

Search history

Search 1: SFT=(hydroprocessing and sulfur and catalyst and ebullated bed and heavy oil) and PD<20170302 (Results 156)

1) Family number: 32383060 (US2005241991A)

PatBase

Title: EBULLATED BED HYDROPROCESSING METHODS AND SYSTEMS AND METHODS OF UPGRADING AN EXISTING EBULLATED BED SYSTEM

Abstract: An ebullated bed hydroprocessing system, and also a method for upgrading a pre-existing ebullated bed hydroprocessing system, involves introducing a colloidal or molecular catalyst, or a precursor composition capable of forming the colloidal or molecular catalyst, into an ebullated bed reactor. The colloidal or molecular catalyst is formed by intimately mixing a catalyst precursor composition into a heavy oil feedstock and raising the temperature of the feedstock to above the decomposition temperature of the precursor composition to form the colloidal or molecular catalyst in situ. The improved ebullated bed hydroprocessing system includes at least one ebullated bed reactor that employs both a porous supported catalyst and the colloidal or molecular catalyst to catalyze hydroprocessing reactions involving the feedstock and hydrogen. The colloidal or molecular catalyst provides catalyst in what would otherwise constitute catalyst free zones within the ebullated bed hydroprocessing system. Asphaltene or other hydrocarbon molecules too large to diffuse into the pores of the supported catalyst can be upgraded by the colloidal or molecular catalyst. A slurry phase reactor may be positioned upstream from one or more ebullated bed reactors or converted from a pre-existing ebullated bed reactor.

Classifications:

International (IPC 8-9): B01F13/00 B01F15/02 B01F15/04 B01F3/14 B01F5/06 B01J19/00 B01J27/047 B01J27/051 B01J35/00 B01J37/00 B01J37/02 B01J37/04 B01J37/08 B01J37/20 B01J38/00 B01J38/68 B01J8/00 B01J8/08 B01J8/18 B01J8/20 B01J8/22 C10C1/00 C10G11/00 C10G45/00 C10G45/04 C10G45/16 C10G45/34 C10G45/46 C10G45/56 C10G47/00 C10G47/02 C10G47/06 C10G47/24 C10G47/26 C10G47/30 C10G49/00 C10G49/04 C10G49/10 C10G49/12 C10G49/16 C10G65/00 C10G65/02 C10G65/10 C10G65/12 C10G67/08 G01S19/06 G01S19/12 G01S19/46 H04W64/00 (Advanced/Invention); B01J38/68 C10G47/02 C10G47/26 C10G65/02 (Advanced/Non-invention); C10G45/00 C10G47/00 (Core/Invention)

International (IPC 1-7): B01F3/14 B01J27/047 B01J27/051 B01J8/18 C10G45/00 C10G47/00 C10G47/02 C10G47/26 C10G65/02 C10G65/10 C10G67/08 H04W64/00 G01S5/02 G01S19/252 B01J8/226 C10G49/12 C10G2300/1033 C10G2300/107 C10G2300/1077 C10G2300/206 C10G2300/703 C10G2300/802 C10G45/04 C10G45/34 C10G45/46 B01J8/22 C10G2300/202 C10G65/00 B01J27/047 B01J27/051 B01J35/0013 B01J37/02 B01J37/086 B01J38/00 B01J38/68 C10G45/00 C10G47/00 C10G49/04 C10G65/12 B01F3/088 B01F2003/105 B01J8/0015 B01J2208/00752 C10G47/26 C10G65/02 C10G45/16 C10G45/56 C10G2300/4056 C10G2300/70 C10G49/005 B01J8/08 C10G47/06

European: B01F3/08P B01J27/047 B01J27/051 B01J35/00C B01J37/02 B01J37/08B4 B01J38/00 B01J8/00F B01J8/22D2 C10G45/00 C10G47/00 C10G47/26 C10G49/04 C10G65/02 C10G65/12 L01F3/10B L01J208/00F2 L01J38/68

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Patent Application Publication Nov. 3, 2005 Sheet 1 of 27 US 2005/0241991 A1

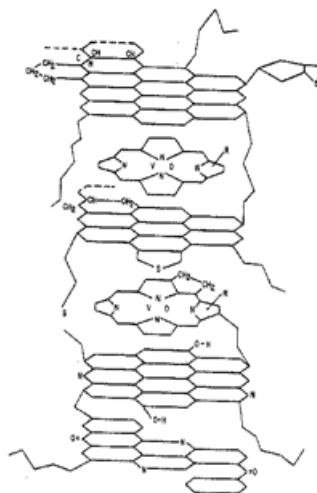


Fig. 1

Family:

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US2014093433 AA	20140403	US20130095698	20131203
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Priority:

US20040566268P	20040428	US20040566335P	20040428	US20040566345	20040428
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CA20142564346	20140722	US20160354230	20161117		

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Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

2) Family number: 30086217 (US2002011428A)

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Title: MULTISTAGE MOVING-BED HYDROPROCESSING REACTOR WITH SEPARATE CATALYST ADDITION AND WITHDRAWAL SYSTEMS FOR EACH STAGE, AND METHOD FOR HYDROPROCESSING A HYDROCARBON FEED STREAM

Abstract: A method, and a reactor, for hydroprocessing a hydrocarbon feed stream through multistage moving catalyst beds contained within a single onstream reactor vessel, with separate catalyst addition and withdrawal systems for each of the multistages of moving catalyst beds. The reactor contains two or more different and distinct moving catalyst beds for any hydroprocessing application. The method includes serially passing, without leaving the reactor vessel, at least a partially treated hydrocarbon stream from one hydroconversion reaction zone containing a moving catalyst bed with a first set of catalytic characteristics to another hydroconversion reaction zone containing a moving catalyst bed with a second set of catalytic characteristics that differ in catalytic abilities from the first set of catalytic characteristics.

Classifications:

International (IPC 8-9): B01J23/16 B01J23/74 B01J35/00 B01J8/00 B01J8/02 B01J8/12 B01J8/18 B01J8/22 C10G11/18 C10G35/10 C10G35/14 C10G45/00 C10G45/02 C10G45/20 C10G47/00 C10G49/00 C10G49/14 (Advanced/Invention); B01J23/16 B01J23/74 (Advanced/Non-invention); B01D53/14 B01D53/26 B01J23/16 B01J23/74 B01J8/00 B01J8/08 C10G11/00 C10G35/00 C10G49/00 C10G5/00 C10L3/00 (Core/Invention); B01J8/02 (Core/Non-invention)

International (IPC 1-7): B01J23/16 B01J23/58 B01J23/74 B01J23/90 B01J8/00 B01J8/02 B01J8/08 B01J8/12 B01J8/18 C10G11/18 C10G35/00 C10G35/04 C10G35/10 C10G35/14 C10G45/00 C10G45/02 C10G45/20 C10G47/00 F28D21/00

CPC: B01J8/008 B01J8/125 B01J8/1881 B01J8/22 B01J2208/00884 C10G49/002 C10G49/14 B01J8/003

European: B01D53/14 B01J8/00F6 B01J8/00L B01J8/12B B01J8/18M B01J8/22 C10G11/18 C10G11/18R C10G49/00B C10G49/14 C10G5/04 C10L3/10 L01J208/00L6

US: 208/108 208/111 208/111.3 208/111.35 208/113 208/147 208/147S 208/148 208/149 208/149S 208/15 208/150 208/150S 208/152 208/157 208/158 208/159 208/160 208/163 208/164 208/165 208/166 208/170 208/171 208/172 208/173 208/176 208/209 208/254H 208/89 208/89P 422/141 422/188 422/190 422/191 422/197 422/207 422/212 422/213 422/216 422/219 422/220 422/223 422/311 422/632 502/305 502/337 502/354 502/439 502/527

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Agent(s): SIM AND MCBURNEY

Designated states: AM AT AU BB BE BF BG BJ BR BY CA CF CG CH CI CM CN CZ DE DK EE ES FI FR GA GB GE GN GR HU IE IS IT JP KE KG KP KR KZ LI LK LR LT LU LV MC MD MG ML MN MR MW MX NE NL NO NZ PL PT RO RU SD SE SG SI SK SN SZ TD TG TJ TT UA UG UZ VN

3) Family number: 32383061 (US2005241992A)

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Title: FIXED BED HYDROPROCESSING METHODS AND SYSTEMS AND METHODS FOR UPGRADING AN EXISTING FIXED BED SYSTEM

Abstract: A fixed bed hydroprocessing system, and also a method for upgrading a pre-existing fixed bed hydroprocessing system, involves preliminarily upgrading a heavy oil feedstock in one or more slurry phase reactors using a colloidal or molecular catalyst and then further hydroprocessing the upgraded feedstock within one or more fixed bed reactors using a porous supported catalyst. The colloidal or molecular catalyst is formed by intimately mixing a catalyst precursor composition into a heavy oil feedstock and raising the temperature of the feedstock to above the decomposition temperature of the precursor composition to form the colloidal or molecular catalyst in situ. Asphaltene or other hydrocarbon molecules otherwise too large to diffuse into the pores of the fixed bed catalyst can be upgraded by the colloidal or molecular catalyst. One or more slurry phase reactors may be built and positioned upstream from one or more fixed bed reactors of a pre-existing fixed bed system and/or converted from one or more pre-existing fixed bed reactors.

Classifications:

International (IPC 8-9): A61K39/12 B01J27/047 B01J27/051 B01J35/00 B01J37/02 B01J37/04 B01J37/08 B01J38/00 B01J8/00 B01J8/02 C07K14/025 C10G45/00 C10G45/16 C10G47/00 C10G47/02 C10G47/26 C10G49/04 C10G65/02 C10G65/04 C10G65/12 (Advanced/Invention); B01J38/68 C10G47/02 C10G47/26 C10G65/04 (Advanced/Non-invention); B01J8/00 (Core/Invention)

International (IPC 1-7): B01J8/00 B01J8/02 C10G45/00 C10G45/16 C10G47/00 C10G47/02 C10G47/26 C10G65/04 C10G65/12

CPC: B01J27/047 B01J27/051 B01J35/0013 B01J37/02 B01J37/086 B01J38/00 B01J38/68 C10G45/00 C10G47/00 C10G49/04 C10G65/02 C10G65/12

European: B01J27/047 B01J27/051 B01J35/00C B01J37/02 B01J37/08B4 B01J38/00 C10G45/00 C10G47/00 C10G49/04 C10G65/02 C10G65/12 L01J38/68

US: 208/108 208/213

PatBase - US2005241992_AA

Patent Application Publication Nov. 3, 2005 Sheet 1 of 26 US 2005/0241992 A1

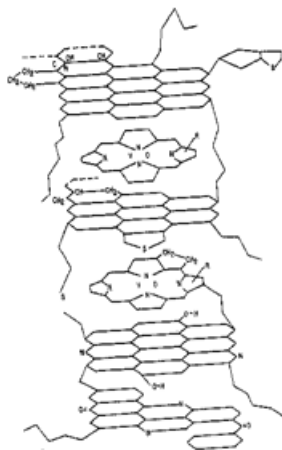


Fig. 1

Family:

Publication number	Publication date	Application number	Application date
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CA2564359 C	20140610	CA20052564359	20050428
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KR20070018924 A	20070214	KR20067022516	20050428
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RU2006141836 A	20080610	RU20060141836	20050428
RU2393203 C2	20100627	RU20060141836	20050428
TR201803926 T4	20180424	TR20180003926T	20050428
US2005241992 AA	20051103	US20050117203	20050428
US7517446 BB	20090414	US20050117203	20050428
WO05104786 A2	20051110	WO2005US14669	20050428
WO05104786 A3	20051215	WO2005US14669	20050428

Priority:

US20040566254P 20040428 US20040566269 20040428 US20040566269P 20040428
EP20050741051 20050428 US20050117203 20050428 WO2005US14669 20050428

Probable Assignee: HYDROCARBON TECHNOLOGY AND INNOVATION LLC

Assignee(s): (std): LOTT ROGER K ; LEE LAP KEUNG ; QUINN PETER C ; KHEDUOTERS KHEHVI OJL LLS ; HEADWATERS HEAVY OIL LLC ; HYDROCARBON TECH AND INNOVATION LLC

Assignee(s): HYDROCARBON TECHNOLOGY INNOVATION LLC ; WILMINGTON TRUST FSB COLLATERAL AGENT AS ; DEUTSCHE BANK NEW YORK BRANCH ADMINISTRATIVE AGENT AG AS ; HEADWATERS HEAVY OIL LLC A UTAH CORP ; HEADWATERS INC ; HEADWATERS INC GRANTOR AS ; HEADWATERS RESOURCES INC A UTAH CORP ; HEADWATERS TECHNOLOGY INNOVATION GROUP INC A UTAH CORP ; TAPCO INT A MICHIGAN CORP ; HEADWATERS RESOURCES INC ; TAPCO INT CORP ; HYDROCARBON TECHNOLOGY AND INNOVATION LLC

Inventor(s): (std): LOTT ROGER K ; LEE LAP KEUNG ; QUINN PETER C ; LOTT ROGER K LEE LAP KEUNG QUI ; LI LAP KEUNG ; KUINN PITER K ; LOTT RODZHER K

Inventor(s): LI LAP-KEUNG ; LOTT ROGER ; QUINN PETER ; ROGER K LOTT ; LAP KEUNG LEE ; PETER C QUINN ; LOTT ROGER K LEE LAP KEUNG QUINN PETER C

Agent(s): CASSAN MACLEAN; CASSAN MACLEAN IP AGENCY INC; ADAM HOLGER; CARPINTERO MARIO; YESIM METIN; WORKMAN NYDEGGER, (F/K/A WORKMAN NYDEGGER AND SEELEY); WORKMAN NYDEGGER F K A WORKMAN NYDEGGER AND SEELEY; WORKMAN NYDEGGER

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

4) Family number: 32715187 (US2006058174A)

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Title: HIGHLY ACTIVE SLURRY CATALYST COMPOSITION

Abstract: The instant invention is directed to the preparation of a slurry catalyst composition. The slurry catalyst composition is prepared in a series of steps, involving mixing a Group VIB metal oxide and aqueous ammonia to form an aqueous mixture and sulfiding the mixture to form a slurry. The slurry is then promoted with a Group VIII metal. Subsequent steps involve mixing the slurry with a hydrocarbon oil, and combining the resulting mixture with hydrogen gas (under conditions which maintain the water in a liquid phase) to produce the active slurry catalyst.

Classifications:

International (IPC 8-9): B01J21/00 B01J23/00 B01J23/16 B01J23/24 B01J23/74 B01J23/745 B01J23/75 B01J23/755 B01J23/85 B01J23/88 B01J27/02 B01J27/04 B01J27/047 B01J27/049 B01J27/051 B01J27/053 B01J27/24 B01J31/00 B01J31/02 B01J31/12 B01J31/18 B01J31/34 B01J33/00 B01J35/12 B01J37/04 B01J37/20 B32B5/16 C07F15/04 C10G45/00 C10G45/04 C10G45/06 C10G45/08 C10G45/16 C10G47/02 C10G47/06 C10G47/22 C10G47/26 C10G47/34 C10G49/02 C10G49/04 C10G49/12 C10G65/04 (Advanced/Invention); B01J23/16 B01J27/049 B01J31/34 C07F11/00 C07F15/04 C10G47/02 (Advanced/Non-invention); B01J21/00 B01J23/00 B01J23/16 B01J23/74 B01J23/745 B01J23/75 B01J23/755 B01J23/76 B01J27/02 B01J27/04 B01J27/053 B01J27/24 B01J31/00 B01J31/02 B01J31/12 B01J31/16 B01J33/00 B01J35/00 B01J37/00 B32B5/16 C07F15/00 C10G45/00 C10G45/02 C10G47/00 C10G49/00 (Core/Invention)

CPC: B01J23/002 B01J27/051 B01J37/0018 B01J2523/00 B01J35/10 B01J37/03 C10G45/50 Y10S502/517 C10G2300/107 C10G2300/1077 C10G47/04 B01J23/24 B01J23/28 B01J23/85 B01J23/882 B01J23/883 B01J23/8885 B01J35/002 B01J35/023 B01J35/1009 B01J35/1014

Patent Application Publication Mar. 16, 2006

US 2006/0081174 A1

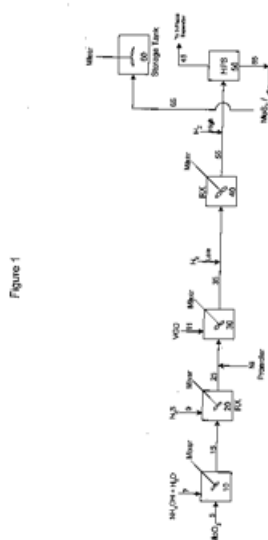


Figure 1

Publication number	Publication date	Application number	Application date
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CA2703137 C	20160524	CA20082703137	20081029
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CN101027127 B	20100505	CN200580030356	20050907
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EA200700591 A1	20070831	EA20070000591	20050907
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EP1799343 A1	20070627	EP20050797908	20050907
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EP1799343 B1	20170809	EP20050797908	20050907
EP2205351 A2	20100714	EP20080846193	20081029
EP2205351 A4	20170830	EP20080846193	20081029
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NO20071782 A	20070404	NO20070001782	20070404
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WO09058861 A3	20090827	WO2008US81581	20081029

Priority:

US20040938003	20040910	WO2005US31891	20050907	US20070627593	20070126
WO2005US31891	20070309	US20070931972	20071031	US20070933085	20071031
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Assignee(s): CHEVRON USA ; CHEVRON U S A ; CHEVRON U S A INC

Inventor(s): (std): CHEN Kaidong ; FARSHID DARUSH ; REYNOLDS BRUCE ; REYNOLDS BRUCE E ; OLEG MIRONOV ; LOPEZ JAIME ; JAIME LOPEZ ; BRUCE REYNOLDS ; BRAIT AXEL ; MIRONOV OLEG ; KUPERMAN ALEXANDER E ; Kaidong CHEN ; CHEN Kaidong REYNOLDS BRUCE E ; AXEL BRAIT ; ALEXANDER E KUPERMAN

Inventor(s): BRUCE E REYNOLDS

Agent(s): SIM AND MCBURNEY; AIRD AND BERLIS IP PARTNERSHIP LTD; AIRD AND MCBURNEY LP; NASH DAVID ALLAN; ASAMURA HAJIME; ASAMURA KIYOSHI; IKEDA YUKIHIRO; NAGANUMA TERUO; ASAMURA PATENT OFFICE PC; CHEVRON TEXACO CORP; CHEVRON CORP; PRATER PENNY L; PENNY L; PHAM HANH T ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

5) Family number: 48962780 (US2011124493A)

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Title: HYDROPROCESSING BULK CATALYST AND METHODS OF MAKING THEREOF

Abstract: A hydroprocessing bulk catalyst is provided. A process to prepare hydroprocessing bulk catalysts is also provided. The hydroprocessing catalyst has the formula (RP)_i(Mt)_a(Lu)_b(Sv)_d(Cw)_e(Hx)_f(Oy)_g(Nz)_h, wherein M is at least a "d" block element metal; L is also at least a "d" block element metal, but different from M; t, u, v, w, x, y, z representing the total charge for each of the components (M, L, S, C, H, O and N, respectively); R is optional and in one embodiment, R is a lanthanoid element metal; 0 less than or equal to i less than or equal to 1; pi+ta+ub+vd+we+xf+yg+zh=0; 0<b; 0<b/a=<5; 0.5 (a+b) less than or equal to d less than or equal to 5(a+b); 0<e less than or equal to 11(a+b); 0<f less than or equal to 7(a+b); 0<g less than or equal to 5(a+b); 0<h less than or equal to 2(a+b). The catalyst has an X-ray powder diffraction pattern with at least three diffractions peak located at 2-θ angles of greater than 25 degrees. In one embodiment, the catalyst is prepared by forming at least a sulfided catalyst precursors from at least two "d" block element metals; and mixing the catalyst precursor with a hydrocarbon compound to form the hydroprocessing catalyst composition. In another embodiment, the catalyst is prepared by the thermal decomposition of an oil dispersible sulfur containing organic metal precursor upon contact with a hydrocarbon oil, generating a slurry catalyst. In yet another embodiment, the catalyst is prepared from an in-situ or ex-situ sulfidation of "d" block element metal precursors in solvent carrier.

Classifications:

International (IPC 8-9): B01J21/00 B01J23/80 B01J23/883 B01J27/02 B01J27/04 B01J27/043 B01J27/049 B01J27/051 B01J27/24 B01J31/00 B01J31/02 B01J31/12 B01J35/10 B01J37/04 B01J37/20 C07C4/06 C10G45/04 C10G49/02 (Advanced/Invention)

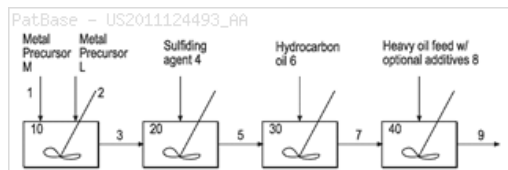
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European: B01J23/80 B01J23/883 B01J27/04 B01J27/043 B01J27/049 B01J27/051A B01J35/00D B01J35/00D8D B01J35/02B B01J35/10A2 B01J35/10A4 B01J35/10A6 B01J37/03B B01J37/04 B01J37/20 C10G49/02 C10G49/12 M10G300/40F

US: 502/167 502/168 502/200 502/216 502/216S 502/219 502/220 502/221 502/222 502/222S 502/223

Family:

Publication number	Publication date	Application number	Application date
CA2781530 AA	20120522	CA20102781530	20101117
CN102665907 A	20120912	CN201080059338	20101117
EA024752 B1	20161031	EA20120090386	20101117
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EP2504099 A2	20121003	EP20100833782	20101117
EP2504099 A4	20140827	EP20100833782	20101117
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US2011124494 AA	20110526	US20090625382	20091124
US2011124496 AA	20110526	US20090625394	20091124
US2011124498 AA	20110526	US20090625399	20091124
US8372776 BB	20130212	US20090625382	20091124
US8389433 BB	20130305	US20090625368	20091124
US8420565 BB	20130416	US20090625394	20091124



Agent(s): SMART AND BIGGAR; LOTTI GIORGIO; WORKMAN NYDEGGER 1000 EAGLE GATE TOWER; WORKMAN NYDEGGER; NYDEGGER RICK D ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

7) Family number: 55704462 (US2014027344A)

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Title: METHODS AND SYSTEMS FOR UPGRADING HEAVY OIL USING CATALYTIC HYDROCRACKING AND THERMAL COKING

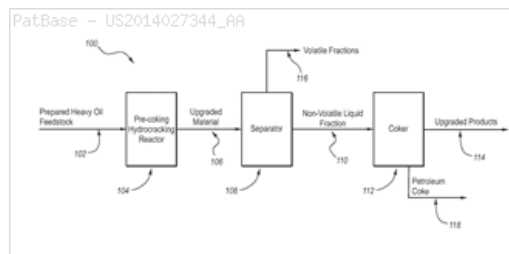
Abstract: Methods and systems for hydroprocessing heavy oil feedstocks to form upgraded material use a colloidal or molecular catalyst dispersed within heavy oil feedstock, pre-coking hydrocracking reactor, separator, and coking reactor. The colloidal or molecular catalyst promotes upgrading reactions that reduce the quantity of asphaltenes or other coke forming precursors in the feedstock, increase hydrogen to carbon ratio in the upgraded material, and decrease boiling points of hydrocarbons in the upgraded material. The methods and systems can be used to upgrade vacuum tower bottoms and other low grade heavy oil feedstocks. The result is one or more of increased conversion level and yield, improved quality of upgraded hydrocarbons, reduced coke formation, reduced equipment fouling, processing of a wider range of lower quality feedstocks, and more efficient use of supported catalyst if used with the colloidal or molecular catalyst, as compared to a conventional hydrocracking process or a conventional thermal coking process.

Classifications:

International (IPC 8-9): B01J23/28 B01J27/043 B01J27/047 B01J27/051 B01J35/02 B01J35/10 B01J37/04 B01J37/08 B01J37/20 B01J8/00 B01J8/02 C10B55/00 C10B57/04 C10G47/06 C10G47/12 C10G47/24 C10G47/26 C10G65/10 C10G69/06 C10G9/00 C10G9/06 (Advanced/Invention)

CPC: C10G69/06 B01J23/28 B01J27/043 B01J27/047 B01J27/051 B01J35/026 B01J35/108 B01J35/109 B01J37/04 B01J37/086 B01J37/20 C10B55/00 C10B57/045 C10G9/005 C10G47/12 C10G2300/206

US: 208/61 422/187



Family:

Publication number	Publication date	Application number	Application date
CA2879715 AA	20150116	CA20132879715	20130726
CN105518109 A	20160420	CN201380051146	20130726
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US2014027344 AA	20140130	US20120561479	20120730
US2015361360 AA	20151217	US20150836792	20150826
US9644157 BB	20170509	US20120561479	20120730
US9969946 BB	20180515	US20150836792	20150826
WO14022243 A1	20140206	WO2013US52422	20130726

Priority:

US20120561479 20120730 WO2013US52422 20130726 US20150836792 20150826

Probable Assignee: HEADWATERS HEAVY OIL LLC

Assignee(s): (std): GENDLER JEFFREY ; HARRIS EVERETTE ; HEADWATERS HEAVY OIL LLC ; HEADWATERS TECH INNOVATION LLC

Assignee(s): HEADWATERS INC ; HEADWATERS RESOURCES INC ; TAPCO INT CORP ; HYDROCARBON TECHNOLOGY AND INNOVATION LLC ; HEADWATERS TECHNOLOGY INNOVATION LLC ; DEUTSCHE BANK NEW YORK BRANCH ADMINISTRATIVE AGENT AG AS

Inventor(s): (std): GENDLER JEFFREY ; HARRIS EVERETTE

Agent(s): CASSAN MACLEAN; CASSAN MACLEAN IP AGENCY INC; TANI AND ABE PC; WORKMAN NYDEGGER; GUYNN JOHN M ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

8) Family number: 61105024 (WO12092006A2)

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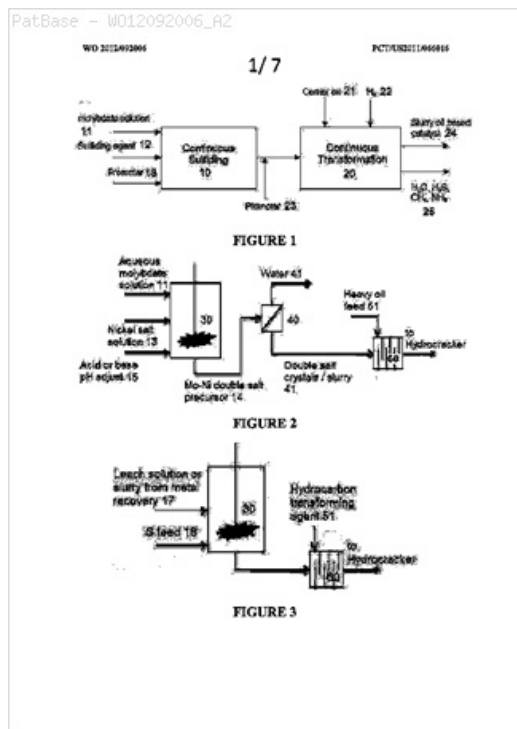
Title: HYDROPROCESSING CATALYSTS AND METHODS FOR MAKING THEREOF

Abstract: A process for preparing a slurry catalyst for the heavy oil upgrade is provided. The slurry catalyst has a BET total surface area of at least 100 m²/g, a total pore volume of at least 0.5 cc/g and a polymodal pore distribution with at least 80 percent of pore sizes from 5 to 2,000 Angstroms. In one embodiment, a polar aprotic solvent is mixed with the metal precursor feed to form an oil-dispersible precursor. In another embodiment, the precursor feedstock is selected from any of a pressure leach solution from metal recovery, a rework material, a double metal salt precursor, a single metal precursor. In one embodiment, high shear mixing is employed to generate an emulsion. In another embodiment, sulfiding is carried out at least twice for enhanced sulfiding. In another embodiment, at least a metal precursor feedstock is split into portions for addition in various stages of the process.

Classifications:

International (IPC 8-9): B01J19/24 B01J23/28 B01J23/30 B01J23/755 B01J27/049 B01J27/24 B01J27/30 B01J35/08 B01J35/10 B01J37/00

B01J37/04 B01J37/16 B01J37/20 B01J38/00 C10G47/26 C10G49/04
C10G49/06 C10G49/12 (Advanced/Invention);
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C10G49/06 C10G49/12 C10G2300/107 C10G2300/1077 C10G2300/205
C10G2300/301 C10G2300/701 C10G2300/703 C10G2300/802



Family:

Publication number	Publication date	Application number	Application date
BR112013009690 A2	20160719	BR20131109690	20111220
CA2817986 AA	20130514	CA20112817986	20111220
EA201390997 A1	20140331	EA20130090997	20111220
EP2658647 A2	20131106	EP20110853753	20111220
EP2658647 A4	20150121	EP20110853753	20111220
IN04162DN2013 A	20160624	IN2013DN04162	20130509
JP2014506831 T2	20140320	JP20130547537T	20111220
JP6097224 B2	20170315	JP20130547537T	20111220
KR101927396 B1	20181211	KR20137020290	20111220
KR20140006857 A	20140116	KR20137020290	20111220
MX2013007317 A1	20130722	MX20130007317	20111220
SG190910 A1	20130731	SG20130041074	20111220
WO12092006 A2	20120705	WO2011US66016	20111220
WO12092006 A3	20130117	WO2011US66016	20111220

Priority:

US20100428599P 20101230 WO2011US66016 20111220

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): KOU BO ; MARIS ERIN P ; KOTUN MODINAT ; KWIK KENNETH ; DUNCKLEY CHRISTOPHER PAUL ; KUPERMAN ALEXANDER E ; JIAO LING ; CHEVRON USA INC ; NGUYEN JOSEPH V ; REYNOLDS BRUCE EDWARD ; MIRONOV OLEG ; YANG SHUWU ; BHADURI RAHUL SHANKAR ; BRAIT AXEL ; CHABOT JULIE

Assignee(s): CHEVRON U S A INC

Inventor(s): (std): BHADURI RAHUL SHANKAR ; BRAIT AXEL ; CHABOT JULIE ; JIAO LING ; KOTUN MODINAT ; KOU BO ; KUPERMAN ALEXANDER E ; KWIK KENNETH ; MARIS ERIN P ; MIRONOV OLEG ; NGUYEN JOSEPH V ; NGUYEN JOSEPH V ; DUNCKLEY CHRISTOPHER PAUL ; REYNOLDS BRUCE EDWARD ; YANG SHUWU

Inventor(s): SHUWU YANG ; ERIN P MARIS ; OLEG MIRONOV ; RAHUL SHANKAR BHADURI ; LING JIAO ; JOSEPH V NGUYEN ; JOSEPH V NGUYEN ; JULIE CHABOT ; KENNETH KWIK ; CHRISTOPHER PAUL DUNCKLEY ; BRUCE EDWARD REYNOLDS ; BO KOU ; ALEXANDER E KUPERMAN ; AXEL BRAIT

Agent(s): SIM AND MCBURNEY; AIRD AND BERLIS IP PARTNERSHIP LTD; NASH DAVID ALLAN; ASAMURA PATENT OFFICE PC; PHAM HANH T ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

9) Family number: 53291809 (US2013075304A)

Title: METHODS FOR INCREASING CATALYST CONCENTRATION IN HEAVY OIL AND/OR COAL RESID HYDROCRACKER

Abstract: Methods and systems for hydrocracking a heavy oil feedstock include using a colloidal or molecular catalyst (e.g., molybdenum sulfide) and provide for concentration of the colloidal or molecular catalyst within the lower quality materials requiring additional hydrocracking in one or more downstream reactors. In addition to increased catalyst concentration, the inventive systems and methods provide increased reactor throughput, increased reaction rate, and of course higher conversion of

asphaltenes and lower quality materials. Increased conversion levels of asphaltenes and lower quality materials also reduces equipment fouling, enables the reactor to process a wider range of lower quality feedstocks, and can lead to more efficient use of a supported catalyst if used in combination with the colloidal or molecular catalyst.

Classifications:

International (IPC 8-9): B01J8/00 C10G47/06 C10G47/26 C10G65/10 C10G65/18 (Advanced/Invention); C10G47/06 (Core/Invention)

CPC: C10G47/06 C10G47/26 C10G65/10 C10G2300/802

US: 208/79 422/187

PatBase - US2013075304_AA

Patent Application Publication Mar. 28, 2013 Sheet 1 of 8 US 2013/0075304 A1

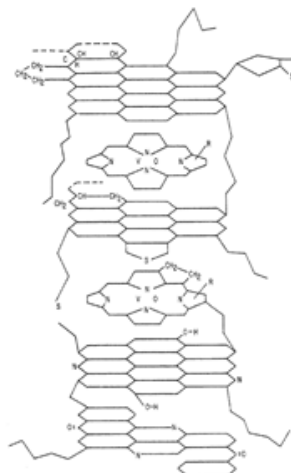


Fig. 1

Family:

Publication number	Publication date	Application number	Application date
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EA031820 B1	20190228	EA20140090681	20120919
EA201490681 A1	20160531	EA20140090681	20120919
EP2758493 A1	20140730	EP20120769562	20120919
JP2014530270 A2	20141117	JP20140531921	20120919
JP2014530270 T2	20141117	JP20140531921T	20120919
JP6141283 B2	20170607	JP20140531921T	20120919
MX2014003442 A1	20140430	MX20140003442	20120919
TH149268 A	20160426	TH20141001525	20120919
US2013075304 AA	20130328	US20110242979	20110923
US9790440 BB	20171017	US20110242979	20110923
WO13043693 A1	20130328	WO2012US56065	20120919

Priority:

US20110242979 20110923 WO2012US56065 20120919

Probable Assignee: HEADWATERS HEAVY OIL LLC

Assignee(s): (std): HEADWATERS HEAVY OIL LLC ; HEADWATERS TECH INNOVATION GROUP INC ; CHANG YU HWA

Assignee(s): DEUTSCHE BANK NEW YORK BRANCH ADMINISTRATIVE AGENT AG AS ; HEADWATERS TECHNOLOGY INNOVATION LLC ; HEADWATERS TECHNOLOGY INNOVATION GROUP INC ; HYDROCARBON TECHNOLOGY AND INNOVATION LLC

Inventor(s): (std): CHANG YU HWA

Inventor(s): YU HWA CHANG

Agent(s): CASSAN MACLEAN; CASSAN MACLEAN IP AGENCY INC; ADAM HOLGER; TANI AND ABE PC; WORKMAN NYDEGGER; GUYNN JOHN M ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

10) Family number: 61105023 (WO12088025A2)

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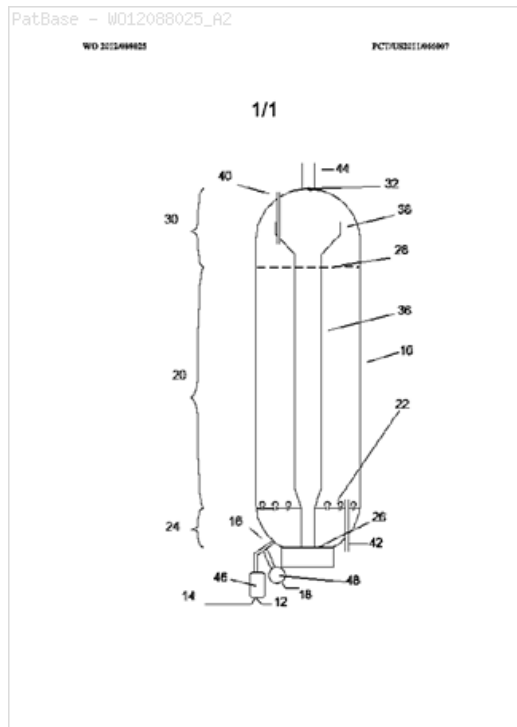
Title: HYDROPROCESSING CATALYSTS AND METHODS FOR MAKING THEREOF

Abstract: A method to upgrade heavy oil feedstock using an ebullated bed reactor and a novel catalyst system is provided. The ebullated bed reactor system includes two different catalyst with different characteristics: an expanded catalyst zone contains particulate catalyst having a particle size of greater than 0.65 mm; and a slurry catalyst with average particle size from 1 to 300 micrometres. The slurry catalyst is provided to the ebullated bed system with the heavy oil feedstock, and entrained in the upflowing hydrocarbon liquid passing through the ebullated bed reaction zone. The slurry catalyst reduces the formation of sediment and coke precursors in the reactor system. In one embodiment, the slurry catalyst is prepared from at least a water-soluble metal precursor, which is pre-sulfided or sulfided in-situ. In another embodiment, the slurry catalyst is prepared from rework materials (catalyst fines).

Classifications:

International (IPC 8-9): B01J23/28 B01J35/08 B01J37/02 B01J8/24 C10G49/02 C10G49/04 (Advanced/Invention);

B01J23/883 B01J35/00 B01J35/02 B01J35/10 B01J37/00
B01J37/20 (Advanced/Non-invention)
CPC: C10G49/02 B01J23/883 B01J35/0006 B01J35/023 B01J35/1019
B01J35/1023 B01J35/1042 B01J35/1047 B01J35/1052 B01J35/1066
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C10G2300/208 C10G2300/4056 C10G2300/70 C10G2300/708
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Family:

Publication number	Publication date	Application number	Application date
CA2817595 A2	20130509	CA20112817595	20111220
EP2654948 A2	20131030	EP20110851925	20111220
EP2654948 A4	20150211	EP20110851925	20111220
KR101917198 B1	20190124	KR20137019411	20111220
KR20130133817 A	20131209	KR20137019411	20111220
WO12088025 A2	20120628	WO2011US66007	20111220
WO12088025 A3	20121122	WO2011US66007	20111220

Priority:

US20100424804P 20101220 US20100428599P 20101230 US20110562850P 20111122
WO2011US66007 20111220

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CHEVRON USA INC ; REYNOLDS BRUCE E ; SOLBERG SEAN ; MARIS ERIN ; CHABOT JULIE ; CHEN KAIDONG

Assignee(s): CHEVRON U S A INC

Inventor(s): (std): SOLBERG SEAN ; MARIS ERIN ; REYNOLDS BRUCE E ; CHEN KAIDONG ; CHABOT JULIE

Agent(s): SIM AND MCBURNEY; AIRD AND BERLIS IP PARTNERSHIP LTD; NASH DAVID ALLAN; PHAM HANH T ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

11) Family number: 30116019 (US2002179493A)

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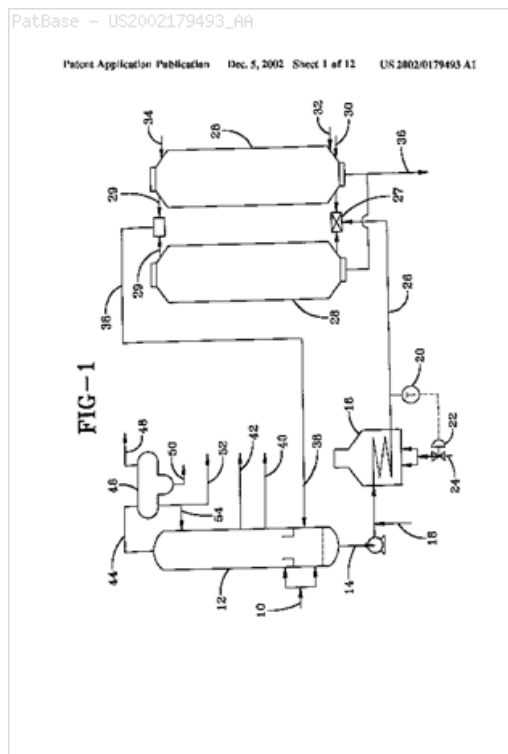
Title: PRODUCTION AND USE OF A PREMIUM FUEL GRADE PETROLEUM COKE

Abstract: A premium "fuel-grade" petroleum coke is produced by modifying petroleum coking technology. Coking process parameters are controlled to consistently produce petroleum coke within a predetermined range for volatile combustible material (VCM) content. The invention includes a process of producing a coke fuel, the method comprising steps: (a) obtaining a coke precursor material derived from crude oil and having a volatile organic component; and (b) subjecting the coke precursor material to a thermal cracking process for sufficient time and at sufficient temperature and under sufficient pressure so as to produce a coke product having volatile combustible materials (VCMs) present in an amount in the range of from about 13 percent to about 50 percent by weight. Most preferably, the volatile combustible materials in the coke product typically may be in the range of from about 15 percent to about 30 percent by weight. The present invention also provides methods for (1) altering the coke crystalline structure, (2) improving the quality of the coke VCM, and (3) reducing the concentration of coke contaminants. Fuels made from the inventive coke product and methods of producing energy through the combustion of such fuels are also included. Finally, novel environmental control techniques are developed to take optimal advantage of the unique characteristics of this upgraded petroleum coke.

Classifications:

International (IPC 8-9): C01B17/22 C10B55/00 C10B57/00 C10B57/06
C10G9/00 C10G9/14 C10L1/10 C10L5/00 C10L9/00 C10L9/02 C10L9/04
C10L9/10 (Advanced/Invention);
C10B55/00 C10B57/00 (Core/Invention)
International (IPC 1-7): C01B17/22 C10G45/00 C10G47/00 C10G9/00
C10G9/14 C10L1/10 C10L5/00 C10L7/00

CPC: F23C2900/99004 C10B57/06 C10B55/00 C10B57/005 C10G9/005 C10L5/00 C10L9/00 C10L9/02 C10L9/04 C10L9/10
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US: 1/1 208/108 208/108S 208/111.01 208/111.010S 208/131 208/132 208/14 208/142 208/142S 208/143 208/143S 208/144 208/144S 208/145 208/145S 208/14S 44/530 44/607



Family:

Publication number	Publication date	Application number	Application date
AU199956841 A1	20000314	AU19990056841	19990820
AU199956841 A5	20000314	AU19990056841	19990820
CA2341006 AA	20010216	CA19992341006	19990820
CA2341006 C	20070710	CA19992341006	19990820
GB200105114 A0	20010418	GB20010005114	19990820
GB2357518 A1	20010627	GB20010005114	19990820
GB2357518 B2	20030319	GB20010005114	19990820
US2002179493 AA	20021205	US20010027677	20011220
US2006032788 AA	20060216	US20050178932	20050711
US6168709 BA	20010102	US19980137283	19980820
US9475992 BB	20161025	US20050178932	20050711
WO0010914 A1	20000302	WO1999US19091	19990820
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Priority:

US19980137283 19980820 WO1999US19091 19990820 US20000556132 20000421
US20010763282 20010220 US20010027677 20011220 US20050178932 20050711

Probable Assignee: ENVIRONMENTAL AND ENERGY ENTPR L

Assignee(s): (std): ENVIRONMENTAL AND ENERGY ENTPR L ; ETTER ROGER ; ETTER ROGER G ; ROGER ETTER

Assignee(s): ENVIRONMENTAL AND ENERGY ENTERPRISES LLC

Inventor(s): (std): ETTER ROGER ; ETTER ROGER G ; ROGER ETTER

Agent(s): SMART AND BIGGAR; STANDLEY LAW GROUP LLP

Designated states: AE AL AM AT AU AZ BA BB BE BF BG BJ BR BY CA CF CG CH CI CM CN CU CY CZ DE DK EE ES FI FR GA GB GD GE GH GM GN GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MC MD MG MK ML MN MR MW MX NE NL NO NZ PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TR TT UA UG US UZ VN YU ZA ZW

12) Family number: 61105054 (US2012152805A)

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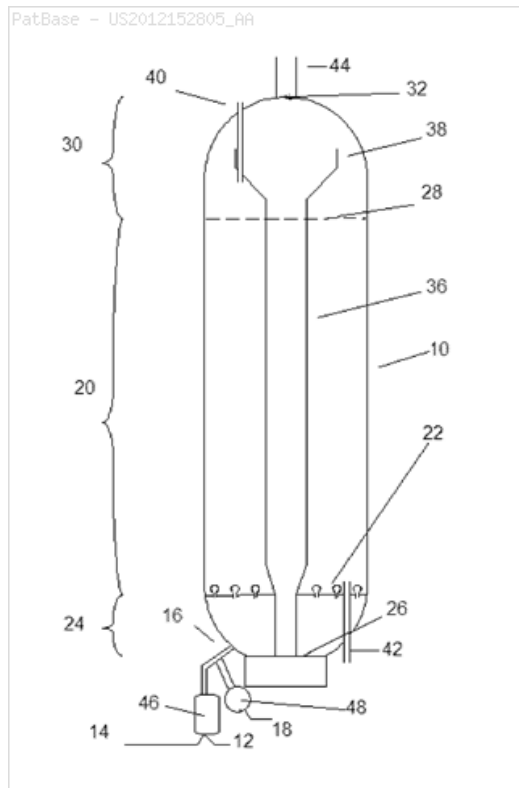
Title: HYDROPROCESSING CATALYSTS AND METHODS FOR MAKING THEREOF

Abstract: A method to upgrade heavy oil feedstock using an ebullated bed reactor and a novel catalyst system is provided. The ebullated bed reactor system includes two different catalyst with different characteristics: an expanded catalyst zone containing particulate catalyst having a particle size of greater than 0.65 mm; and a slurry catalyst having an average particle size ranging from 1 to 300 micro m. The slurry catalyst is provided to the ebullated bed system containing the heavy oil feedstock, and entrained in the upflowing hydrocarbon liquid passing through the ebullated bed reaction zone. The slurry catalyst reduces the formation of sediment and coke precursors in the ebullating bed reactor system. The slurry catalyst is prepared from rework materials, which form a slurry catalyst in-situ upon mixing with the heavy oil feedstock.

Classifications:

International (IPC 8-9): B01J23/883 B01J27/02 B01J31/02 B01J35/00 B01J35/02 B01J35/10 B01J37/00 B01J37/02 B01J37/20 C10G45/02 C10G47/00 C10G47/26 C10G49/02 C10G49/12 (Advanced/Invention)
CPC: C10G49/02 B01J23/883 B01J35/0006 B01J35/023 B01J35/1019

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US: 1/1 208/108 208/143 208/213 208/251R 208/254H 502/100 502/150
 502/216 502/220



Family:

Publication number	Publication date	Application number	Application date
US2012152805 AA	20120621	US20110330910	20111220
US9206361 BB	20151208	US20110330910	20111220

Priority:

US20100424804P 20101220 US20100428599P 20101230 US20110562850P 20111122
 US20110330910 20111220

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CHABOT JULIE ; CHEVRON USA INC ; MARIS ERIN ; REYNOLDS BRUCE E ; YANG SHUWU

Inventor(s): (std): YANG SHUWU ; CHABOT JULIE ; REYNOLDS BRUCE E ; MARIS ERIN

Agent(s): TERRENCE M

13) Family number: 61105055 (US2012152806A)

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Title: HYDROPROCESSING CATALYSTS AND METHODS FOR MAKING THEREOF

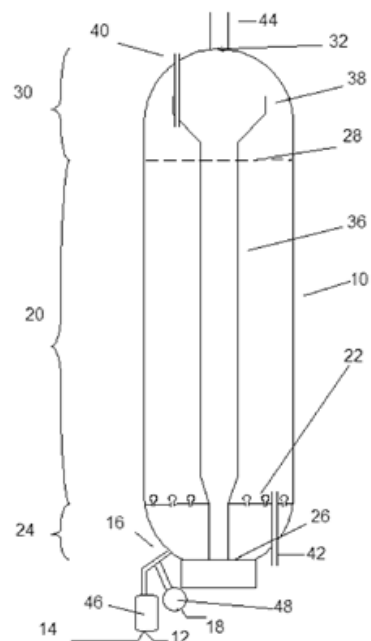
Abstract: A method to upgrade heavy oil feedstock using an ebullated bed reactor and a novel catalyst system is provided. The ebullated bed reactor system includes two different catalyst with different characteristics: an expanded catalyst zone containing particulate catalyst having a particle size of greater than 0.65 mm; and a slurry catalyst having an average particle size ranging from 1 to 300 micro m. The slurry catalyst is introduced to the ebullated bed system with the heavy oil feedstock, and entrained in the upflowing hydrocarbon liquid passing through the ebullated bed reaction zone. The slurry catalyst reduces the formation of sediment and coke precursors in the ebullating bed reactor system. The slurry catalyst is prepared from at least a water-soluble metal precursor and pre-sulfided prior to being introduced with the heavy oil feedstock to the reactor system, or sulfided in-situ in the ebullated bed reactor in another embodiment.

Classifications:

International (IPC 8-9): B01J23/883 B01J27/043 B01J27/047 B01J27/053
 B01J27/24 B01J31/28 B01J31/34 B01J35/00 B01J35/02 B01J35/10
 B01J37/00 B01J37/02 B01J37/20 C10G35/06 C10G35/085 C10G45/00
 C10G47/06 C10G47/26 C10G49/00 C10G49/02
 C10G49/12 (Advanced/Invention)

CPC: C10G49/02 B01J23/883 B01J35/0006 B01J35/023 B01J35/1019
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 B01J37/0036 B01J37/0201 B01J37/20 C10G49/12 B01J35/1052
 C10G2300/208 C10G2300/4056 C10G2300/70 C10G2300/708
 C10G2300/802

US: 1/1 208/108 208/134 208/143 208/215 208/253 208/254H 502/150
 502/200 502/217 502/219 502/222

**Family:**

Publication number	Publication date	Application number	Application date
US2012152806 AA	20120621	US20110330925	20111220
US9169449 BB	20151027	US20110330925	20111220

Priority:

US20100424804P 20101220	US20100428599P 20101230	US20110562850P 20111122
US20110562850P 20111130	US20110330925 20111220	

Probable Assignee: CHEVRON USA INC**Assignee(s):** (std): CHABOT JULIE ; CHEN KAIDONG ; CHEVRON USA INC ; MARIS ERIN ; REYNOLDS BRUCE E ; SOLBERG SEAN**Inventor(s):** (std): CHEN KAIDONG ; CHABOT JULIE ; REYNOLDS BRUCE E ; MARIS ERIN ; SOLBERG SEAN**Agent(s):** TERRENCE M**14) Family number: 56728517** (US2014171299A)

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Title: HYDROPROCESSING CO-CATALYST COMPOSITIONS AND METHODS OF INTRODUCTION THEREOF INTO HYDROPROCESSING UNITS

Abstract: A hydroprocessing co-catalyst composition may comprise in an embodiment a first component comprising co-catalyst particles and a liquid carrier, and a second component comprising a dispersant and a dispersant diluent. The co-catalyst particles may be in the micron size range, and the dispersant may promote dispersion of the co-catalyst particles in materials such as the liquid carrier, the dispersant diluent, and combinations thereof. Methods of introducing a hydroprocessing co-catalyst composition into a hydroprocessing system are also disclosed.

Classifications:

International (IPC 8-9): B01J21/00 B01J21/02 B01J21/06 B01J21/12 B01J23/28 B01J23/30 B01J23/75 B01J23/755 B01J23/78 B01J23/85 B01J23/882 B01J23/883 B01J23/888 B01J31/02 B01J35/00 B01J35/02 B01J37/00 B01J37/04 C10G45/16 C10G47/26 (Advanced/Invention);

B01J21/02 B01J21/06 B01J21/10 B01J21/12 B01J37/04 C10G47/26 C10G49/02 C10G49/12 (Advanced/Non-invention)

CPC: B01J23/78 B01J23/28 B01J23/30 B01J23/755 B01J23/75 B01J2231/641 B01J21/02 B01J21/06 B01J21/10 B01J21/12

B01J23/85 B01J31/0205 B01J31/0247 B01J35/0006 B01J35/023 B01J37/0036 B01J37/04 C10G47/26 C10G49/02 C10G49/12

US: 502/204 502/206 502/207 502/254 502/255 502/259 502/260 502/306 502/309 502/322 502/323 502/325 502/328 502/332 502/335 502/337

Family:

Publication number	Publication date	Application number	Application date
CA2892666 AA	20150526	CA20132892666	20131107
EP2931419 A1	20151021	EP20130802143	20131107
JP2016505368 T2	20160225	JP20150547944T	20131107
JP6263549 B2	20180117	JP20150547944T	20131107
KR20150097575 A	20150826	KR20157018005	20131107
RU2015128301 A	20170123	RU20150128301	20131107
US2014171299 AA	20140619	US20120715943	20121214
US9687823 BB	20170627	US20120715943	20121214
WO14092894 A1	20140619	WO2013US68963	20131107

Priority:

US20120715943 20121214 WO2013US68963 20131107

Probable Assignee: CHEVRON USA INC**Assignee(s):** (std): CHABOT JULIE ; CHEVRON USA INC ; KOU BO ; KUPERMAN ALEXANDER**Inventor(s):** (std): KUPERMAN ALEXANDER ; KOU BO ; CHABOT JULIE**Agent(s):** SIM AND MCBURNEY; AIRD AND BERLIS IP PARTNERSHIP LTD; NASH DAVID ALLAN; ASAMURA PATENT OFFICE PC; MARK L; ELLINWOOD STEVEN R ET AL**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW**15) Family number: 61105062** (US2012172201A)

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Title: HYDROPROCESSING CATALYSTS AND METHODS FOR MAKING THEREOF

Abstract: A process for preparing a slurry catalyst is provided. The slurry catalyst is prepared from at least a Group VIB metal precursor and optionally at least a Promoter metal precursor selected from Group VIII, Group IIB, Group IIA, Group IVA metals and combinations thereof. The slurry catalyst comprises a plurality of dispersed particles in a hydrocarbon medium having an average particle size ranging from 1 to 300 nm. The slurry catalyst is then mixed with a hydrogen feed at a pressure from 1435 psig (10 MPa) to 3610 psig (25 MPa) and a temperature from 200-800 degrees Fahrenheit at 500 to 15,000 scf hydrogen per bbl of slurry catalyst for a minute to 20 hours, for the slurry catalyst to be saturated with hydrogen providing an increase of k-values in terms of HDS, HDN, and HDMCR of at least 15 percent compared to a slurry catalyst that is not saturated with hydrogen.

Classifications:**International (IPC 8-9):** B01J23/00 B01J23/24 B01J23/40 B01J23/42 B01J23/44 B01J23/70 B01J23/74 B01J23/85 B01J23/883 B01J23/887 B01J27/02 B01J27/043 B01J27/045 B01J27/047 B01J27/051 B01J27/24 B01J31/00 B01J35/00 B01J37/18 B01J37/20

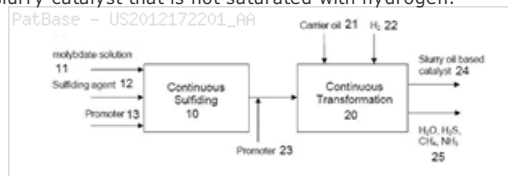
C10G49/04 (Advanced/Invention);

B01J35/10 (Advanced/Non-invention)

CPC: B01J23/883 B01J27/051 B01J35/1095 B01J23/85 B01J37/20

B01J23/8872 C10G49/04 B01J23/8873 B01J35/1019 B01J35/1023

B01J35/1047 B01J23/24 B01J35/0073 B01J27/0515 B01J35/1042

US: 502/150 502/167 502/168 502/200 502/216 502/219 502/222 502/223 502/325 502/326 502/337 502/338 502/339**Family:**

Publication number	Publication date	Application number	Application date
US2012172201 AA	20120705	US20110331274	20111220
US8846560 BB	20140930	US20110331274	20111220

Priority:

US20100428599P 20101230 US20110331274 20111220

Probable Assignee: CHEVRON USA INC**Assignee(s):** (std): C O CHEVRON CORP ; CHABOT JULIE ; CHEVRON USA INC ; KOU BO ; YANG SHUWU ; REYNOLDS BRUCE EDWARD**Inventor(s):** (std): KOU BO ; CHABOT JULIE ; YANG SHUWU ; REYNOLDS BRUCE EDWARD**16) Family number: 61105064** (US2012172203A)

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Title: HYDROPROCESSING CATALYSTS AND METHODS FOR MAKING THEREOF

Abstract: An improved process for preparing a slurry catalyst for the upgrade of heavy oil feedstock is provided. In the process, high shear mixing is employed to generate an emulsion containing droplets of metal precursor in oil with droplet sizes ranging from 0.1 to 300 micro m. The emulsion is subsequently sulfided with a sulfiding agent, or in-situ in a heavy oil feedstock to form a slurry catalyst. The in-situ sulfidation in heavy oil is under sufficient condition for the heavy oil feedstock to generate the sulfiding source needed for the sulfidation.

Classifications:**International (IPC 8-9):** B01J23/00 B01J23/24 B01J23/40 B01J23/42 B01J23/44 B01J23/58 B01J23/70 B01J23/74 B01J23/85 B01J23/883 B01J23/887 B01J27/02 B01J27/043 B01J27/045 B01J27/047 B01J27/049 B01J27/051 B01J31/34 B01J35/00 B01J37/20

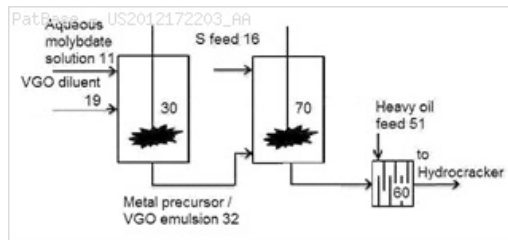
C10G49/04 (Advanced/Invention);

B01J35/10 (Advanced/Non-invention)

CPC: B01J23/883 B01J35/1047 B01J23/85 B01J23/8872 B01J27/051

B01J23/8873 B01J23/24 B01J35/0073 B01J35/1042 B01J27/0515

B01J35/1019 B01J35/1023 B01J35/1095 B01J37/20 C10G49/04

US: 502/150 502/167 502/168 502/216 502/219 502/221 502/222 502/223 502/325 502/326 502/328 502/337 502/338 502/339 502/349**Family:**

Publication number	Publication date	Application number	Application date
US2012172203 AA	20120705	US20110331372	20111220
US8809222 BB	20140819	US20110331372	20111220

Priority:

US20100428599P 20101230 US20110331372 20111220

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): BRAIT AXEL ; CHABOT JULI ; CHABOT JULIE ; CHEVRON USA INC ; REYNOLDS BRUCE EDWARD ; NGUYEN JOSEPH V ; KWIK KENNETH ; YANG SHUWU ; MIRONOV OLEG ; JIAO LING ; KOTUN MODINAT ; KUPERMAN ALEXANDER E

Inventor(s): (std): BRAIT AXEL ; REYNOLDS BRUCE EDWARD ; NGUYEN JOSEPH V ; KWIK KENNETH ; YANG SHUWU ; MIRONOV OLEG ; KOTUN MODINAT ; CHABOT JULI ; JIAO LING ; KUPERMAN ALEXANDER E ; CHABOT JULIE

17) Family number: 61105063 (US2012172202A)

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Title: HYDROPROCESSING CATALYSTS AND METHODS FOR MAKING THEREOF

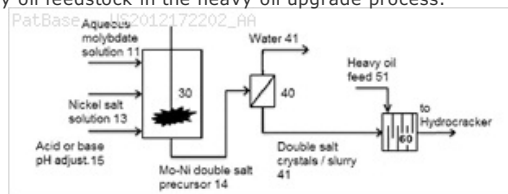
Abstract: A process for preparing a slurry catalyst for the upgrade of heavy oil feedstock is provided. The process employs a pressure leach solution obtained from a metal recovery process as part of the metal precursor feed. In one embodiment, the process comprises: sulfiding a pressure leach solution having at least a Group VIB metal precursor compound in solution forming a catalyst precursor, and mixing the sulfided catalyst precursor with a hydrocarbon diluent to form the slurry catalyst. In another embodiment, the pressure leach solution is mixed with a hydrocarbon diluent under high shear mixing conditions to form an emulsion, which emulsion can be sulfided in-situ upon contact with a heavy oil feedstock in the heavy oil upgrade process.

Classifications:

International (IPC 8-9): B01J23/00 B01J23/24 B01J23/40 B01J23/42 B01J23/44 B01J23/58 B01J23/70 B01J23/74 B01J23/85 B01J23/883 B01J23/887 B01J27/02 B01J27/043 B01J27/045 B01J27/051 B01J27/24 B01J31/00 B01J31/02 B01J35/00 B01J37/20 C10G49/04 (Advanced/Invention); B01J35/10 (Advanced/Non-invention)

CPC: B01J23/883 B01J27/0515 B01J35/1095 B01J23/85 B01J35/0073 B01J35/1042 B01J27/051 B01J35/1019 B01J23/24 B01J23/8873 B01J37/20 B01J23/8872 B01J35/1023 C10G49/04 B01J35/1047

US: 502/150 502/167 502/168 502/200 502/216 502/222 502/223 502/325 502/326 502/328 502/337 502/338 502/339 502/349



Family:

Publication number	Publication date	Application number	Application date
US2012172202 AA	20120705	US20110331341	20111220
US8778828 BB	20140715	US20110331341	20111220

Priority:

US20100428599P 20101230 US20110331341 20111220

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): BHADURI RAHUL SHANKAR ; CHABOT JULIE ; CHEVRON CORP ; CHEVRON USA INC ; REYNOLDS BRUCE EDWARD ; YANG SHUWU ; MIRONOV OLEG ; JIAO LING ; NGUYEN JOSEPH V ; KUPERMAN ALEXANDER E

Inventor(s): (std): REYNOLDS BRUCE EDWARD ; BHADURI RAHUL SHANKAR ; YANG SHUWU ; MIRONOV OLEG ; JIAO LING ; NGUYEN JOSEPH V ; CHABOT JULIE ; KUPERMAN ALEXANDER E

18) Family number: 61105061 (US2012172200A)

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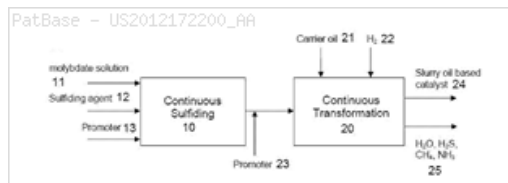
Title: HYDROPROCESSING CATALYSTS AND METHODS FOR MAKING THEREOF

Abstract: A single metal slurry catalyst for the upgrade of heavy oil feedstock is provided. The slurry catalyst is prepared by sulfiding a Primary metal precursor, then mixing the sulfided metal precursor with a hydrocarbon diluent to form the slurry catalyst. The single-metal slurry catalyst has the formula $(M_t)a(S_v)d(C_w)e(H_x)f(O_y)g(N_z)h$, wherein M is at least one of a non-noble Group VIII metal, a Group VIB metal, a Group IVB metal, and a Group IIB metal; $0.5a \leq d \leq 4a$; $0 \leq e \leq 11a$; $0 \leq f \leq 18a$; $0 \leq g \leq 2a$; $0 \leq h \leq 3a$; t, v, w, x, y, z , each representing total charge for each of: M, S, C, H, O, and N; and $ta+vd+we+xf+yg+zh=0$. The slurry catalyst has a particle size ranging from 1 to 300 micro m.

Classifications:

International (IPC 8-9): B01J23/00 B01J23/40 B01J23/42 B01J23/44 B01J23/58 B01J27/02 B01J27/043 B01J27/045 B01J27/24 B01J31/00 B01J31/02 B01J31/26 B01J31/28 B01J31/38 (Advanced/Invention)

US: 502/150 502/167 502/168 502/200 502/216 502/222 502/223 502/325 502/326 502/328 502/337 502/338 502/339 502/349



Family:

Publication number	Publication date	Application number	Application date
US2012172200 AA	20120705	US20110331175	20111220
US8697594 BB	20140415	US20110331175	20111220

Priority:

US20100428599P 20101230 US20110331175 20111220

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): BRAIT AXEL ; CHEVRON USA INC ; KUPERMAN ALEXANDER E ; MIRONOV OLEG ; NGUYEN JOSEPH V

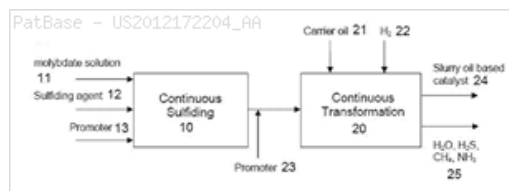
Inventor(s): (std): BRAIT AXEL ; KUPERMAN ALEXANDER E ; MIRONOV OLEG ; NGUYEN JOSEPH V

Title: HYDROPROCESSING CATALYSTS AND METHODS FOR MAKING THEREOF

Abstract: An improved hydroprocessing slurry catalyst is provided for the upgrade of heavy oil feedstock. The catalyst comprises dispersed particles in a hydrocarbon medium with the dispersed particles have an average particle size ranging from 1 to 300 micro m. The catalyst has a total pore volume of at least 0.5 cc/g and a polymodal pore distribution with at least 80 percent of pore sizes in the range of 5 to 2,000 Angstroms in diameter. The catalyst is prepared from sulfiding and dispersing a metal precursor solution in a hydrocarbon diluent, the metal precursor comprising at least a Primary metal precursor and optionally a Promoter metal precursor, the metal precursor solution having a pH of at least 4 and a concentration of less than 10 weight percent of Primary metal in solution.

Classifications:

International (IPC 8-9): B01J23/00 B01J23/24 B01J23/40 B01J23/42 B01J23/44 B01J23/58 B01J23/70 B01J23/74 B01J23/85 B01J23/883 B01J23/887 B01J27/02 B01J27/043 B01J27/045 B01J27/051 B01J27/24 B01J31/00 B01J31/02 B01J35/00 B01J35/10 B01J37/20 C10G49/04 (Advanced/Invention); B01J35/10 (Advanced/Non-invention)
CPC: B01J23/883 B01J23/8872 B01J27/051 B01J37/20 B01J23/24 B01J35/1019 B01J35/1047 B01J23/85 B01J35/0073 B01J35/1042 C10G49/04 B01J35/1095 B01J27/0515 B01J23/8873 B01J35/1023
US: 502/150 502/167 502/168 502/200 502/216 502/222 502/223 502/325 502/326 502/328 502/337 502/338 502/339 502/349

**Family:**

Publication number	Publication date	Application number	Application date
US2012172204 AA	20120705	US20110331479	20111220
US8802586 BB	20140812	US20110331479	20111220

Priority:

US20100428599P 20101230 US20110331479 20111220

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CHABOT JULIE ; CHEVRON USA INC ; DUNCKLEY CHRISTOPHER PAUL ; JIAO LING ; REYNOLDS BRUCE EDWARD ; NGUYEN JOSEPH V ; YANG SHUWU ; MIRONOV OLEG ; KUPERMAN ALEXANDER E ; MARIS ERIN P

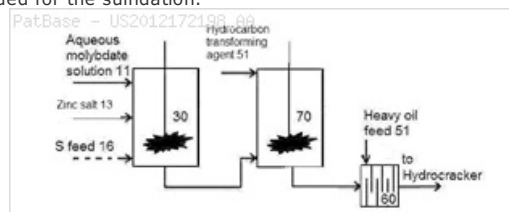
Inventor(s): (std): REYNOLDS BRUCE EDWARD ; NGUYEN JOSEPH V ; YANG SHUWU ; MIRONOV OLEG ; JIAO LING ; MARIS ERIN P ; CHABOT JULIE ; KUPERMAN ALEXANDER E ; DUNCKLEY CHRISTOPHER PAUL

Title: HYDROPROCESSING CATALYSTS AND METHODS FOR MAKING THEREOF

Abstract: A process for making an improved slurry catalyst for the upgrade of heavy oil feedstock is provided. In the process, a metal precursor solution comprising at least a water-soluble molybdenum compound and a water-soluble metal zinc compound is mixed under high shear mixing conditions to generate an emulsion. The emulsion is subsequently sulfided with a sulfiding agent ex-situ, or in-situ in a heavy oil feedstock to form the slurry catalyst. The in-situ sulfidation in heavy oil is under sufficient condition for the heavy oil feedstock to generate the sulfiding source needed for the sulfidation.

Classifications:

International (IPC 8-9): B01J23/00 B01J23/24 B01J23/40 B01J23/42 B01J23/44 B01J23/58 B01J23/85 B01J23/883 B01J23/887 B01J27/02 B01J27/04 B01J27/043 B01J27/045 B01J27/051 B01J27/24 B01J31/00 B01J31/34 B01J35/00 B01J37/00 B01J37/04 B01J37/20 C10G49/04 C10G49/06 C10G49/12 (Advanced/Invention); B01J35/10 (Advanced/Non-invention)
CPC: B01J23/883 B01J23/24 B01J23/85 B01J23/8872 B01J23/8873 B01J27/051 B01J27/0515 B01J35/0073 B01J35/1019 B01J35/1023 B01J35/1042 B01J35/1047 B01J35/1095 B01J37/20 C10G49/04 C10G49/06 C10G49/12 C10G2300/107 C10G2300/1077 C10G2300/205 C10G2300/301 C10G2300/701 C10G2300/703 C10G2300/802
US: 502/150 502/167 502/168 502/200 502/216 502/222 502/223 502/325 502/326 502/328 502/337 502/338 502/339

**Family:**

Publication number	Publication date	Application number	Application date
US2012172198 AA	20120705	US20110331690	20111220
US9040447 BB	20150526	US20110331690	20111220

Priority:

US20100428599P 20101230 US20110331690 20111220

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): C O CHEVRON CORP ; CHEVRON USA INC ; KUPERMAN ALEXANDER E ; MIRONOV OLEG

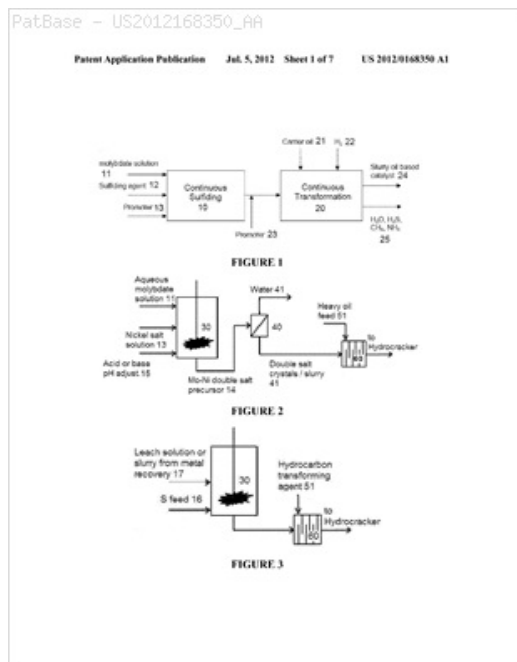
Inventor(s): (std): KUPERMAN ALEXANDER E ; MIRONOV OLEG

Title: HYDROPROCESSING CATALYSTS AND METHODS FOR MAKING THEREOF

Abstract: An improved process for preparing a slurry catalyst for the upgrade of heavy oil feedstock is provided. The process employs a polar aprotic solvent to mix with the inorganic metal precursor feed to form an oil-dispersible inorganic metal precursor, at a weight ratio of solvent to inorganic metal precursor of 1:1 to 10:1; the oil-dispersible inorganic metal precursor is subsequently sulfided forming the slurry catalyst. In one embodiment, the sulfiding is in-situ upon mixing the oil-dispersible inorganic metal precursor with a hydrocarbon diluent containing a heavy oil feedstock under in-situ sulfiding conditions.

Classifications:

International (IPC 8-9): B01J23/24 B01J23/85 B01J23/883 B01J23/887 B01J27/04 B01J27/047 B01J27/049 B01J27/051 B01J31/02 B01J31/34 B01J35/00 B01J37/20 C10G45/04 C10G47/02 C10G49/04 C10G49/06 C10G49/12 (Advanced/Invention); B01J35/10 (Advanced/Non-invention)
CPC: B01J23/883 B01J23/24 B01J23/85 B01J23/8872 B01J23/8873 B01J27/051 B01J27/0515 B01J35/0073 B01J35/1019 B01J35/1023 B01J35/1042 B01J35/1047 B01J35/1095 B01J37/20 C10G49/04 C10G49/06 C10G49/12 C10G2300/107 C10G2300/1077 C10G2300/205 C10G2300/301 C10G2300/701 C10G2300/703 C10G2300/802
US: 208/112 208/134 208/143 208/213 208/253 502/150 502/151 502/167 502/168 502/172 502/200 502/216 502/219 502/220 502/221 502/222

**Family:**

Publication number	Publication date	Application number	Application date
US2012168350 AA	20120705	US20110331207	20111220
US9018124 BB	20150428	US20110331207	20111220

Priority:

US20100428599P 20101230 US20110331207 20111220

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CHEVRON USA INC ; KUPERMAN ALEXANDER E ; MIRONOV OLEG

Inventor(s): (std): KUPERMAN ALEXANDER E ; MIRONOV OLEG

22) Family number: 61105060 (US2012172199A)

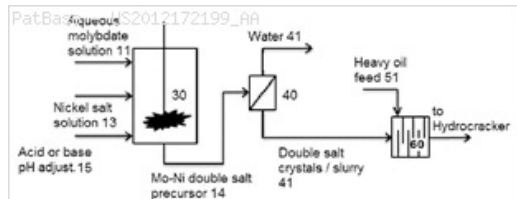
© PatBase

Title: HYDROPROCESSING CATALYSTS AND METHODS FOR MAKING THEREOF

Abstract: An improved process to make a slurry catalyst for the upgrade of heavy oil feedstock is provided. In the process, at least a metal precursor feedstock is portioned and fed in any of the stages: the promotion stage; the sulfidation stage; or the transformation stage of a water-based catalyst precursor to a slurry catalyst. In one embodiment, the promoter metal precursor feedstock is split into portions, the first portion is for the sulfiding step, the second portion is for the promotion step; and optionally the third portion is to be added to the transformation step in the mixing of the sulfided promoted catalyst precursor with a hydrocarbon diluent to form the slurry catalyst. In another embodiment, the Primary metal precursor feedstock is split into portions.

Classifications:

International (IPC 8-9): B01J23/00 B01J23/40 B01J23/42 B01J23/44 B01J23/58 B01J27/02 B01J27/043 B01J27/045 B01J27/24 B01J31/00 B01J31/02 B01J37/20 (Advanced/Invention)
US: 502/150 502/167 502/168 502/200 502/216 502/222 502/223 502/325 502/326 502/328 502/337 502/338 502/339

**Family:**

Publication number	Publication date	Application number	Application date
US2012172199 AA	20120705	US20110331725	20111220
US8703637 BB	20140422	US20110331725	20111220

Priority:

US20100428599P 20101230 US20110331725 20111220

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CHABOT JULIE ; CHEVRON USA INC ; JIAO LING ; NGUYEN JOSEPH V ; YANG SHUWU ; REYNOLDS BRUCE EDWARD

Inventor(s): (std): CHABOT JULIE ; YANG SHUWU ; JIAO LING ; REYNOLDS BRUCE EDWARD ; NGUYEN JOSEPH V

23) Family number: 61105067 (US2012172206A)

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Title: HYDROPROCESSING CATALYSTS AND METHODS FOR MAKING THEREOF

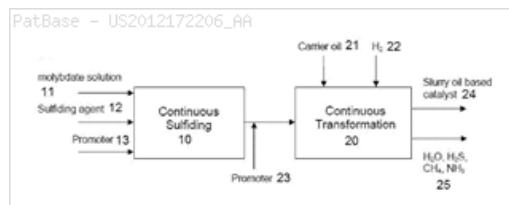
Abstract: A method for preparing an improved slurry catalyst for the upgrade of heavy oil feedstock is provided. In one embodiment, the process comprises: sulfiding at least a metal precursor solution with at least a sulfiding agent forming a sulfided Group VIB catalyst precursor, the metal precursor solution having a pH of at least 4 and a concentration of less than 10 weight percent of Primary metal in solution; and mixing the catalyst precursor with a hydrocarbon diluent to form the slurry catalyst composition. The slurry catalyst prepared therefrom has a BET total surface area of at least 100 m²/g, a total pore volume of at least 0.5 cc/g and a polymodal pore distribution with at least 80 percent of pore sizes in the range of 5 to 2,000 Angstroms in diameter.

Classifications:

International (IPC 8-9): B01J23/00 B01J23/24 B01J23/40 B01J23/42 B01J23/44 B01J23/58 B01J23/85 B01J23/883 B01J23/887 B01J27/02 B01J27/04 B01J27/043 B01J27/045 B01J27/051 B01J27/24 B01J31/00 B01J31/02 B01J35/00 B01J37/00 B01J37/04 B01J37/20 C10G49/04 C10G49/06 C10G49/12 (Advanced/Invention); B01J35/10 (Advanced/Non-invention)

CPC: B01J23/883 B01J23/24 B01J23/85 B01J23/8872 B01J23/8873 B01J27/051 B01J27/0515 B01J35/0073 B01J35/1019 B01J35/1023 B01J35/1042 B01J35/1047 B01J35/1095 B01J37/20 C10G49/04 C10G49/06 C10G49/12 C10G2300/107 C10G2300/1077 C10G2300/205 C10G2300/301 C10G2300/701 C10G2300/703 C10G2300/802

US: 502/150 502/167 502/168 502/200 502/216 502/222 502/223 502/325 502/326 502/328 502/337 502/338 502/339 502/349

**Family:**

Publication number	Publication date	Application number	Application date
US2012172206 AA	20120705	US20110331630	20111220
US9040446 BB	20150526	US20110331630	20111220

Priority:

US20100428599P 20101230 US20110331630 20111220

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CHABOT JULIE ; CHEVRON USA INC ; DUNCKLEY CHRISTOPHER PAUL ; JIAO LING ; REYNOLDS BRUCE EDWARD ; NGUYEN JOSEPH V ; YANG SHUWU ; MIRONOV OLEG ; KUPERMAN ALEXANDER E ; MARIS ERIN P

Inventor(s): (std): REYNOLDS BRUCE EDWARD ; NGUYEN JOSEPH V ; YANG SHUWU ; MIRONOV OLEG ; JIAO LING ; MARIS ERIN P ; CHABOT JULIE ; KUPERMAN ALEXANDER E ; DUNCKLEY CHRISTOPHER PAUL

24) Family number: 61105068 (US2012172207A)

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Title: HYDROPROCESSING CATALYSTS AND METHODS FOR MAKING THEREOF

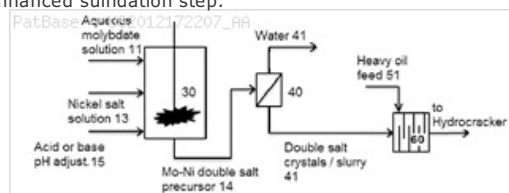
Abstract: An improved process to make a slurry catalyst for the upgrade of heavy oil feedstock is provided. The sulfiding of the metal precursor/catalyst precursor is carried out at least twice ("enhanced sulfiding") in the improved process to form a slurry catalyst with improved surface area and porosity value. The slurry catalyst under an enhanced sulfiding scheme is characterized as having increased catalytic activities over a slurry catalyst without an enhanced sulfidation step.

Classifications:

International (IPC 8-9): B01J23/00 B01J23/24 B01J23/40 B01J23/42 B01J23/44 B01J23/58 B01J23/74 B01J23/85 B01J23/883 B01J23/887 B01J27/02 B01J27/043 B01J27/045 B01J27/051 B01J31/02 B01J35/00 B01J37/20 C10G49/04 (Advanced/Invention); B01J35/10 (Advanced/Non-invention)

CPC: B01J23/883 B01J23/85 B01J37/20 B01J35/0073 B01J23/8873 B01J27/051 B01J35/1047 B01J35/1042 B01J23/24 B01J35/1095 C10G49/04 B01J27/0515 B01J23/8872 B01J35/1019 B01J35/1023

US: 502/150 502/167 502/168 502/216 502/222 502/223 502/325 502/326 502/328 502/337 502/338 502/339 502/349

**Family:**

Publication number	Publication date	Application number	Application date
US2012172207 AA	20120705	US20110331704	20111220
US8802587 BB	20140812	US20110331704	20111220

Priority:

US20100428599P 20101230 US20110331704 20111220

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CHABOT JULIE ; CHEVRON USA INC ; DUNCKLEY CHRISTOPHER PAUL ; JIAO LING ; YANG SHUWU ; NGUYEN JOSEPH V

Inventor(s): (std): YANG SHUWU ; CHABOT JULIE ; JIAO LING ; DUNCKLEY CHRISTOPHER PAUL ; NGUYEN JOSEPH V

25) Family number: 61105058 (US2012172197A)

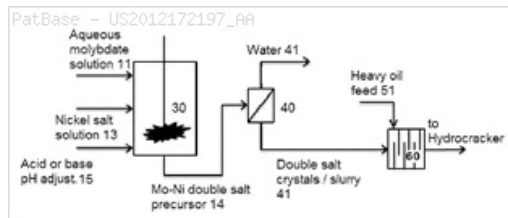
© PatBase

Title: HYDROPROCESSING CATALYSTS AND METHODS FOR MAKING THEREOF

Abstract: A process for preparing an improved slurry catalyst for the upgrade of heavy oil feedstock is provided. The process comprises providing at least a metal precursor in solution comprising at least two different metal cations in its molecular structure, with at least one of the metal cations is a Group VIB metal cation; sulfiding the metal precursor with a sulfiding agent in solution forming a catalyst precursor; and mixing the catalyst precursor with a hydrocarbon diluent to form the slurry catalyst. In one embodiment, the at least a metal precursor comprising at least two different metal cations is prepared by combining and reacting at least one Group VIB metal compound with at least a Promoter metal compound selected from Group VIII, Group IIB, Group IIA, Group IVA metals and combinations thereof.

Classifications:

International (IPC 8-9): B01J23/00 B01J23/02 B01J23/06 B01J23/24 B01J23/40 B01J23/42 B01J23/44 B01J23/58 B01J23/70 B01J23/74 B01J23/85 B01J23/883 B01J23/887 B01J27/02 B01J27/043 B01J27/045 B01J27/051 B01J31/02 B01J35/00 B01J37/20 C10G49/04 (Advanced/Invention); B01J35/10 (Advanced/Non-invention)
CPC: B01J23/883 B01J35/1042 B01J23/85 B01J27/051 C10G49/04 B01J27/0515 B01J35/0073 B01J37/20 B01J23/24 B01J35/1047 B01J35/1095 B01J23/8872 B01J35/1019 B01J23/8873 B01J35/1023
US: 208/58 502/150 502/216 502/219 502/222 502/223 502/325 502/326 502/328 502/329 502/337 502/338 502/339 502/340 502/349

**Family:**

Publication number	Publication date	Application number	Application date
US2012172197 AA	20120705	US20110331660	20111220
US8809223 BB	20140819	US20110331660	20111220

Priority:

US20100428599P 20101230 US20110331660 20111220

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CHABOT JULIE ; CHEVRON USA INC ; MIRONOV OLEG ; NGUYEN JOSEPH V

Inventor(s): (std): CHABOT JULIE ; MIRONOV OLEG ; NGUYEN JOSEPH V

26) Family number: 56728516 (US2014171298A)

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Title: HYDROPROCESSING CO-CATALYST COMPOSITIONS AND METHODS OF INTRODUCTION THEREOF INTO HYDROPROCESSING UNITS

Abstract: A hydroprocessing co-catalyst composition may comprise in an embodiment a first component comprising co-catalyst particles and a liquid carrier, and a second component comprising a dispersant and a dispersant diluent. The co-catalyst particles may be in the micron size range, and the dispersant may promote dispersion of the co-catalyst particles in materials such as the liquid carrier, the dispersant diluent, and combinations thereof. Methods of introducing a hydroprocessing co-catalyst composition into a hydroprocessing system are also disclosed.

Classifications:

International (IPC 8-9): B01J21/00 B01J21/02 B01J21/06 B01J21/10 B01J21/12 B01J23/28 B01J23/30 B01J23/75 B01J23/755 B01J23/78 B01J23/85 B01J31/02 B01J31/04 B01J31/06 B01J35/00 B01J35/02 B01J37/00 B01J37/04 B01J8/20 C10G45/08 C10G45/16 C10G47/26 (Advanced/Invention); B01J21/02 B01J21/06 B01J21/10 B01J21/12 B01J37/04 (Advanced/Non-invention)
CPC: B01J23/78 B01J23/28 B01J23/30 B01J23/755 B01J23/75 B01J2231/64 B01J21/02 B01J21/06 B01J21/10 B01J21/12 B01J23/85 B01J31/0247 B01J31/04 B01J31/06 B01J35/0006 B01J35/023 B01J37/0036 B01J37/04 C10G45/08 C10G45/16 C10G2300/1033 C10G2300/202
US: 1/1 502/202 502/204 502/206 502/207 502/232 502/254 502/255 502/259 502/260 502/263 502/306 502/309 502/323 502/328 502/332 502/335 502/340 502/350 502/355

Family:

Publication number	Publication date	Application number	Application date
CA2892665 AA	20150526	CA20132892665	20131107
EP2931418 A1	20151021	EP20130802142	20131107
JP2016506296 T2	20160303	JP20150547943T	20131107
KR20150094675 A	20150819	KR20157018004	20131107
RU2015128295 A	20170125	RU20150128295	20131107
US2014171298 AA	20140619	US20120715918	20121214
US9321037 BB	20160426	US20120715918	20121214
WO14092893 A1	20140619	WO2013US68957	20131107

Priority:

US20120715918 20121214 WO2013US68957 20131107

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CHABOT JULIE ; CHEVRON USA INC ; KOU BO ; KUPERMAN ALEXANDER

Assignee(s): CHEVRON USA

Inventor(s): (std): KUPERMAN ALEXANDER ; KOU BO ; CHABOT JULIE

Agent(s): SIM AND MCBURNEY; AIRD AND BERLIS IP PARTNERSHIP LTD; NASH DAVID ALLAN; ASAMURA PATENT OFFICE PC; PARKS IP LAW LLC; STEVE E; ELLINWOOD STEVEN R ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

27) Family number: 49133145 (US2011155639A)

© PatBase

Title: HIGH CONVERSION PARTIAL UPGRADING PROCESS

Abstract: The described invention discloses an innovative hydroconversion-processing configuration for converting bitumen or heavy oils to produce a transportable synthetic crude oil (SCO). The innovative processing scheme disclosed herein maximizes

the synthetic crude oil yield at a minimal investment compared to currently known methods.

Classifications:

International (IPC 8-9): C10C3/02 C10G1/06 C10G47/00 C10G47/22

C10G49/00 C10G65/12 C10G69/10 C10G7/00 (Advanced/Invention)

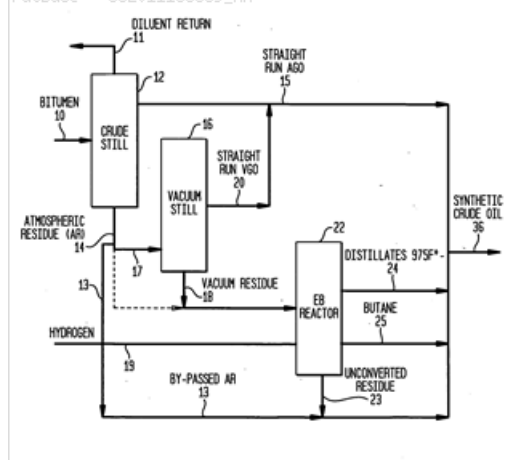
CPC: C10G49/12 C10G65/14 C10G2300/107 C10G2300/1077

C10G21/003 C10G47/22 C10G67/00 C10G67/049 C10G2300/308

European: C10G21/00A C10G47/22 C10G49/12 C10G65/14 C10G67/00
C10G67/04F12 M10G300/10H M10G300/10K M10G300/30F

US: 208/110 208/309 208/56 208/56P 208/58 208/86 208/86P 208/93
208/95 208/95P

PatBase - US2011155639_AA



Family:

Publication number	Publication date	Application number	Application date
CA2726693 AA	20110628	CA20102726693	20101223
CA2726693 C	20190115	CA20102726693	20101223
CA2993546 AA	20110628	CA20102993546	20101223
US2011155639 AA	20110630	US20090655242	20091228
US2011198265 AA	20110818	US20100658378	20100212
US2011198266 AA	20110818	US20100658373	20100212
US8568583 BB	20131029	US20090655242	20091228
US8597495 BB	20131203	US20100658373	20100212

Priority:

US20090655242 20091228
CA20102726693 20101223

US20100658378 20100212
CA20182726693 20180209

US20100658373 20100212

Probable Assignee: IFP

Assignee(s): (std): COLVAR JAMES J ; COLYAR JAMES J ; IFP ENERGIES NOUVELLES ; WISDOM LAWRENCE I ; IFP ENERGIES NOW

Assignee(s): WISDOM LAWRENCE ; FRANCAIS DU PETROLE INST ; IFP

Inventor(s): (std): COLYAR JAMES J ; WISDOM LAWRENCE ; COLVAR JAMES J ; WISDOM LAWRENCE I

Agent(s): ROBIC

28) Family number: 61105025 (WO13039950A2)

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Title: HYDROPROCESSING CATALYSTS AND METHODS FOR MAKING THEREOF

Abstract: Methods for preparing and an improved slurry catalyst feed system for heavy oil upgraded are provided. The catalyst feed system comprises a fresh slurry catalyst and a deoiled spent catalyst in an amount of at least 10 percent the catalyst feed system. The deoiled spent catalyst is a slurry catalyst that has been used in a hydroprocessing operation with more than 10 percent but less than 80 percent of original catalytic activity, and containing less than 10 weight percent soluble hydrocarbons as unconverted heavy oil feed. In one embodiment, the deoiled spent catalyst is first treated with a solution containing at least one of plain water, a mineral acid, an oxidizing agent, and combinations thereof to reduce the concentration of at least one metal contaminant in the deoiled spent catalyst by at least 40 percent.

Classifications:

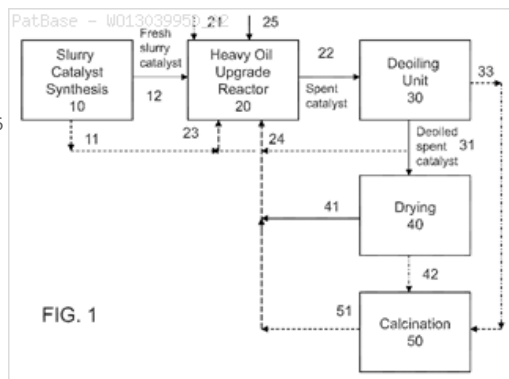
International (IPC 8-9): B01J23/88 B01J23/90 B01J23/94 B01J27/30

B01J35/02 B01J38/00 B01J38/02 B01J38/48 B01J38/60 B01J38/68

B01J38/70 C10G45/04 C10G45/16 C10G47/02

C10G47/26 (Advanced/Invention)

CPC: B01J23/94 B01J27/30 B01J35/023 B01J38/60 B01J38/70 C10G45/16
C10G47/26 C10G2300/205 C10G2300/701 C10G2300/802 C10G45/04
C10G47/02



Family:

Publication number	Publication date	Application number	Application date
BR112014006174 A2	20170404	BR20141106174	20120912
CA2848508 AA	20140312	CA20122848508	20120912
CN103906828 A	20140702	CN201280051948	20120912
EP2756057 A2	20140723	EP20120831213	20120912

EP2756057 A4	20150624	EP20120831213	20120912
JP2014527116 T2	20141009	JP20140530742T	20120912
KR20140064948 A	20140528	KR20147009582	20120912
MX2014003158 A1	20140430	MX20140003158	20120912
RU2014114844 A	20151020	RU20140114844	20120912
SG11201400662V A1	20140428	SG20141100662	20120912
WO13039950 A2	20130321	WO2012US54723	20120912
WO13039950 A3	20130627	WO2012US54723	20120912

Priority:

US20110233455 20110915 US20110233477 20110915 US20110233491 20110915
WO2012US54723 20120912

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CHABOT JULIE ; CHEVRON USA INC ; KOU BO ; REYNOLDS BRUCE EDWARD ; YANG SHUWU

Inventor(s): (std): BO KOU ; BRUCE EDWARD REYNOLDS ; CHABOT JULIE ; JULIE CHABOT ; KOU BO ; REYNOLDS BRUCE EDWARD ; SHUWU YANG ; YANG SHUWU

Agent(s): SIM AND MCBURNEY; AIRD AND BERLIS IP PARTNERSHIP LTD; NASH DAVID ALLAN; ASAMURA PATENT OFFICE PC; ELLINWOOD STEVEN R ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

29) Family number: 48392151 (US2011049010A)

© PatBase

Title: SYSTEMS AND METHODS FOR HYDROPROCESSING A HEAVY OIL FEEDSTOCK

Abstract: Systems and methods for hydroprocessing a heavy oil feedstock are disclosed. The system employs a plurality of contacting zones and at least one separation zone, wherein a solvating hydrocarbon having a normal boiling point less than 538 degrees centigrade (1000 degrees Fahrenheit) is employed. In the system, a mixture of heavy oil feedstock and solvating hydrocarbon is provided to a contact zone along with a slurry catalyst feed in a hydrocarbon diluent. The contacting zone operates at a temperature and pressure near the critical temperature and pressure of the heavy oil and solvating hydrocarbon mixture to convert at least a portion of the heavy oil feedstock to lower boiling hydrocarbons, forming upgraded products.

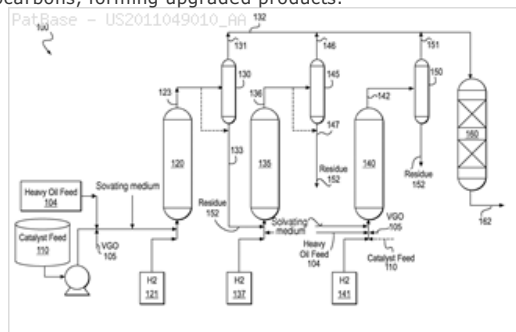
Classifications:

International (IPC 8-9): C10G47/00 C10G65/10
C10G65/14 (Advanced/Invention)

CPC: C10G47/26 C10G65/10 C10G65/18

European: C10G47/26 C10G65/10 C10G65/18

US: 208/108 208/108S 208/49 208/57 208/58 208/59 208/59P 208/60
208/61 208/78 208/78S



Family:

Publication number	Publication date	Application number	Application date
US2011049010 AA	20110303	US20090551015	20090831
US8551323 BB	20131008	US20090551015	20090831

Priority:

US20090551015 20090831

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): ABDEL HALIM TAYSEER A ; BRAIT AXEL ; CHEVRON USA INC

Inventor(s): (std): ABDEL HALIM TAYSEER A ; BRAIT AXEL

30) Family number: 55351648 (US2013334097A)

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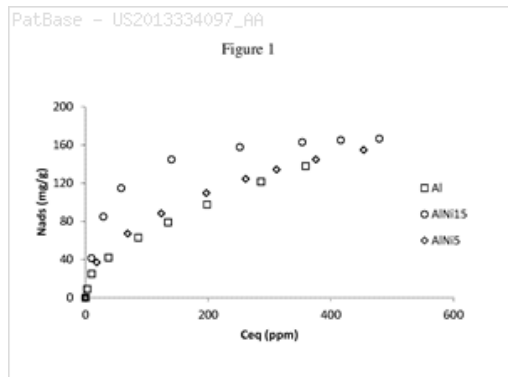
Title: NANOCATALYSTS FOR HYDROCRACKING AND METHODS OF THEIR USE

Abstract: Novel catalysts comprising nickel oxide nanoparticles supported on alumina nanoparticles, methods of their manufacture, heavy oil compositions contacted by these nanocatalysts and methods of their use are disclosed. The novel nanocatalysts are useful, inter alia, in the upgrading of heavy oil fractions or as aids in oil recovery from well reservoirs or downstream processing.

Classifications:

International (IPC 8-9): B01J21/04 B01J23/755 B01J23/78 B01J23/89
B01J35/00 B01J35/02 B01J35/10 B01J37/02 B01J37/03 C10G1/08
C10G11/02 C10G11/04 C10G47/34 C10G49/04
E21B43/00 (Advanced/Invention)

CPC: E21B43/00 B01J35/023 B01J21/04 B01J23/78 B01J23/892
B01J23/8946 B01J35/0013 B01J35/002 B01J35/006 B01J35/1014
B01J37/0201 B01J37/0207 C10G1/08 C10G11/02 C10G2300/4037



Family:

Publication number	Publication date	Application number	Application date
BR112014030468 A2	20170627	BR20141130468	20130605
CO7151476 A2	20141229	CO20140270186	20141209
MX2014014488 A1	20150511	MX20140014488	20130605
US2013334097 AA	20131219	US20130896578	20130517
US2016257890 AA	20160908	US20160155413	20160516
US2018237701 AA	20180823	US20180962805	20180425
US9339796 BB	20160517	US20130896578	20130517
US10301555 BB	20190528	US20180962805	20180425
WO13183004 A2	20131212	WO20131854619	20130605
WO13183004 A3	20140313	WO20131854619	20130605

Priority:

US20120655576P 20120605 US20130896578 20130517 WO20131854619 20130605
 US20160155413 20160516 US20180962805 20180425

Probable Assignee: PETRORAZA SAS

Assignee(s): (std): PETRORAZA SAS

Inventor(s): (std): PATINO JOSE EDGAR ; CORTES FARID BERNARDO ; JOSE EDGAR PATINO ; FARID BERNARDO CORTES

Agent(s): HUMBERTO RUBIO CAMACHO; FELDMAN GALE PA; WCF PATENT SHEPHERD PLLC

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

31) Family number: 43682041 (US2004004030A)

© PatBase

Title: CATALYST FOR CONVERSION PROCESSES

Abstract: An improved catalyst for hydrodesulfurization of heavy feedstocks is disclosed. The catalyst is adopted for on-stream catalyst replacement in upflow processing units. It is characterized by a smaller peak pore diameter than general purpose hydrotreating catalysts.

Classifications:

International (IPC 8-9): A23K1/00 A23K1/18 A61K9/00 B01J23/00 B01J23/85 B01J23/883 B01J27/00 B01J27/185 B01J27/19 B01J35/08 B01J35/10 B01J8/00 B01J8/02 B63H20/20 C10G1/06 C10G45/04 C10G45/06 C10G45/08 C10G65/04 F16H3/14 (Advanced/Invention); A61K9/20 B01J35/00 B01J37/02 (Advanced/Non-invention); A23K1/00 A23K1/18 A61K9/00 B01J23/76 B01J27/14 B01J35/00 B01J8/00 B01J8/02 B63H20/00 C10G45/02 C10G65/00 F16H3/08 (Core/Invention); A61K9/20 B01J37/00 (Core/Non-invention)

International (IPC 1-7): B01J27/18 B01J27/19 B01J35/10 C10G1/06 C10G45/04 C10G45/08

CPC: B01J8/0025 B01J8/0085 B01J8/025 B01J8/0278 B01J23/85 B01J23/883 B01J27/1853 B01J27/19 B01J35/0006 B01J35/002 B01J35/0026 B01J35/1019 B01J35/1042 B01J35/1047 B01J35/1061 B01J35/108 B01J37/0213 B01J2208/0061 B01J2208/00752 B01J2208/00761 B01J2208/00769 B01J2208/00884 C10G45/04 C10G45/06 C10G65/04

European: B01J23/85 B01J23/883 B01J27/185A B01J27/19 B01J8/00F4 B01J8/00L2 B01J8/02D2 B01J8/02F C10G45/04 C10G45/06 C10G65/04 L01J208/00C16 L01J208/00F2 L01J208/00F4 L01J208/00F6 L01J208/00L6 L01J27/19 L01J35/00B L01J35/00D L01J35/00D2 L01J35/10A6 L01J35/10B4 L01J35/10B6 L01J35/10C4 L01J35/10D L01J37/02B12

US: 208/213 208/213S 208/216 208/216PP 502/211 502/211S 502/213 502/314 502/315 502/315S 502/322 502/323

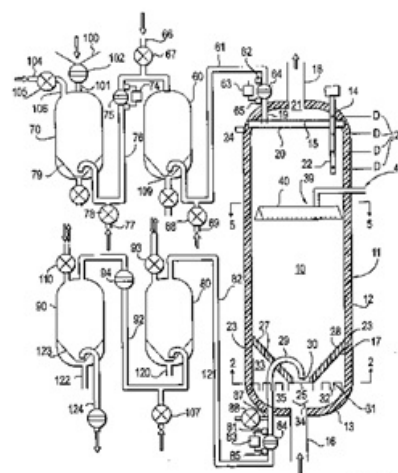


Fig. 1

Family:

Publication number	Publication date	Application number	Application date
AU2003239196 AA	20040123	AU20030239196	20030609
AU2003245527 AA	20040123	AU20030245527	20030612
CN100482765 C	20090429	CN20038015624	20030612
CN1665907 A	20050907	CN20038015624	20030612
EP1520000 A1	20050406	EP20030739155	20030612
EP1520000 A4	20090624	EP20030739155	20030612
JP2005531407 T2	20051020	JP20040519597T	20030612
JP4628097 B2	20110209	JP20040519597T	20030612
US2004004030 AA	20040108	US20020190202	20020702
US7074740 BB	20060711	US20020190202	20020702
WO04005429 A1	20040115	WO2003US18181	20030609
WO04005430 A1	20040115	WO2003US18998	20030612
WO04005430 A9	20090716	WO2003US18998	20030612

Priority:

US20020190202 20020702 US20020191202 20020702 WO2003US18181 20030609
 WO2003US18998 20030612

Probable Assignee: CHEVRON USA INC**Assignee(s):** (std): CHEVRON USA INC**Assignee(s):** GIBSON KIRK R ; LEUNG PAK C ; THRELKEL RICHARD ; CHEVRON U S A INC**Inventor(s):** (std): GIBSON KIRK R ; THRELKEL RICHARD ; LEUNG PAK C ; RICHARD THRELKEL**Inventor(s):** KIRK R GIBSON ; PAK C LEUNG**Agent(s):** STEVEN H

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM
 DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK
 LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ OM PH PL PT RO RU SC SD SE SG SI
 SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW

32) Family number: 56726309 (US2014166541A)

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Title: HYDROPROCESSING CO-CATALYST COMPOSITIONS AND METHODS OF INTRODUCTION THEREOF INTO
 HYDROPROCESSING UNITS

Abstract: A hydroprocessing co-catalyst composition may comprise in an embodiment a first component comprising co-catalyst particles and a liquid carrier, and a second component comprising a dispersant and a dispersant diluent. The co-catalyst particles may be in the micron size range, and the dispersant may promote dispersion of the co-catalyst particles in materials such as the liquid carrier, the dispersant diluent, and combinations thereof. Methods of introducing a hydroprocessing co-catalyst composition into a hydroprocessing system are also disclosed.

Classifications:**International (IPC 8-9):** B01J33/00 C10G45/04 C10G45/16 C10G47/26 (Advanced/Invention)**CPC:** C10G45/04 C10G45/16**US:** 208/213 208/251H 208/254H 208/264

Family:

Publication number	Publication date	Application number	Application date
CA2892663 AA	20150526	CA20132892663	20131107
EP2931846 A1	20151021	EP20130802141	20131107
JP2016501946 T2	20160121	JP20150547942T	20131107
KR20150096689 A	20150825	KR20157018069	20131107
RU2015128292 A	20170123	RU20150128292	20131107
US2014166541 AA	20140619	US20120715959	20121214
WO14092892 A1	20140619	WO2013US68952	20131107

Priority:

US20120715959 20121214 WO2013US68952 20131107

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CHABOT JULIE ; CHEVRON USA INC ; KOU BO ; KUPERMAN ALEXANDER

Inventor(s): (std): KUPERMAN ALEXANDER ; KOU BO ; CHABOT JULIE

Agent(s): SIM AND MCBURNEY; AIRD AND BERLIS IP PARTNERSHIP LTD; NASH DAVID ALLAN; ASAMURA PATENT OFFICE PC; ELLINWOOD STEVEN R ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

33) Family number: 59582649 (US2015175892A)

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Title: PROCESS FOR PRODUCING CRUDE OIL AND BITUMEN PRODUCTS

Abstract: Disclosed are processes for producing crude oil and bitumen products of relatively high quality from oil sand. The processes for producing the high quality crude oil and bitumen products involve a Phase I and/or Phase II extraction solvent. According to the Phase I process, a high quality bitumen-derived crude oil can be produced using a Phase I type solvent. According to the Phase II process, a substantial amount of the bitumen on the oil sand can be extracted using a Phase II type solvent, while producing a relatively dry tailings by-product. The Phase I and Phase II extraction processes can be carried out independently or in conjunction with one another.

Classifications:

International (IPC 8-9): B01D11/04 C10C3/02 C10C3/08 C10G1/00 C10G1/04 C10G45/08 C10G45/50 C10G45/60 C10G47/00 C10G47/02 C10G47/04 C10G67/04 (Advanced/Invention)

CPC: C10G45/08 C10G47/00 C10G47/04 C10G2300/1033 C10G2400/02 C10G2400/04 C10G2400/08 C10G1/045 C10G1/042 C10G1/002 C10G45/50 C10G45/60 C10G47/02 C10G2300/202 C10G1/04 C10G2300/44

US: 1/1 208/390

Family:

Publication number	Publication date	Application number	Application date
CA2932863 AA	20160603	CA20142932863	20141216
CA2932863 C	20190115	CA20142932863	20141216
CA3021635 AA	20150625	CA20143021635	20141216
CA3021685 AA	20150625	CA20143021685	20141216
CA3021685 C	20190212	CA20143021685	20141216
US2015175892 AA	20150625	US20130135396	20131219
US2015175893 AA	20150625	US20140318169	20140627
US2016333272 AA	20161117	US20160218258	20160725
US2016355738 AA	20161208	US20160240286	20160818
US9422482 BB	20160823	US20140318169	20140627
US9447330 BB	20160920	US20130135396	20131219
US9809757 BB	20171107	US20160240286	20160818
US10030200 BB	20180724	US20160218258	20160725
WO15095131 A1	20150625	WO2014US70500	20141216

Priority:

US20130135396 20131219 US20140318169 20140627 CA20142932863 20141216
 WO2014US70500 20141216 US20160218258 20160725 US20160240286 20160818
 CA20182932863 20181029 CA20182932863 20181030

Probable Assignee: EPIC OIL EXTRACTORS LLC

Assignee(s): (std): EPIC OIL EXTRACTIONS LLC ; EPIC OIL EXTRACTORS LLC

Assignee(s): JORDAN RICHARD D ; SCHLOSBERG RICHARD H ; DIEFENTHAL EDWARD L

Inventor(s): (std): JORDAN RICHARD D ; SCHLOSBERG RICHARD H ; DIEFENTHAL EDWARD L

Agent(s): DICKINSON WRIGHT LLP; DICKINSON WRIGHT PLLC; WILLIAM H; JORDAN RICHARD D ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

34) Family number: 30133847 (US4422960A)

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Title: Catalysts for hydrotreatment of heavy hydrocarbon oils containing asphaltenes

Abstract: A catalyst for hydrotreating a heavy hydrocarbon oil containing asphaltenes comprises a porous carrier composed of one or more inorganic oxides of at least one element selected from among those of Groups II, III and IV of the Periodic Table, and at least one catalytic metal component composited with the carrier. The metal of the catalytic metal component is selected from among those of Groups VB, VIB, VIII and IB of the Periodic Table. The catalyst contains about 1 to 30 percent by weight of such catalytic metal component and has the following pore characteristics with regard to its pores having a diameter of 75 ÅNGSTROM or more: an average pore diameter APD of about 180 to 500 ÅNGSTROM, a total pore volume PV, expressed in cc/g, being equal to or greater than a value X the volume of pores with a diameter of about 180 to 500 ÅNGSTROM being at least about 0.2 cc/g, the volume of pores with a diameter of at least 1,500 ÅNGSTROM being not greater than about 0.03 cc/g, and a total surface area being at least about 60 m²/g. The catalyst has an average catalyst diameter ACD, expressed in millimeters, of not greater than a value of the formula, ACD=(APD/100)0.5. Disclosed also are a method of preparing such a catalyst, and a process for hydrotreating a heavy hydrocarbon oil containing asphaltenes in the presence of such a catalyst.

Classifications:

International (IPC 8-9): B01J21/00 B01J23/00 B01J23/74 B01J23/85 B01J35/10 C07D311/46 C07D311/48 C10G45/00 C10G45/04 C10G47/10 C10G55/06 C10G65/04 C10G65/12 (Advanced/Invention); B01J23/882 B01J23/887 B01J35/00 (Advanced/Non-invention); B01J21/00 B01J23/74 B01J23/76 B01J35/00 C07D311/00 C10G45/02 C10G47/00 C10G55/00 C10G65/00 (Core/Invention)

International (IPC 1-7): B01J21/04 B01J23/00 B01J23/22 B01J23/28 B01J23/70 B01J32/00 B01J35/10 B01J37/02 B01J37/03 C10G45/46 C10G55/06 C10G65/00

CPC: C07D311/46 C07D311/48 B01J23/85 B01J23/882 B01J23/8872 B01J35/002 B01J35/10 B01J35/1019 B01J35/1061 B01J35/108 C10G2300/107

European: 124HA31B4B1F2A B01J23/85 B01J23/882 B01J23/887C B01J35/10 C07D311/46 C07D311/48 C10G45/04 C10G65/04 L01J23/882 L01J23/887C L01J35/00D L01J35/10A6 L01J35/10C4 L01J35/10D M10G300/10H

US: 208/111.1 208/111.25 208/111.3 208/111.35 208/210 208/216PP 208/251H 208/97 502/206 502/207 502/220 502/222 502/235 502/236 502/242 502/244 502/245 502/247 502/251 502/255 502/257 502/263 502/309 502/336 546/196 549/285

PatBase - US4422960_R

$$X = \frac{0.46}{1 - \left(\frac{100}{APD} \right)^2},$$

Family:

Publication number	Publication date	Application number	Application date
BE530546 A	00000000		00000000
CA1153750 A1	19830913	CA19800364622	19801113
CH325666 A	19571115		19540713
DE1081023 B	19600505	DE1954S039952	19540710
DE3041676 A1	19810903	DE19803041676	19801105
DE3041676 C2	19890622	DE19803041676	19801105
DE964326 A	19570523	DE1954S039951	19540711
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FR2475931 A1	19810821	FR19800025215	19801127
GB2069363 A1	19810826	GB19800032271	19801007
GB2069363 B2	19841031	GB19800032271	19801007
GB789296 A	19580115	GB19540021426	19540722
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IT8026251 A0	19801126	IT19800026251	19801126
JP1279714 C3	19850829	JP19800019596	19800219
JP56115638 A2	19810910	JP19800019596	19800219
JP60001056 B4	19850111	JP19800019596	19800219
MX162469 A	19910513	MX19800184934	19801127
MX171865 B	19931122	MX19800011982	19801127
NL189446 B	19921116	NL19800005913	19801028
NL189446 C	19930416	NL19800005913	19801028
NL8005913 A	19810916	NL19800005913	19801028
NL8005913 A1	19810916	NL19800005913	19801028
NL93599 C	00000000		00000000
US2789986 A	19570423	US19540449260	19540811
US4422960 A	19831227	US19800210059	19801214
US4444655 A	19840424	US19820428796	19820930

Priority:

DE1954S039952 19540710 DE1954S039951 19540711 FR19540673492 19540723
US19540449260 19540811 JP19800019596 19800219 CA19800364622 19801113

Probable Assignee: CHIYODA CHEM ENG CONSTRUCT CO

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Assignee(s): CHIYODA CHEMICAL ENGINEERING AND CONSTRUCTION COMPANY LIMITED TE YOKOHAMA JAPAN ; CHIYODA CHEMICAL ENGINEERING CON ; SHIROTO YOSHIMI ; ONO TAKEO ; NAKAMURA MUNEKAZU ; SPOFA SPOJENE FARMACEUTICKE ZAVODY NARODNI PODNIK ; SPOFA SPOJENE FARMACEUTICKE ZAVODY ; CHIYODA CHEMICAL ENG AND CONSTRUCTION CO LTD ; CHIYODA CHEMICAL ENGINEERING AND CONSTRUCTION CO ; CHIYODA CHEMICAL ENGINEERING AND CONSTRUCTION CO L ; CHIYODA CHEMICAL ENGINEERING AND CONSTRUCTION CO LTD ; CHIYODA CHEMICAL ENGINEERING AND CONSTRUCTION CO LTD TE YOKOHAMA JAPAN ; CHIYODA CHEMICAL ENGINEERING AND CONSTRUCTION CO LTD YOKOHAMA KANAGAWA JP ; ASAOKA SACHIO

Inventor(s): (std): DIPL PROCHAZKA ZELIMIR ING ; FRELKH ALFONS ; FROELICH ALFONS ; FROHLICH ALFONS ; ARUFUONSU FUREERIHI ; ASAOKA SACHIO ; MUNEKAZU NAKAMURA ; NAKAMURA MUNEKAZU ; ONO TAKEO ; OSAKA SACHIO ; OSAOKA SACHIO ; SACHIO ASAOKA ; SACHIO OSAKA ; SACHIO OSAOKA ; SHIRATO YOSHIMI ; SHIROTO YOSHIMI ; TAKEO ONO ; YOSHIMI SHIROTO ; ZELIMIR PROCHAZKA

Inventor(s): YOSHIMI SHIROTO TAKEO ONO SACHIO ASAOKA ET MUNEKAZ ; YOSHIMI SHIROTO TAKEO ONO SACHIO ASAOKA ET MUNEKAZU NAKAMURA ; SHIROTO YOSHIMI YOKOHAMA KANAGAWA JP ; PROCHAZKA ZELIMIR ; ONO TAKEO KAWASAKI KANAGAWA JP ; NAKAMURA MUNEKAZU YOKOHAMA KANAGAWA JP ; DER

Agent(s): SIM AND MCBURNEY

35) Family number: 9024504 (US5013427A)

PatBase

Title: Resid hydrotreating with resins

Abstract: A hydrotreating process if provided in which resid and resins are hydrotreated with hydrogen-rich gases in the presence of a hydrotreating catalyst in an ebullated bed reactor.

Classifications:

International (IPC 8-9): B01J19/00 C08J11/08 C10C3/00 C10G21/00 C10G21/14 C10G45/00 C10G45/02 C10G49/00 C10G65/02 C10G67/04 C10G67/14 C10G69/04 (Advanced/Invention);

B01J19/00 C08J11/00 C10C3/00 C10G21/00 C10G45/00 C10G45/02 C10G49/00 C10G65/00 C10G67/00 C10G69/00 (Core/Invention)

International (IPC 1-7): C08J11/08 C10C3/00 C10G1/00 C10G21/00 C10G21/14 C10G45/00 C10G45/02 C10G45/04 C10G49/00 C10G53/02 C10G53/04 C10G65/02 C10G67/04 C10G67/14 C10G71/00 E10G53/04 E10G55/02

CPC: B01J19/00 C10G67/049 C10G21/003 C10G67/0463 C10C3/00 C10G2300/107 C10G11/18 C10G21/14 C10G49/12 C10G67/0454 Y02W30/701 Y02P20/584

European: B01J19/00 C10C3/00 C10G11/18 C10G21/00A C10G21/14 C10G49/12 C10G67/04F C10G67/04F12 C10G67/04F2 C10G69/04 M10G300/10H

US: 208/108 208/143 208/144 208/162 208/208 208/208R 208/211 208/211.2 208/212 208/216R 208/221 208/222 208/229 208/251H 208/254H 208/264 208/309 208/313 208/314 208/315 208/317 208/339 208/39 208/49 208/50 208/52CT 208/52R 208/61 208/81 208/86 208/87 208/89 208/92 208/94 208/96 208/97

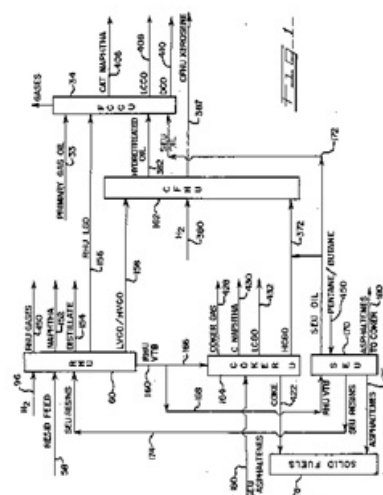
PatBase - US5013427_A

U.S. Patent

May 7, 1991

Sheet 1 of 7

5,013,427

**Family:**

Publication number	Publication date	Application number	Application date
CA2035875 AA	19910305	CA19902035875	19900608
CA2035875 C	19961001	CA19902035875	19900608
CA2064338 AA	19930924	CA19922064338	19920323
CA2064338 C	19980526	CA19922064338	19920323
EP0434799 A1	19910703	EP19900909945	19900608
EP0434799 A4	19911218	EP19900909945	19900608
EP0434799 B1	19941102	EP19900909945	19900608
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FR2689900 B1	19960531	FR19920004314	19920408
JP2804369 B2	19980924	JP19900509865	19900608
JP4501879 T2	19920402	JP19900509865T	19900608
MX170689 B	19930907	MX19900021520	19900710
NL194801 B	20021101	NL19920000571	19920327
NL194801 C	20030304	NL19920000571	19920327
NL9200571 A	19931018	NL19920000571	19920327
US5013427 A	19910507	US19890381372	19890718
US5124025 A	19920623	US19900616219	19901120
US5124026 A	19920623	US19900616208	19901120
US5124027 A	19920623	US19900616218	19901120
US5228978 A	19930720	US19920824508	19920123
US5242578 A	19930907	US19920824289	19920123
US5258117 A	19931102	US19920824509	19920123
US5312543 A	19940517	US19920902585	19920622
WO9101360 A1	19910207	WO1990US03263	19900608

Priority:

US19890381372 19890718	US19890381372 19890718	WO1990US03263 19900608
US19900610936 19901109	US19900616218 19901120	US19900616208 19901120
US19900616219 19901120	US19900618218 19901120	US19920824289 19920123
US19920824508 19920123	US19920824509 19920123	CA19922064338 19920323
NL19920000571 19920327	FR19920004314 19920408	US19920902585 19920622

Probable Assignee: AMOCO CORP**Assignee(s):** (std): AMOCO CORPORATION ; AMOCO CORP

Assignee(s): AMOCO CORP WAS STANDARD OIL CO ; AMOCO A CORP OF INDIANA CORP ; AMOCO TE CHICAGO ILLINOIS VER ST V AM CORP ; BEATON WILLIAM INGRAM ; KENNEDY BRIAN STEWART ; TAYLOR JAMES LONG ; HUGHES ROBERT DAVID ; KOLSTAD JEFFREY JOHN ; MOSBY JAMES FRANCIS ; PECK LAWRENCE BRUCE

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Inventor(s): LAWRENCE BRUCE PECK ; JEFFREY JOHN KOLSTAD ; JAMES LONG TAYLOR ; JAMES FRANCIS MOSBY ; BRIAN STEWART KENNEDY ; WILLIAM INGRAM BEATON ; ROBERT DAVID HUGHES

Agent(s): GOWLING LAFLEUR HENDERSON LLP

Designated states: AT BE CA CH DE DK ES FR GB IT JP LU NL SE

36) Family number: 61105051 (US2012000821A)

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Title: HYDROPROCESSING CATALYSTS AND METHODS FOR MAKING THEREOF

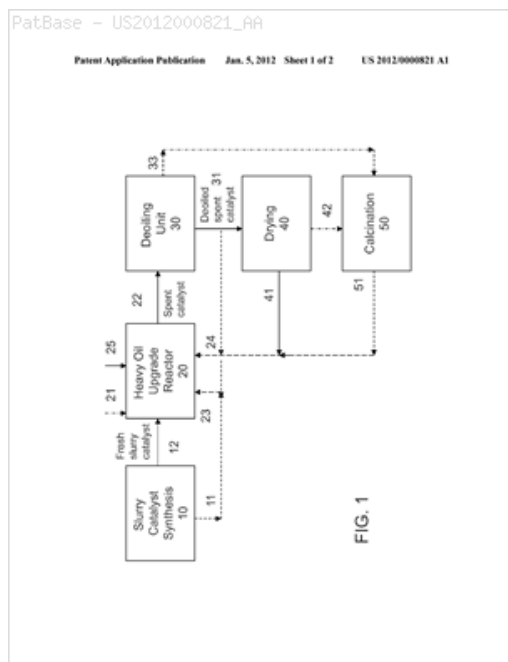
Abstract: A method to reduce metal deposit in the hydroprocessing or upgrade of heavy oil feedstock is provided. The method comprises feeding an improved catalyst feed to the system, with the improved catalyst feed comprising a fresh slurry catalyst and a deoiled spent catalyst, with the deoiled spent catalyst being present in an amount of at least 10 percent the catalyst feed for the heavy oil upgrade system to have at least a 5 percent reduction in metal contaminant build-up compared to heavy oil upgrade system without the deoiled spent catalyst in the feed.

Classifications:

International (IPC 8-9): C10G47/26 C10G47/32 C10G47/36 C10G65/00 C10G65/10 C10G65/18 (Advanced/Invention); C10G47/00 C10G47/02 (Advanced/Non-invention)

CPC: C10G47/02 C10G47/26 C10G47/32 C10G47/36 C10G65/00 C10G65/10 C10G65/18 C10G2300/205 C10G2300/4075 C10G2300/701 C10G2300/802

US: 1/1 208/113 208/121



Family:

Publication number	Publication date	Application number	Application date
US2012000821 AA	20120105	US20110233477	20110915
US9068132 BB	20150630	US20110233477	20110915

Priority:

US20090506937 20090721 US20100428599P 20101230 US20110103790 20110509
US20110233477 20110915

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CHABOT JULIE ; CHEVRON CORP ; CHEVRON USA INC ; KOU BO ; YANG SHUWU ; REYNOLDS BRUCE EDWARD

Inventor(s): (std): KOU BO ; CHABOT JULIE ; YANG SHUWU ; REYNOLDS BRUCE EDWARD

37) Family number: 61105053 (US2012004097A)

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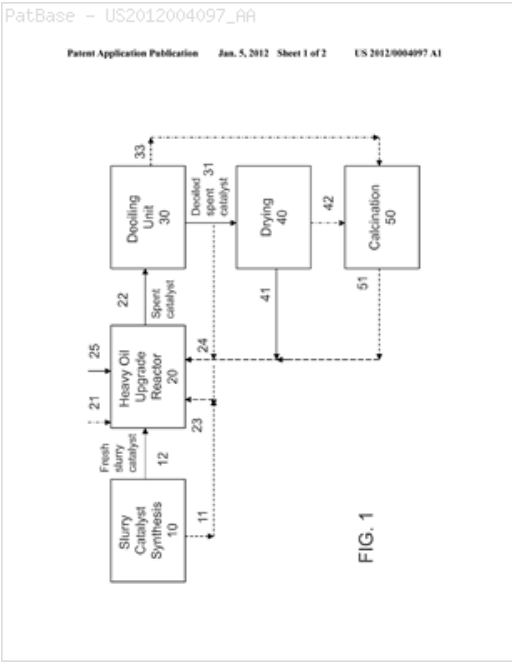
Title: HYDROPROCESSING CATALYSTS AND METHODS FOR MAKING THEREOF

Abstract: An improved slurry catalyst feed system for heavy oil upgraded is provided. The catalyst feed system comprises a fresh slurry catalyst and a deoiled spent catalyst, with the deoiled spent catalyst being present in an amount of at least 10 percent the catalyst feed system. The deoiled spent catalyst is a slurry catalyst that has been used in a hydroprocessing operation resulting in than 80 percent but more than 10 percent of original catalytic activity, and containing less than 10 weight percent soluble hydrocarbons as unconverted heavy oil feed. The deoiled spent catalyst is slurried in a hydrocarbon medium as dispersed particles prior to being fed to the heavy oil upgrade system.

Classifications:

International (IPC 8-9): B01J31/02 C10G47/02 C10G47/26 C10G47/32

C10G65/00 C10G65/10 C10G65/18 (Advanced/Invention)
CPC: C10G47/02 C10G65/10 C10G65/00 C10G47/32 C10G2300/802
C10G65/18 C10G2300/701 C10G47/26
US: 502/150 502/173 502/20 502/29 502/31 502/32 502/33



Family:

Publication number	Publication date	Application number	Application date
US2012004097 AA	20120105	US20110233455	20110915
US8759242 BB	20140624	US20110233455	20110915

Priority:

US20090506937 20090721 US20100428599P 20101230 US20110103790 20110509
US20110233455 20110915

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CHABOT JULIE ; CHEVRON USA INC ; REYNOLDS BRUCE EDWARD ; YANG SHUWU

Inventor(s): (std): YANG SHUWU ; CHABOT JULIE ; REYNOLDS BRUCE EDWARD

38) Family number: 32564595 (US2006011510A) © PatBase

Title: TWO-STEP HYDROPROCESSING METHOD FOR HEAVY HYDROCARBON OIL

Abstract: A method is disclosed for hydroprocessing a heavy hydrocarbon oil, comprising a first hydroprocessing step of bringing a heavy hydrocarbon oil into contact with a Catalyst (1) with a certain specific surface area and pore size distribution in the presence of hydrogen in a first reaction zone containing the Catalyst (1), and a second hydroprocessing step of bringing the hydroprocessed oil obtained from the first reaction zone into contact with a Catalyst (2) with a certain specific surface area and pore size distribution in the presence of hydrogen in a second reaction zone containing the Catalyst (2). The method is an improvement in decreasing or inhibiting the sediment formation, while highly hydroprocessing a heavy hydrocarbon oil containing a large amount of impurities such as sulfur, micro carbon residue (MCR), metals, nitrogen and asphaltene, especially a heavy oil containing a large amount of heavy vacuum residue, to adequately remove the impurities.

Classifications:

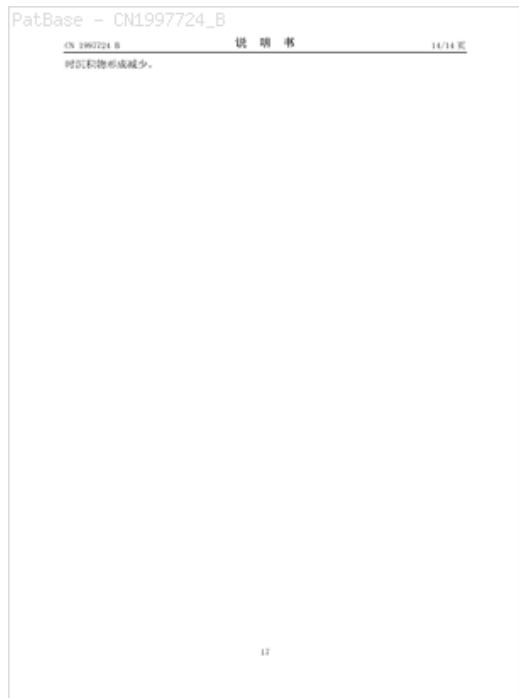
International (IPC 8-9): B01J21/12 B01J23/85 B01J23/883 B01J35/00 B01J35/10 B01J37/00 B01J37/03 C10G45/04 C10G45/08 C10G47/00 C10G47/12 C10G47/14 C10G65/12 (Advanced/Invention); B01J37/02 (Advanced/Non-invention)

International (IPC 1-7): B01J21/12 B01J23/85 B01J35/00 B01J35/10 C10G65/12

CPC: C10G2300/107 C10G2300/1077 C10G2300/202 C10G2300/206 C10G2300/301 B01J35/10 B01J21/12 B01J23/85 B01J23/883 B01J35/0006 B01J35/1019 B01J35/1038 B01J35/1042 B01J35/1047 B01J35/1061 B01J35/108 B01J35/1085 B01J35/109 B01J37/0009 B01J37/0203 B01J37/036 C10G65/12

European: B01J21/12 B01J23/85 B01J23/883 B01J35/00B B01J35/10 B01J37/00B B01J37/03C C10G65/12 L01J35/10A6 L01J35/10B2 L01J35/10B4 L01J35/10B6 L01J35/10C4 L01J35/10D L01J35/10D2 L01J35/10D4 L01J37/02B2

US: 208/111.3 208/111.300S 208/111.35 208/111.350S 208/216.00R 208/216.00RS 208/216.0PP 208/216PP 208/216R 208/217 208/58 208/58S 208/97 208/97P 502/257 502/257S 502/313 502/313S



Family:

Publication number	Publication date	Application number	Application date
AU2005265004 AA	20060126	AU20050265004	20050614
CA2570685 AA	20061130	CA20052570685	20050614
CN1997724 A	20070711	CN200580020106	20050614
CN1997724 B	20120704	CN200580020106	20050614
DE602005047232 D1	20150917	DE200560047232T	20050614
EP1773969 A1	20070418	EP20050762212	20050614
EP1773969 B1	20150812	EP20050762212	20050614
JP2008503611 T2	20080207	JP20070516684T	20050614
JP4839311 B2	20111221	JP20070516684T	20050614
MXPA06014513 A1	20070323	MX2006PA14513	20050614
US2006011510 AA	20060119	US20050153558	20050614
US7491313 BB	20090217	US20050153558	20050614
WO06009742 A1	20060126	WO2005US21149	20050614

Priority:

US20040580607P 20040617 EP20050762212 20050614 US20050153558 20050614
WO2005US21149 20050614

Probable Assignee: EXXON MOBIL CORP

Assignee(s): (std): ABE SATOSHI ; EXXONMOBIL RES AND ENG CO ; TOSHIMA HIROSHI ; EXXONMOBIL RESEARCH AND ENGINEERING CORP

Assignee(s): EXXONMOBIL RESEARCH AND ENGINEERING COMPANY ; EXXONMOBIL RESEARCH AND ENGINEERING CO ; EXXONMOBIL RESEARCH AND ENGINEERING CO ANNANDALE ; EXXON MOBIL CORP ; EXXON RESEARCH AND ENGINEERING COMPANY

Inventor(s): (std): ABE SATOSHI ; ABE SATOSHI ; HIROSHI TOSHIMA ; SATOSHI ABE ; TOSHIMA HIROSHI ; SATOSHI TOSHIMA HIROSHI ABE

Inventor(s): TOSHIMA HIROSHI ABE SATOSHI

Agent(s): WATERMARK PATENT AND TRADE MARKS ATTORNEYS; WATERMARK INTELLECTUAL PROPERTY PTY LTD; BORDEN LADNER GERVAIS LLP; UEXKUELL AND STOLBERG; MARESCHAL ANNE; EXXONMOBIL RESEARCH AND ENGINEERING COMPANY; EXXONMOBIL RESEARCH AND ENGINEERING CO; CLARK W ROBINSON H; HUGHES GERALD J; W ROBINSON H; GERALD J

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

39) Family number: 60049902 (US2015225657A)

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Title: PROCESSING VACUUM RESIDUUM AND VACUUM GAS OIL IN EBULLATED BED REACTOR SYSTEMS

Abstract: A process for upgrading vacuum residuum and vacuum gas oil hydrocarbons is disclosed. The process may include: contacting a heavy distillate hydrocarbon fraction and hydrogen with a zeolite selective hydrocracking catalyst in a first ebullated bed hydrocracking reaction zone to convert at least a portion of the vacuum gas oil to lighter hydrocarbons. Contacting a residuum hydrocarbon fraction and hydrogen with a non-zeolite base metal hydroconversion catalyst in a second ebullated bed hydroconversion reaction zone may produce a vapor stream containing unconverted hydrogen, acid gases and volatilized hydrocarbons which may be fed along with the vacuum gas oil in the first ebullated bed hydrocracking zone.

Classifications:



AP201407486 A0	20140331	AP20140007486	20120906
AP3713 A	20160531	AP20140007486	20120906
CA2846759 AA	20140226	CA20122846759	20120906
CN103842077 A	20140604	CN201280043236	20120906
CN103842077 B	20160817	CN201280043236	20120906
EP2753424 A1	20140716	EP20120756708	20120906
IN02467DN2014 A	20150515	IN2014DN02467	20140328
IN310270 B	20190405	IN2014DN02467	20140328
ITMI20111626 A1	20130309	IT2011MI01626	20110908
RU2014112708 A	20151020	RU20140112708	20120906
RU2615766 C2	20170411	RU20140112708	20120906
US2014291203 AA	20141002	US20120343007	20120906
US9700880 BB	20170711	US20120343007	20120906
WO13034642 A1	20130314	WO2012EP67412	20120906

Priority:

IT2011MI01626 20110908 WO2012EP67412 20120906

Probable Assignee: ENI SPA

Assignee(s): (std): ENI SPA ; LANDONI ALBERTO ; POLLESEL PAOLO ; MOLINARI DANIELE ; BELLUSSI GIUSEPPE

Assignee(s): ENI S P A ; ENI SP A

Inventor(s): (std): BELLUSSI DZHUZEPPE ; BELLUSSI GIUSEPPE ; LANDONI ALBERTO ; POLLESEL PAOLO ; MOLINARI DANIELE ; BELLUSSI GIUSEPPR

Agent(s): FETHERSTONHAUGH AND CO; ZUMSTEIN ANGELA; TAROLLI SUNDHEIM COVELL AND TUMMINO LLP

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

42) Family number: 27130453 (US2004209771A)

© PatBase

Title: TWO-STAGE HEAVY FEED HPC PROCESS

Abstract: The present invention pertains to a method for hydroprocessing a heavy hydrocarbon oil, comprising bringing a heavy hydrocarbon oil into contact with hydroprocessing catalyst I in the presence of hydrogen in a first stage, after which the effluent of the first stage is contacted in whole or in part with hydroprocessing catalyst II in the presence of hydrogen in a second stage. The method according to the invention combines efficient contaminant removal with high cracking rate and low sediment formation. The invention also pertains to the combination of catalysts.

Classifications:

International (IPC 8-9): B01J23/58 B01J23/755 B01J23/85 B01J23/88 B01J35/00 B01J35/10 C10G45/04 C10G45/06 C10G65/02 C10G65/04 C10G65/10 (Advanced/Invention);

B01J21/04 B01J21/12 B01J23/883 B01J37/00 B01J37/02 (Advanced/Non-invention);

B01J23/76 B01J35/00 C10G45/02 C10G65/00 (Core/Invention);

B01J21/00 B01J37/00 (Core/Non-invention)

International (IPC 1-7): B01J23/88 B01J35/10 C10G45/00 C10G45/06 C10G65/02 C10G65/04 C10G65/10 C10G65/12

CPC: C10G2300/202 C10G2300/301 B01J35/10 B01J21/04 B01J21/12 B01J23/85 B01J23/883 B01J35/0006 B01J35/1019 B01J35/1042

B01J35/108 B01J37/0009 B01J37/0201 C10G65/02 C10G65/10

European: B01J23/85 B01J35/00B B01J35/10 C10G65/02 C10G65/10 L01J21/04 L01J21/12 L01J23/883 L01J35/10A6 L01J35/10B4 L01J35/10D L01J37/00B L01J37/02B

US: 208/110 208/210 208/211 208/211S 208/212 208/212S 208/213 208/216PP 208/216R 208/217 208/59 208/59S 502/313

表 1 得られた触媒中の各成分の量及び性状						
	単位	触媒 A	触媒 B	触媒 C	触媒 D	触媒 E
構成成分						
触媒成分						
酸化モリブデン	重量%	13.1	11.9	11.5	13.3	13.0
酸化ニッケル	重量%	2.0	2.0	2.1	2.1	2.2
酸化ナトリウム	重量%	N.A*	N.A	0.2	N.A	N.A
担体成分						
アルミナ	重量%	重量	重量	重量	重量	重量
シリカ	重量%	N.A	N.A	0.0	N.A	N.A
比表面積	m ² /g	181	147	214	168	125
全細孔容積	ml/g	0.88	0.79	0.75	0.72	0.80
直径200Å以上の細孔容積割合	%	63	74	25	35	30
直径2000Å以上の細孔容積割合	%	24	1	1	12	36
直径10000Å以上の細孔容積割合	%	0.1	0.0	0.0	0.5	3.5
直径100Å～1200Åの細孔容積割合	%	74	89	80	68	56
直径4000Å以上の細孔容積割合	%	16	1	0.3	1.4	18
直径100Å以下の細孔容積割合	%	0.4	0.4	14	0.4	0.6

* Not available: 検出されず

Family:

Publication number	Publication date	Application number	Application date
AU2002319243 AA	20021223	AU20020319243	20020610
CA2449637 AA	20031205	CA20022449637	20020610
CA2449637 C	20120731	CA20022449637	20020610
EP1392800 A2	20040303	EP20020748792	20020610
EP1392800 B1	20060816	EP20020748792	20020610
JP2002363576 A2	20021218	JP20010174073	20010608
JP4773634 B2	20110914	JP20010174073	20010608
PL196409 B1	20071231	PL20020367266	20020610
PL367266 A1	20050221	PL20020367266	20020610
SK200301498 A5	20040608	SK20030001498	20020610
SK286656 B6	20090305	SK20030001498	20020610
US2004209771 AA	20041021	US20040480176	20040521
US7476309 BB	20090113	US20020480176	20020610
WO02100980 A2	20021219	WO2002EP06665	20020610
WO02100980 A3	20030410	WO2002EP06665	20020610

Priority:

JP20010174073 20010608 WO2002EP06665 20020610

Probable Assignee: NIPPON KETJEN CO LTD

Assignee(s): (std): ABE SATOSHI ; AKZO NOBEL NV ; NIPPON KETJEN CO LTD ; FUJITA KATSUHISA ; NIPPON KECCHEN KK ; NIPPON KETJEN CO ; ALBEMARLE NETHERLANDS BV

Assignee(s): ALBEMARLE NETHERLANDS B V ; AKZO NOBEL N V

Inventor(s): (std): ABE SATOSHI ; FUJITA KATSUHISA

Inventor(s): KATSUHISA FUJITA ; SATOSHI ABE

Agent(s): OGILVY RENAULT LLP SENCRL SRL; NORTON ROSE CANADA SENCRL SRL LLP; KLIEBERT JEREMY J; JEREMY J

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ OM PH PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW

43) Family number: 12371468 (US6086749A)

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Title: Catalyst and method for hydroprocessing a hydrocarbon feed stream in a reactor containing two or more catalysts

Abstract: A method and catalyst mixture for hydroprocessing a hydrocarbon feed stream through a moving catalyst bed having a catalyst mixture and contained within a single onstream reactor vessel. The reactor vessel contains the catalyst mixture which includes two or more different and distinct catalyst for any hydroprocessing application. The different and distinct catalyst have different catalyst density and are designed for a different function, such as HDM and HDN. The different and distinct catalysts can also have different average residence times if their densities and physical properties are properly selected.

Classifications:

International (IPC 8-9): B01J8/22 B01J8/44

C10G49/00 (Advanced/Invention);

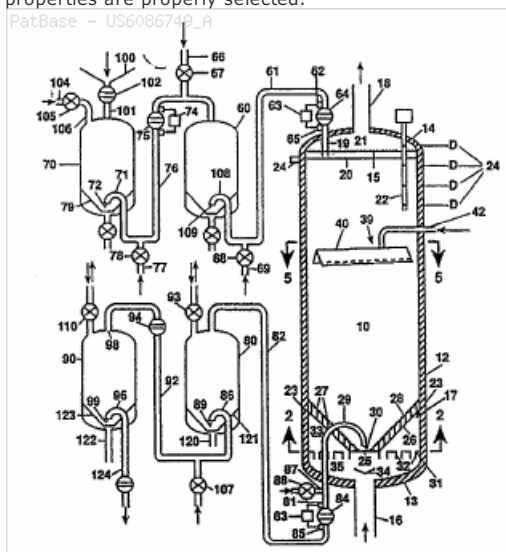
B01J8/20 B01J8/24 C10G49/00 (Core/Invention)

International (IPC 1-7): C10G45/04 C10G47/02 C10G47/04

CPC: B01J8/222 B01J8/44 B01J2208/025 C10G49/002

European: B01J8/22B B01J8/44 C10G49/00B L01J208/02D2B

US: 208/108 208/110 208/112 208/213 208/216R 208/217 208/251H 208/254H



Family:

Publication number	Publication date	Application number	Application date
US6086749 A	20000711	US19970994339	19971219

Priority:

US19960034439P 19961223 US19970994339 19971219

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CHEVRON USA INC

Assignee(s): CHEVRON USA INC ; CHEVRON U S A INC

Inventor(s): (std): KRAMER DAVID C ; STANGELAND BRUCE E

44) Family number: 57414072 (US2016030856A)

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Title: DISTILLATION REACTOR MODULE

Abstract: The distillation reactor consists of a reactor apparatus with corresponding method of upstream distilling and purification of carbon based liquid or liquidized streams for use as fuels, lubricating oils and or gaseous energy and electricity production. The distillation reactor consolidates the atmospheric and vacuum distillation processes along with desalting, defueling, deasphalting, fractionation, thin/wiped film evaporation and Hydro finishing into an advanced high velocity, high volume single reactor system. Carbon based feed streams include either a single stream or preferably, a combined stream of liquefied coal slurries, crude oils, spent oils, Pyrolytic oils and or peat or other plant carbon derived liquids, vapors, mists or gases. The method further consists of controlling the mix ratio, flow velocity, sequential fractionation and filtration technology and processing atmospheres of the carbon feeds with the reactor apparatus. The combined apparatus and method allows for a refinery to consistently produce a finished barrel of oil well below traditional costs and at a higher efficiency than current art and prior art.

Classifications:

International (IPC 8-9): B01D3/00 B01D3/06 B01D3/10 B01D3/26

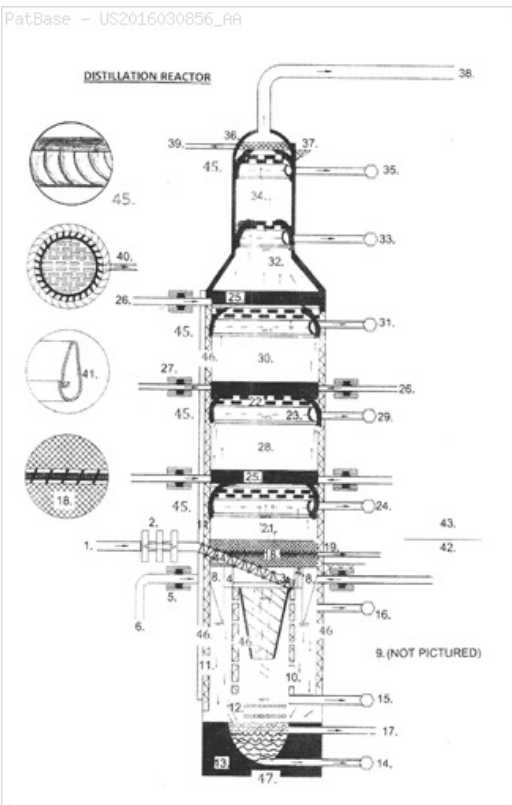
B01D3/32 B01D39/20 B01D53/48 B01D53/62 B01D59/04 B01J B01J19/24

B01J19/26 B01J2/00 B01J6/00 B01J8/24 B02C23/00 B03C1/00 B22F3/10

B22F9/00 B29B17/00 C01B17/027 C01B17/74 C02F1/00 C10B49/12

C10G1/00 C10G11/18 C10G33/00 C10G45/00 C10G57/00 C10G7/00

C10G7/06 C10G9/04 C10J3/72 C10L9/10 C22B13/00 C22B15/00
C22B21/00 C22B7/00 C22B9/00 F03G7/00 F27B17/00 G21C1/02
G21D5/00 H01M10/54 H01M8/00 H02K55/02
H02K7/09 (Advanced/Invention)
CPC: Y02E30/40 G21D1/00 B01J19/0093 B01J2219/00864
B01J2219/00867 B01J2219/00871 C01G21/02 C01B3/32 C01B13/02
C01B17/02 C01B2203/0205 C01B2203/0283 C01B2203/043
C01B2203/0445 C01B2203/0475 C10G1/02 C10G1/10 C10G31/08
C10G75/04 Y02P20/129 B09B5/00 Y02P30/446 Y02E30/30 B01D3/10
B01D3/006 B01D3/06 B01D39/2027 F03G7/00 B01D3/009 C10G7/06
G21C1/00 G21D5/00 C10G7/00 C10G57/00 C10G7/003 C10L9/10
C10J3/72 C10G1/00 C01B17/027 C01B17/74 B01J6/008 B01J2/00
B01J19/24 B01D53/48 B01D53/62 C22B9/00 F27B17/00 C02F1/00
C22B7/00 B29B17/00 B22F3/10 B22F9/00 C22B21/00 C22B15/00
C22B13/00 H01M8/00 H01M10/54 H02K55/02 H02K7/09 B02C23/00
B03C1/00 C10L2290/544 C10J2300/093 C10J2300/0946 B22F2009/001
C01B17/48 C10G11/18 C10G33/00 C10G45/00 Y02E20/16 Y02E20/18
Y02W10/33 Y02W10/37 Y02W30/84 C01B32/05 C01B32/20 C01B32/50
Y02P10/143
US: 196/46 202/232 209/213 210/251 241/301 241/65 266/160 310/90.5
422/129 422/170 422/187 422/198 422/255 423/522 423/567.1 429/49
505/163 505/166 60/698



Family:

Publication number	Publication date	Application number	Application date
CA2907677 AA	20150921	CA20142907677	20140318
EP2969180 A2	20160120	EP20140762668	20140318
EP2969180 A4	20161005	EP20140762668	20140318
IL242590 A0	20160131	IL20140242590	20140318
JP2016512165 T2	20160425	JP20160502609T	20140318
US2016030856 AA	20160204	US20140776734	20140318
US2016032904 AA	20160204	US20140776736	20140318
US2016045841 AA	20160218	US20140776732	20140515
WO14146129 A2	20140918	WO2014US31118	20140318
WO14146129 A3	20150129	WO2014US31118	20140318
WO14153570 A2	20140925	WO2014US38290	20140515
WO14153570 A3	20150219	WO2014US38290	20140515
WO14153570 A9	20150806	WO2014US38290	20140515
WO14200605 A2	20141218	WO2014US31116	20140318
WO14200605 A3	20150326	WO2014US31116	20140318
WO14200605 A4	20150430	WO2014US31116	20140318
WO14200605 A9	20150205	WO2014US31116	20140318

Priority:

US20130800209P 20130315	US20130801170P 20130315	US20130801491P 20130315
US20140776734 20140318	US20140776736 20140318	WO2014US31118 20140318
WO2014US31116 20140318	US20140776732 20140515	WO2014US38290 20140515

Probable Assignee: TRANSTAR GROUP LLC

Assignee(s): (std): BRADLEY RANDALL ; KALPAN ALLEN ; KAPLAN ALLEN ; TRANSTAR GROUP LTD

Assignee(s): TRANSTAR GROUP LLC

Inventor(s): (std): KAPLAN ALLEN ; BRADLEY RANDALL ; KALPAN ALLEN

Agent(s): ADE AND CO INC; NELLIGAN OBRIEN PAYNE LLP; PERRONACE ANDREA; HERSHKOVITZ ABRAHAM ET AL; HERSHKOTIZ ABRAHAM ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

45) Family number: 62457639 (US2016145509A)

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Title: PROCESS TO UPGRADE PARTIALLY CONVERTED VACUUM RESIDUA

Abstract: Processes for upgrading partially converted vacuum residua hydrocarbon feeds are disclosed. The upgrading processes may include: steam stripping the partially converted vacuum residua to generate a first distillate and a first residuum;

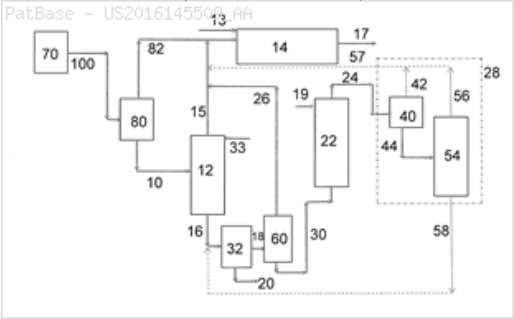
solvent deasphalting the first residuum stream to generate a deasphalted oil and an asphaltenes fraction; vacuum fractionating the deasphalted oil to recover a deasphalted gas oil distillate and a heavy deasphalted residuum; contacting the first distillate and the deasphalted gas oil distillate and hydrogen in the presence of a first hydroconversion catalyst to produce a product; contacting the heavy deasphalted residuum stream and hydrogen in the presence of a second hydroconversion catalyst to produce an effluent; and fractionating the effluent to recover a hydrocracked atmospheric residua and a hydrocracked atmospheric distillate

Classifications:

International (IPC 8-9): B01J8/18 C10G21/00 C10G47/00 C10G53/00 C10G53/02 C10G55/06 C10G65/14 C10G67/00 C10G67/04 C10G67/14 C10G7/06 C10J3/00 (Advanced/Invention)

CPC: C10J3/00 C10J2200/00 C10G7/06 C10G21/003 C10G65/14 C10G67/0454 C10G2300/1077 C10G47/00 C10G2300/206 C10G67/049 C10G67/00 C10G53/02 C10G55/06

US: 208/59 208/80 422/142



Family:

Publication number	Publication date	Application number	Application date
BR112017010699 A2	20180619	BR20171110699	20151027
CA2963972 AA	20170406	CA20152963972	20151027
CN107001952 A	20170801	CN201580057777	20151027
CN107001952 B	20190111	CN201580057777	20151027
EP3221430 A1	20170927	EP20150860744	20151027
EP3221430 A4	20180725	EP20150860744	20151027
GC9730 A	20190212	GC2015P030441	20151119
IN201727009393 A	20170623	IN201727009393	20170317
KR101917968 B1	20181113	KR20177010095	20151027
KR20170061141 A	20170602	KR20177010095	20151027
MX2017006498 A1	20180219	MX20170006498	20151027
RU2673803 C1	20181130	RU20170121598	20151027
SG11201703799P A1	20170629	SG20171103799	20151027
US2016145509 AA	20160526	US20140550384	20141121
US2017121614 AA	20170504	US20170407917	20170117
US2017335206 AA	20171123	US20150522342	20151027
US9695369 BB	20170704	US20140550384	20141121
WO16081165 A1	20160526	WO2015US57511	20151027

Priority:

US20140550384 20141121 US20150522342 20151027 WO2015US57511 20151027
US20170407917 20170117

Probable Assignee: LUMMUS TECHNOLOGY INC

Assignee(s): (std): LUMMUS TECH INC ; LUMMUS TECHNOLOGY INC

Assignee(s): MUKHERJEE UJJAL K ; LUMMUS TECHNOLOGY LLC ; BALDASSARI MARIO C ; CB AND I TECHNOLOGY INC ; GREENE MARVIN I

Inventor(s): (std): MUKHERJEE UJJAL K ; BALDASSARI MARIO C ; GREENE MARVIN I ; UJJAL K MUKHERJEE ; MARIO C BALDASSARI ; MARVIN I GREENE

Agent(s): GOWLING WLG CANADA LLP; OSHA LIANG; ABU GAZALEH INTELLECTUAL PROPERTY LLC; YURIDICHESKAYA GORODISSKIY I PARTNER Y OOO FA; OSHA LIANG LLP; GRIFFITH ARON T ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

46) Family number: 61105057 (US2012168351A)

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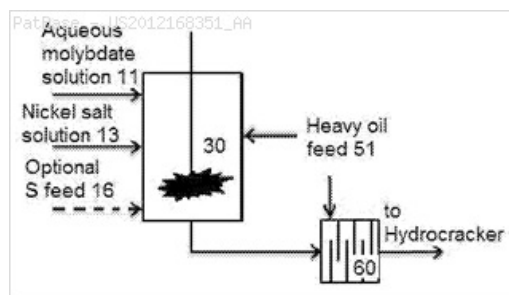
Title: HYDROPROCESSING CATALYSTS AND METHODS FOR MAKING THEREOF

Abstract: An improved process for preparing a slurry catalyst for the upgrade of heavy oil feedstock is provided. The process employs rework material obtained from a process to prepare a hydroprocessing catalyst as part of the metal precursor feed. In one embodiment, the process comprises mixing the rework material with a hydrocarbon diluent to form a slurried metal precursor for subsequent in-situ sulfiding in a heavy oil upgrade process. In another embodiment, the rework is slurried in a hydrocarbon carrier and a sulfiding agent, forming a slurry catalyst. In yet another embodiment, the rework material is mixed directly with a heavy oil feedstock under in-situ sulfiding conditions, forming a slurry catalyst.

Classifications:

International (IPC 8-9): B01J27/047 B01J27/049 B01J27/188 B01J37/20 C10G29/10 C10G29/16 C10G45/04 (Advanced/Invention)

US: 208/264 208/283 208/293 502/150 502/180 502/210 502/219 502/221 502/87



Family:

Publication number	Publication date	Application number	Application date
US2012168351 AA	20120705	US20110331305	20111220

Priority:

US20100428599P 20101230 US20110331305 20111220

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): C O CHEVRON CORP ; CHABOT JULIE ; MARIS ERIN P ; MIRONOV OLEG

Assignee(s): CHEVRON USA INC

Inventor(s): (std): CHABOT JULIE ; MARIS ERIN P ; MIRONOV OLEG

47) Family number: 61105066 (US2012172205A)

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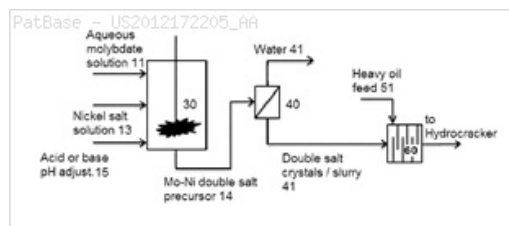
Title: HYDROPROCESSING CATALYSTS AND METHODS FOR MAKING THEREOF

Abstract: An improved hydroprocessing slurry catalyst is provided for the upgrade of heavy oil feedstock. The slurry catalyst is prepared from at least a Group VIB metal precursor compound and optionally at least a Promoter metal precursor compound. The catalyst comprises dispersed particles in a hydrocarbon medium with the dispersed particles have an average particle size ranging from 1 to 300 micro m. The catalyst has a total surface area of at least 100 m²/g. The catalyst is prepared from sulfiding and dispersing a metal precursor solution in a hydrocarbon diluent, the metal precursor comprising at least a Primary metal precursor and optionally a Promoter metal precursor, the metal precursor solution having a pH of at least 4 and a concentration of less than 10 weight percent of Primary metal in solution.

Classifications:

International (IPC 8-9): B01J31/02 (Advanced/Invention)

US: 502/150 502/167 502/168



Family:

Publication number	Publication date	Application number	Application date
US2012172205 AA	20120705	US20110331528	20111220

Priority:

US20100428599P 20101230 US20110331528 20111220

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): DUNCKLEY CHRISTOPHER PAUL ; REYNOLDS BRUCE EDWARD ; NGUYEN JOSEPH V ; YANG SHUWU ; MIRONOV OLEG ; JIAO LING ; KUPERMAN ALEXANDER E ; MARIS ERIN P ; CHABOT JULIE ; CHEVRON CORP

Assignee(s): CHEVRON USA INC

Inventor(s): (std): REYNOLDS BRUCE EDWARD ; NGUYEN JOSEPH V ; YANG SHUWU ; MIRONOV OLEG ; JIAO LING ; MARIS ERIN P ; CHABOT JULIE ; KUPERMAN ALEXANDER E ; DUNCKLEY CHRISTOPHER PAUL

48) Family number: 32713301 (US2006054533A)

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Title: PROCESS FOR RECYCLING AN ACTIVE SLURRY CATALYST COMPOSITION IN HEAVY OIL UPGRADING

Abstract: The instant invention is directed to a process employing slurry catalyst compositions in the upgrading of heavy oils. The slurry catalyst composition is not permitted to settle, which would result in possible deactivation. The slurry is recycled to an upgrading reactor for repeated use and products require no further separation procedures for catalyst removal.

Classifications:

International (IPC 8-9): B01J27/051 B01J37/03 B01J38/00 B01J38/02 B01J38/10 C10G45/16 C10G47/00 C10G47/02 C10G47/06 C10G47/22 C10G47/24 C10G47/26 C10G49/04 C10G49/12 C10G65/00

C10G65/12 (Advanced/Invention);

C10G47/24 (Advanced/Non-invention);

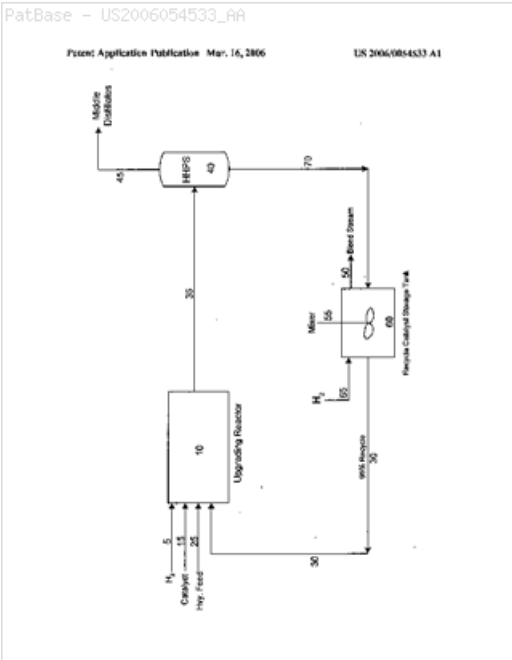
B01J27/04 B01J37/00 B01J38/00 C10G45/02 C10G47/00 C10G49/00

C10G65/00 (Core/Invention)

CPC: C10G45/16 C10G2300/1003 C10G2300/1022 C10G2300/1033

C10G2300/1074 C10G2300/1088 C10G2300/202 C10G2300/301

B01J27/051 B01J27/30 B01J35/12 C10G2300/107 C10G2400/06
European: B01J27/051 C10G45/16 C10G47/26 L01J27/30 L01J35/12
M10G300/10H M10G400/06
US: 208/108 208/113 208/113S 208/143 208/213 208/254.00R 208/254H
208/254R 208/46 208/46S



Family:

Publication number	Publication date	Application number	Application date
BRPI0515100 A	20080708	BR2005PI15100	20050907
CA2579139 AA	20070302	CA20052579139	20050907
CA2579139 C	20101214	CA20052579139	20050907
CN101300325 A	20081105	CN200580030414	20050907
CN101300325 B	20120418	CN200580030414	20050907
EA011976 B1	20090630	EA20070000610	20050907
EA200700610 A1	20071026	EA20070000610	20050907
EP1794265 A2	20070613	EP20050798059	20050907
EP1794265 A4	20100908	EP20050798059	20050907
JP2008512557 T2	20080424	JP20070531310T	20050907
JP4874977 B2	20120215	JP20070531310T	20050907
KR100930991 B1	20091210	KR20077005598	20050907
KR20070051892 A	20070518	KR20077005598	20050907
MX2007002672 A1	20070516	MX20070002672	20050907
NO20071781 A	20070404	NO20070001781	20070404
NO20071781 L	20070404	NO20070001781	20070404
US2006054533 AA	20060316	US20040938438	20040910
US2009050526 AA	20090226	US20080212881	20080918
US7431824 BB	20081007	US20040938438	20040910
US7972499 BB	20110705	US20080212881	20080918
WO06031571 A2	20060323	WO2005US31892	20050907
WO06031571 A3	20070621	WO2005US31892	20050907

Priority:

US20040938438 20040910 WO2005US31892 20050907 US20080212881 20080918

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CHEVRON USA INC ; SHEVRON U S A INC ; CHABOT JULIE ; CHEN KAIDONG

Assignee(s): CHEVRON U S A INC ; SHEVRON USA INC

Inventor(s): (std): CHEN KAIDONG ; CHABOT JULIE ; JULIE CHABOT ; KAIDONG CHEN

Agent(s): SIM AND MCBURNEY; CHEVRON TEXACO CORP; CHEVRON CORP; PRATER PENNY L; PENNY L

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

49) Family number: 13515874 (US5047142A)

© PatBase

Title: CATALYST COMPOSITION AND METHOD FOR HYDROPROCESSING PETROLEUM FEEDSTOCKS

Abstract: A catalyst composition useful in the hydroprocessing of a sulfur- and metal-containing hydrocarbon feedstock comprises 1.0-5.0 weight percent of an oxide of nickel or cobalt and 10.0-25.0 weight percent of an oxide of molybdenum, all supported on a porous alumina support in such a manner that the molybdenum gradient of the catalyst has a value of less than 6.0 and 15-30 percent of the nickel or cobalt contained in the catalyst is in an acid extractable form. The catalyst is further characterized by having a total surface area of 150-210 m²/g, a total more volume of 0.50-0.75 cc/g, and a pore size distribution such that pores having diameters of less than 100A constitute less than 25.0 percent, pores having diameters of 100-160A constitute 70.0-85.0 percent and pores having diameters of greater than 250A constitutes 1.0-15.0 percent of the total pore

volume of the catalyst. A method for the hydroprocessing of a sulfur- and metal-containing hydrocarbon feedstock comprises contacting the feedstock with the abovedescribed catalyst and hydrogen in a maner such that the catalyst is maintained at isothermal conditions and is exposed to a uniform quality of feed. The method is particularly effective in achieving desired levels of hydrodesulfurization in vacuum residual feedstocks.

Classifications:

International (IPC 8-9): B01J23/85 B01J23/88 B01J35/10 C10G45/08 (Advanced/Invention);

B01J23/76 B01J35/00 C10G45/02 (Core/Invention)

International (IPC 1-7): B01J21/04 B01J23/88 B01J35/10 C10G17/00 C10G45/00 C10G45/08

CPC: B01J35/1019 B01J35/1042 B01J35/1061 B01J35/108 B01J35/002 C10G45/08 B01J23/85

European: B01J23/85 B01J35/10 C10G45/08

US: 208/216PP 208/217 208/251H 502/314

Family:

Publication number	Publication date	Application number	Application date
EP0525259 A1	19930203	EP19910307022	19910731
JP5096170 A2	19930420	JP19910228644	19910814
US5047142 A	19910910	US19880194379	19880513
US5094994 A	19920310	US19910645772	19910125

Priority:

US19880194379 19880513 US19910645772 19910125 EP19910307022 19910731

JP19910228644 19910814

Probable Assignee: IFP

Assignee(s): (std): TEXACO DEVELOPMENT CORP ; TEXACO INC

Assignee(s): TEXACO INC A CORP OF DE ; IFP ; TEXACO DEV CORP ; TEXACO DEVELOPMENT A CORP OF DE CORP

Inventor(s): (std): BAATON HENRI BAATOREI ; BARTLEY BURTON H ; BARTLEY BURTON HENRY ; DAI PEI SHING E ; DAI PEI SHING EUGENE ; DEBITSUDO EDOWAADO SHIYAAUTSUD ; NEFF LAURENCE D ; NEFF LAURENCE DARREL ; PEIISHIN YUJUIEN DAI ; ROORENSU DAARERU NEFU ; SHERWOOD DAVID EDWARD JR ; SHERWOOD JR DAVID E

Inventor(s): DEBITSUDO EDOWAADO SHIYAAUTSUDO JIYUNIA

Designated states: DE FR GB IT NL

50) Family number: 4549444 (US5009771A)

PatBase

Title: HYDROCONVERSION PROCESS USING MIXED CATALYST SYSTEM

Abstract: Disclosed is an improved process for the hydrodemetallization, hydrodesulfurization, hydrodenitrogenation, and hydroconversion of a hydrocarbon feedstock containing asphaltenes, metals and Shell hot filtration solids precursors. The process utilizes a catalyst mixture wherein one component of the mixture is a relatively small pore catalyst and another component is a catalyst that possesses a relatively large amount of macropore volume.

Classifications:

International (IPC 8-9): B01J35/00 B01J35/10 B01J37/04

C10G45/04 (Advanced/Invention);

B01J35/00 B01J37/00 C10G45/02 (Core/Invention)

International (IPC 1-7): B01J23/24 B01J23/74 B01J23/85 B01J27/14

C10G45/04

CPC: B01J35/002 B01J35/1014 B01J35/1019 B01J35/1038 B01J35/1066

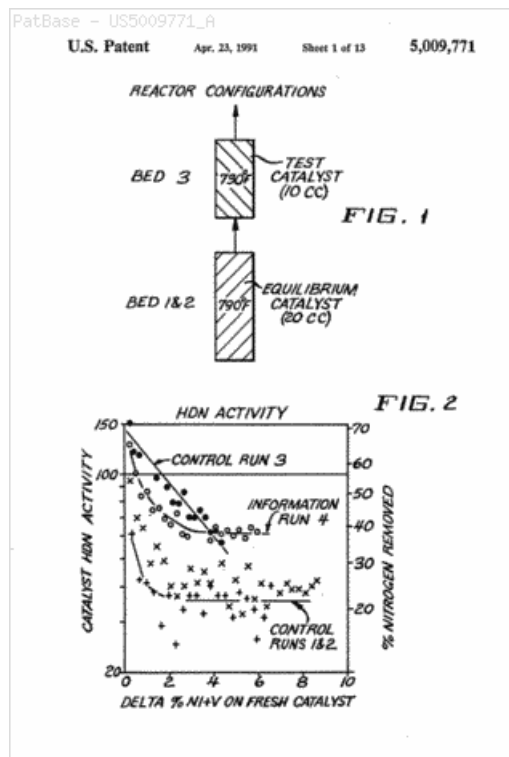
B01J35/109 B01J35/1042 B01J35/1061 B01J35/108 C10G45/04

B01J35/0006 B01J37/04

European: B01J35/00B B01J35/10 B01J37/04 C10G45/04

US: 208/209 208/213 208/216PP 208/216R 208/251H 208/254H 502/211

502/313 502/314 502/315 502/355



Family:

Publication number	Publication date	Application number	Application date
US5009771 A	19910423	US19900502297	19900330
US5100855 A	19920331	US19900625092	19901207

Priority:

US19900502297 19900330 US19900625092 19901207

Probable Assignee: AMOCO CORP

Assignee(s): (std): AMOCO CORP

Assignee(s): AMOCO A CORP OF IN CORP

Inventor(s): (std): CLARK FREDERICK T ; HENSLEY JR ALBERT L ; LYZINSKI DAVID ; PECK LAWRENCE B

51) Family number: 61689076 (US2016046878A)

© PatBase

Title: ULTRASONIC CAVITATION REACTOR FOR PROCESSING HYDROCARBONS AND METHODS OF USE THEREOF

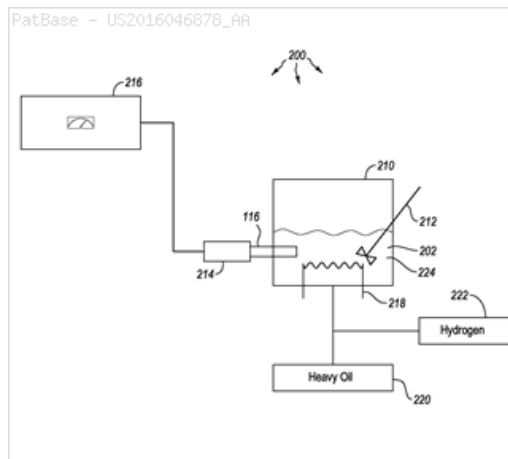
Abstract: Systems and methods for upgrading or improving the quality of a heavy oil feedstock. The systems and methods described herein utilize cavitation energy, such as ultrasonic cavitation energy, to transmit ultrasonic or other cavitation energy (e.g., cavitation forces, shear, microjets, shockwaves, micro-convection, local hotspots, and the like) into heavy oil to drive hydroconversion under low pressure hydrogen condition (e.g., less than 500 psig) that are not conventionally believed to be suitable for treating heavy oil.

Classifications:

International (IPC 8-9): B01J19/00 B01J19/10 C10G1/00 C10G1/06 C10G32/02 C10G47/24 C10G65/10 C10G65/12 (Advanced/Invention)

CPC: C10G65/12 B01J19/008 B01J2219/0877 B01J2219/0879 B01J2219/0892 B01J2219/0871 C10G15/08 C10G47/00 C10G49/002 C10G69/02 B01J19/10

US: 208/108 208/402 208/59 422/128



Family:

Publication number	Publication date	Application number	Application date
CN105368487 A	20160302	CN201510303061	20150604
US2016046878 AA	20160218	US20150823848	20150811

Priority:

US20140036418P 20140812 US20150823848 20150811

Probable Assignee: ROGER K LOTT

Assignee(s): (std): LOTT ROGER K ; ROGER K LOTT

Inventor(s): (std): LOTT ROGER K ; ROGER K LOTT

52) Family number: 32713302 (US2006054534A)

© PatBase

Title: PROCESS FOR UPGRADING HEAVY OIL USING A HIGHLY ACTIVE SLURRY CATALYST COMPOSITON

Abstract: The instant invention is directed to a process for upgrading heavy oils using a slurry composition. The slurry composition is prepared in a series of steps, involving mixing a Group VIB metal oxide with aqueous ammonia to form an aqueous mixture and sulfiding the mixture to form a slurry. The slurry is then promoted with a Group VIII metal compound. Subsequent steps involve mixing the slurry with a hydrocarbon oil, and combining the resulting mixture with hydrogen gas (under conditions which maintain the water in a liquid phase) to produce the active slurry catalyst.

Classifications:

International (IPC 8-9): B01J27/051 B01J33/00 B01J37/03 B01J37/04 B01J37/20 C10G45/02 C10G45/04 C10G45/06 C10G45/08 C10G45/16 C10G45/32 C10G47/02 C10G47/20 C10G47/22 C10G47/26 C10G49/04 C10G49/12 C10G65/02 (Advanced/Invention); B01J27/04 B01J33/00 B01J37/00 C10G45/02 C10G45/32 C10G47/00 C10G65/00 (Core/Invention)

CPC: C10G2300/1003 C10G2300/1022 C10G2300/1033 C10G2300/1074 C10G2300/1088 C10G2300/207 C10G2300/703 C10G45/08 B01J27/0515 B01J27/053 B01J35/12 B01J37/20 C10G45/16 C10G47/06 C10G49/12 C10G2300/301 C10G47/02 C10G47/26

European: B01J27/051A C10G45/08 C10G45/16 C10G47/02 C10G47/06 C10G47/26 C10G49/02 C10G49/04 C10G49/12 L01J27/053 L01J35/12 L01J37/20

US: 208/108 208/111.3 208/111.35 208/210 208/215 208/216R 208/217 208/251H 208/251R 208/254H 208/254R 208/49 208/58 208/67 502/220

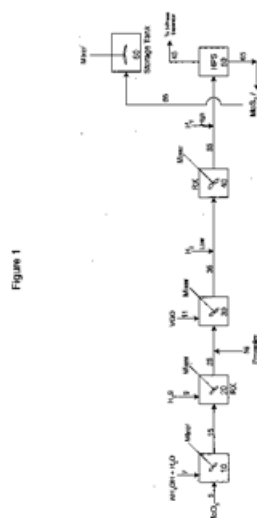


Figure 1

JULIE CHABOT

Agent(s): SIM AND MCBURNEY; CHEVRON TEXACO CORP; PENNY L

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

53) Family number: 42961714 (US2010304963A)

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Title: CATALYST FOR THE FIRST HYDRODEMETALIZATION STEP IN A HYDROPROCESSING SYSTEM WITH MULTIPLE REACTORS FOR THE IMPROVEMENT OF HEAVY AND EXTRA HEAVY CRUDES

Abstract: An improved catalyst for hydrodemetallization of heavy crude oils and residua is disclosed. The catalyst is adopted for fixed bed hydroprocessing units. The invention is characterized for having a large pore diameter catalyst principally for hydrodemetallization of heavy oil and residue in a first reactor of a multi-reactor process. The catalyst has high demetallizing activity and high metal deposition capacity which results in good stability with time on stream (TOS). The hydrorefining catalyst is obtained by kneading a porous starting powder principally composed of gamma-alumina and having a pore capacity of 0.3-0.6 ml/g or larger and a mean pore diameter of 10 to 26 nm, extrudating and calcining, and after that supported with active metals component of elements belonging to groups VIIIB and VIB of the periodic table.

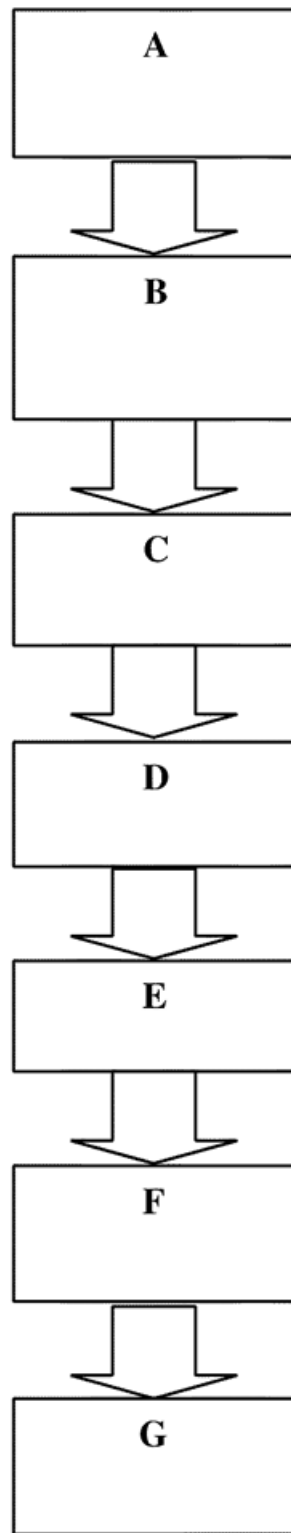
Classifications:

International (IPC 8-9): B01J21/04 B01J23/24 B01J23/56 B01J23/652 B01J23/70 B01J23/75 B01J23/85 B01J23/86 B01J23/882 B01J23/885 B01J23/887 B01J27/043 B01J27/047 B01J35/10 B01J37/08 C10G45/08 C10G47/00 C10G49/04 C10G65/04 C10G65/12 (Advanced/Invention); B01J21/00 B01J23/00 B01J23/76 B01J27/00 B01J35/00 C10G45/02 C10G49/00 C10G65/00 (Core/Invention)

CPC: B01J21/04 B01J23/56 B01J23/652 B01J23/85 B01J23/862 B01J23/864 B01J23/866 B01J23/887 B01J23/882 B01J35/1038 B01J35/1042 B01J35/1061 C10G47/00 C10G65/04 C10G65/12 C10G2300/107 C10G2300/1077 C10G2300/202 C10G2300/205 B01J23/885 B01J37/08 B01J35/1014 B01J35/1019 C10G45/08

European: B01J23/882 B01J35/10B2 B01J35/10B4 B01J35/10C4 C10G45/08 C10G47/00 C10G65/04 C10G65/12 M10G300/10H M10G300/10K M10G300/20A2 M10G300/20A4

US: 1/1 208/253 502/219 502/222 502/222S 502/314 502/314S 502/323 502/323S 502/332 502/332S 502/355 502/355S

**Family:**

Publication number	Publication date	Application number	Application date
MX2007009504 A1	20090206	MX20070009504	20070807
US2010304963 AA	20101202	US20080733054	20080526
US2015321177 AA	20151112	US20150806375	20150722
US9133401 BB	20150915	US20080733054	20080526
US9901908 BB	20180227	US20150806375	20150722
WO09022890 A1	20090219	WO2008MX00064	20080526

Priority:

Probable Assignee: INSTITUTO MEXICANO DEL PETROLEO

Assignee(s): (std): KUMAR MAITY SAMIR ; MEXICANO INST PETROL ; RANA MOHAN SINGH ; RAYO MAYORAL PATRICIA ; SINGH MOHAN ; ANCHEYTA JUAREZ JORGE

Assignee(s): INSTITUTO MEXICANO DEL PETROLEO

Inventor(s): (std): ANCHEYTA JUAREZ JORGE ; KUMAR MAITY SAMIR ; SINGH MOHAN ; RAYO MAYORAL PATRICIA ; RANA MOHAN SINGH ; MAITY SAMIR KUMAR ; MAYORAL PATRICIA RAYO ; JUAREZ JORGE ANCHEYTA

Inventor(s): MOHAN SINGH ; SAMIR KUMAR MAITY ; JORGE ANCHEYTA JUAREZ ; PATRICIA RAYO MAYORAL

Agent(s): ROYLANCE ABRAMS BERDO AND GOODMAN LLP; DICKINSON WRIGHT PLLC; GUZMAN VEGA MARIO ALBERTO

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

54) Family number: 41575474 (US2008053871A)

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Title: EXPANDED BED REACTOR SYSTEM AND METHOD FOR HYDROPROCESSING WAX PRODUCED BY FISCHER-TROPSCH REACTION AND CONTAMINATED WITH SOLIDS

Abstract: An expanded bed hydroprocessing system and related method includes at least one expanded bed reactor that employs a solid catalyst to catalyze hydroprocessing reactions involving hydrogen and a high molecular weight hydrocarbon feedstock (e.g., a Fischer-Tropsch wax) that is contaminated with solid particulates. Hydroprocessing the high molecular weight hydrocarbon feedstock in an expanded bed reactor results in formation of a hydroprocessed material from the hydrocarbon feedstock, while eliminating the risk of plugging of the supported catalyst bed by the solid particulates as compared to a reactor including a stationary catalyst bed.

Classifications:

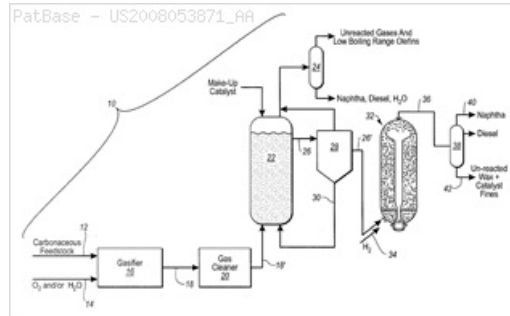
International (IPC 8-9): C10G47/02 C10G47/24 (Advanced/Invention);

C10G47/00 (Core/Invention)

CPC: C10G47/26

European: C10G47/26

US: 208/107 208/108 208/109



Family:

Publication number	Publication date	Application number	Application date
US2008053871 AA	20080306	US20060469237	20060831
US7615142 BB	20091110	US20060469237	20060831
WO08027868 A2	20080306	WO2007US76954	20070828
WO08027868 A3	20081127	WO2007US76954	20070828

Priority:

US20060469237 20060831

Probable Assignee: HYDROCARBON TECHNOLOGY AND INNOVATION LLC

Assignee(s): (std): ABRAMS LAWRENCE M ; HEADWATERS CTL LLC ; HEADWATERS TECH INNOVATION LLC ; HEADWATERS NANOKINETIX INC ; LEE LAP KEUNG

Assignee(s): HEADWATERS TECHNOLOGY INNOVATION LLC ; HEADWATERS TECHNOLOGY INNOVATION GROUP INC ; WILMINGTON TRUST FSB COLLATERAL AGENT AS ; HEADWATERS RESOURCES INC A UTAH CORP ; HEADWATERS TECHNOLOGY INNOVATION GROUP INC A UTAH CORP ; TAPCO INT A MICHIGAN CORP ; HYDROCARBON TECHNOLOGY AND INNOVATION LLC ; HEADWATERS HEAVY OIL LLC A UTAH CORP ; HEADWATERS INC GRANTOR AS

Inventor(s): (std): LEE LAP KEUNG ; ABRAMS LAWRENCE M

Agent(s): WORKMAN NYDEGGER; GUYNN JOHN M ET AL

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

55) Family number: 50665434 (US2012211399A)

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Title: JET FUELS HAVING SUPERIOR THERMAL STABILITY

Abstract: Disclosed herein are jet fuel compositions containing (a) a total aromatics content of from 2 vol. percent to no more than about 25 vol. percent; (b) a net heat of combustion of at least about 125,000 Btu/gal; (c) a concentration of less than about 5 vol. percent of hydrocarbons having a boiling point greater than or equal to about 550 degrees Fahrenheit, as determined by ASTM D 2887; and (d) a Jet Fuel Thermal Oxidation Test (JFTOT) thermal stability characterized by a filter pressure drop of no

more than 25 mm Hg, a breakpoint temperature greater than or equal to about 300 degrees centigrade, and an overall tube deposit rating less than 3, as determined by ASTM D 3241. Methods for their preparation are also disclosed.

Classifications:

International (IPC 8-9): B01J21/00 B01J29/10 C10G45/04 C10G45/44 C10G45/46 C10G45/50 C10G45/54 C10G45/68 C10G45/70 C10L1/04 C10L1/16 (Advanced/Invention);

B01J21/12 B01J23/85 B01J23/883 B01J23/888 B01J29/14 B01J29/16 (Advanced/Non-invention)

CPC: B01J21/12 B01J23/85 B01J23/883 B01J23/888 B01J29/146 B01J29/166 B01J2229/42 C10G45/68 C10G45/70 C10G2300/301 C10G2400/08 C10L1/04

European: C10G45/68 C10G45/70 C10L1/04 L01J21/12 L01J229/42 L01J23/85 L01J23/883 L01J23/888 L01J29/14Y L01J29/16Y M10G300/30A M10G400/08

US: 1/1 208/144 208/144S 208/145 208/145S 208/15 208/15P 208/95 208/95S

Family:

Publication number	Publication date	Application number	Application date
AU2011292238 AA	20120223	AU20110292238	20110812
AU2011292238 BB	20140605	AU20110292238	20110812
CA2807766 AA	20130207	CA20112807766	20110812
EP2606108 A2	20130626	EP20110818604	20110812
EP2606108 A4	20131030	EP20110818604	20110812
JP2013535563 T2	20130912	JP20130524897T	20110812
JP5838209 B2	20160106	JP20130524897T	20110812
KR20130098341 A	20130904	KR20137006646	20110812
MX2013001829 A1	20130322	MX20130001829	20110812
US2012211399 AA	20120823	US20110208813	20110812
US9169451 BB	20151027	US20110208813	20110812
WO12024193 A2	20120223	WO2011US47647	20110812
WO12024193 A3	20120426	WO2011US47647	20110812

Priority:

US20100374136P 20100816 US20110208813 20110812 WO2011US47647 20110812

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CANNELLA WILLIAM J ; CHEVRON USA INC ; LOPEZ JAIME

Assignee(s): CHEVRON U S A INC

Inventor(s): (std): CANNELLA WILLIAM J ; LOPEZ JAIME

Inventor(s): JAIME LOPEZ ; WILLIAM J CANNELLA

Agent(s): FREEHILLS PATENT ATTORNEYS; FPA PATENT ATTORNEYS PTY LTD; SIM AND MCBURNEY; AIRD AND BERLIS IP PARTNERSHIP LTD; NASH DAVID ALLAN; ASAMURA PATENT OFFICE PC; M CARMEN AND ASSOCIATES PLLC; JOSETTA I; JONES JOSETTA I ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

56) Family number: 57266536 (US2014238897A) © PatBase

Title: RECONFIGURATION OF RECIRCULATION STREAM IN UPGRADING HEAVY OIL

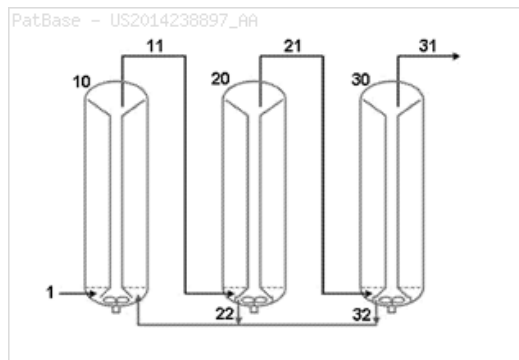
Abstract: Methods for hydroprocessing heavy oil feedstocks are disclosed. A heavy oil feedstock, a hydrogen-containing gas, and a slurry catalyst are passed through a plurality of upflow reactors operating under hydrocracking conditions to convert at least a portion of the heavy oil feedstock to lower boiling hydrocarbons, forming upgraded products. At least a portion of the mixture comprising the upgraded products, unconverted heavy oil feedstock, the hydrogen-containing gas, and the slurry catalyst from an upflow reactor other than the first upflow reactor is sent back to at least one upstream upflow reactor as a recycled stream.

Classifications:

International (IPC 8-9): C10G47/26 C10G65/10 (Advanced/Invention)

CPC: C10G65/10 C10G47/26 C10G2300/10 C10G2300/1022 C10G2300/1033 C10G2300/107 C10G2300/1074 C10G2300/1077 C10G2300/1088 C10G2300/4081

US: 208/59



Family:

Publication number	Publication date	Application number	Application date
US2014238897 AA	20140828	US20130777508	20130226
WO14133608 A1	20140904	WO2013US70711	20131119

Priority:

US20130777508 20130226

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CHABOT JULIE ; CHEVRON USA INC ; KOU BO ; REYNOLDS BRUCE EDWARD

Inventor(s): (std): KOU BO ; CHABOT JULIE ; REYNOLDS BRUCE EDWARD

Agent(s): FLAHERTY TERRENCE M ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

57) Family number: 41819431 (US2010212893A)

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Title: CATALYTIC DOWN-HOLE UPGRADING OF HEAVY OIL AND OIL SAND BITUMENS

Abstract: The invention relates to systems and methods for catalytic down-hole upgrading of heavy oil and oil sand bitumens. The method enables upgrading heavy oil in a production well within a hydroprocessing zone including the steps of: introducing a controlled amount of heat to the hydroprocessing zone; introducing a selected quantity of hydrogen to the hydroprocessing zone to promote a desired hydrocarbon upgrading reaction; and, recovering upgraded hydrocarbons at the surface. The invention further includes the hardware capable of performing the method.

Classifications:

International (IPC 8-9): B01J23/885 E21B43/24

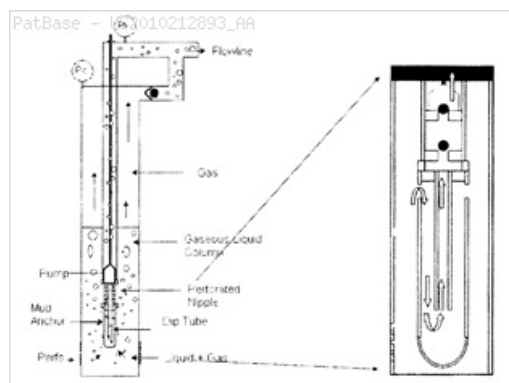
E21B43/38 (Advanced/Invention);

B01J23/76 E21B43/16 E21B43/34 (Core/Invention)

CPC: B01J27/049 B01J27/0515 E21B43/24

European: E21B43/24 L01J27/049 L01J27/051A

US: 166/272.1 166/272.100P



Family:

Publication number	Publication date	Application number	Application date
US2010212893 AA	20100826	US20070514919	20071114
WO08058400 A1	20080522	WO2007CA02086	20071114

Priority:

US20060865733P 20061114

US20070514919 20071114

WO2007CA02086 20071114

Probable Assignee: OF CALGARY UNIV

Assignee(s): (std): KANTZAS APOSTOLOS ; LARTER STEPHEN ; LARTER STEVEN ; MOINI ARAGHI BEHDAD ; PEREIRA ALMAO PERDRO ; UNIV CALGARY ; PEREIRA ALMAO PEDRO

Assignee(s): UNIV ; OF CALGARY UNIV ; THE UNIVERSITY OF CALGARY ; CALGARY UNIV

Inventor(s): (std): PEREIRA ALMAO PEDRO ; LARTER STEPHEN ; PEREIRA ALMAO PERDRO ; KANTZAS APOSTOLOS ; MOINI ARAGHI BEHDAD ; LARTER STEVEN

Agent(s): DAVIDSON BERQUIST JACKSON AND GOWDEY LLP ATTN BRIAN SIRITZKY PHD; HICKS ANDREW

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

58) Family number: 64814714 (US2017029724A)

© PatBase

Title: INTEGRATED EBULLATED-BED HYDROPROCESSING, FIXED BED HYDROPROCESSING AND COKING PROCESS FOR WHOLE CRUDE OIL CONVERSION INTO HYDROTREATED DISTILLATES AND PETROLEUM GREEN COKE

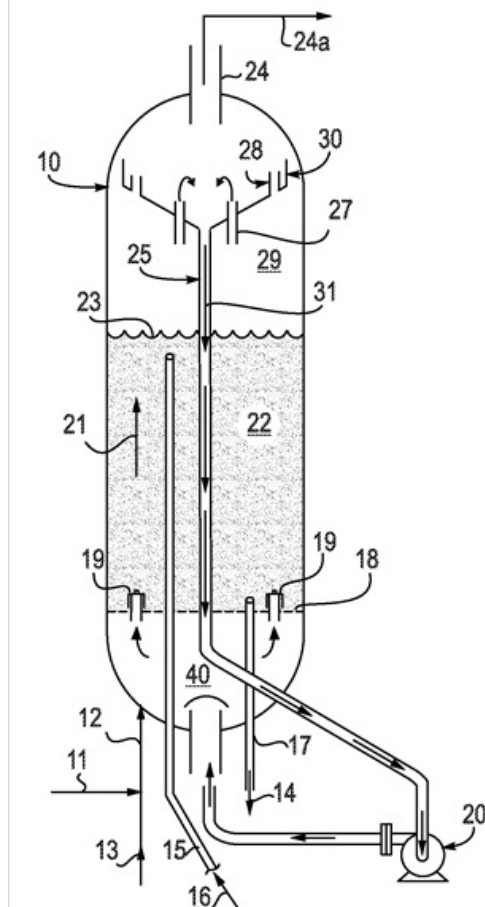
Abstract: A system and process for upgrading a whole crude oil feed in an integrated ebullated-bed and hydrotreater is provided in which the whole crude oil is flashed into a flashed straight run distillates fraction and an atmospheric residue fraction. The atmospheric residue fraction is hydroprocessed in an ebullated-bed reaction zone, while the flashed straight run distillates fraction and the products fraction produced from the ebullated-bed reaction zone are hydrotreated in a fixed-bed reaction zone. The unconverted residue fraction from the ebullated-bed reaction zone is processed in a coker unit to produce high quality petroleum green coke.

Classifications:

International (IPC 8-9): C10B55/00 C10B57/04 C10G45/02 C10G45/14 C10G47/00 C10G47/30 C10G65/10 C10G65/12 C10G69/00 C10G69/06 C10G69/14 C10G9/00 (Advanced/Invention)

CPC: C10B55/00 C10G2300/202 C10G2300/4081 C10G69/06 C10G9/005 C10G65/10 C10G69/00 C10G69/14

US: 208/89

**Family:**

Publication number	Publication date	Application number	Application date
BR112013020529 A2	20161025	BR20131120529	20120531
CA2829148 AA	20130904	CA20122829148	20120531
CN103459559 A	20131218	CN201280015316	20120531
EA025812 B1	20170130	EA20130091441	20120531
EA201391441 A1	20140331	EA20130091441	20120531
EP2718406 A2	20140416	EP20120796068	20120531
EP2718406 A4	20150121	EP20120796068	20120531
IN10538DN2013 A	20160610	IN2013DN10538	20131207
JP2014520185 T2	20140821	JP20140514505T	20120531
JP6110847 B2	20170405	JP20140514505T	20120531
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MX2013009813 A1	20131007	MX20130009813	20120531
SG194505 A1	20131230	SG20130077003	20120531
US2012315202 AA	20121213	US20110162742	20110617
US2014147352 AA	20140529	US20140168099	20140130
US9314759 BB	20160419	US20140168099	20140130
WO12170272 A2	20121213	WO2012US40132	20120531
WO12170272 A3	20130131	WO2012US40132	20120531

Priority:

US20110494320P 20110607 US20110162742 20110617 WO2012US40132 20120531
US20140168099 20140130

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CHEVRON USA INC ; KEMOUN ABDENOUR ; KUEHNE DONALD L ; REYNOLDS BRUCE ; SONG STEVEN X ; SONG STEVEN XUQI ; KUEHNE DONALD LEROY ; REYNOLDS BRUCE EDWARD ; C O CHEVRON CORP

Assignee(s): CHEVRON U S A INC ; CHEVRON USA

Inventor(s): (std): KUEHNE DONALD L ; KEMOUN ABDENOUR ; REYNOLDS BRUCE ; SONG STEVEN X ; SONG STEVEN XUQI ; KUEHNE DONALD LEROY ; REYNOLDS BRUCE EDWARD

Inventor(s): DONALD L KUEHNE ; ABDENOUR KEMOUN ; STEVEN X SONG ; BRUCE REYNOLDS ; DONALD LKUEHNE

Agent(s): SIM AND MCBURNEY; AIRD AND BERLIS IP PARTNERSHIP LTD; NASH DAVID ALLAN; ASAMURA PATENT OFFICE PC; PARKS IP LAW LLC; STEVE E; ELLINWOOD STEVEN R ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS

IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY
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SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

60) Family number: 29328026 (US5622616A)

PatBase

Title: HYDROCONVERSION PROCESS AND CATALYST

Abstract: Hydroconversion of heavy hydrocarbon oils using solid heterogeneous catalyst and small amounts of oil-miscible compound, like molybdenum naphthenate, improves total pore volume properties of the catalyst.

Classifications:

International (IPC 8-9): B01J23/28 B01J23/88 B01J31/20 B01J35/10
C07B61/00 C10C3/02 C10G45/04 C10G45/16 C10G45/60 C10G47/02
C10G47/10 C10G47/12 C10G47/26 C10G49/02 C10G49/04 C10G49/06
C10G49/12 (Advanced/Invention);
B01J23/16 B01J23/76 B01J31/16 B01J35/00 C07B61/00 C10G45/02
C10G47/00 C10G49/00 (Core/Invention)

International (IPC 1-7): B01J20/30 B01J23/28 B01J23/88 B01J31/20
B01J35/10 C01G11/00 C07B61/00 C10C3/02 C10G45/04 C10G45/08
C10G45/16 C10G45/60 C10G47/02 C10G47/10 C10G47/12 C10G47/26
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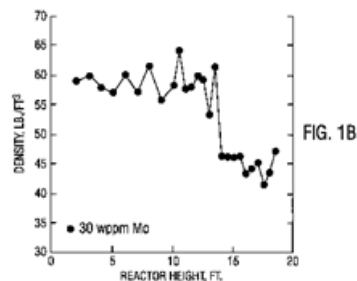
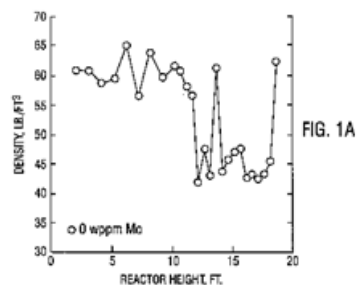
CPC: B01J35/1019 B01J35/1042 B01J35/1061 B01J35/1066 B01J35/0026
B01J35/1014 B01J35/1038 B01J35/1047 B01J35/108 B01J35/109
C10G47/02 C10G47/12 C10G47/26

European: B01J35/10 C10G47/02 C10G47/12 C10G47/26 L01J35/10A6
L01J35/10B4 L01J35/10C4 L01J35/10C6

US: 208/108 208/110 208/111 208/111.3 208/111.35 208/112 208/113
208/120 208/120.3 208/120.35 208/153 208/157 208/216PP 208/251H
208/420

PatBase - US5868923_A

U.S. Patent Feb. 9, 1999 Sheet 1 of 2 5,868,923



Family:

Publication number	Publication date	Application number	Application date
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CA2073417 AA	19930523	CA19922073417	19920709
CA2073417 C	20040420	CA19922073417	19920709
CA2095664 AA	19940103	CA19932095664	19930506
DE69206314 D1	19960111	DE19926006314	19920501
DE69206314 T2	19960418	DE19926006314T	19920501
DE69217626 D1	19970403	DE19926017626	19921110
DE69217626 T2	19970612	DE19926017626T	19921110
EP0512778 A1	19921111	EP19920304001	19920501
EP0512778 B1	19951129	EP19920304001	19920501
EP0546686 A1	19930616	EP19920310259	19921110
EP0546686 B1	19970226	EP19920310259	19921110
EP0577413 A1	19940105	EP19930305127	19930630
JP3051566 B2	20000612	JP19920139625	19920506
JP5156263 A2	19930622	JP19920139625	19920506
JP6100871 A2	19940412	JP19930151949	19930623
JP6240265 A2	19940830	JP19920327510	19921113
MX9202076 A1	19921130	MX19920002076	19920504
MX9206725 A1	19940630	MX19920006725	19921123
US5622616 A	19970422	US19950380211	19950130
US5868923 A	19990209	US19970839147	19970423

Priority:

US19910694591 19910502	US19910945919 19910502	US19910798300 19911122
CA19922067878 19920501	US19920907880 19920702	CA19922073417 19920709
CA19932095664 19930506	US19950380211 19950130	US19970839147 19970423

Probable Assignee: IFP

Assignee(s): (std): TEXACO DEVELOPMENT CORP ; TEXACO INC ; TEXACO DE VELOPMENT CORP

Assignee(s): TEXACO DEVELOPMENT CORP WHITE PLAINS N Y US ; TEXACO DEV CORP ; BHATTACHARYA AJIT K ; CLAUSEN GLENN A ; HARRISON JEFFREY B ; IFP ; PATEL MAHENDRA S ; PORTER MICHAEL K ; RAO DENNIS J

Inventor(s): (std): DENISU JIYOSUFU RAO ; GLEN ALLEN CLUSEN ; GUREN AREN KUROOZEN ; HARRISON JEFFERY B ; JEFFREY BAKER HARRISON ; JIEFURII BEEKAA HARISON ; MAHENDORA SOMABUHAH PATERU ; MAIKERU KEBIN

POOTAA ; MICHAEL KEVIN ; AJIT KUMAR BHATTACHARYA ; SOMABHAI PATEL MAHENDRA ; AJITO KUMAARU BUHATSUTACHIYARA ; RAO DENNIS JOSEPH ; RAO DENNIS J ; PORTER MICHAEL KEVIN ; PORTER MICHAEL K ; PATEL MAHENDRA SOMABHAI ; PATEL MAHENDRA S ; KUMAR BHATTACHARYA AJIT ; KEVIN MICHAEL ; JOSEPH RAO DENNIS ; HARRISON JEFFREY BAKER ; HARRISON JEFFREY B ; CLUSEN GLEN ALLEN ; CLAUSEN GLENN ALLEN ; CLAUSEN GLENN A ; BHATTACHARYA AJIT KUMAR ; BHATTACHARYA AJIT K ; BAKER HARRISON JEFFREY ; AJITO KUMAA BATATSUCHIYAARIYA ; CLAUSEN GLEN ALLEN

Inventor(s):

BHATTACHARYA AJIT KUMAR HOPEWELL JUNCTION NEW... ; BHATTACHARYA AJIT KUMAR HOPEWELL JUNCTION NEW YORK ; CLAUSEN GLEN ALLEN 225 NEDERLAND TX 77627 US ; HARRISON JEFFREY BAKER FISHKILL NEW YORK 12524 US ; PATEL MAHENDRA SOMABHAI HOPEWELL JUNCTION NEW... ; PATEL MAHENDRA SOMABHAI HOPEWELL JUNCTION NEW YORK ; PORTER MICHAEL KEVIN BEAUMONT TX 77706 US ; RAO DENNIS JOSEPH HOPEWELL JUNCTION NEW YORK... ; RAO DENNIS JOSEPH HOPEWELL JUNCTION NEW YORK 12533

Agent(s):

SMART AND BIGGAR; ROBIC

Designated states: DE FR GB IT NL

61) Family number: 30541307 (US4557821A)

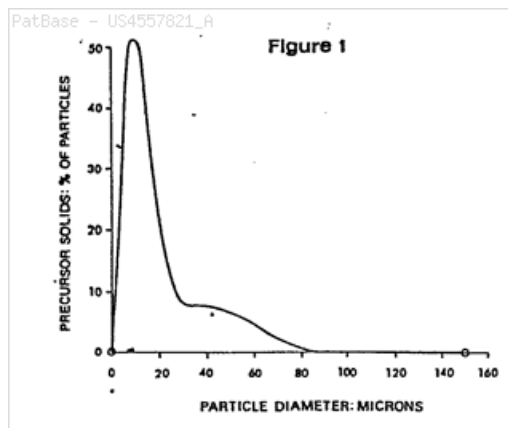
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Title: Heavy oil hydroprocessing

Abstract: Heavy or refractory oils are hydroprocessed in the presence of added water and added hydrogen sulfide with or without a slurry catalyst comprising molybdenum sulfide. The water and hydrogen sulfide may originate from the catalyst preparation procedure.

Classifications:

International (IPC 8-9): B01J23/24 B01J23/76 B01J27/047 B01J27/049 B01J27/051 B01J37/20 C01G45/08 C10G45/04 C10G45/08 C10G45/18 C10G47/06 C10G47/26 C10G47/32 C10G49/04 C10G49/12 C10G49/18 (Advanced/Invention); B01J27/04 B01J37/00 C10G45/02 C10G47/00 C10G49/00 (Core/Invention)
International (IPC 1-7): B01J23/00 B01J23/24 B01J23/76 B01J27/00 B01J27/047 B01J27/049 B01J27/051 B01J27/147 B01J27/47 B01J38/66 C01G45/08 C10G29/04 C10G45/04 C10G45/08 C10G45/16 C10G45/18 C10G45/46 C10G45/60 C10G47/00 C10G47/02 C10G47/06 C10G47/20 C10G47/32 C10G49/04 C10G49/18 C10G65/14 C10G67/04 C10G69/06
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European: B01J27/047 B01J27/049 B01J37/20 C10G47/06 C10G47/26 C10G49/12 C10G49/18
US: 208/108 208/143 208/210 208/211 208/215 208/216R 208/217 208/251H 208/253 208/58 423/55 423/56 502/208 502/215 502/219 502/220 502/221 502/26



Family:

Publication number	Publication date	Application number	Application date
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AU576500 B2	19880901	AU19840028330	19840517
CA1238289 A1	19880621	CA19840455497	19840530
CA2003650 AA	19900522	CA19892003650	19891122
CA2066453 AA	19920303	CA19912066453	19910426
CN1059551 A	19920318	CN19911005302	19910705
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EP0145105 A2	19850619	EP19840303765	19840605
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EP0396740 A1	19901114	EP19900901261	19891121
EP0396740 A4	19910417	EP19900901261	19891121
EP0491932 A1	19920701	EP19910913933	19910426
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JP3503743 T2	19910822	JP19890501333	19891121
JP5501829 T2	19930408	JP19910513290T	19910426
JP60071688 A2	19850423	JP19840176864	19840827
KR19927002252 A	19920903	KR19927000497	19910426
MX9100090 A1	19920228	MX19910000090	19910705
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US4710486 A	19871201	US19850767768	19850821
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US4824821 A	19890425	US19850767760	19850821
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US4970190 A	19901113	US19890388790	19890905
US5094991 A	19920310	US19910657351	19910215
US5162282 A	19921110	US19910682861	19910405
US5164075 A	19921117	US19900548157	19900705
US5178749 A	19930112	US19900586622	19900921
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WO9005587 A1	19900531	WO1989US05366	19891121
WO9200807 A1	19920123	WO1991US02891	19910426

Priority:

US19830527414	19830829	CA19840455497	19840530	US19850767768	19850821
US19850767821	19850821	US19850767760	19850821	US19850767822	19850821
US19850767767	19850821	US19860941456	19861215	US19880252839	19880930
US19880275235	19881122	US19890388790	19890905	WO1989US05366	19891121
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US19940294182	19940822				

Probable Assignee: CHEVRON RESEARCH AND TECHNOLOGY CO**Assignee(s):** (std): GULF RESEARCH DEVELOPMENT CO ; CHEVRON RES ; CHEVRON RES AND TECH ; CHEVRON RESEARCH AND TECHNOLOGY CO**Assignee(s):** CHEVRON RESEARCH AND TECHNOLOGY CO SAN FRANCISCO C ; CHEVRON RESEARCH AND TECHNOLOGY CO SAN FRANCISCO CALIF US ; CHEVRON RESEARCH AND TECHNOLOGY COMPANY ; GULF RESEARCH AND DEVELOPMENT CO ; CHEVRON RESEARCH CO ; CHEVRON RESEARCH COMPANY ; GULF RES AND DEV CO ; CHEVRON RESEARCH CO A CORP OF DE ; CHEVRON RESEARCH CO SAN FRANCISCO CA A CORP OF DE ; GULF RESEARCH AND DEVELOPMENT COMPANY ; LOPEZ JAIME ; GULF RESEARCH AND DEVELOPMENT CO A CORP OF DE ; MCKINNEY JOEL D ; PASEK EUGENE A ; LESE HENRI K ; SPARS BYRON G ; ZAKARIAN JOHN A ; SNYDER THOMAS P**Inventor(s):** (std): BYRON G SPARS ; CUGINI ANTHONY V ; EUGENE A PASEK ; EUGENE P PASEK ; EUGENE PASEK ; HENRI K LESE ; JAIME LOPEZ ; JIIME ROPEZU ; JIYOERU DEII MATSUKINEI ; JOEL D MCKINNEY ; JOHN A ZAKARIAN ; LESE HENRI K ; LOPEZ JAIME ; MCKINNEY JOEL D ; PASEK EUGENE ; PASEK EUGENE A ; PASEK EUGENE P ; SNYDER THOMAS P ; SPARS BYRON G ; THOMAS P SNYDER ; YUJIN EI PASEKU ; ZAKARIAN JOHN A**Inventor(s):** PASEK EUGENE A EXPORT PENNSYLVANIA 15632 US ; MCKINNEY JOEL D PITTSBURGH PENNSYLVANIA 15238 US ; LOPEZ JAIME PITTSBURGH PENNSYLVANIA 15217 US**Agent(s):** GRIFFITH HACK; DAVIES COLLISON CAVE; DAVIES COLLISON CAVE PTY LTD; MCCARTHY TETRAULT LLP; SIM AND MCBURNEY**Designated states:** AT AU BE CA CH DE DK ES FR GB GR IT JP KR LU NL SE**62) Family number: 55110370 (US2013292299A)**

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Title: INTEGRATED EBULLATED-BED PROCESS FOR WHOLE CRUDE OIL UPGRADING

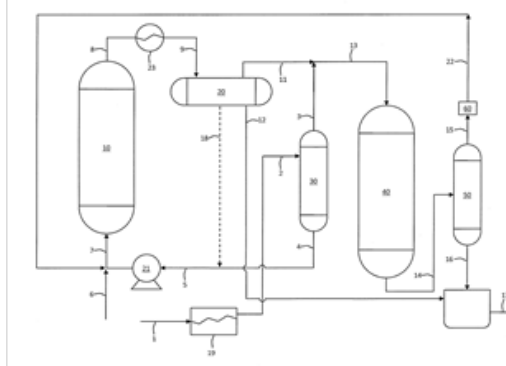
Abstract: A system and process for upgrading a whole crude oil feed in an integrated ebullated-bed and hydrotreater is provided in which the whole crude oil is flashed into a flashed straight run distillates fraction and an atmospheric residue fraction. The atmospheric residue fraction is hydroprocessed in an ebullated-bed reaction zone, while the flashed straight run distillates fraction and the products fraction produced from the ebullated-bed reaction zone are hydrotreated in a fixed-bed reaction zone. Distillates from the hydrotreater and the unconverted residue fraction from the ebullated-bed reaction zone can be combined to produce an upgraded synthetic crude oil.

Classifications:**International (IPC 8-9):** C10C3/00 C10G45/02 C10G45/12 C10G47/00

C10G47/30 C10G65/12 (Advanced/Invention)

CPC: C10G65/12 C10G45/02 C10G47/00 C10G2300/42**US:** 208/97

PatBase - US2013292299_AA

**Family:**

Publication number	Publication date	Application number	Application date
CN104471035 A	20150325	CN201380035474	20130503
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EP2844721 A1	20150311	EP20130722256	20130503
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Priority:

US20120642784P	20120504	JP20150510472T	20130503	US20130886580	20130503
WO2013US39423	20130503	JP20170128979	20170630		

Probable Assignee: SAUDI ARABIAN OIL CO**Assignee(s):** (std): KOSEOGLU OMER REFA ; RANC ALAIN PAUL ; SAUDI ARABIAN OIL CO**Inventor(s):** (std): RANC ALAIN PAUL ; KOSEOGLU OMER REFA ; OMER REFA KOSEOGLU ; ALAIN PAUL RANC

Agent(s): GERVASI GEMMA; SULEIMAN I AL AMMAR LAW OFFICE; MORIZUMI KEN ICHI; TANAKA MITSUO; YAMADA TAKUJI; ABELMAN FRAYNE AND SCHWAB; CRISPINO RALPH J

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

63) Family number: 33057575 (US2006118463A)

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Title: INTEGRATED SDA AND EBULLATED-BED PROCESS

Abstract: This invention relates to a novel integrated method for economically processing vacuum residue from heavy crude oils. This is accomplished by utilizing a solvent deasphalter (SDA) in the first step of the process with a C₃/C₄/C₅ solvent such that the DAO product can thereafter be processed in a classic fixed-bed hydrotreater or hydrocracker. The SDA feed also includes recycled stripper bottoms containing unconverted residue/asphaltenes from a downstream steam stripper unit. The asphaltenes from the SDA are sent to an ebullated-bed reactor for conversion of the residue and asphaltenes. Residue conversion in the range of 60-80 percent is achieved and asphaltene conversion is in the range of 50-70 percent. The overall residue conversion, with the DAO product considered non-residue, is in the range of 80 W percent -90 W percent and significantly higher than could be achieved without utilizing the present invention.

Classifications:

International (IPC 8-9): C10C3/00 C10G47/00 C10G67/04

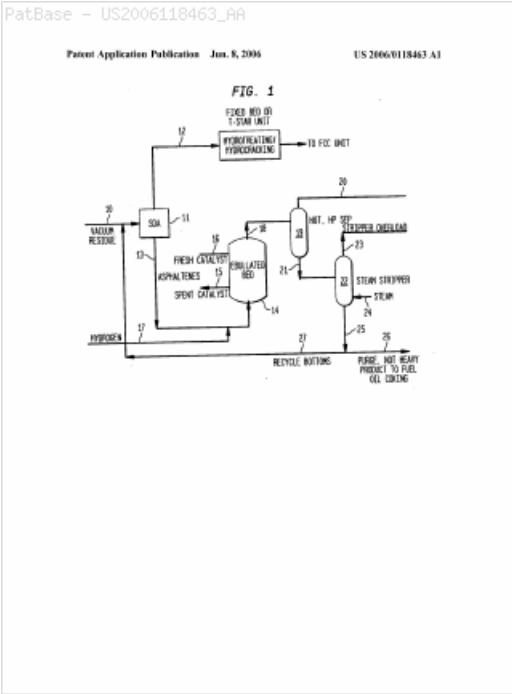
C10G69/04 (Advanced/Invention);

C10G67/00 C10G69/00 (Core/Invention)

CPC: C10G67/00 C10G67/0463 C10G67/049 C10G69/02 C10G2400/02 C10G2400/04

European: C10G67/00 C10G67/04F12 C10G67/04F2 C10G69/02 M10G400/02 M10G400/04

US: 208/107 208/108 208/39 208/78 208/86 208/86P



Family:

Publication number	Publication date	Application number	Application date
US2006118463 AA	20060608	US20040005062	20041206
US7279090 BB	20071009	US20040005062	20041206
WO06061120 A1	20060615	WO2005EP12719	20051129

Priority:

US20040005062 20041206

Probable Assignee: IFP ENERGIES NOUVELLES

Assignee(s): (std): COLYAR JAMES J ; GUERET CHRISTOPHE ; INST FRANCAIS DU PE TROLE ; KRESSMANN STEPHANE ; INST FRANCAIS DU PETROLE

Assignee(s): INSTITUT FRANCAIS DU PE TROLE ; INSTITUT FRANCAIS DU PETROLE ; IFP ENERGIES NOUVELLES ; FRANCAIS DU PE TROLE INST ; FRANCAIS DU PETROLE INST

Inventor(s): (std): KRESSMANN STEPHANE ; KRESSMAN STEPHANE ; GUERET CHRISTOPHE ; COLYAR JAMES J ; COLYAR JAMES

Agent(s): JOHN F RITTER IFP NORTH AMERICA INC; JOHN F

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LC LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

64) Family number: 50099600 (US2011303583A)

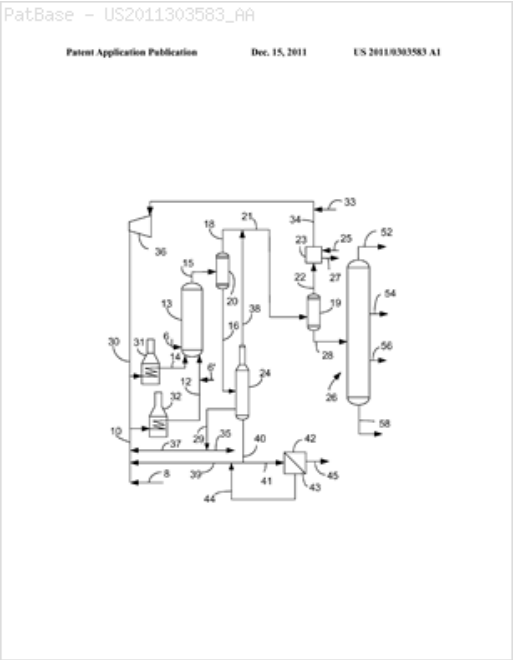
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Title: PROCESS FOR USING SUPPORTED MOLYBDENUM CATALYST FOR SLURRY HYDROCRACKING

Abstract: A process is disclosed for converting heavy hydrocarbon feed into lighter hydrocarbon products. The heavy hydrocarbon feed is slurried with a catalyst comprising molybdenum supported on a base, such as boehmite or pseudo-boehmite alumina. Iron oxide may also be in the base. The base is preferably bauxite. The heavy hydrocarbon slurry is hydrocracked in the presence of the catalyst to produce lighter hydrocarbons.

Classifications:

International (IPC 8-9): B01J21/04 B01J23/28 B01J23/881 B01J23/887 B01J27/051 C07C4/06 C10G47/00 C10G47/02 C10G47/04 C10G47/12 C10G47/26 (Advanced/Invention)
CPC: C10G47/26 C10G47/12 C10G47/10 B01J37/0201 B01J27/0515 B01J23/881 B01J23/28 B01J21/04 B01J37/20
European: B01J21/04 B01J23/28 B01J23/881 B01J27/051A B01J37/02B B01J37/20 C10G47/12 C10G47/26
US: 208/106 208/107 208/108 208/112 502/220 502/305 502/314 502/314S 502/321 502/322 502/322S



Family:

Publication number	Publication date	Application number	Application date
EP2579982 A2	20130417	EP20110792908	20110601
EP2579982 A4	20150415	EP20110792908	20110601
US2011303583 AA	20111215	US20100813020	20100610
US2011303584 AA	20111215	US20100813043	20100610
US2011306490 AA	20111215	US20100813060	20100610
US8608945 BB	20131217	US20100813020	20100610
US8617386 BB	20131231	US20100813043	20100610
WO11156180 A2	20111215	WO2011US38662	20110601
WO11156180 A3	20120412	WO2011US38662	20110601

Priority:

US20100813020 20100610 US20100813043 20100610 US20100813060 20100610
WO2011US38662 20110601

Probable Assignee: UOP LLC

Assignee(s): (std): BAUER LORENZ J ; BHATTACHARYYA ALAKANANDA ; BRICKER MAUREEN L ; MEZZA BECKAY J ; UOP LLC

Inventor(s): (std): BHATTACHARYYA ALAKANANDA ; BAUER LORENZ J ; BRICKER MAUREEN L ; MEZZA BECKAY J

Agent(s): HAYES ADRIAN CHETWYND; JAMES C; PASCHALL JAMES C

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

65) Family number: 27130491 (US2004256293A) © PatBase

Title: TWO-STAGE HPC PROCESS

Abstract: The present invention pertains to a method for hydroprocessing a heavy hydrocarbon oil, comprising bringing a heavy hydrocarbon oil in a first stage into contact with hydroprocessing catalyst I in the presence of hydrogen, after which the effluent of the first stage is contacted in whole or in part with hydroprocessing catalyst II in the presence of hydrogen. The method of the invention combines efficient contaminant removal with high residue conversion and low sediment formation. The invention also comprises a combination of catalysts for use in the above method.

Classifications:

International (IPC 8-9): B01J23/58 B01J23/755 B01J23/85 B01J23/88 B01J23/887 B01J35/10 C10G45/06 C10G45/08 C10G49/04 C10G65/02 C10G65/04 (Advanced/Invention); B01J21/04 B01J21/12 B01J35/00 B01J37/02 (Advanced/Non-invention); B01J23/76 B01J35/00 C10G45/02 C10G49/00 C10G65/00 (Core/Invention); B01J21/00 B01J37/00 (Core/Non-invention)
International (IPC 1-7): B01J23/88 B01J35/10 C10G45/06 C10G49/04 C10G65/02 C10G65/04 C10G65/12
CPC: B01J21/04 B01J21/12 B01J23/85 B01J23/8872 B01J35/0006 B01J35/10 B01J35/1019 B01J35/1042 B01J35/108 B01J37/0203 C10G45/08 C10G65/02
European: B01J23/85 B01J23/887C B01J35/10 C10G45/08 C10G65/02

L01J21/04 L01J21/12 L01J35/00B L01J35/10A6 L01J35/10B4 L01J35/10D
L01J37/02B2
US: 208/210 208/210P 208/213 208/213S 208/216 208/216.00RS
208/216PP 208/216R 208/217 208/217S 208/59 208/59S 502/313
502/313S

表 1: 原料油の組成	
中東系石油 (VR:AR = 50:50)	
硫黄 (重量%)	4.79
窒素 (重量ppm)	2890
金属 (重量ppm)	
バナジウム	85
ニッケル	26
残留炭素 (重量%)	16.2
C7-insoluble ^{*1} (重量%)	6.0
減圧残油留分 ^{*2,3} (重量%)	75
密度 (g/ml; 15°C)	1.0048

*1: ノルマルヘプタンへの不溶解分
*2: 538°C以上の沸点を有する減圧残油留分
*3: 蒸留ガスクロマトグラフィー (ASTM D 5307法準拠)による測定

Family:

Publication number	Publication date	Application number	Application date
AU2002321070 AA	20021223	AU20020321070	20020610
CA2449646 AA	20031205	CA20022449646	20020610
CA2449646 C	20110322	CA20022449646	20020610
EP1392798 A2	20040303	EP20020754693	20020610
EP1392798 B1	20070509	EP20020754693	20020610
JP2002363575 A2	20021218	JP20010174072	20010608
JP4773633 B2	20110914	JP20010174072	20010608
PL196775 B1	20080131	PL20020367265	20020610
PL367265 A1	20050221	PL20020367265	20020610
SK200301497 A5	20040608	SK20030001497	20020610
SK286655 B6	20090305	SK20030001497	20020610
US2004256293 AA	20041223	US20040480064	20040818
WO02100985 A2	20021219	WO2002EP06664	20020610
WO02100985 A3	20030828	WO2002EP06664	20020610

Priority:

JP20010174072 20010608 WO2002EP06664 20020610

Probable Assignee: NIPPON KETJEN CO LTD

Assignee(s): (std): AKZO NOBEL NV ; FUJITA KATSUHISA ; NIPPON KETJEN CO LTD ; NIPPON KECCHEN KK ; NIPPON KETJEN CO ; ABE SATOSHI

Assignee(s): AKZO NOBEL N V

Inventor(s): (std): ABE SATOSHI ; FUJITA KATSUHISA

Inventor(s): KATSUHISA FUJITA ; SATOSHI ABE

Agent(s): OGILVY RENAULT LLP SENCRL SRL; NORTON ROSE OR SENCRL SRL LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ OM PH PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW

66) Family number: 34504728 (US2007123416A)

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Title: CATALYST FOR THE HYDRODESULFURIZATION OF RESIDUA AND HEAVY CRUDES

Abstract: A catalyst for hydrotreating, especially hydrodesulfurization, of residua and heavy crudes is prepared by synthesizing the support from titanium and boehmite, to form either a titanium/alumina support (TiO₂/Al₂O₃) or a titanium-alumina support (TiO₂-Al₂O₃) that is thereafter provided with at least one hydrogenating metal from group VIB in oxide form and a promoter from group VIII also in oxide form. The (TiO₂/Al₂O₃) support is prepared from boehmite, which is peptized by using an inorganic acid, then extruded, calcined and impregnated with a solution containing titanium, while the (TiO₂-Al₂O₃) support is prepared by admixing boehmite with a titanium-containing solution, peptized using an inorganic acid, extruded and calcined to obtain the titanium-alumina support.

Classifications:

International (IPC 8-9): B01D47/06 B01J20/00 B01J21/06 B01J23/887

B01J27/051 B01J31/02 B01J35/10 (Advanced/Invention);

B01J23/76 C10G7/00 (Core/Invention)

CPC: C10G2300/1033 C10G2300/202 C10G2300/206 C10G2300/703

B01J37/0009 B01J21/063 B01J23/85 B01J23/883 B01J35/1019

B01J35/1038 B01J35/1042 B01J35/1061 B01J35/108 B01J37/0207

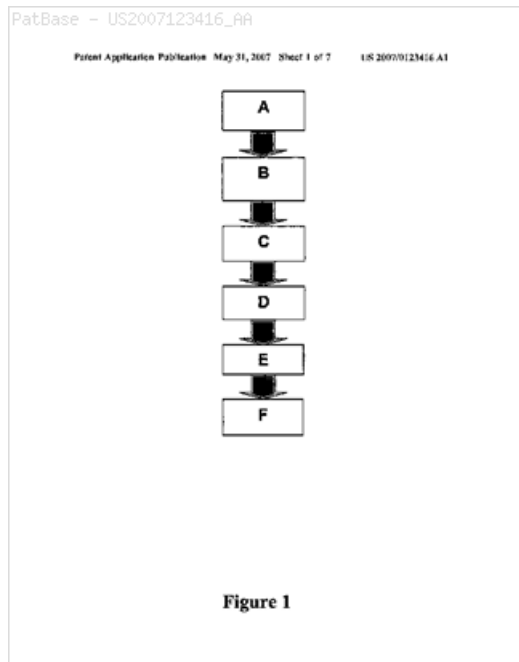
C10G45/08 C10G65/04

European: B01J21/06T B01J23/85 B01J23/883 B01J37/00B B01J37/02B6

C10G45/08 C10G65/04 L01J35/10A6 L01J35/10B2 L01J35/10B4

L01J35/10C4 L01J35/10D

US: 423/242.1 502/150 502/220 502/220S 502/309 502/309S 502/415



Family:

Publication number	Publication date	Application number	Application date
MXPA05012893 A1	20071123	MX2005PA12893	20051129
US2007123416 AA	20070531	US20060582552	20061018
US2011218097 AA	20110908	US20110107461	20110513
US7968069 BB	20110628	US20060582552	20061018

Priority:

MX20050012893 20051129 MX2005PA02893 20051129 MX2005PA12893 20051129
 US20060582552 20061018 US20110107461 20110513

Probable Assignee: INSTITUTO MEXICANO DEL PETROLEO

Assignee(s): (std): MEXICANO INST PETROL

Assignee(s): INSTITUTO MEXICANO DEL PETROLEO

Inventor(s): (std): RANA MOHAN SINGH ; ALONSO MARTINEZ FERNANDO ; RAYO MAYORAL PATRICIA ; RAMIREZ SOLIS JORGE FERNANDO ; MARTINEZ FERNANDO ALONSO ; SOLIS JORGE FERNANDO RAMIREZ ; MAITY SAMIR KUMAR ; SINGH MOHAN ; JUAREZ JORGE ANCHEYTA ; MAYORAL PATRICIA RAYO ; FERNANDO ALONSO M ; MOHAN SINGH ; MAITY SAMIR K ; RAMIREZ SOLIS JORGE F ; ANCHEYTA JUAREZ JORGE ; MAYORAL PATRICIA R

Inventor(s): FERNANDO ALONSO MARTINEZ ; SAMIR KUMAR MAITY ; PATRICIA RAYO MAYORAL ; JORGE FERNANDO RAMIREZ SOLIS ; JORGE ANCHEYTA JUAREZ ; FERNANDO ALONSO ; MAITY SAMIR ; RAMIREZ SOLIS JORGE ; MAYORAL PATRICIA

Agent(s): ROYLANCE ABRAMS BERDO AND GOODMAN LLP

67) Family number: 32876613 (US2007187294A)

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Title: PROCESS FOR THE CATALYTIC HYDROTRETMENT OF HEAVY HYDROCARBONS OF PETROLEUM

Abstract: Two-stage low pressure catalytic hydrotreatment of heavy petroleum hydrocarbons having a high content of contaminants (metals and asphaltenes), is conducted under operating conditions with low-pressure, in a fixed bed or ebullated bed reactor to limit the formation of sediments and sludge in the product and obtain a hydrotreated hydrocarbon of improved properties, with levels of contaminants, API gravity and distillates within the ranges commonly reported in the feedstocks typical to refining schemes. A hydrotreatment catalyst, whose principal effect is the hydrodemetallization and the hydrocracking of asphaltenes of the heavy hydrocarbons of petroleum is used in the first stage, and the second reaction stage employs a hydrotreatment catalyst for a deeper effect of hydrodesulfurization of the heavy petroleum hydrocarbon whose content of total sulfur is reduced to a level required for its treatment in the conventional refining process or for its sale as a hydrocarbon of petroleum with improved properties.

Classifications:

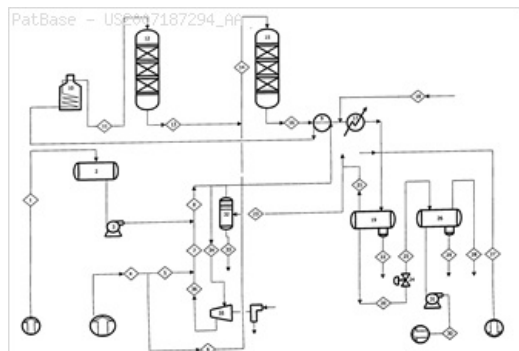
International (IPC 8-9): C10G17/00 C10G17/00 C10G45/00 C10G45/08 C10G47/00 C10G47/12 C10G65/00 C10G65/02 C10G65/04 C10G65/12 C10G69/00 (Advanced/Invention); C10G17/00 C10G17/00 C10G45/00 C10G45/02 C10G47/00 C10G65/00 C10G69/00 (Core/Invention)

International (IPC 1-7): C10G65/02 C10G65/12

CPC: C10G2300/1033 C10G2300/107 C10G2300/1077 C10G2300/202 C10G2300/205 C10G2300/206 C10G2300/308 C10G2300/4006 C10G2300/4012 C10G2300/4018 C10G65/02 C10G45/02 C10G65/12

European: C10G45/02 C10G65/02 C10G65/12

US: 208/177 208/208.00R 208/208.00RS 208/208R 208/209 208/210 208/213 208/216.00R 208/216.00PP 208/216PP 208/216R 208/217 208/251.00H 208/251.00R 208/251.00RS 208/251H 208/251R 208/253 208/254.00R 208/254.00RS 208/254R 208/264 208/49 208/58 208/58P 208/85 208/85S



Family:

Publication number	Publication date	Application number	Application date
AU2003304331 AA	20050128	AU20030304331	20030709
AU2003304331 BB	20091008	AU20030304331	20030709
BRPI0318379 A	20060912	BR2003PI18379	20030709
BRPI0318379 B1	20130625	BR2003PI18379	20030709
CA2532195 AA	20060111	CA20032532195	20030709
CA2532195 C	20130409	CA20032532195	20030709
EP1652905 A1	20060503	EP20030741616	20030709
EP1652905 A4	20081217	EP20030741616	20030709
JP2007521343 T2	20070802	JP20050503895T	20030709
JP5051868 B2	20121017	JP20050503895T	20030709
MXPA05013546 A1	20060519	MX2005PA13546	20051213
RU2006103662 A	20060610	RU20060103662	20030709
RU2339680 C2	20081127	RU20060103662	20030709
US2007187294 AA	20070816	US20030563577	20030709
US7651604 BB	20100126	US20030563577	20030709
WO05005581 A1	20050120	WO2003MX00053	20030709

Priority:

RU20060103662 20030709 WO2003MX00053 20030709 MX2005PA13546 20051213

Probable Assignee: INSTITUTO MEXICANO DEL PETROLEO**Assignee(s):** (std): ALONSO MARTINEZ FERNANDO ; ANCHEYTA JUAREZ JORGE ; BETANCOURT RIVERA GERARDO ; CENTENO NOLASCO GUILLERMO ; INST MEKHIKANO DEL PETROLEO ; MARROQUIN SANCHEZ GUSTAVO JESU ; MUNOZ MOYA JOSE ANTONIO DOMING ; MEXICANO INST PETROL ; MARROQUIN SANCHEZ GUSTAVO ; MUNOZ MAYA JOSE ANTONIO DOMING ; INSTITUTO MEXICANO DEL PETROLEO ; MARTINEZ FERNANDO ALONSO**Assignee(s):** MARROQUIN SANCHEZ GUSTAVO JESUS ; MUNOZ MOYA JOSE ANTONIO DOMINGO ; INSTITUTO MEKHIKANO DEL PETROLEO**Inventor(s):** (std): RIVERA GERARDO BETANCOURT ; SANCHEZ GUSTAVO JESUS MARROQUI ; NOLASCO GUILLERMO CENTENO ; MOYA JOSE ANTONIO DOMINGO MUNO ; MARTINEZ FERNANDO ALONSO ; JUAREZ JORGE ANCHEYTA ; ANCHEYTA JUAREZ JORGE ; BETANCOURT RIVERA GERARDO ; MARROQUIN SANCHEZ GUSTAVO J ; CENTENO NOLASCO GUILLERMO ; MUNOZ MOYA JOSE ANTONIO ; MOYA JOSA ANTONIO DOMINGO MUNO ; NOLASCO GUILHERME CENTENO ; MOYA JOSE ANTONIO DOMINGO MU O ; GUILHERME CENTENO NOLASCO ; JOSE ANTONIO DOMINGO MUNOZ MOYA ; FERNANDO ALONSO MARTINEZ ; GUSTAVO JESUS MARROQUIN SANCHEZ ; JORGE ANCHEYTA JUAREZ ; GERARDO BETANCOURT RIVERA ; MARROQUIN SANCHEZ GUSTAVO ; MUNOZ MAYA JOSE ANTONIO DOMING ; MUNOZ MOYA JOSE ANTONIO DOMINGO ; MOYA JOSE ANTONIO DOMINGO MUNOZ ; SANCHEZ GUSTAVO JESUS MARROQUIN ; MARROQUIN SANCHEZ GUSTAVO JESUS ; MARROQUIN SANCHEZ GUSTAVO JESU ; MUNOZ MOYA JOSE ANTONIO DOMING ; ALONSO MARTINEZ FERNANDO ; SENTENO NOLASKO GIL ERMO ; MUN OS MOJJA KHOSE ANTONIO DOMINGO ; MARROKIN SANCHES GUSTAVO KHESUS ; BETANKOURT RIVERA GERARDO ; ANCHEITA KHUARES KHORKHE ; ALONSO MARTINES FERNANDO**Inventor(s):** SENTENO NOLASKO GIL'ERMO ; MUN'OS MOJJA KHOSE ANTONIO DOMINGO ; GUILLERMO CENTENO NOLASCO ; ALONSO MARTINEZ FRENANDO ; MUNOZ MAYA JOSE ANTONIO DOMINGO ; JOSA ANTONIO DOMINGO MUNOZ MOYA**Agent(s):** ALLENS ARTHUR ROBINSON PATENT AND TRADE MARKS ATTORNEYS; ALLENS PATENT AND TRADE MARK ATTORNEYS; GOWLING LAFLEUR HENDERSON LLP; ROYLANCE ABRAMS BERDO AND GOODMAN LLP**Designated states:** AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW**68) Family number: 30725377** (US2004134835A)

© PatBase

Title: HEAVY FEED HPC PROCESS USING A MIXTURE OF CATALYSTS**Abstract:** The present invention pertains to a process for the hydroprocessing of heavy hydrocarbon feeds, preferably in an ebullating bed process, by contacting the feed with a mixture of two hydroprocessing catalysts meeting specified pore size distribution requirements. The process combines high contaminant removal with high conversion, low sediment formation, and high process flexibility.**Classifications:****International (IPC 8-9):** B01J23/24 B01J23/28 B01J23/85 B01J23/883 B01J35/00 B01J35/10 C10G45/04 C10G45/08 C10G47/04 C10G49/04 (Advanced/Invention);B01J21/04 B01J21/12 B01J37/00 (Advanced/Non-invention);
B01J23/16 B01J23/76 B01J35/00 C10G45/02 C10G49/00 (Core/Invention);
B01J21/00 B01J37/00 (Core/Non-invention)**International (IPC 1-7):** C10G47/00**CPC:** B01J21/04 B01J21/12 B01J23/24 B01J23/28 B01J23/85 B01J23/883 B01J35/0006 B01J35/10 B01J35/1019 B01J35/1042 B01J35/1061 B01J35/108 B01J37/0009 C10G45/08 C10G49/04**European:** B01J23/24 B01J23/28 B01J23/85 B01J23/883 B01J35/00B B01J35/10 C10G45/08 C10G49/04 L01J21/04 L01J21/12 L01J35/10A6 L01J35/10B4 L01J35/10C4 L01J35/10D L01J37/00B**US:** 208/111.1 208/111.100P 208/111.35 208/120.3 208/120.35 208/243 208/244 208/253 208/254.00H 208/254H 208/295 502/313**Family:**

Publication number	Publication date	Application number	Application date
US2004134835 AA	20040715	US20030728489	20031205
US8012343 BB	20110906	US20030728489	20031205

Priority:

Probable Assignee: ALBEMARLE CORP**Assignee(s):** (std): ABE SATOSHI ; FUJITA KATSUHISA ; PLANTENGA FRANS LODEWIJK**Assignee(s):** NIPPON KETJEN CO LTD ; ALBEMARLE CORP ; ALBEMARLE NETHERLANDS BV**Inventor(s):** (std): PLANTENGA FRANS LODEWIJK ; FUJITA KATSUHISA ; ABE SATOSHI**Agent(s):** JEREMY J**69) Family number: 11480014** (US5879642A)

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Title: FIXED BED REACTOR ASSEMBLY HAVING A GUARD CATALYST BED

Abstract: A method, and a reactor, for hydroprocessing a hydrocarbon feed stream through multistage fixed catalyst beds contained within a single onstream reactor vessel, with a separate catalyst addition and a separate catalyst withdrawal system for the upper or top essentially fixed catalyst bed. The upper or top essentially fixed catalyst bed functions as a guard catalyst bed for removing a major proportion of contaminants (e.g. organometallic constituents) from a hydrocarbon feed stream in order to extend the life of one or more fixed catalyst beds serially disposed underneath the upper or top essentially fixed catalyst bed. Catalyst particles are withdrawn from the essentially fixed catalyst bed by slurrying or liquifying the catalyst particles in a container disposed within the reactor. A method for retrofitting a reactor assembly having two or more fixed catalyst beds in order to place a guard catalyst bed in the upper or top portion of the reactor assembly.

Classifications:**International (IPC 8-9):** B01J8/00 B01J8/04

C10G49/00 (Advanced/Invention);

B01J8/00 B01J8/04 C10G49/00 (Core/Invention)

International (IPC 1-7): B01J8/04**CPC:** B01J2219/00024 B01J8/0015 B01J8/003 B01J8/0085 B01J8/0453

B01J8/0492 C10G49/002 Y10T29/49345

European: B01J8/00F B01J8/00F6 B01J8/00L2 B01J8/04D2D B01J8/04F C10G49/00B**US:** 29/890 422/141 422/142 422/143 422/145 422/147 422/191 422/239 422/311 422/632 422/635 422/638

PatBase - US5879642_A

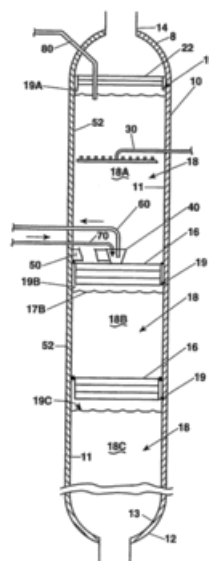
U.S. Patent

Mar. 9, 1999

Sheet 1 of 7

5,879,642

FIGURE 1

**Family:**

Publication number	Publication date	Application number	Application date
US5879642 A	19990309	US19960639057	19960424

Priority:

US19960639057 19960424

Probable Assignee: CHEVRON USA INC**Assignee(s):** (std): CHEVRON USA INC**Assignee(s):** CHEVRON U S A INC**Inventor(s):** (std): CASH DENNIS R ; TRIMBLE HAROLD J**70) Family number: 53272041** (US2013067815A)

© PatBase

Title: GASIFICATION OF HEAVY RESIDUE WITH SOLID CATALYST FROM SLURRY HYDROCRACKING PROCESS

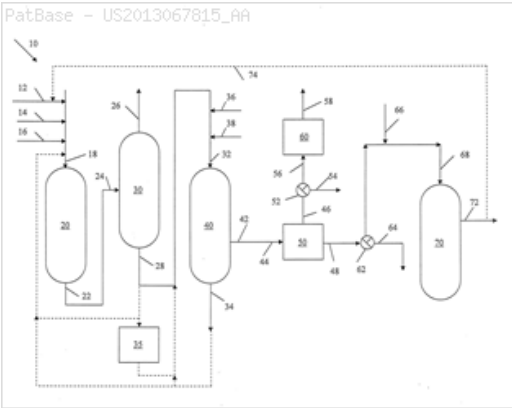
Abstract: A cost-effective solution for the disposal of heavy residue bottoms recovered from a slurry hydrocracking process that include solid heterogeneous catalyst particles is provided by their introduction into a membrane wall gasification reactor in the form of a flowable slurry to produce a synthesis gas and, optionally, subjecting the synthesis gas to a water-gas shift reaction to produce a more hydrogen-rich product stream. Process steam and electricity are produced by recovering the sensible heat values from the hot synthesis gas.

Classifications:**International (IPC 8-9):** B01J27/051 C01B3/36 C01B3/38 C01B3/40

C10G47/00 C10G47/06 C10G47/10 C10G47/14 C10G47/26 C10G49/12

C10G65/00 C10G65/14 C10G67/12 C10J3/00 C10J3/46 C10J3/82

F01K23/06 (Advanced/Invention)
CPC: C10G65/14 C10G67/12 C01B2203/0255 C01B2203/0283
C01B2203/063 C10G47/06 C10G47/14 F01K23/067 C10G47/10
C10J3/466 C10J3/82 C10J2300/0946 C10J2300/0959 C10J2300/0976
C10J2300/1675 C10J2300/1846 Y02P20/145 C01B3/36 C10G47/26
US: 1/1 252/373 48/211 60/645



Family:

Publication number	Publication date	Application number	Application date
CN103974898 A	20140806	CN201280055583	20120913
DE602012045965 D1	20180530	DE201260045965T	20120913
EP2758337 A1	20140730	EP20120772839	20120913
EP2758337 B1	20180502	EP20120772839	20120913
GC10345 A	20190501	GC2012P022291	20120918
JP2014527910 T2	20141023	JP20140531868T	20120913
JP5851043 B2	20160203	JP20140531868T	20120913
KR101856088 B1	20180509	KR20147010503	20120913
KR20140079421 A	20140626	KR20147010503	20120913
US2013067815 AA	20130321	US20110236923	20110920
US2015275700 AA	20151001	US20150740040	20150615
US9056771 BB	20150616	US20110236923	20110920
US9359917 BB	20160607	US20150740040	20150615
WO13043443 A1	20130328	WO2012US55011	20120913

Priority:

US20110236923 20110920 EP20120772839 20120913 WO2012US55011 20120913
US20150740040 20150615

Probable Assignee: SAUDI ARABIAN OIL CO

Assignee(s): (std): BALLAGUET JEAN PIERRE ; KOSEOGLU OMER REFA ; SAUDI ARABIAN OIL CO

Assignee(s): SAUDI ARABIAN OIL COMPANY

Inventor(s): (std): BALLAGUET JEAN PIERRE ; KOSEOGLU OMER REFA

Inventor(s): OMER REFA KOSEOGLU ; JEAN PIERRE BALLAGUET

Agent(s): GERVASI GEMMA; SULEIMAN I AL AMMAR LAW OFFICE; ABELMAN FRAYNE AND SCHWAB; SPATH THOMAS E

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

71) Family number: 42176784 (WO08115230A1) © PatBase

Title: A PROCESS FOR PRODUCING TAILORED SYNTHETIC CRUDE OIL THAT OPTIMIZE CRUDE SLATES IN TARGET REFINERIES

Abstract: The instant invention is directed to a process wherein a heavy oil feedstock upgrader alters its mode of operation of its full conversion hydroprocessing unit to create a custom tailored synthetic crude feedstock based upon data communicated from a target refinery and data communicated from the heavy oil feedstock upgrader. The data from the target refinery is data that represents refining process data and linear program modeling along with analysis by a refining planner to calculate the optimum "synthetic trim crude" that will optimize the effective use of the target refinery's capacity and equipment.

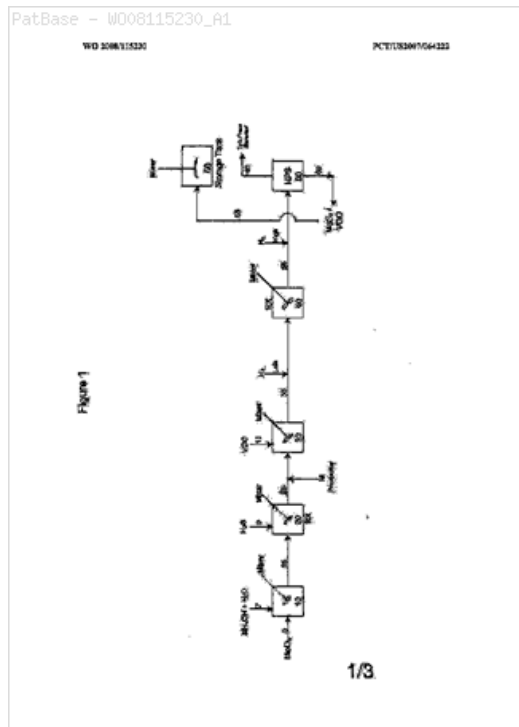
Classifications:

International (IPC 8-9): C10G45/02 C10G45/08 C10G45/72 C10G49/26

C10G65/02 C10M175/00 (Advanced/Invention)

CPC: C10G45/02 C10G45/08 C10G49/26 C10G65/02

European: C10G45/02 C10G45/08 C10G49/26 C10G65/02



Family:

Publication number	Publication date	Application number	Application date
CA2680878 AA	20080925	CA20072680878	20070316
CA2680878 C	20150721	CA20072680878	20070316
EP2004782 A1	20081224	EP20070758741	20070316
EP2004782 A4	20110413	EP20070758741	20070316
WO08115230 A1	20080925	WO2007US64222	20070316

Priority:

WO2007US64222 20070316

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): ALLINSON PAUL A ; CHEVRON USA INC ; MUNSON CURTIS

Assignee(s): CHEVRON U S A ; CHEVRON U S A INC

Inventor(s): (std): ALLINSON PAUL A ; MUNSON CURTIS

Agent(s): SIM AND MCBURNEY; AIRD AND BERLIS IP PARTNERSHIP LTD; NASH DAVID ALLAN; PRATER PENNY L

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

72) Family number: 36059049 (US2007209967A)

© PatBase

Title: PROCESS FOR PRODUCING TAILORED SYNTHETIC CRUDE OIL THAT OPTIMIZE CRUDE SLATES IN TARGET REFINERIES

Abstract: The instant invention is directed to a process wherein a heavy oil feedstock upgrader alters its mode of operation of its full conversion hydroprocessing unit to create a custom tailored synthetic crude feedstock based upon data communicated from a target refinery and data communicated from the heavy oil feedstock upgrader. The data from the target refinery is data that represents refining process data and linear program modeling along with analysis by a refining planner to calculate the optimum "synthetic trim crude" that will optimize the effective use of the target refinery's capacity and equipment.

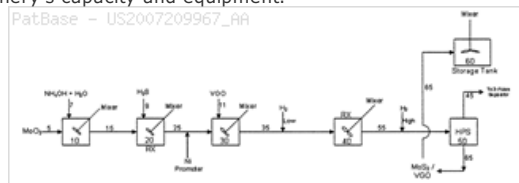
Classifications:

International (IPC 8-9): C10G45/00 C10G65/00 (Advanced/Invention); C10G45/00 C10G65/00 (Core/Invention)

CPC: C10G45/02 C10G45/04 C10G65/02 C10G2400/08

European: C10G45/02 C10G45/04 C10G65/02 M10G400/08

US: 208/108 208/215 208/57 208/57S 208/58 208/58P 364/149 364/150 364/151 364/578 502/219 502/220 502/221 702/22 705/10



Family:

Publication number	Publication date	Application number	Application date
US2007209967 AA	20070913	US20060373589	20060310
US7799207 BB	20100921	US20060373589	20060310

Priority:

US20060373589 20060310

Probable Assignee: CHEVRON USA INC
Assignee(s): (std): CHEVRON USA INC
Assignee(s): CHEVRON U S A INC
Inventor(s): (std): ALLINSON PAUL A ; MUNSON CURTIS
Agent(s): CHEVRON CORP; ALAN

73) Family number: 11429525 (US5866501A)

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Title: Dispersed anion-modified iron oxide catalysts for hydroconversion processes

Abstract: A dispersed fine-sized anion-modified iron oxide slurry catalyst having high surface area exceeding about 100 m²/gm and high catalytic activity, and which is useful for hydrogenation and hydroconversion reactions for carbonaceous feed materials is disclosed. The catalyst is synthesized by rapid aqueous precipitation from saturated salt solutions such as ferric alum or ferric sulfate, and is promoted with at least one active metal such as cobalt, molybdenum, nickel, tungsten and combinations thereof. The iron-based dispersed catalysts are modified during their preparation with anionic modifiers such as molybdate (MoO₄²⁻), phosphate (PO₄³⁻), sulfate (SO₄²⁻), or tungstate (WO₄²⁻). The resulting catalyst usually has primary particle size smaller than about 50 Angstrom units, and may be used in the form of a gel or wet cake which can be easily mixed with a hydrocarbonaceous feed material such as coal, heavy petroleum fractions, mixed waste plastics or mixtures thereof. Alternatively, the catalyst can be dried and/or calcined so as to be in a fine dry particulate form suitable for adding to the feed material. The invention includes methods for making the catalyst and processes for using the catalyst for hydroprocessing of the carbonaceous feed materials.

Classifications:

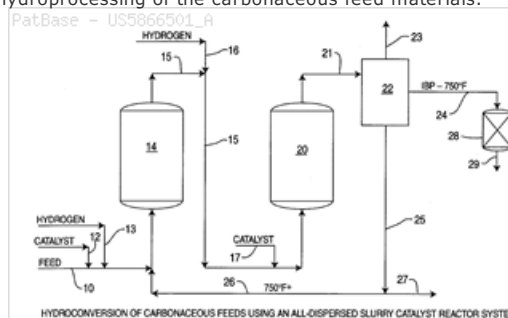
International (IPC 8-9): B01J23/745 B01J23/881 B01J27/053 B01J27/185 B01J35/12 B01J37/03 C10G1/00 C10G1/08 C10G1/10 C10G45/04 C10G47/02 C10G47/26 C10G49/12 C10G65/02 C10G65/10 (Advanced/Invention); B01J23/74 B01J23/84 B01J27/19 (Advanced/Non-invention); C10G45/02 (Core/Invention)

International (IPC 1-7): B01J23/74 B01J23/745 B01J23/84 B01J27/043 B01J27/053 B01J27/185 B01J37/03 C10G1/06 C10G45/04

CPC: B01J23/74 B01J23/745 B01J23/84 B01J23/881 B01J27/053 B01J27/185 B01J27/19 B01J35/12 B01J37/036 C10G1/002 C10G1/006 C10G1/086 C10G1/10 C10G47/02 C10G47/26 C10G49/12 C10G65/02 C10G65/10

European: B01J23/745 B01J23/881 B01J27/053 B01J27/185A B01J35/12 B01J37/03C C10G1/00B C10G1/00D C10G1/08D C10G1/10 C10G47/02 C10G47/26 C10G49/12 C10G65/02 C10G65/10 L01J23/74 L01J23/84 L01J27/19

US: 201/2.5 201/25 208/112 208/143 208/413 208/418 208/419 208/422 208/423 502/213 502/217 502/221 502/222 502/305 502/313 502/325 502/337 502/338 502/339 585/241



Family:

Publication number	Publication date	Application number	Application date
CN1107540 C	20030507	CN19981022746	19981130
CN1255407 A	20000607	CN19981022746	19981130
US5866501 A	19990202	US19960609759	19960223
US5871638 A	19990216	US19960742541	19961101
US6139723 A	20001031	US19990238310	19990128
US6190542 BA	20010220	US19990241505	19990201

Priority:

US19960609759 19960223 US19960742541 19961101 CN19981022746 19981130
US19990238310 19990128 US19990241505 19990201

Probable Assignee: HYDROCARBON TECHNOLOGIES INC

Assignee(s): (std): COMOLLI ALFRED G ; HYDROCARBON TECHNOLOGIES INC ; HYDROCARBON TECH INC ; PRADHAN VIVEK R ; LEE LAP KEUNG

Assignee(s): HEADWATERS RESOURCES INC SUCCESSOR TO JTM IND INC ; HEADWATERS TECHNOLOGY INNOVATION GROUP INC SUCCESS ; HEADWATERS HEAVY OIL LLC A UTAH CORP ; HEADWATERS INC GRANTOR AS ; HEADWATERS RESOURCES INC (SUCCESSOR TO JTM IND INC) ; HEADWATERS RESOURCES INC A UTAH CORP ; HEADWATERS TECHNOLOGY INNOVATION GROUP INC (SUCCESSOR TO HEADWATERS TECHNOLOGY INNOVATION LLC) ; HEADWATERS TECHNOLOGY INNOVATION GROUP INC (SUCCESSOR TO HEADWATERS TECHNOLOGY INNOVATION LLC) AND INST OF COAL CHEMISTRY ; HEADWATERS TECHNOLOGY INNOVATION GROUP INC A UTAH CORP ; HEADWATERS TECHNOLOGY INNOVATION GROUP INC SUCCESSOR TO HEADWATERS TECHNOLOGY INNOVATION LLC ; HEADWATERS TECHNOLOGY INNOVATION GROUP INC SUCCESSOR TO HEADWATERS TECHNOLOGY INNOVATION LLC AND INST OF COAL CHEMISTRY ; BANK ONE NA ; MORGAN STANLEY AND CO INC ; ISG RESOURCES INC ; TAPCO INT ; TAPCO INT SUCCESSOR TO MID AMERICA BUILDING PRODU ; TAPCO INT (SUCCESSOR TO TAPCO PRODUCTS CO INC) COR ; TAPCO INT CORP ; TAPCO INT CORPORATON SUCCESSOR TO TAPCO PRODUCTS ; WILMINGTON TRUST FSB COLLATERAL AGENT AS ; HYDROCARBON TECHNOLOGIES INC (UTAH) ; HYDROCARBON TECHNOLOGIES INC UTAH ; TAPCO INT CORPORATON SUCCESSOR TO TAPCO PRODUCTS C ; TAPCO INT SUCCESSOR TO MID AMERICA BUILDING PRODUC ; TAPCO INT SUCCESSOR TO TAPCO PRODUCTS CO INC CORP ; TAPCO INT (SUCCESSOR TO MID AMERICA BUILDING PRODUCTS) CORP ; TAPCO INT (SUCCESSOR TO TAPCO PRODUCTS CO INC) CORP ; TAPCO INT A MICHIGAN CORP ; TAPCO INT CORPORATON (SUCCESSOR TO TAPCO PRODUCTS CO INC) ; TAPCO INT CORPORATON SUCCESSOR TO TAPCO PRODUCTS CO INC ; TAPCO INT SUCCESSOR TO MID AMERICA BUILDING PRODUCTS CORP ; HEADWATERS INC ; HEADWATERS TECHNOLOGY INNOVATION GROUP INC AND INS ; HEADWATERS TECHNOLOGY INNOVATION GROUP INC ; HEADWATERS RESOURCES INC ; HEADWATERS TECHNOLOGY INNOVATION GROUP INC SUCCE ; CROZZOLI GUALTIERO ; CURTIS WRIGHT FLOW CONTROL CORP ; ENERGY UNITED STATES DEPARTMENT OF ; GENERAL ELECTRIC CAPITAL CORP ; HEADWATERS CTL LLC ; HEADWATERS CTL ; HEADWATER RESOURCES INC ; HEADWATER RESOURCES INC (SUCCESSOR TO JTM IND INC) ; HEADWATERS CTL LLC SUCCESSOR TO HYDROCARBON TECHN ; HEADWATER RESOURCES INC SUCCESSOR TO JTM IND INC ; HEADWATERS CTL LLC SUCCESSOR TO HYDROCARBON TECHNO ; HEADWATERS CTL LLC (SUCCESSOR TO HYDROCARBON TECHNOLOGIES INC) ; HEADWATERS CTL LLC SUCCESSOR TO HYDROCARBON TECHNOLOGIES INC

Inventor(s): (std): COMOLLI ALFRED G ; KOMOLI A G ; LEE LAP KEUNG ; LI L K ; PELRINE BRUCE P ; PRADAN V R ; PRADHAN VIVEK R

Inventor(s): V R PRADAN ; L K LI ; A G KOMOLI

74) Family number: 30664963 (WO04053028A1)

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Title: HYDRO PROCESSING OF HYDROCARBON USING A MIXTURE OF CATALYSTS

Abstract: The present invention pertains to a process for hydroprocessing a heavy hydrocarbon oil, comprising contacting a heavy hydrocarbon oil in the presence of hydrogen with a mixture of hydroprocessing catalyst I and hydroprocessing catalyst II wherein catalyst I has a specific surface area of at least 100 m²/g, a total pore volume of at least 0.55 ml/g, at least 50 percent of the total pore volume in pores with a diameter of at least 20 nm (200 Å) and at least 65 percent of the total pore volume in pores with a diameter of 10-120 nm (100-1200 Å), and catalyst II has a specific surface area of at least 100 m²/g, a total pore volume of at least 0.55 ml/g, 30-80 percent of the pore volume in pores with a diameter of 10-20 nm (100-200 Å), and at least 5 percent of the pore volume in pores with a diameter of at least 100 nm (1000 Å) with catalyst I having a larger percentage of its pore volume in pores with a diameter of at least 20 nm (200 Å) than catalyst II. The process of the invention combines high contaminant removal with high conversion, low sediment formation, and high process flexibility.

Classifications:

International (IPC 8-9): B01J23/85 B01J23/88 B01J23/883 B01J23/887 B01J35/00 B01J35/10 C10G45/08 C10G49/04 C10G65/04 C10G65/14 (Advanced/Invention);
B01J21/04 B01J21/12 B01J37/00 (Advanced/Non-invention)

International (IPC 1-7): B01J23/85 B01J35/10 C10G49/04

CPC: B01J21/04 B01J21/12 B01J23/85 B01J23/883 B01J23/8872 B01J35/0006 B01J35/10 B01J35/1019 B01J35/1042 B01J35/108 B01J37/0009 C10G45/08 C10G49/04 C10G65/04

European: B01J23/85 B01J23/883 B01J23/887C B01J35/00B B01J35/10 C10G45/08 C10G49/04 C10G65/04 L01J21/04 L01J21/12 L01J35/10A6 L01J35/10B4 L01J35/10D L01J37/00B

Family:

Publication number	Publication date	Application number	Application date
AU2003294799 AA	20040630	AU20030294799	20031204
AU2003294799 AH	20040630	AU20030294799	20031204
CA2508630 AA	20050603	CA20032508630	20031204
CA2508630 C	20131203	CA20032508630	20031204
CN1307290 C	20070328	CN200380108309	20031204
CN1735678 A	20060215	CN200380108309	20031204
EP1567617 A1	20050831	EP20030785754	20031204
JP2006512430 T2	20060413	JP20040558007T	20031204
PL202770 B1	20090731	PL20030377120	20031204
PL377120 A1	20060123	PL20030377120	20031204
WO04053028 A1	20040624	WO2003EP13790	20031204

Priority:

EP20020080690 20021206 EP20030785754 20031204 WO2003EP13790 20031204

Probable Assignee: NIPPON KETJEN CO

Assignee(s): (std): AKZO NOBEL NV ; ALBEMARLE CORP ; ALBEMARLE NETHERLANDS BV ; NIPPON KETJEN CO ; NIPPON KETJEN CO LTD

Assignee(s): PLANTENGA FRANS LODEWIJK ; ABE SATOSHI ; AKZO NOBEL N V ; FUJITA KATSUHISA

Inventor(s): (std): ABE SATOSHI ; FRANS LODEWIJK PLANTENGA ; FUJITA KATSUHISA ; KATSUHISA FUJITA ; PLANTENGA FRANS LODEWIJK ; PLANTENGA FRANS LODEWIJK FUJITA KATSUHISA ABE SATO ; SATOSHI ABE ; SATOSHI PLANTENGA FRANS LODEWI

Inventor(s): PLANTENGA FRANS LODEWIJK FUJITA KATSUHISA ABE...

Agent(s): OGILVY RENAULT LLP SENCRL SRL; NORTON ROSE FULBRIGHT CANADA LLP SENCRL SRL

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SN SY SZ TD TG TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW

75) Family number: 30826787 (US2004163999A)

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Title: HPC PROCESS USING A MIXTURE OF CATALYSTS

Abstract: The present invention pertains to a process for hydroprocessing a heavy hydrocarbon oil, comprising contacting a heavy hydrocarbon oil in the presence of hydrogen with a mixture of hydroprocessing catalyst I and hydroprocessing catalyst II. The process of the invention combines high contaminant removal with high conversion, low sediment formation, and high process flexibility.

Classifications:

International (IPC 8-9): B01J23/85 B01J23/883 B01J35/00 B01J35/10 C10G45/04 C10G45/08 C10G47/02 C10G49/04 (Advanced/Invention);
B01J21/04 B01J21/12 B01J37/00 (Advanced/Non-invention);
B01J23/76 B01J35/00 C10G45/02 C10G49/00 (Core/Invention);
B01J21/00 B01J37/00 (Core/Non-invention)

International (IPC 1-7): C10G45/04 C10G47/02

CPC: B01J21/04 B01J21/12 B01J23/85 B01J23/883 B01J35/0006 B01J35/10 B01J35/1019 B01J35/1042 B01J35/1061 B01J35/108 B01J37/0009 C10G45/08 C10G49/04

European: B01J23/85 B01J23/883 B01J35/00B B01J35/10 C10G45/08 C10G49/04 L01J21/04 L01J21/12 L01J35/10A6 L01J35/10B4 L01J35/10C4 L01J35/10D L01J37/00B

US: 208/108 208/110 208/111.3 208/111.300S 208/111.35 208/111.350P 208/112 208/213 208/216 208/216.00R 208/216.00RS 208/216.0PP 208/216PP 208/216R 208/217 208/251 208/251.00H 208/251.00HS 208/251H 208/254 208/254.00H 208/254.00HS

Family:

Publication number	Publication date	Application number	Application date
US2004163999 AA	20040826	US20030730433	20031208
US7922894 BB	20110412	US20030730433	20031208

Priority:

US20020431623P 20021206 US20030730433 20031208

Probable Assignee: NIPPON KETJEN CO LTD**Assignee(s):** (std): ALBEMARLE NETHERLANDS BV ; NIPPON KETJEN CO LTD**Assignee(s):** PLANTENGA FRANS LODEWIJK ; ABE SATOSHI ; ALBEMARLE NETHERLANDS B V ; FUJITA KATSUHISA ; NIPPON KETJEN CO**Inventor(s):** (std): ABE SATOSHI ; FUJITA KATSUHISA ; PLANTENGA FRANS LODEWIJK**Agent(s):** JEREMY J; JAMES A; MARCY M**76) Family number: 10681080** (US5320743A)

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Title: MILD HYDROCRACKING OF HEAVY HYDROCARBON FEEDSTOCKS EMPLOYING SILICA-ALUMINA CATALYSTS

Abstract: A mild hydrocracking process for the hydrodemetallation (HDM), hydrodesulfurization (HDS) and hydroconversion (HC) of hydrocarbon feedstocks such as residuum feedstocks which provides increased conversion of the 1000 DEG F.+ hydrocarbon fraction to the 1000 DEG F.- fraction and increased yields of middle distillates is disclosed. The process utilizes a catalyst comprising about 2.0 to about 6.0 weight percent of an oxide of a Group VIII metal, about 12.0 to about 25.0 weight percent of an oxide of molybdenum and 0 to about 3.0 weight percent of an oxide of phosphorus supported on a porous alumina support containing about 4.0 to about 30 weight percent of silica.

Classifications:**International (ipc 8-9):** B01J27/19 B01J35/00 B01J35/10 C10G45/08

C10G47/04 C10G47/12 (Advanced/Invention);

B01J27/14 C10G47/00 (Core/Invention)

International (ipc 1-7): B01J27/14 B01J27/19 B01J35/10 C10G17/00 C10G45/00 C10G47/04 C10G47/12**CPC:** C10G47/04 B01J35/1019 B01J35/1042 B01J35/108 B01J27/19 B01J35/0006 C10G45/08 C10G47/12**European:** B01J27/19 B01J35/00B B01J35/10 C10G45/08 C10G47/12**US:** 208/111 208/111.3 208/111.35 208/216PP 502/211 502/213 502/315

PatBase - EP0696687_A1

Mbg = Mb: Al atomic ratio for catalyst pellet exterior
Mb: Al atomic ratio for catalyst pellet interior**Family:**

Publication number	Publication date	Application number	Application date
CA2123630 AA	19951117	CA19942123630	19940516
EP0686687 A1	19951213	EP19940304197	19940610
US5320743 A	19940614	US19920890206	19920529
US5453411 A	19950926	US19940199923	19940222

Priority:

US19920890206 19920529 US19940199923 19940222 CA19942123630 19940516

EP19940304197 19940610

Probable Assignee: MICROSOFT CORP**Assignee(s):** (std): TEXACO DEVELOPMENT CORP ; TEXACO INC**Assignee(s):** CAMPBELL CHARLES NELSON II ; DAI PEI SHING EUGENE ; MARTIN BOBBY RAY ; MICROSOFT CORP ; PETTY RANDALL HUGHES**Inventor(s):** (std): CAMPBELL CHARLES NELSON II ; CAMPBELL II CHARLES N ; DAI PEI SHING EUGENE ; MARTIN BOBBY RAY ; PETTY RANDALL HUGHES ; PETTY RANDALL H ; MARTIN BOBBY R ; DAI PEI SHING E ; CAMPBELL CHARLES N II**Inventor(s):** CAMPBELL CHARLES N**Agent(s):** SMART AND BIGGAR**Designated states:** AT DE ES FR GB IT NL**77) Family number: 57613880** (US2014315712A)

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Title: PROCESS AND CATALYST FOR THE HYDROTREATMENT OF A HEAVY HYDROCARBON FEEDSTOCK

Abstract: A method of hydrotreating a heavy hydrocarbon feedstock using a hydrotreating catalyst having specific properties that make it effective in removing nitrogen and sulfur from the feedstock is disclosed. The catalyst is composed of an alumina support particle having a specific pore diameter distribution which is achieved in part, by the use of pseudo-boehmite as the alumina source and specific calcining temperatures. The hydrotreatment catalyst also comprises a Group 6 metal component (e.g., molybdenum) and a Group 10 metal component (e.g., nickel), and optionally, a phosphorus metal component, which are supported by the alumina support particle.

Classifications:**International (ipc 8-9):** B01J21/04 B01J23/85 B01J23/883 B01J27/199

B01J35/00 B01J35/02 B01J35/10 B01J37/00 B01J37/02 B01J37/08

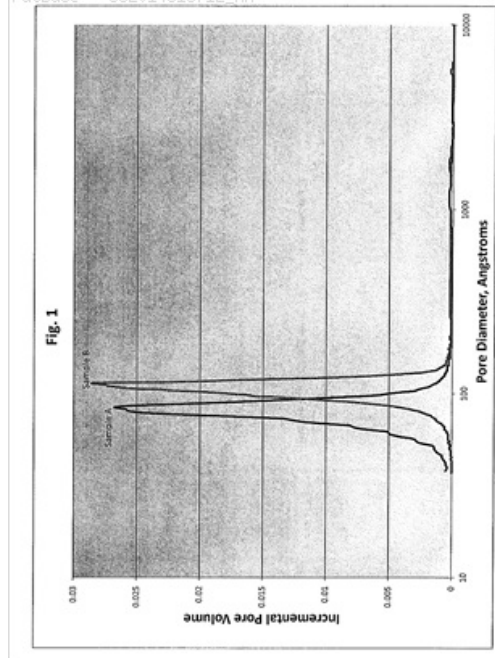
C10G45/08 (Advanced/Invention)

CPC: B01J21/04 B01J23/883 B01J27/199 B01J35/002

B01J35/026 B01J35/1019 B01J35/1042 B01J35/1061 B01J37/0009

B01J37/0207 B01J37/08 C10G45/08

US: 502/313

**Family:**

Publication number	Publication date	Application number	Application date
US2014315712 AA	20141023	US20140254130	20140416
US10118158 BB	20181106	US20140254130	20140416

Priority:

US20130812932P 20130417 US20140254130 20140416

Probable Assignee: SHELL OIL CO

Assignee(s): (std): SHELL OIL CO

Inventor(s): (std): SMEGAL JOHN ANTHONY

Agent(s): STEWART CHARLES W

78) Family number: 34853336 (US2007158238A)

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Title: HYDROCARBON-SOLUBLE MOLYBDENUM CATALYST PRECURSORS AND METHODS FOR MAKING SAME

Abstract: Hydrocarbon-soluble molybdenum catalyst precursors include a plurality of molybdenum cations that are each bonded with a plurality of organic anions to form an oil soluble molybdenum salt. A portion of the molybdenum atoms are in the 3+ oxidation state such that the plurality of molybdenum atoms has an average oxidation state of less than 4+, e.g., less than about 3.8+, especially less than about 3.5+. The catalyst precursors can form a hydroprocessing molybdenum sulfide catalyst in heavy oil feedstocks. The oil soluble molybdenum salts are manufactured in the presence of a reducing agent, such as hydrogen gas, to obtain the molybdenum in the desired oxidation state. Preferably the reaction is performed with hydrogen or an organic reducing agent and at a temperature such that the molybdenum atoms are reduced to eliminate substantially all molybdenum oxide species.

Classifications:

International (IPC 8-9): B01J27/047 B01J31/04 B01J21/02 B01J21/04 B01J23/00 B01J23/02 B01J27/051 B01J31/00 B01J31/22 C10G47/00 C10G47/02 C10G47/06 C10G47/26 H01B3/22 (Advanced/Invention); B01J21/00 B01J23/00 B01J23/02 B01J27/04 B01J31/00 B01J31/16 C10G47/00 H01B3/18 (Core/Invention)

International (IPC 1-7): B01J31/00

CPC: B82Y30/00 Y02E60/325 Y10S420/90 Y10S977/70 Y10S977/84 C10G2300/4037 C10G2300/70 C10G47/06 B01J27/051 B01J31/04 B01J31/2226 B01J2531/64 C01B3/0021 C10G47/26

European: B01J27/051 C10G47/06 C10G47/26 L01J31/04 L01J31/22B2H L01J531/64

US: 208/111.3 208/111.300 208/14 502/150 502/152 502/170 502/172 502/204 502/321 502/439

Family:

Publication number	Publication date	Application number	Application date
CA2636282 AA	20080704	CA20072636282	20070103
CA2636282 C	20161122	CA20072636282	20070103
CN101370913 A	20090218	CN200780002000	20070103
DE602007046127 D1	20160616	DE200760046127T	20070103
EP1973993 A2	20081001	EP20070709927	20070103
EP1973993 A4	20091111	EP20070709927	20070103
EP1973993 B1	20160504	EP20070709927	20070103
ES2583485 T3	20160921	ES20070709927T	20070103
IN05785DN2008 A	20081024	IN2008DN05785	20080703
JP2009522103 T2	20090611	JP20080549627T	20070103
JP5112334 B2	20130109	JP20080549627T	20070103
KR101377620 B1	20140325	KR20087019133	20070103

US2005211603 AA	20050929	US20050086556	20050323
US7803266 BB	20100928	US20050086556	20050323

Priority:

FR20040002980 20040323 CA20052500755 20050321

Probable Assignee: IFP ENERGIES NOUVELLES

Assignee(s): (std): IFP ENERGIES NOUVELLES ; INST FRANCAIS DU PETROL ; KRESSMANN STEPHANE ; ROY AUBERGER MAGALIE ; INST FRANCAIS DU PETROLE ; GUILLAUME DENIS

Assignee(s): IFP ; FRANCAIS DU PETROLE INST ; FRANCAIS DU PETROLE RUEIL MALMAISON INST ; INSTITUT FRANCAIS DU PETROLE RUEIL MALMAISON ; INSTITUT FRANCAIS DU PETROL ; INST FR PETROLE ; INSTITUT FRANCAIS DU PETROLE

Inventor(s): (std): GUILAUME DENIS ; GUILLAUME DENIS ; GUILLAUME DENIS JEAN MARIE ; KRESSMANN STEPHANE ; ROY AUBERGER MAGALIE ; ROY MAGALIE

Inventor(s): STEPHANE KRESSMANN ; DENIS GUILLAUME ; MAGALIE ROY

Agent(s): ROBIC ; IFP ; HIBI NORIHIKO ; KISHIMOTO EINOSUKE ; WATANABE AKIRA ; KIYOSUE YASUKO ; MILLEN WHITE ZELANO AND BRANIGAN PC ; MILLEN WHITE ZELANO BRANIGAN PC

Designated states: BE DE DK GB NL

80) Family number: 9377507 (US5322616A)

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Title: MILD HYDROCRACKING OF HEAVY HYDROCARBON FEEDSTOCKS EMPLOYING LITHIA PROMOTED CATALYSTS

Abstract: A mild hydrocracking process for the hydrometallation (HDM), hydrodesulfurization (HDS) and hydroconversion (HC) of hydrocarbon feedstocks such as residuum feedstocks which provides increased conversion and increased yields of middle distillates is disclosed. The process utilizes a catalyst comprising about 1.0 to about 6.0 weight percent of an oxide of a Group VIII metal, about 12.0 to about 25.0 weight percent of an oxide of molybdenum and about 0 to about 5.0 weight percent of an oxide of phosphorus supported on a porous alumina support containing about 0.1 to about 10.0 weight percent of lithium oxide.

Classifications:

International (IPC 8-9): B01J23/76 B01J23/88 B01J27/19 B01J35/10 C10G47/04 C10G47/12 (Advanced/Invention); B01J23/76 B01J27/14 B01J35/00 C10G47/00 (Core/Invention)

International (IPC 1-7): B01J23/08 B01J23/76 B01J23/88 B01J27/19 B01J35/10 C10G45/08 C10G47/04 C10G47/12

CPC: B01J35/0073 B01J35/1019 B01J35/1042 B01J35/108 B01J35/1061 B01J27/19 C10G47/12

European: B01J27/19 B01J35/10 C10G47/12

US: 208/108 208/110 208/111 208/111.15 208/111.3 208/111.35 208/216PP 208/251H 208/254H 502/311 502/314 502/315 502/316 502/317 502/439

Family:

Publication number	Publication date	Application number	Application date
CA2114376 AA	19950728	CA19942114376	19940127
EP0673678 A1	19950927	EP19940302133	19940324
JP7256106 A2	19951009	JP19940043707	19940315
US5322616 A	19940621	US19920860796	19920330
US5436215 A	19950725	US19930161843	19931206

Priority:

US19920860796 19920330 US19930161843 19931206 CA19942114376 19940127

JP19940043707 19940315 EP19940302133 19940324

Probable Assignee: TEXACO INC

Assignee(s): (std): TEXACO DEVELOPMENT CORP ; TEXACO INC

Assignee(s): TEXACO INC A CORP OF DELAWARE ; CAMPBELL CHARLES NELSON II ; DAI PEI SHING EUGENE ; DURKIN JOSEPH ANTHONY ; SHERWOOD DAVID EDWARD JR ; TEXACO DEV CORP

Inventor(s): (std): DAI PEI SHING EUGENE ; CAMPBELL CHARLES NELSON II ; DURKIN JOSEPH ANTHONY ; SHERWOOD DAVID EDWARD JR ; CAMPBELL II CHARLES N ; SHERWOOD JR DAVID E ; CHIYAARUZU NERUSON KIYANBERU Z ; JIYOSUFEU ANSONII DAAKIN ; PEI SHIN YUJIN DAI ; DEBITSUDO EDOWAADO SHIYAAUTSUD ; SHERWOOD DAVIS E JR ; DURKIN JOSEPH A ; CAMPBELL CHARLES N II ; DAI PEI SHING E

Inventor(s): CHIYAARUZU NERUSON KIYANBERU ZA SEKANDO ; DEBITSUDO EDOWAADO SHIYAAUTSUDO JIYUNIA ; SHERWOOD DAVIS E ; CAMPBELL CHARLES N

Agent(s): SMART AND BIGGAR

Designated states: DE FR GB IT NL

81) Family number: 42669198 (US2011000825A)

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Title: CARBONACEOUS MATERIAL UPGRADING USING SUPERCRITICAL FLUIDS

Abstract: Systems and methods for extracting, handling and upgrading carbonaceous material. The systems and methods involve forming a reaction mixture of a carbonaceous material, a supercritical fluid, a catalyst and a source of hydrogen, and maintaining the reaction mixture at moderate temperatures for modest time periods. Exemplary reaction temperatures are those below 200 degrees centigrade Exemplary reaction times range from 30 minutes to less than 24 hours.

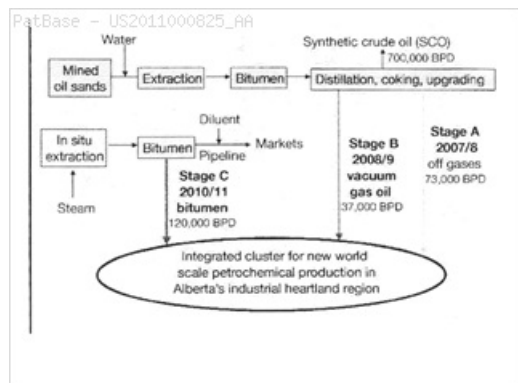
Classifications:

International (IPC 8-9): B01J8/18 C10C1/18 C10G1/00 C10G1/04 C10G1/06 C10G1/08 C10G21/06 C10G21/08 C10G21/14 C10G29/04 C10G35/04 C10G35/06 C10G45/00 C10G45/44 C10G55/06 C10G67/04 (Advanced/Invention);

B01J8/18 C10C1/00 C10G1/00 C10G45/00 C10G55/00 (Core/Invention)

CPC: C10G3/50 B01J21/04 B01J23/40 B01J23/74 C10G1/04 C10G3/45 C10G3/47 C10G2300/1011 C10G2300/1037 C10G2300/4006

C10G2300/104 C10G2300/1044 C10G2300/1055 C10G2300/1096
C10G2300/202 C10G1/002 C10G1/042 C10G1/047 C10G21/16
C10G45/00 C10G2300/80 C10G2300/805 C10G45/02 C10G45/04
C10G45/58 C10G45/60 Y02P30/20 C10G21/08 C10G1/065 C10G21/14
European: C10G1/04 C10G1/04B C10G1/06B C10G21/08 C10G21/14
C10G3/00 L01J21/04 L01J23/40 L01J23/74
US: 1/1 208/134 208/142 208/143 208/390 208/391 208/400 208/402
208/402S 208/407 208/408 208/419 208/419S 208/424 208/428 208/430
208/435 208/46



Family:

Publication number	Publication date	Application number	Application date
CA2690727 AA	20091209	CA20082690727	20080611
CA2690727 C	20161213	CA20082690727	20080611
EP2164930 A1	20100324	EP20080770701	20080611
EP2164930 A4	20150128	EP20080770701	20080611
JP2010529286 T2	20100826	JP20100512320T	20080611
JP2014205850 A2	20141030	JP20140138263	20140704
JP5964890 B2	20160803	JP20140138263	20140704
US2011000825 AA	20110106	US20100708898	20100219
US2011049016 AA	20110303	US20080663843	20080611
US2012279902 AA	20121108	US20120345522	20120106
US8691084 BB	20140408	US20080663843	20080611
US9376635 BB	20160628	US20100708898	20100219
WO08154576 A1	20081218	WO2008US66545	20080611
WO10096692 A2	20100826	WO2010US24791	20100219
WO10096692 A3	20110127	WO2010US24791	20100219

Priority:

US20070943173P 20070611	JP20100512320 20080611	JP20100512320T 20080611
US20080663843 20080611	WO2008US66545 20080611	US20090153711P 20090219
US20090157583P 20090305	US20090157583P 20090503	US20090279958P 20091028
US20090257459P 20091102	US20100293888P 20100111	US20100708898 20100219
US20100663843 20100913	US20120345522 20120106	

Probable Assignee: HSM SYSTEMS INC

Assignee(s): (std): BROUGH SARAH ANN ; HSM SYSTEMS INC ; MCGRADY GERALD SEAN ; MCGRADY GERARD SEAN ; WILLSON CHRISTOPHER ; UNIV NEW BRUNSWICK ; UNIV OF NEW BRUNSWICK

Assignee(s): OF NEW BRUNSWICK UNIV ; NEW BRUNSWICK UNIV ; UNIVERSITY OF NEW BRUNSWICK

Inventor(s): (std): WILLSON CHRISTOPHER ; BROUGH SARAH ANN ; MCGRADY GERALD SEAN ; CHRISTOPHER WILLSON ; GERARD SEAN MCGRADY ; MCGRADY GERARD SEAN

Agent(s): STIKEMAN ELLIOTT LLP; SIEGERT GEORG; OKABE YUZURU; TAKANASHI NORIMICHI; USUI SHINICHI; MILSTEIN ZHANG AND WU LLC; JOSEPH B; MILSTEIN JOSEPH B

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

82) Family number: 60812496 (US2015329790A)

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Title: SYSTEMS AND METHODS FOR PRODUCING A CRUDE PRODUCT

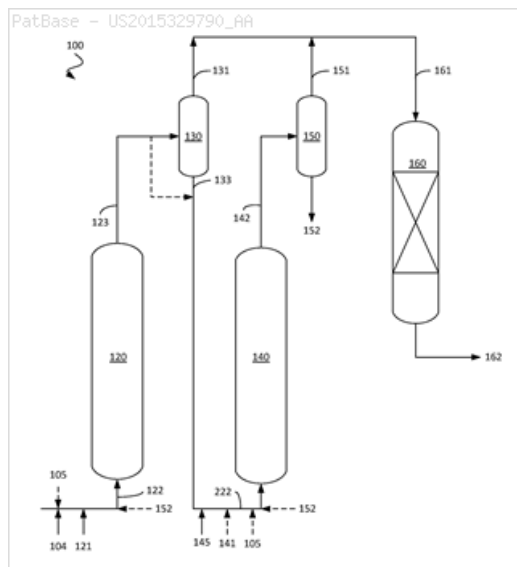
Abstract: Systems and methods for hydroprocessing heavy oil feedstocks are disclosed. The process employs a plurality of contacting zones operating under hydrocracking conditions and at least one separation zone to convert at least a portion of the heavy oil feedstock to lower boiling hydrocarbons, forming upgraded products. The first contacting zone consists of one or more ebullated bed reactors. Most of the metals in the heavy oil feed are converted and adsorbed on the ebullated bed catalyst and can be removed during catalyst replacement. The second contacting zone consists of one or more slurry phase reactors. The slurry phase reactor can be operated at higher temperature to achieve higher conversion.

Classifications:

International (IPC 8-9): C10G65/10 (Advanced/Invention)

CPC: C10G65/10 C10G65/12

US: 208/59



Family:

Publication number	Publication date	Application number	Application date
US2015329790 AA	20151119	US20140279093	20140515

Priority:

US20140279093 20140515

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CHABOT JULIE ; KOU BO ; REYNOLDS BRUCE EDWARD ; YANG SHUWU

Assignee(s): CHEVRON USA INC

Inventor(s): (std): KOU BO ; YANG SHUWU ; CHABOT JULIE ; REYNOLDS BRUCE EDWARD

83) Family number: 8212698 (US4267033A)

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Title: Upgrading of aromatic liquids

Abstract: Desulfurization, denitrogenation, deoxygenation and CCR reduction of highly aromatic petroleum and coal derived liquids are conducted with hydrogen and with a refractory base catalyst incorporating at least one Group VIA metal and at least one Group VIII metal. The catalyst has a surface area of between about 100 and 300 m²/g and a total pore volume of between about 0.3 and 1.0 cc/g and is further characterized as follows: -Pore Volume Distribution, -Volume percent in Pores of 0-150 Angstroms diameter 20-40 -150-200 Angstroms diameter 40-60 -200+ Angstroms diameter 10-30 -

Classifications:

International (IPC 8-9): B01J23/85 B01J35/10

C10G45/08 (Advanced/Invention);

B01J23/76 B01J35/00 C10G45/02 (Core/Invention)

International (IPC 1-7): B01J21/04 B01J23/85 B01J23/88 B01J27/04

C10G45/04

CPC: B01J23/85 B01J35/10 B01J35/1019 B01J35/1042 B01J35/1061

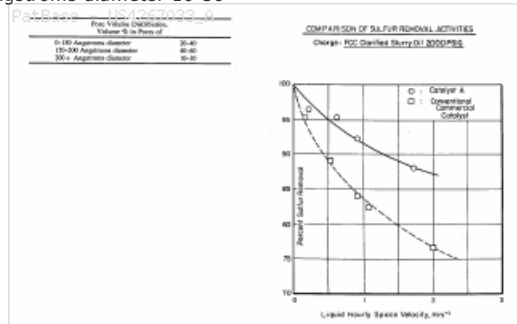
C10G45/08

European: B01J23/85 B01J35/10 C10G45/08 L01J35/10A6 L01J35/10B4

L01J35/10C4

US: 208/216PP 208/254H 208/264 208/435 252/439 502/221 502/313

502/315



Family:

Publication number	Publication date	Application number	Application date
US4267033 A	19810512	US19790086876	19791022
US4357263 A	19821102	US19800216896	19801216

Priority:

US19790086876 19791022 US19800216896 19801216

Probable Assignee: MOBIL OIL CORP

Assignee(s): (std): MOBIL OIL ; MOBIL OIL CORP

Inventor(s): (std): HECK ROLAND H ; OLECK STEPHEN M ; SHIH STUART S ; WILSON ROBERT C ; CLECK STEPHEN M

84) Family number: 11584643 (US5906953A)

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Title: Catalyst rejuvenation process

Abstract: A process and apparatus for rejuvenating particulate used catalysts in a single rejuvenation vessel and providing a rejuvenated catalyst material having properties that result in activity substantially equal to new catalyst. The pressurizable vertically-oriented vessel has inlet and outlet openings for the catalyst and washing liquids, and is arranged to facilitate successive solvent liquid washing, water washings, and acid treatment steps for the used particulate catalyst provided in a bed in the vessel conical-shaped lower portion which contains catalyst rotary stirring means. After rejuvenation of the used catalyst, it is withdrawn from the vessel conical-shaped lower portion downwardly through a central withdrawal conduit and control valve for further processing. The water-soluble solvent and acid treatment liquids can be usually recovered by distillation for reuse in the catalyst rejuvenation process. The solvent-washed and acid-treated catalyst is separately heated and oxidized to remove carbon deposits and provide a completely rejuvenated catalyst material.

Classifications:

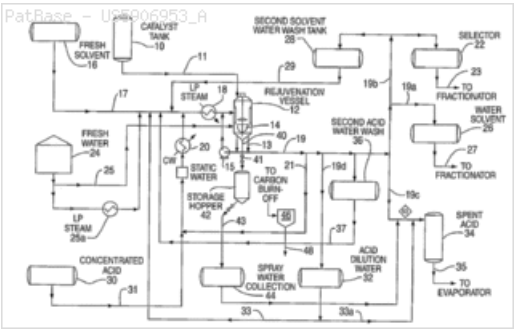
International (IPC 8-9): B01J38/48 B01J38/50
B01J38/60 (Advanced/Invention);
B01J38/00 (Core/Invention)

International (IPC 1-7): B01J20/34 B01J38/52 B01J38/60

CPC: B01J38/48 B01J38/50 B01J38/60

European: B01J38/48 B01J38/50 B01J38/60

US: 502/27 502/31 502/33



Family:

Publication number	Publication date	Application number	Application date
US5906953 A	19990525	US19970853394	19970509

Priority:

US19970853394 19970509

Probable Assignee: HRI INC

Assignee(s): (std): HRI

Assignee(s): HRI INC

Inventor(s): (std): HILDEBRANDT STEVEN J ; DUDDY JOHN E ; ABRAMS LAWRENCE M

85) Family number: 57413906 (US2014262943A)

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Title: HEAVY OIL HYDROCRACKING PROCESS

Abstract: A process for the production of high yields of high quality products from heavy hydrocarbonaceous feedstock comprising a two-stage, close-coupled process. The first stage comprises a thermo-catalytic zone into which is introduced a mixture comprising the feedstock, coal, a liquid catalyst precursor, and hydrogen. The second, close-coupled stage comprises a catalytic-hydrotreating zone into which substantially all the effluent from the first stage is directly passed and processed under hydrotreating conditions.

Classifications:

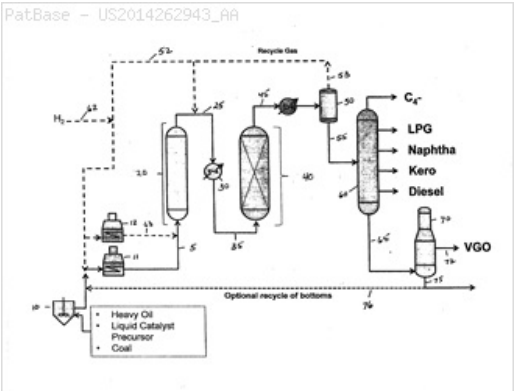
International (IPC 8-9): C10G47/02 C10G65/12 C10G69/04

C10G69/06 (Advanced/Invention);

C10G65/00 C10G65/02 (Advanced/Non-invention)

CPC: C10G69/04 C10G69/06

US: 1/1 208/70



Family:

Publication number	Publication date	Application number	Application date
US2014262943 AA	20140918	US20140216947	20140317
US9410093 BB	20160809	US20140216947	20140317
WO14145891 A1	20140918	WO2014US30737	20140317

Priority:

US20130851903P 20130315

US20130852652P 20130319

US20140216947 20140317

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CASH DENNIS R ; CHEVRON USA INC ; FORDER GRAHAM J ; MITCHELL DAVID S ; ROSENTHAL JOEL W

Inventor(s): (std): CASH DENNIS R ; MITCHELL DAVID S ; ROSENTHAL JOEL W ; FORDER GRAHAM J

Agent(s): E JOSEPH; SUSAN M; MELISSA M; GESS E JOSEPH ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN

86) Family number: 59065260 (FR3011842B)

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Title: PROCEDE OPTIMISE DE CONVERSION DE LA BIOMASSE AVEC AJOUT DE CATALYSEUR DISPERSE

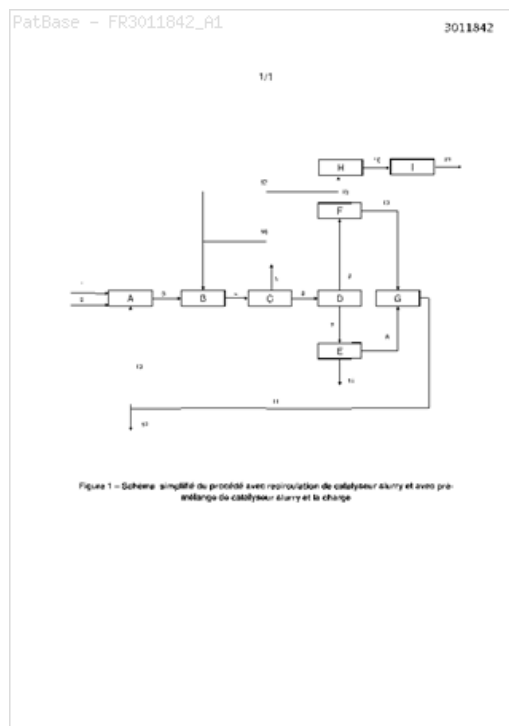
Abstract: Source: FR3011842A [FR] La presente invention concerne un procede de production de produits hydrocarbones a partir d'une charge comprenant au moins une bio-huile, ledit procede comprenant l'introduction de ladite charge dans une premiere etape d'hydroreforme en presence d'hydrogene, pour produire au moins un effluent liquide comprenant au moins une phase aqueuse et au moins une phase organique, ladite premiere etape d'hydroreforme operant a une temperature comprise entre 270 et 360 degrees centigrade, a une pression absolue comprise entre 3 et 30 MPa, a une vitesse spatiale horaire comprise entre 0,2 et 5 h⁻¹, dans au moins un reacteur triphasique fonctionnant en lit bouillonnant, le ou lesdits reacteurs contenant chacun au moins un premier catalyseur supporte d'hydroreforme et egalement au moins un deuxieme catalyseur disperse dans le(s)dit(s) reacteur(s), ledit deuxieme catalyseur circulant du bas vers le haut avec la charge dans le(s)dit(s) reacteurs et etant soutire du ou desdits reacteurs avec l'effluent liquide produit, ledit premier catalyseur supporte d'hydroreforme presentant une taille comprise entre 0,1 et 5 mm et ledit deuxieme catalyseur presentant une taille comprise entre 0,001 et 100 micrometres et pouvant etre supporte ou non, suivie du traitement dans une deuxieme etape d'hydrotraitement et/ou d'hydrocraquage d'au moins une partie de la phase organique de l'effluent liquide issu de la premiere etape d'hydroreforme pour obtenir un effluent hydrocarbone, dans lequel au moins une partie de la phase organique de l'effluent issue de la premiere etape d'hydroreforme est recyclee dans ladite premiere etape d'hydroreforme, en melange avec ladite charge comprenant au moins une bio-huile, avec un taux de recycle egal au rapport du debit massique de ladite phase organique sur le debit massique de la bio-huile non pretraitee compris entre 0,05 et 2 et dans lequel l'effluent hydrocarbone issu de la deuxieme etape d'hydrotraitement et/ou d'hydrocraquage n'est pas recycle dans ladite premiere etape d'hydroreforme.

Machine translation: The present invention relates to a hydrocarbon product production process from a feed comprising at least one bio-oil, said method comprising introducing said feedstock in a first stage of hydrotreating in the presence of hydrogen for generating at least one liquid effluent comprising at least one aqueous phase and at least one organic phase, said first step of hydrotreating operating at a temperature between 270 and 360 degrees centigrade, at a pressure between 3 and 30 MPa, a space velocity between 0.2 and 5 h⁻¹, in at least one three-phase reactor operated in an ebullated bed, the or each said reactors containing at least one first catalyst support and also for hydrotreating at least one second catalyst dispersed in the (s) say (s) reactor (s), said second catalyst flowing from the bottom up with the load in the (s) say (s) reactors and being drawn off of said one or reactors with the liquid product effluent, said first catalyst supports of hydrotreating having a size between 0.1 and 5 mm and said second catalyst having a size of between 0.001 and 100 microns and can be supported or not, followed by treatment in a second stage hydrotreating and / or hydrocracking of at least a portion of the organic phase of the liquid effluent from the first step to obtain a hydrocarbon hydrotreating effluent wherein at least a portion of the organic phase the effluent end of the first stage of hydrotreating is recycled to said first stage of hydrotreating in mixture with said filler comprising at least one bio-oil, with a recycle rate equal to the ratio of the mass flow of said organic phase the mass flow of the bio-oil unpretreated between 0.05 and 2 and wherein the hydrocarbon effluent from the second stage hydrotreating and / or hydrocracking is not recycled to said first stage of hydrotreating.

Classifications:

International (IPC 8-9): C10G1/08 C10G3/00 C10G45/16
C10G65/12 (Advanced/Invention)

CPC: C10G3/50 C10G3/48 C10G3/56 Y02P30/20

**Family:**

Publication number	Publication date	Application number	Application date
FR3011842 A1	20150417	FR20130059856	20131010
FR3011842 B1	20151218	FR20130059856	20131010

Priority:

FR20130059856 20131010

Probable Assignee: IFP ENERGIES NOUVELLES**Assignee(s):** (std): IFP ENERGIES NOUVELLES**Inventor(s):** (std): BERTINO GHERA CELINE ; DAUDIN ANTOINE ; MARQUES JOAO ; QUIGNARD ALAIN ; VERSTRAETE JAN

Inventor(s): JAN VERSTRAETE ; JOAO MARQUES ; CELINE BERTINO GHERA ; ALAIN QUIGNARD ; ANTOINE DAUDIN
Agent(s): IFP ENERGIES NOUVELLES

87) Family number: 29972662 (US6547957B)

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Title: Process for upgrading a hydrocarbon oil

Abstract: A catalyst assisted upgrading process for treating a hydrocarbon oil feed to reduce total acid number (TAN) and increase API gravity is provided herein which employs a hydroprocessing catalyst based on a catalyst support, e.g., alumina. The process includes blending the supported hydroprocessing catalyst with the hydrocarbon oil feed to form a slurry which is then treated with hydrogen at moderate temperature and pressure in, for example, a tubular reactor. Deposit formation is thus minimized or avoided.

Classifications:

International (IPC 8-9): C10G45/16 C10G47/26

C10G49/12 (Advanced/Invention);

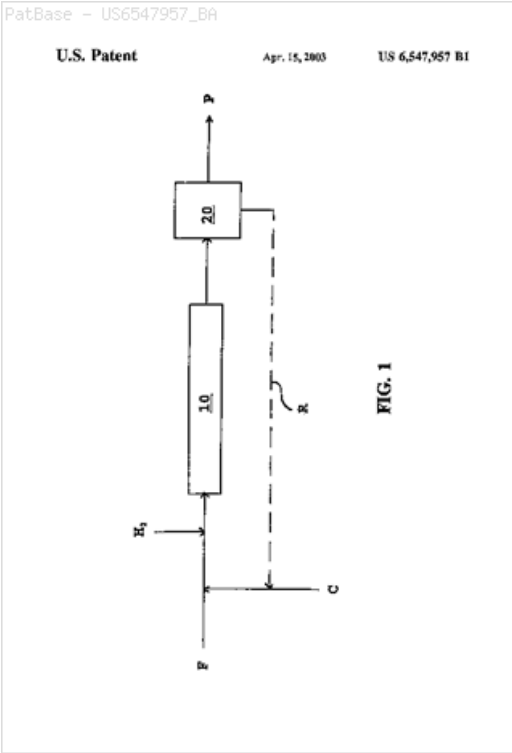
C10G45/02 C10G47/00 C10G49/00 (Core/Invention)

International (IPC 1-7): C10G45/04 C10G47/12 C10G49/12

CPC: C10G45/16 C10G47/26 C10G49/12

European: C10G45/16 C10G47/26 C10G49/12

US: 208/111.01 208/111.3 208/111.35 208/213 208/216R 208/217 208/263



Family:

Publication number	Publication date	Application number	Application date
AU2002214195 AA	20020429	AU20020214195	20011017
BRPI0114691 A	20040113	BR2001PI14691	20011017
CA2425922 AA	20030414	CA20012425922	20011017
CN1501970 A	20040602	CN20018017429	20011017
GB200308834 A0	20030521	GB20030008834	20011017
GB2384783 A1	20030806	GB20030008834	20011017
US6547957 BA	20030415	US20000690380	20001017
WO0233029 A1	20020425	WO2001IB02151	20011017

Priority:

US20000690380 20001017 WO2001IB02151 20011017

Probable Assignee: TEXACO INC

Assignee(s): (std): TEXACO DEVELOPMENT CORP ; TEXACO INC

Assignee(s): CASPARY MARK TIMOTHY ; DECANIO STEPHEN JUDE ; SUDHAKAR CHAKKA

Inventor(s): (std): CASPARY MARK THIMOTHY ; CASPARY MARK TIMOTHY ; DECANIO STEPHEN JUDE ; CHAKKA SUDHAKAR ; JUDE DECANIO STEPHEN ; SUDHAKAR CHAKKA ; THIMOTHY CASPARY MARK ; SUDHAKER CHAKKA

Inventor(s): STEPHEN JUDE DECANIO ; MARK THIMOTHY CASPARY ; MARK TIMOTHY CASPARY ; CHAKKA SUDHAKER

Agent(s): SIM AND MCBURNEY

Designated states: AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EE ES FI FR GA GB GD GE GH GM GN GQ GR HW HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

88) Family number: 3509549 (US4940529A)

© PatBase

Title: CATALYTIC CRACKING WITH DEASPHALTED OIL

Abstract: A process is provided in which solvent-extracted oil or other deasphalted oil derived from hydrotreated resid is

catalytically cracked to increase the yield of gasoline and other high value products.

Classifications:

International (IPC 8-9): C10G69/00 C10G69/04 (Advanced/Invention); C10G69/00 (Core/Invention)

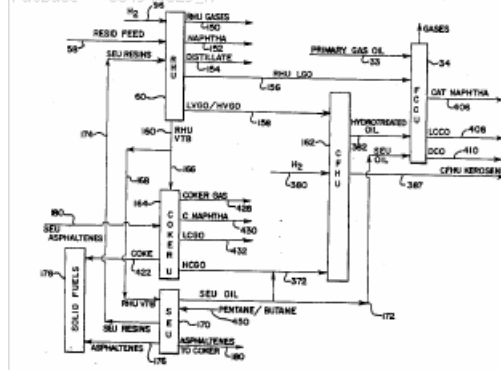
International (IPC 1-7): C10G49/00

CPC: C10G67/0463 C10G2300/1074 C10G2300/205 C10G2300/206 C10G2300/708 C10G69/04

European: C10G69/00 C10G69/04

US: 208/108 208/143 208/211 208/212 208/251H 208/254H 208/61 208/78 208/86 208/87 208/92

PatBase - US4940529_A



Family:

Publication number	Publication date	Application number	Application date
US4940529 A	19900710	US19890381295	19890718

Priority:

US19890381295 19890718

Probable Assignee: AMOCO CORP

Assignee(s): (std): AMOCO CORP

Assignee(s): TOA NENRYO KOGYO A CORP OF JAPAN KK ; TOA NENRYO KOGYO KK ; AMOCO A CORP OF INDIANA CORP

Inventor(s): (std): TAYLOR JAMES L ; PECK LAWRENCE B ; MOSBY JAMES F ; BEATON WILLIAM I

89) Family number: 10223500 (US4750989A)

© PatBase

Title: CATALYST INVENTORY DETERMINATION

Abstract: An effective, efficient and safe method is provided to accurately determine the amount of catalyst in an ebullated bed reactor without depressurizing the reactor or exposing the hydrocarbon in the reactors to oxidizing, flammable, or explosive conditions. Measurements are made automatically by density detectors and pressure sensors along with other equipment.

Classifications:

International (IPC 8-9): B01J8/24 C10G49/12

C10G49/26 (Advanced/Invention);

B01J8/24 C10G49/00 (Core/Invention)

International (IPC 1-7): C10G13/00 C10G23/02

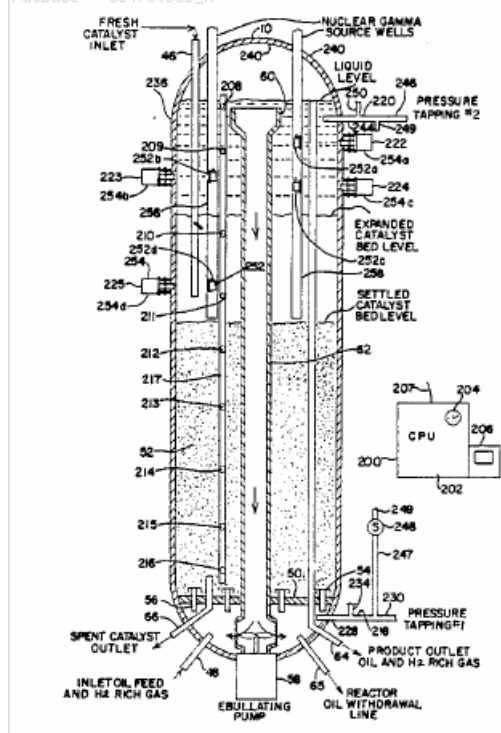
CPC: Y10S208/01 C10G49/26 B01J8/1809 B01J8/1872 B01J2208/00044 C10G49/12

European: B01J8/18D B01J8/18L C10G49/12 C10G49/26

L01J208/00C2B2B

US: 208/143 208/146 208/157 208/166 208/DIG.1 422/219

PatBase - US4750989_A



Family:

Publication number	Publication date	Application number	Application date
US4750989 A	19880614	US19870003743	19870116

Priority:

US19870003743 19870116

Probable Assignee: AMOCO CORP

Assignee(s): (std): AMOCO CORP
Inventor(s): (std): SODERBERG DAVID J

90) Family number: 9020061 (US5372705A)

PatBase

Title: Hydroprocessing of heavy hydrocarbonaceous feeds

Abstract: A method of catalytically hydroconverting a hydrocarbon feed stream containing a substantial quantity of components boiling above about 1000 DEG F. to convert a substantial portion thereof to components boiling below 1000 DEG F. is disclosed. More particularly, aromatic heavy oil additive, such as Heavy Cycle Gas Oil, is added to a heavy hydrocarbon feed stream and the stream is contacted with a solid catalyst and an oil-miscible metal naphthenate. The method disclosed herein advantageously substantially eliminates plugging of the hydroconversion reactor and minimizes the amount of insolubles in the total liquid product.

Classifications:

International (IPC 8-9): B01J23/88 C07B61/00 C10G47/02

C10G47/12 (Advanced/Invention)

International (IPC 1-7): B01J23/88 C07B61/00 C10G47/02 C10G47/12

CPC: C10G47/02

European: C10G47/02

US: 208/108 208/112 208/216R 208/217 208/251H 208/254H

PatBase - CA2090651_AA

**SUBSTITUTE
REMPLACEMENT**

**SECTION is not Present
Cette Section est Absente**

Family:

Publication number	Publication date	Application number	Application date
CA2090651 AA	19930903	CA19932090651	19930301
EP0559399 A1	19930908	EP19930301487	19930226
JP6009966 A2	19940118	JP19930064858	19930302
US5372705 A	19941213	US19920973205	19921106

Priority:

US19920844092 19920302 US19920973205 19921106 CA19932090651 19930301

Probable Assignee: IFP

Assignee(s): (std): TEXACO DEVELOPMENT CORP ; TEXACO INC

Assignee(s): TEXACO DEV CORP ; PATEL MAHENDRA S ; BHATTACHARYA AJIT K ; HARRISON JEFFREY B ; IFP ; MALOUF RAYMOND J

Inventor(s): (std): AJITO KUMAA BATATSUCHIYAARIYA ; BHATTACHARYA AJET KUMAR ; BHATTACHARYA AJIT K ; HARRISON JEFFREY B ; HARRISON JEFFREY BAKER ; JIEFURII BEEKAA HARISON ; MAHENDORA SOMABUHAI PATERU ; MALOUF RAYMOND J ; MALOUF RAYMOND JOSEPH ; PATEL MAHENDRA S ; PATEL MOHENDRA SAMABHAI ; REIMONDO JIYOSUFU MAROOFU

Agent(s): SMART AND BIGGAR

Designated states: DE ES FR GB IT NL

91) Family number: 50792744 (US2012067775A)

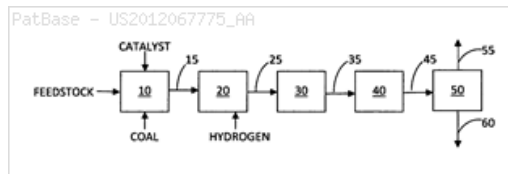
PatBase

Title: TWO-STAGE, CLOSE-COUPLED, DUAL-CATALYTIC HEAVY OIL HYDROCONVERSION PROCESS

Abstract: A process for the production of high yields of high quality products from heavy hydrocarbonaceous feedstock is provided comprising a two-stage, close-coupled process, wherein the first stage comprises a thermal-catalytic zone into which is introduced a mixture comprising the feedstock, coal, dispersed catalyst, and hydrogen; and the second, close-coupled stage comprises a catalytic-hydrotreating zone into which substantially all the effluent from the first stage is directly passed and processed under hydrotreating conditions.

Classifications:

International (IPC 8-9): C07C4/00 C10G1/00 C10G1/06 C10G11/02 C10G11/18 C10G47/04 C10G47/10 C10G65/02 C10G65/10 C10G65/12 C10G69/04 C10G69/06 (Advanced/Invention)
CPC: C10G2300/1011 C10G2300/4081 C10G1/002 C10G47/04 C10G65/02 C10G65/10 C10G65/12 C10G11/18 C10G47/10 C10G69/04 C10G2300/107 C10G2300/1074 C10G2300/1077 C10G2300/205 C10G2300/206 C10G2300/301 Y02P30/20
European: C10G1/00B C10G47/04 C10G65/12 M10G300/10H M10G300/10K
US: 1/1 208/57 208/57P 208/67 208/67P



Family:

Publication number	Publication date	Application number	Application date
AR086432 AA	20131211	AR2012P101747	20120517
US2012067775 AA	20120322	US20110134604	20110610
US2012118791 AA	20120517	US20120358495	20120125
US9039890 BB	20150526	US20120358495	20120125
US9334452 BB	20160510	US20110134604	20110610
UY34079 A1	20130103	UY20120034079	20120517
WO12170082 A1	20121213	WO2012US23578	20120202
WO12170167 A1	20121213	WO2012US38267	20120517

Priority:

US20100360259P 20100630 US20100384572P 20100920 US20110134604 20110610
US20110575814P 20110829 US20120358495 20120125 WO2012US23578 20120202

Probable Assignee: 4CRGROUP LLC

Assignee(s): (std): 4CRGROUP LLC ; CASH DENNIS R ; CHEVRON USA INC ; FORDER GRAHAM J ; MITCHELL DAVID S ; ROSENTHAL JOEL W ; ROSENTHAL JOE W

Inventor(s): (std): CASH DENNIS R ; FORDER GRAHAM J ; ROSENTHAL JOE W ; MITCHELL DAVID S ; ROSENTHAL JOEL W

Agent(s): MELISSA M; MARY R; STEVEN R; SUSAN M; BALDWIN DOUGLAS; SOFFEN STEPHEN A

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

92) Family number: 64900325 (US2017096525A)

© PatBase

Title: USE OF POLYMERS AS HYDROGEN DONORS HETEROGENEOUS IN IMPROVING HEAVY CRUDES AND EXTRA-HEAVY CRUDES

Abstract: The present invention is related to the application of solid polymers or copolymers prepared from monomers having in their structure a polycyclic aromatic ring, an aromatic ring of the type of naphthalene, or polyesters, polyethers, polyamides or polyvinyl derivatives having naphthalene units in their structure, in the hydrotreatment or hydrocracking of heavy hydrocarbons, such as heavy or extra-heavy crude oils or residues from the distillation of petroleum; these polymers or copolymers may be supported, anchored or in a physical mixture with metallic oxides such as alumina, silica, titania or kaolin, and they have an application as heterogeneous hydrogen donors in reactions of hydrotreatment or hydrocracking of heavy or extra-heavy crude oils, residues from the distillation of petroleum and cuts and streams derived from this distillation. These solid polymers or copolymers operate in the presence of hydrogen or methane-rich gas. These hydrogen donor polymers, being solid, may be recovered from the reaction mixture to be reused and have a thermal stability that allows for their use in reactions at temperatures above 450 degrees centigrade. These heterogeneous hydrogen donors improve the physical properties of crude oils, such as API gravity, viscosity, and distillates yield, inhibiting the formation of coke.

Classifications:

International (IPC 8-9): C08G63/66 C08G63/78 C10G11/00 C10G27/04 C10G45/00 C10G45/16 C10G45/18 C10G45/20 C10G45/28 C10G45/44 C10G47/00 C10G47/26 C10G47/28 C10G47/30 C10G47/32 C10G47/34 C10G49/20 C10G9/00 (Advanced/Invention)

CPC: C08G63/66 C10G11/00 C10G9/00 C08G63/78 C10G2300/80 C08G63/197

US: 208/113

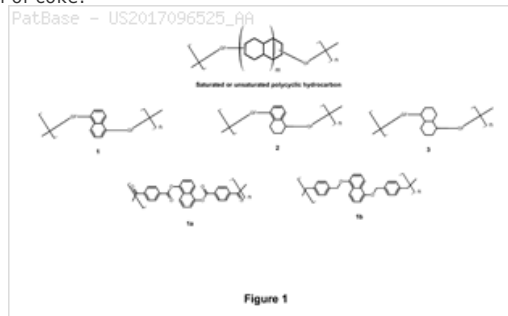


Figure 1

Family:

Publication number	Publication date	Application number	Application date
CA2938272 AA	20170206	CA20162938272	20160805
MX2015010173 A1	20170206	MX20150010173	20150806
US2017096525 AA	20170406	US20160225618	20160801
US10077334 BB	20180918	US20160225618	20160801

Priority:

MX20150010173 20150806

Probable Assignee: INST MEXICANO DEL PETROLEO

Assignee(s): (std): MEXICANO INST PETROL ; INST MEXICANO DEL PETROLEO

Assignee(s): ALEMAN VAZQUEZ LAURA OLIVIA ; CANO DOMINGUEZ JOSE LUIS ; GARCIA GUTIERREZ JOSE LUIS ; HERNANDEZ PEREZ FIDENCIO ; INSTITUTO MEXICANO DEL PETROLEO ; MARES GALLARDO MARIA TERESA

; JIMENEZ CRUZ FEDERICO

Inventor(s): (std): MARES GALLARDO MARIA TERESA ; ALEMAN VAZQUEZ LAURA OLIVIA ; GARCIA GUTIERREZ JOSE LUIS ; HERNANDEZ PEREZ FIDENCIO ; CANO DOMINGUEZ JOSE LUIS ; JIMENEZ CRUZ FEDERICO ; LAURA OLIVIA ALEMAN VAZQUEZ ; FIDENCIO HERNANDEZ PEREZ ; MARIA TERESA MARES GALLARDO ; FEDERICO JIMENEZ CRUZ ; JOSE LUIS GARCIA GUTIERREZ ; JOSE LUIS CANO DOMINGUEZ

Agent(s): NORTON ROSE FULBRIGHT CANADA LLP SENCRL SRL; REYNOLDS ANNE M; CASIMIR JONES SC

93) Family number: 11641247 (US5925238A)

© PatBase

Title: Catalytic multi-stage hydrodesulfurization of metals-containing petroleum residua with cascading of rejuvenated catalyst

Abstract: A process for catalytic two-stage hydrodesulfurization of metal-containing petroleum residua feedstocks to achieve at least about 75 percent desulfurization of the liquid product while also providing at least about 40 percent reduction in catalyst consumption. In the process, used catalyst having a catalyst equilibrium age of 0.3-5.0 bbl oil feed/lb catalyst is withdrawn from the second stage reactor, rejuvenated so as to remove 10-50 weight percent of the contaminant metals and at least 80 weight percent of carbon deposited on the catalyst, and then cascaded forward and added to the first stage reactor. Sufficient fresh make-up catalyst is added to the second stage reactor to replace the used catalyst withdrawn there, and only sufficient fresh catalyst is added to the first stage reactor to replace any catalyst transfer losses. Used catalyst having a catalyst equilibrium age of 0.6 to 10.0 bbl. oil per lb. catalyst is withdrawn from the first stage reactor for discard.

Classifications:

International (IPC 8-9): C10G65/04 (Advanced/Invention);

C10G65/00 (Core/Invention)

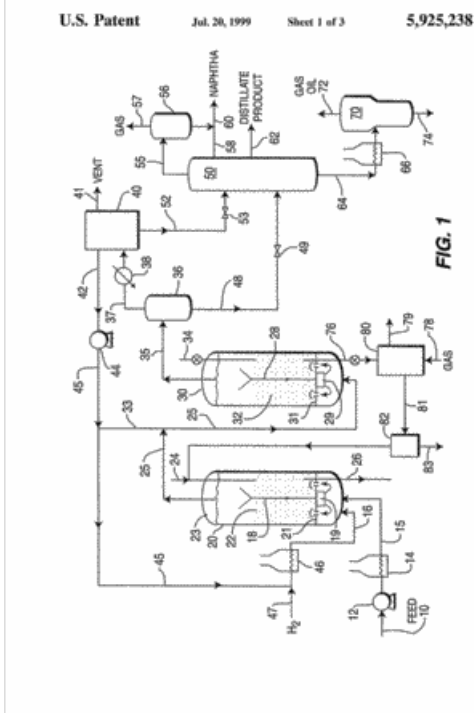
International (IPC 1-7): C10G65/04

CPC: C10G65/04

European: C10G65/04

US: 208/210 208/213 208/216R 208/251H

PatBase - US5925238_A



Family:

Publication number	Publication date	Application number	Application date
US5925238 A	19990720	US19970853393	19970509

Priority:

US19970853393 19970509

Probable Assignee: HRI INC

Assignee(s): (std): IFP NORTH AMERICA

Assignee(s): HRI INC

Inventor(s): (std): ABRAMS LAWRENCE M ; DUDDY JOHN E ; HILDEBRANDT STEVEN J

94) Family number: 30685860 (WO04052534A1)

© PatBase

Title: HEAVY FEED HPC PROCESS USING A MIXTURE OF CATALYSTS

Abstract: The present invention pertains to a process for the hydroprocessing of heavy hydrocarbon feeds, preferably in an ebullating bed process, by contacting the feed with a mixture of two hydroprocessing catalysts meeting specified pore size distribution requirements. More in particular, catalyst I has at least 50 percent of its total pore volume in pores with a diameter of at least 20 nm (200 Å), and 10-30 percent of the total pore volume in pores with a diameter of at least 200 nm (2000 Å), while catalyst II has at least 75 percent of the total pore volume in pores with a diameter of 10-120 nm (1001200 Å), 0-2 percent of the total pore volume in pores with a diameter of at least 400 nm (4000 Å), and 0-1 percent of the total pore volume in pores with a diameter of at least 1000 nm (10000 Å). The process combines high contaminant removal with high conversion, low sediment formation, and high process flexibility.

Classifications:

International (IPC 8-9): B01J23/24 B01J23/88 B01J35/10 C10G45/04 C10G45/06 C10G45/08 C10G45/12

C10G49/04 (Advanced/Invention)
International (IPC 1-7): B01J23/24 B01J35/10 C10G49/04
CPC: C10G49/04
European: C10G49/04

Family:

Publication number	Publication date	Application number	Application date
AU2003289969 AA	20040630	AU20030289969	20031204
AU2003289969 AH	20040630	AU20030289969	20031204
CA2508605 AA	20050603	CA20032508605	20031204
CA2508605 C	20111129	CA20032508605	20031204
CN100444956 C	20081224	CN200380108308	20031204
CN1735456 A	20060215	CN200380108308	20031204
EP1567262 A1	20050831	EP20030782317	20031204
JP2006509084 T2	20060316	JP20040558008T	20031204
JP4369871 B2	20091125	JP20040558008T	20031204
PL213492 B1	20130329	PL20030377092	20031204
PL377092 A1	20060123	PL20030377092	20031204
WO04052534 A1	20040624	WO2003EP13791	20031204

Priority:

EP20020080141 20021206 EP20030782317 20031204 WO2003EP13791 20031204

Probable Assignee: ALBEMARLE CORP

Assignee(s): (std): AKZO NOBEL NV ; ALBEMARLE CORP ; ALBEMARLE NETHERLANDS BV ; NIPPON KETJEN CO LTD ; NIPPON KETJEN CO

Assignee(s): PLANTENGA FRANS LODEWIJK ; ABE SATOSHI ; AKZO NOBEL N V ; FUJITA KATSUHISA

Inventor(s): (std): SATOSHI PLANTENGA FRANS LODEWI ; SATOSHI ABE ; PLANTENGA FRANS LODEWIJK FUJITA KATSUHISA
ABE SATO ; KATSUHISA FUJITA ; FRANS LODEWIJK PLANTENGA ; PLANTENGA FRANS LODEWIJK ; FUJITA KATSUHISA ; ABE SATOSHI ; LODEWIJK PLANTENGA FRANS

Inventor(s): PLANTENGA FRANS LODEWIJK FUJITA KATSUHISA ABE

Agent(s): OGILVY RENAULT LLP SENCRL SRL; NORTON ROSE OR SENCRL SRL LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SN SY SZ TD TG TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW

95) Family number: 60159498 (US2017175012A)

© PatBase

Title: PROCESS FOR HYDROCRACKING HEAVY OIL AND OIL RESIDUE

Abstract: A process for the hydrocracking of heavy oils and/or oil residues, the process comprising the step of contacting the heavy oils and/or oil residues with a non-metallised carbonaceous additive in the presence of a hydrogen-containing gas at a temperature of from 250 degrees centigrade to 600 degrees centigrade wherein the non-metallised carbonaceous additive has an average pore size of at least 2 nm.

Classifications:

International (IPC 8-9): B01J21/18 B01J23/745 B01J27/20 B01J35/10 B01J37/06 B01J37/20 C10G1/08 C10G45/00 C10G45/04 C10G45/46 C10G45/60 C10G47/02 C10G47/26 (Advanced/Invention)

CPC: C10G2300/70 C10G1/08 C10G45/04 C10G45/46 C10G45/60 B01J21/18 B01J23/745 B01J35/1019 B01J35/1061 B01J35/109 B01J35/1095 B01J37/06 B01J37/20 C10G45/00 C10G2300/703 C10G47/02

Family:

Publication number	Publication date	Application number	Application date
CN106102908 A	20161109	CN201580007701	20150212
EP3104968 A1	20161221	EP20150705010	20150212
EP3104968 B1	20190424	EP20150705010	20150212
JP2017510672 T2	20170413	JP20160551819T	20150212
RU2016134032 A	20180315	RU20160134032	20150212
RU2016134032 A3	20180906	RU20160134032	20150212
US2017175012 AA	20170622	US20150115836	20150212
WO15121373 A1	20150820	WO2015EP53012	20150212

Priority:

US20140939019P 20140212 RU20160134032 20150212 WO2015EP53012 20150212
US20150115836 20150212

Probable Assignee: BP PLC

Assignee(s): (std): BP EUROPA SE ; BP PLC ; SCHLEIFFER ANDREAS ; YANG HONG

Inventor(s): (std): SCHLEIFFER ANDREAS ; YANG HONG

Agent(s): HAMER CHRISTOPHER K; YAMAMOTO OSAMU; TAKEUCHI SHIGEO; ONO SHINJIRO; MATSUYAMA MINAKO; KOBAYASHI YASUSHI; PEDLEY MICHAEL EWAN

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: HYDROCRACKING PROCESS WITH FEED/BOTTOMS TREATMENT

Abstract: A hydrocracking process is provided for treating a first heavy hydrocarbon feedstream and a second heavy hydrocarbon feedstream, in which the first heavy hydrocarbon feedstream contains undesired nitrogen-containing compounds, sulfur-containing compounds and poly-nuclear aromatic compounds. The process includes contacting the first heavy hydrocarbon feedstream with adsorbent material to produce an adsorbent-treated heavy hydrocarbon stream having a reduced content of nitrogen-containing, sulfur-containing compounds and poly-nuclear aromatic compounds. The second heavy hydrocarbon feedstream is combined with the adsorbent-treated heavy hydrocarbon stream. The combined stream is charged to a hydrocracking reaction unit. The hydrocracked effluent is fractionated to recover hydrocracked products and a bottoms stream containing heavy poly-nuclear aromatic compounds. Fractionator bottoms are contacted with adsorbent material (which can be the same or different than the adsorbent material used to treat the initial feed) to produce an adsorbent-treated fractionator bottoms stream having a reduced content of heavy poly-nuclear aromatic compounds, and are recycled to the hydrocracking reaction unit.

Classifications:

International (IPC 8-9): C10G25/00 C10G47/00 C10G47/12 C10G67/00 C10G67/06 C10G67/14 (Advanced/Invention)

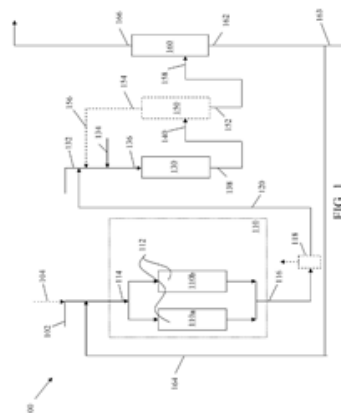
CPC: C10G2300/1074 C10G2300/1096 C10G2300/202 C10G2300/4081 C10G2300/44 C10G2300/701 C10G67/14 C10G67/06

European: C10G67/06 C10G67/14 M10G300/20A2

US: 208/91 208/91P

PatBase - US2012187027_AA

Patent Application Publication Jul. 26, 2012 Sheet 1 of 3 US 2012/0187027 A1

**Family:**

Publication number	Publication date	Application number	Application date
CN103443251 A	20131211	CN201280012208	20120124
CN103443251 B	20160601	CN201280012208	20120124
DE602012032262 D1	20170629	DE201260032262T	20120124
EP2668251 A1	20131204	EP20120745355	20120124
EP2668251 A4	20140910	EP20120745355	20120124
EP2668251 B1	20170510	EP20120745355	20120124
ES2634099 T3	20170926	ES20120745355T	20120124
GC9268 A	20181204	GC2012P020330	20120123
JP2014507526 A2	20140327	JP20130550662	20120124
JP2014507526 T2	20140327	JP20130550662T	20120124
JP6073808 B2	20170201	JP20130550662T	20120124
KR101895091 B1	20180904	KR20137022426	20120124
KR20140017561 A	20140211	KR20137022426	20120124
US2012187027 AA	20120726	US20110012353	20110124
US2014360918 AA	20141211	US20140469905	20140827
US8828219 BB	20140909	US20110012353	20110124
US9534179 BB	20170103	US20140469905	20140827
WO12109004 A1	20120816	WO2012US22302	20120124

Priority:

US20110012353 20110124 EP20120745355 20120124 WO2012US22302 20120124
US20140469905 20140827

Probable Assignee: SAUDI ARABIAN OIL CO**Assignee(s):** (std): KOSEOGLU OMER REFA ; SAUDI ARABIAN OIL CO**Assignee(s):** SAUDI ARABIAN OIL COMPANY**Inventor(s):** (std): KOSEOGLU OMER REFA ; KOSEOGLU OMER**Inventor(s):** KOSEOGLU OMER REFA DHAHRAN ; OMER REFA KOSEOGLU

Agent(s): BOEHMERT AND BOEHMERT ANWALTSPARTNERSCHAFT MBB PATENTANWAELTE RECHTSANWAELTE;
GERVASI GEMMA; ISERN JORGE; SULEIMAN I AL AMMAR LAW OFFICE; ABELMAN FRAYNE AND SCHWAB;
CRISPINO RALPH J

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY
CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS
IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY
MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY

97) Family number: 4710682 (US5037791A)

© PatBase

Title: POROUS METAL OXIDE SUPPORTED CARBON-COATED CATALYSTS AND METHOD FOR PRODUCING SAME

Abstract: Supported carbon-coated catalyst material and a method for producing and using same in catalytic reaction processes, preferably in ebullated or fluidized catalyst beds. The catalyst materials are prepared by depositing a porous carbon layer on a support material of a selected metal oxide or compound to produce 5-40 weight percent carbon thereon, then preferentially treating the carbon based layer by partial oxidation, pyrolysis or reduction to enhance and activate the carbon layer on the catalyst. Promoter materials can also be advantageously added either to the support material or to the carbon layer in 0.5-10 weight percent to provide an improved composite carbon-coated catalyst having total pore volume of 0.3-1.0 cc/gm, substantially increased surface area of 80-600 M²/gm, low surface acidity, particle strength of 1.8-5 lb/mm with reduced particle attrition losses and improved catalyst performance characteristics.

Classifications:

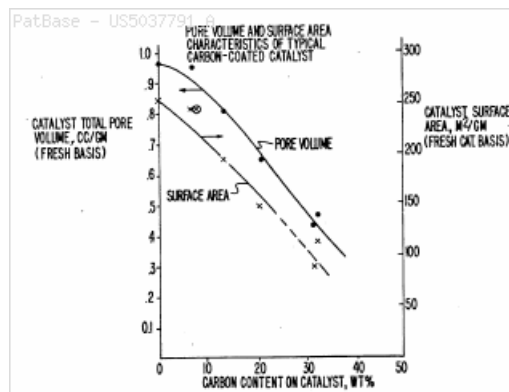
International (IPC 8-9): B01J21/18 B01J23/24 B01J23/74 B01J35/10 B01J37/02 C10G49/02 (Advanced/Invention); B01J21/00 B01J23/16 B01J23/74 B01J35/00 B01J37/00 C10G49/00 (Core/Invention)

International (IPC 1-7): B01J21/18 B01J23/24 B01J23/88

CPC: B01J35/002 B01J35/0026 B01J35/1014 B01J35/1019 B01J35/1038 B01J35/1042 B01J21/18 B01J23/24 B01J23/74 B01J37/024 C10G49/02

European: B01J21/18 B01J23/24 B01J23/74 B01J35/10 B01J37/02M C10G49/02

US: 208/217 208/251H 502/180 502/182 502/185 502/413 502/415 502/433

**Family:**

Publication number	Publication date	Application number	Application date
US5037791 A	19910806	US19900541553	19900621

Priority:

US19880226929 19880728 US19900541553 19900621

Probable Assignee: IFP ENERGIES NOUVELLES

Assignee(s): (std): HYDROCARBON RESEARCH INC

Assignee(s): IFP ENERGIES NOUVELLES ; FRANCAIS DU PETROLE INST ; HRI INC ; HRI INC 6 CLEMENTON RD GIBBSBORO NJ 08026 A CORP OF DE

Inventor(s): (std): GANGULI PARTHA S ; COMOLLI ALFRED G

98) Family number: 28147099 (US6136179A)

© PatBase

Title: Low pressure process for the hydroconversion of heavy hydrocarbons

Abstract: PCT No. PCT/US97/02409 Sec. 371 Date Jun. 19, 1998 Sec. 102(e) Date Jun. 19, 1998 PCT Filed Feb. 14, 1997 PCT Pub. No. WO97/29841 PCT Pub. Date Aug. 21, 1997 This invention relates to a process of catalytic hydroconversion of a heavy hydrocarbon oil containing a substantial portion of components having an atmospheric boiling point above 565 DEG C. to give a product hydrocarbon oil containing components having a boiling point below about 565 DEG C. The process includes steps of mixing a heavy hydrocarbon oil with an oil soluble molybdenum compound, introducing the resulting mixture into a hydroconversion zone, introducing a reactor feed gas into the hydroconversion zone, and recovering the product hydrocarbon oil from the hydroconversion zone.

Classifications:

International (IPC 8-9): B01J27/19 C10G11/04 C10G35/06 C10G47/02 C10G47/04 C10G47/12 C10G47/26 C10G49/02 C10G63/04 C10G69/04 (Advanced/Invention)

International (IPC 1-7): B01J27/19 C10G11/04 C10G35/06 C10G45/00 C10G47/02 C10G47/04 C10G47/12 C10G49/02 C10G63/04 C10G69/04

CPC: C10G47/02 C10G47/26

European: C10G47/02 C10G47/26

US: 208/108 208/109 208/110 208/111.3 208/111.35 208/112

ТАБЛИЦА 1

Свойства	I	II
Плотность, кг/м ³	4,4	3,1
1000°Р°, % обжиг.	87,3	76,1
1000°Р°, % мас.	88,3	-
1000°Р°, % мас.	11,7	-
Сера, % мас.	5,8	5,6
Общий азот, мас.ч.		
на миллион (мг/мл)	4015	4328
Водород, % мас.	10,10	9,88
Углерод, % мас.	83,5	84,10
Остаток микроуглерода по Алюр, % мас.	22,4	20,2
Устойчивость к коррозии		
в 300°Р	1705	-
в 350°Р	475	-
Точка текучести, °Р	110	-
Нерастворимое в H ₂ O, % мас.	35,6	30,16
Нерастворимое в H ₂ O ₂ , % мас.	10,87	9,40
Нерастворимое в толуоле, % мас.	0,01	0,01
Асфальтены, % мас.	10,16	9,48
Металлы, мас. частей на миллион		
NI	44	37
V	141	110
Fe	11	9
Содерж., мас. частей на миллион	1007	1007

-10-

Family:

Publication number	Publication date	Application number	Application date
AU199719599 A1	19970902	AU19970019599	19970214
CA2244821 AA	19980727	CA19972244821	19970214
CA2244821 C	20061121	CA19972244821	19970214
EP0902823 A2	19990324	EP19970907644	19970214
EP0902823 A4	19991215	EP19970907644	19970214
JP2001525858 T2	20011211	JP19970529529T	19970214
PL328308 A1	19990118	PL19970328308	19970214
RU2181751 C2	20020427	RU19980116818	19970214
RU98116818 A	20000610	RU19980116818	19980914
SK107598 A3	19990611	SK19980001075	19970214
US6136179 A	20001024	US19980091610	19980619
WO9729841 A2	19970821	WO1997US02409	19970214

Priority:

US19960011652 19960214 US19960011652P 19960214 WO1997US02409 19970214
US19980091610 19980619

Probable Assignee: IFP

Assignee(s): (std): PORTER MICHAEL KEVIN ; SHERWOOD DAVID EDWARD JR ; TEKSAKO DEVELOPMENT KORPOREJSHN ;
TEXACO DEVELOPMENT CORP ; TEXACO INC

Assignee(s): IFP

Inventor(s): (std): PORTER MAJKL KEVIN ; PORTER MICHAEL K ; PORTER MICHAEL KEVIN ; SHERVUD DEJVID EHDVARD ML ;
SHERWOOD DAVID E ; SHERWOOD DAVID E JR ; SHERWOOD DAVID EDWARD JR ; SHERWOOD JR DAVID
EDWARD

Inventor(s): DAVID EDWARD SHERWOOD JR ; MICHAEL KEVIN PORTER

Agent(s): SMART AND BIGGAR

Designated states: AL AM AT AU AZ BA BB BE BF BG BJ BR BY CA CF CH CN CU CZ DE DK EE ES FI FR GB GE GR HU IE IL IS
IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MC MD MG MK MN MW MX NL NO NZ PL PT RO RU SD SE SG SI
SK SZ TJ TM TR TT UA UG US UZ VN YU

99) Family number: 44990322 (WO10053865A1)

© PatBase

Title: INTEGRATION OF GASIFICATION AND HYDROPROCESSING FOR LOW EMISSIONS REFINING

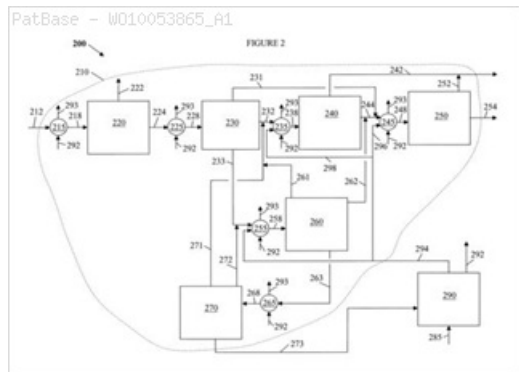
Abstract: Disclosed is an integrated hydroprocessing and gasification system and a method for operating the integrated hydroprocessing and gasification system. The integrated hydroprocessing and gasification system comprises an oil processing facility integrated with a gasification facility. The gasification facility uses cheaper coal/coke feed to produce a hydrogen stream and a high pressure steam stream. The hydrogen stream provides sufficient hydrogen for the oil processing facility, while the high pressure steam stream is used to pre-heat the streams entering the equipment of the oil processing facility in a steam heater. These steam heaters substantially eliminate emissions. Additionally, there is no heavy crude bottoms product formed in the oil processing facility because the bottoms product is fed into the gasification facility, according to some embodiments, the reactors used within the oil processing facility may be ebulating bed reactors, which use the heat of reaction to supply the required heat for operation.

Classifications:

International (IPC 8-9): C01B3/22 C10G45/00 (Advanced/Invention)

CPC: C01B3/22 C01B3/50 C01B3/52 C01B3/56 C01B3/58 C01B13/0229

C01B2203/0266 C01B2203/04 C01B2203/0415 C01B2203/043
C01B2203/0445 C01B2203/0475 C01B2203/0485 C01B2203/06
C01B2203/061 C01B2203/062 C01B2203/068 C01B2203/147
C01B2210/0046 C10G49/007
European: C01B13/02D C01B3/22 C01B3/50 C01B3/52 C01B3/56
C01B3/58 C10G49/00H M01B203/02F M01B203/04 M01B203/04D
M01B203/04F4 M01B203/04H4 M01B203/04P4 M01B203/04P8
M01B203/06 M01B203/06B M01B203/06D M01B203/06J M01B203/14H2
M01B210/00W4



Family:

Publication number	Publication date	Application number	Application date
WO10053865 A1	20100514	WO2009US62964	20091102

Priority:

US20080111263P 20081104

Probable Assignee: KATANA ENERGY LLC

Assignee(s): (std): KATANA ENERGY LLC ; NONGBRI GOVANON ; RODARTE ALMA ISABEL MARIN ; WALLACE PAUL STEVEN

Inventor(s): (std): NONGBRI GOVANON ; RODARTE ALMA ISABEL MARIN ; WALLACE PAUL STEVEN

Agent(s): PATEL RAJESH D ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

100) Family number: 49584732 (US2011226666A)

© PatBase

Title: SYSTEM AND PROCESS FOR INTEGRATED OXIDATIVE DESULFURIZATION, DESALTING AND DEASPHALTING OF HYDROCARBON FEEDSTOCKS

Abstract: A system and process for integrated desulfurizing, desalting and deasphalting of hydrocarbon feedstocks is provided. A hydrocarbon feedstock, a water soluble oxidant, and a water soluble catalyst can be introduced in a oxidation zone and retained for a period of time sufficient to achieve the desired degree of desulfurization, or introduced directly into the desalting zone along with wash water. Catalyst and dissolved salt are discharged along with the wastewater effluent from the desalting zone. A hydrocarbon stream including converted hydrocarbons and oxidation by-products is passed to a deasphalting zone. In the deasphalting zone, phase separation occurs, whereby a light phase including desulfurized hydrocarbons are produced, and a heavy phase including asphaltenes and oxidation by-products are discharged, e.g., passed to an asphalt pool.

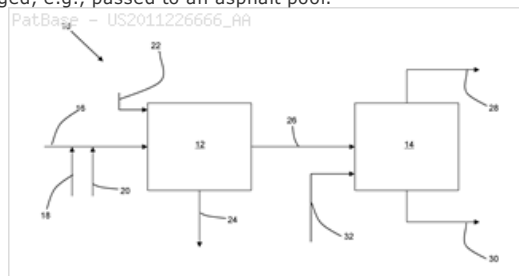
Classifications:

International (IPC 8-9): B01J19/00 C10C3/00 C10G27/00 C10G27/04 C10G31/08 C10G33/02 C10G53/04 C10G53/14 C10G61/02 (Advanced/Invention)

CPC: C10G31/08 C10G27/00 C10G27/04 C10G33/02 C10G2300/202

European: C10G27/00 C10G27/04 C10G31/08 C10G33/02 M10G300/20A2

US: 196/155 208/240 208/3 208/309 208/45 208/97 208/97P 422/187 422/187S



Family:

Publication number	Publication date	Application number	Application date
US2011226666 AA	20110922	US20110049305	20110316
US8980080 BB	20150317	US20110049305	20110316
WO11116059 A1	20110922	WO2011US28621	20110316

Priority:

US20100314497P 20100316 US20110049305 20110316

Probable Assignee: SAUDI ARABIAN OIL CO

Assignee(s): (std): BOURANE ABDENNOUR ; KOSEOGLU OMER REFA ; SAUDI ARABIAN OIL CO

Assignee(s): SAUDI ARABIAN OIL COMPANY

Inventor(s): (std): KOSEOGLU OMER REFA ; BOURANE ABDENNOUR

Agent(s): ABELMAN FRAYNE AND SCHWAB; CRISPINO RALPH J

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: HYDROCARBON CONVERSION PROCESS

Abstract: The invention involves a process for hydrocarbon conversion. The process can include providing a feed to a primary upgrading zone and then treating the product from the primary upgrading zone with a feed-immiscible ionic liquid to remove sulfur compounds.

Classifications:

International (IPC 8-9): C10G21/24 C10G21/28 C10G55/02 C10G55/04 C10G55/06 C10G67/04 (Advanced/Invention)

CPC: C10G67/04 C10G55/04 C10G21/24 C10G21/28 C10G55/06

US: 1/1 208/237 208/240 208/96

Family:

Publication number	Publication date	Application number	Application date
US2014001093 AA	20140102	US20130760292	20130206
US9133404 BB	20150915	US20130760292	20130206

Priority:

US20120665950P 20120629 US20130760292 20130206

Probable Assignee: UOP LLC

Assignee(s): (std): UOP LLC

Inventor(s): (std): MEZZA BECKAY J ; NICHOLAS CHRISTOPHER P ; HUOVIE BRENN A E ; WANG HAIYAN ; BHATTACHARYYA ALAKANANDA ; GATTUPALLI RAJESWAR R

Title: Shale oil stabilization with a hydroprocessor

Abstract: A process is provided to produce, stabilize, dedust and upgrade synthetic oil, such as shale oil. In the process, synthetic fuels, such as oil shale, tar sands and diatomite are retorted with heat carrier material to liberate an effluent product stream comprising hydrocarbons and entrained particulates of dust. In order to minimize polymerization of the product stream and agglomerate the dust, the product stream is stabilized, upgraded, and pretreated prior to dedusting, in a hydroprocessor, such as an ebullated bed reactor, with a hydroprocessing gas in the presence of a catalyst. The hydroprocessing gas can be hydrogen, scrubbed fractionator gases, or hydrocarbon-enriched hydroprocessor off gases.

Classifications:

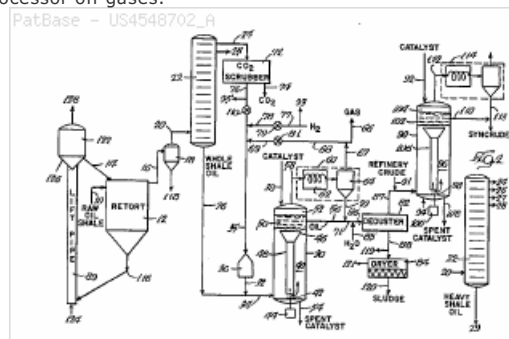
International (IPC 8-9): C10G1/00 (Advanced/Invention); C10G1/00 (Core/Invention)

International (IPC 1-7): C10G1/00

CPC: C10G1/002

European: C10G1/00B

US: 208/11R 208/409 208/413 208/419 208/424 208/89

**Family:**

Publication number	Publication date	Application number	Application date
US4548702 A	19851022	US19840583320	19840224

Priority:

US19840583320 19840224

Probable Assignee: CHEVRON RESEARCH CO

Assignee(s): (std): GULF OIL CORP ; STANDARD OIL CO

Assignee(s): STANDARD OIL CO A CORP OF IN ; MATSUSHITA ELECTRIC INDUSTRIAL CO LTD ; CHEVRON RESEARCH CO ; CHEVRON USA INC ; GULF OIL A CORP OF PA CORP

Inventor(s): (std): JOHNSON DAVID M ; MILLER PAUL B ; YORK EARL D

Title: CATALYST REJUVENATION**Abstract:** ABSTRACT OF THE DISCLOSURE

In a process for hydrotreating heavy oils containing soluble organometallic compounds wherein the heavy oil is contacted, at an elevated temperature and pressure and in the presence of hydrogen, with valuable hydrotreating catalyst solid particles and the hydrotreating catalyst loses activity at least in part due to metals fouling of the catalyst, the improvement which comprises rejuvenating the metals fouled catalyst by attriting away at least a portion of the outside skin of the catalyst particles so as to extend the useful life of the catalyst particles for hydro-treating. B

Classifications:

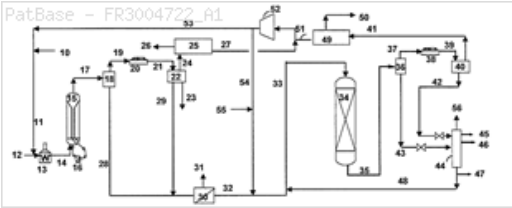
International (IPC 8-9): B01J37/00 B01J38/00 C10G49/04 (Advanced/Invention);

au moins une fraction distillats moyens. Ledit procede permet d'eliminer au moins en partie des impuretes solides lors de l'etape de separation, de maniere a envoyer dans l'etape d'hydroisomerisation en lit fixe une fraction liquide a teneur reduite en impuretes solides et d'operer l'etape d'hydroisomerisation sans risque de bouchage prematuree et avec une duree de cycle amelioree.

Machine translation: The invention relates to a process for converting a feed derived from renewable sources for producing middle distillates comprising a hydrotreating step of said filler in the presence of hydrogen in at least a three-phase ebullated bed reactor operating at least one step of separation of at least a portion of the hydrotreated effluent obtained after the step a) to produce at least a gaseous fraction, at least a liquid fraction comprising paraffins and at least a fraction solid impurities comprising a hydroisomerization operant fixed bed of at least a portion of the liquid fraction obtained after the step b) in the presence of a hydroisomerization catalyst, said catalyst comprising a function hydro-dehydrogenating function and at least one molecular sieve or amorphous mineral support, at least one step of separation of the effluent after the step c) into at least one gaseous fraction and at least one distillate fraction means. The method allows to eliminate at least part of the solid impurities in the stage of separation, a way to send in the stage fixed bed hydroisomerization of a liquid fraction content was reduced by solid impurities and operate the hydroisomerization step of safely capping temperature and with a duration of IMPROVED cycle.

Classifications:

International (IPC 8-9): C10G3/00 C10G45/08 C10G45/62 C10G65/04 (Advanced/Invention)
CPC: C10G3/50 C10G1/002 C10G3/42 C10G3/56 C10G45/60 C10G45/64 C10G49/002 C10G2300/1011 C10G2400/04 C10L1/08 Y02E50/13 Y02P30/20



Family:

Publication number	Publication date	Application number	Application date
FR3004722 A1	20141024	FR20130053695	20130423
FR3004722 B1	20160311	FR20130053695	20130423

Priority:

FR20130053695 20130423

Probable Assignee: IFP ENERGIES NOUVELLES
Assignee(s): (std): IFP ENERGIES NOUVELLES
Inventor(s): (std): CHAPUS THIERRY ; WEISS WILFRIED
Inventor(s): WILFRIED WEISS ; THIERRY CHAPUS
Agent(s): IFP ENERGIES NOUVELLES

106) Family number: 62400706 (US2016137930A)

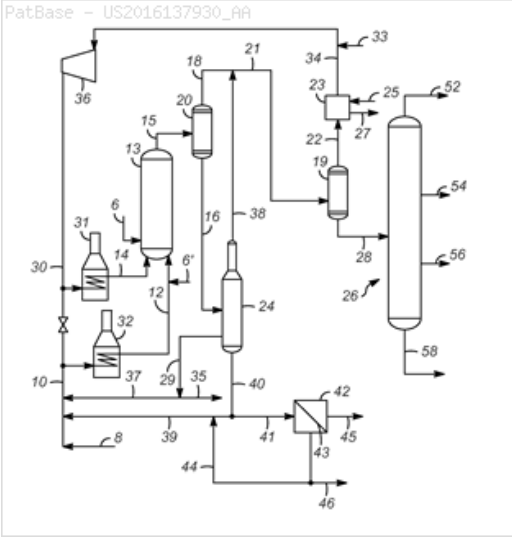
© PatBase

Title: SLURRY HYDROCRACKING PROCESS USING SPENT HYDROPROCESSING CATALYST

Abstract: A slurry hydrocracking process using spent hydroprocessing catalyst is described. The process includes obtaining the spent hydroprocessing catalyst from a hydroprocessing zone; reducing the size of the spent hydroprocessing catalyst; and introducing a heavy hydrocarbon feed and a hydrogen stream into a slurry hydrocracking zone in the presence of the reduced size spent hydroprocessing catalyst under slurry hydrocracking conditions to form a slurry hydrocracking effluent.

Classifications:

International (IPC 8-9): C10G47/12 C10G47/20 (Advanced/Invention)
CPC: C10G47/20 B01J38/00 C10G47/26 C10G65/12 B01J23/882 B01J23/883 B01J23/888 B01J23/90 B01J23/92 B01J23/94 B01J29/064 B01J29/076 B01J29/106 B01J29/166 B01J29/7215 B01J29/7815 B01J29/90 B01J35/023 B01J37/0036 B01J2229/186
US: 208/111.3 208/112



Family:

Publication number	Publication date	Application number	Application date
US2016137930 AA	20160519	US20140546735	20141118

Priority:

US20140546735 20141118

Probable Assignee: UOP LLC
Assignee(s): (std): UOP LLC

107) Family number: 2874494 (US4808289A)

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Title: Resid hydrotreating with high temperature flash drum recycle oil

Abstract: Resid hydrotreating conversion of resid can be substantially increased by blending the resid with high-temperature flash drum oil before being hydrotreated in a train of ebullated bed reactors. The high-temperature flash drum oil also improves the overall thermal efficiency of the process.

Classifications:

International (IPC 8-9): C10G45/16 C10G49/00

C10G65/04 (Advanced/Invention);

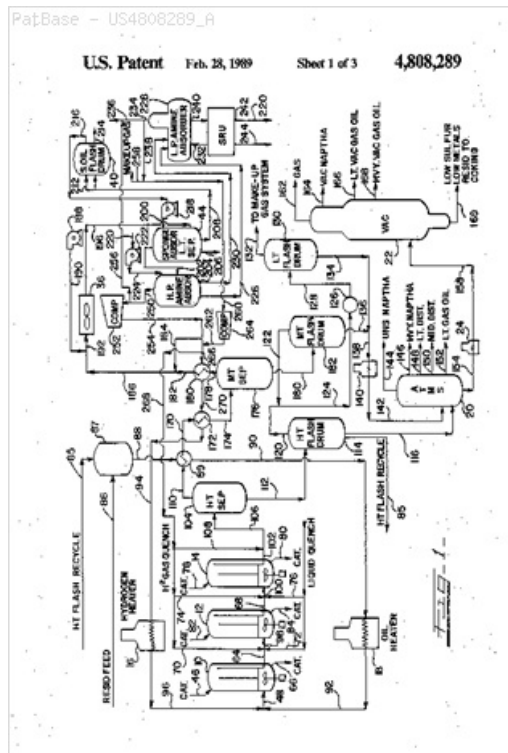
C10G45/02 C10G49/00 C10G65/00 (Core/Invention)

International (IPC 1-7): C10G65/04

CPC: C10G45/16 C10G49/007 C10G65/04

European: C10G45/16 C10G49/00H C10G65/04

US: 208/100 208/102 208/108 208/112 208/131 208/155 208/162 208/210 208/212 208/251H 208/254H



Family:

Publication number	Publication date	Application number	Application date
CA1306969 A1	19920901	CA19880571126	19880705
US4808289 A	19890228	US19870071477	19870709

Priority:

US19870071477 19870709 CA19880571126 19880705

Probable Assignee: AMOCO A CORP OF INDIANA CORP

Assignee(s): (std): AMOCO CORP

Assignee(s): BOENING ROBERT E ; MCDANIEL NORMAN K ; VASTI NICHOLAS C ; WOODS NORMAN R ; AMOCO A CORP OF INDIANA CORP

Inventor(s): (std): BOENING ROBERT E ; MCDANIEL NORMAN K ; VASTI NICHOLAS C ; WOODS NORMAN R

Agent(s): GOWLING LAFLEUR HENDERSON LLP

108) Family number: 53725487 (US2013118951A)

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Title: METHOD FOR PREDICTING CATALYST PERFORMANCE

Abstract: Disclosed herein is a method involving the steps of: (a) precipitating an amount of polyaromatic compounds from a liquid sample of a first hydrocarbon-containing feedstock having solvated polyaromatic compounds therein with one or more first solvents in a column; (b) determining one or more solubility characteristics of the precipitated polyaromatic compounds; (c) analyzing the one or more solubility characteristics of the precipitated polyaromatic compounds; and (d) correlating a measurement of catalyst activity performance for the first hydrocarbon-containing feedstock sample with a mathematical parameter derived from the results of analyzing the one or more solubility characteristics of the precipitated polyaromatic compounds to predict catalyst performance of a catalyst in a refinery operation of the hydrocarbon-containing feedstock.

Classifications:

International (IPC 8-9): C10G21/00 C10G99/00

G01N30/02 (Advanced/Invention);

G01N30/00 G01N30/88 (Advanced/Non-invention)

CPC: C10G21/003 G01N2030/009 G01N2030/8854

US: 1/1 208/14 73/61.56 73/61.59



US9505994 BB	20161129	US20150608848	20150129
WO15119850 A1	20150813	WO2015US13702	20150130

Priority:

US20140935931P 20140205 US20150608848 20150129 WO2015US13702 20150130

Probable Assignee: BAKER HUGHES INC

Assignee(s): (std): BAKER HUGHES INC

Assignee(s): BAKER HUGHES INCORPORATION ; OVASKAINEN OSSI V ; RESPINI MARCO

Inventor(s): (std): RESPINI MARCO ; OVASKAINEN OSSI V

Agent(s): SIM AND MCBURNEY; MARKS AND CLERK; BEACHAM ANNABEL ROSE; MOSSMAN KUMAR AND TYLER PC; LITTLEFIELD STEPHEN A

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

110) Family number: 11609323 (US5322829A)

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Title: RESID HYDROTREATING CATALYST AND PROCESS

Abstract: A catalyst and process are disclosed for upgrading heavy feedstocks such as resid. The catalyst comprises a porous inorganic oxide support having an incremental pore volume maximum at a pore radius greater than 50 Angstroms bearing between 0.1 to 5.0 weight percent nickel and having at least 0.4 cc/g of pores having a radius less than 125 Angstroms. An ebullated bed hydroconversion process employing the catalyst also is disclosed.

Classifications:

International (IPC 8-9): B01J23/755 B01J23/85 B01J35/10

C10G45/08 (Advanced/Invention);

B01J23/755 B01J23/76 B01J35/00 C10G45/02 (Core/Invention)

International (IPC 1-7): B01J23/28 B01J23/74 B01J23/85 B01J23/88

CPC: C10G45/08 B01J23/755 B01J23/85 B01J35/1014 B01J35/1019

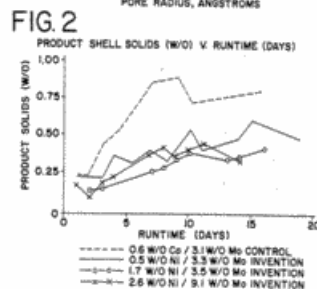
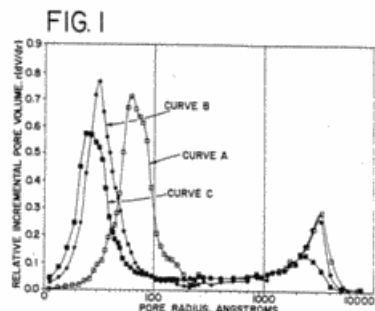
B01J35/1042 B01J35/1047 B01J35/1061 B01J35/108

European: B01J23/755 B01J23/85 B01J35/10 C10G45/08

US: 502/315

PatBase - US5322829_A

U.S. Patent June 21, 1994 Sheet 1 of 4 5,322,829



Family:

Publication number	Publication date	Application number	Application date
US5322829 A	19940621	US19930031656	19930315

Priority:

US19930031656 19930315

Probable Assignee: AMOCO CORP

Assignee(s): (std): AMOCO CORP

Assignee(s): AMOCO PATENTS AND LICENSING DEPARTMENT CORP

Inventor(s): (std): KUKES SIMON G ; ARTES DAVID C

111) Family number: 54631705 (WO13126362A2)

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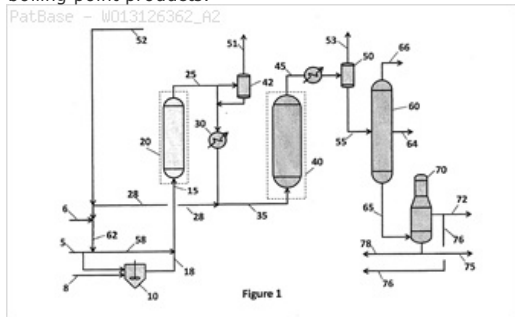
Title: TWO-ZONE, CLOSE-COUPLED, HEAVY OIL HYDROCONVERSION PROCESS UTILIZING AN EBULLATING BED FIRST ZONE

Abstract: A process for hydroconversion of heavy oil feedstocks that effectively controls the condensation of asphaltenes by utilizing a two-zone, close-coupled reactor(s) combination comprising an ebullating bed thermo-catalytic zone operated at high

temperature to achieve high conversion of the heavy oil to lower boiling point products, followed by a closely-coupled, catalytic-hydrotreating second zone which may comprise fixed, moving and/or ebullated reactors wherein the first zone liquid effluent is stabilized and reduced in heteroatom content. This close-coupled combination converts heavy hydrocarbonaceous feed-stocks, a significant portion of which boils above 540 degrees centigrade, to high yields of high quality products boiling below 540 degrees centigrade. In cases with heavy oil feedstocks that are more difficult to process, a dispersed catalyst and/or dispersed coal may be added to the first zone feed to further promote the conversion to lower boiling point products.

Classifications:

International (IPC 8-9): C10G1/00 C10G1/08 C10G47/22 C10G47/24 C10G47/26 C10G47/28 C10G65/10 C10G65/12 (Advanced/Invention); B01J21/18 (Advanced/Non-invention)
CPC: C10G65/10 C10G47/22 C10G47/26 C10G1/002 C10G1/083 C10G47/24 C10G47/28 C10G65/12 C10G2300/1077 C10G2300/205 C10G2300/4006 C10G2300/4081 C10G47/10



Family:

Publication number	Publication date	Application number	Application date
AR090423 AA	20141112	AR2013P100514	20130221
WO13126362 A2	20130829	WO2013US26785	20130220
WO13126362 A3	20140206	WO2013US26785	20130220

Priority:

US20120601366P 20120221

Probable Assignee: 4CRGROUP LLC

Assignee(s): (std): 4CRGROUP LLC ; CASH DENNIS R ; GRAHAM J FORDER ; MITCHELL DAVID S ; ROSENTHAL JOEL W

Assignee(s): GRAHAM J

Inventor(s): (std): CASH DENNIS R ; DAVID S MITCHELL ; DENNIS R CASH ; GRAHAM J FORDER ; JOEL W ROSENTHAL ; MITCHELL DAVID S ; ROSENTHAL JOEL W

Inventor(s): GRAHAM J

Agent(s): SOFFEN STEPHEN A

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

112) Family number: 60159495 (US2017267937A)

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Title: PROCESS FOR HYDROCRACKING HEAVY OIL AND OIL RESIDUE WITH A CARBONACEOUSE ADDITIVE

Abstract: A process for the hydroprocessing of heavy oils and/or oil residues, the process comprising the steps of contacting a non-metallised carbonaceous material with an acid to form a non-metallised carbonaceous additive; and contacting the heavy oils and/or oil residues with the non-metallised carbonaceous additive in the presence of a hydrogen-containing gas at a temperature of from 250 degrees centigrade to 600 degrees centigrade

Classifications:

International (IPC 8-9): B01J21/18 B01J23/745 B01J27/20 B01J35/10 B01J37/04 B01J37/06 B01J37/08 C10G47/02 (Advanced/Invention)

CPC: C10G47/14 B01J35/0006 B01J37/20 B01J37/084 C10G2300/1074 C10G2300/107 C10G2300/1077 C10G2300/206 C10G2300/202 C10G2300/208 C10G47/02 B01J21/18 B01J35/1019 B01J35/1047 B01J35/1061 B01J37/04 B01J37/06 C01B32/342

Family:

Publication number	Publication date	Application number	Application date
CN106061606 A	20161026	CN201580007849	20150212
EP3104969 A1	20161221	EP20150707054	20150212
JP2017506685 T2	20170309	JP20160551839T	20150212
RU2016134426 A	20180315	RU20160134426	20150212
RU2016134426 A3	20180910	RU20160134426	20150212
US2017267937 AA	20170921	US20150115859	20150212
WO15121368 A1	20150820	WO2015EP53007	20150212

Priority:

US20140939081P 20140212 RU20160134426 20150212 WO2015EP53007 20150212
US20150115859 20150212

Probable Assignee: BP PLC

Assignee(s): (std): BP EUROPA SE ; BP PLC ; SCHLEIFFER ANDREAS ; YANG HONG

Inventor(s): (std): SCHLEIFFER ANDREAS ; YANG HONG

Agent(s): HAMER CHRISTOPHER K; YAMAMOTO OSAMU; TAKEUCHI SHIGEO; ONO SHINJIRO; MATSUYAMA MINAKO; KOBAYASHI YASUSHI; PEDLEY MICHAEL EWAN

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM

113) Family number: 60159497 (US2017260463A)

© PatBase

Title: PROCESS FOR HYDROCRACKING HEAVY OIL AND OIL RESIDUE WITH A NON-METALLISED CARBONACEOUS ADDITIVE

Abstract: A process for the hydroprocessing of heavy oils and/or oil residues, the process comprising the steps of contacting a non-metallised carbonaceous material with an oxygen-containing gas at a temperature of at least 120 degrees centigrade to form a non-metallised carbonaceous additive, and contacting the heavy oils and/or oil residues with the non-metallised carbonaceous additive in the presence of a hydrogen-containing gas at a temperature of from 250 degrees centigrade to 600 degrees centigrade

Classifications:**International (IPC 8-9):** B01J21/18 C10G47/02 C10G47/30 (Advanced/Invention)**CPC:** B01J35/1019 B01J35/0006 B01J35/1047 B01J35/1061 B01J37/04 B01J37/06 B01J37/20 C10G47/02 C10G47/30 C10G2300/1077 C10G2300/1074 C10G2300/4006 C10G2300/4012 B01J21/18 C10G47/14 C10G2300/107 C10G2300/70**Family:**

Publication number	Publication date	Application number	Application date
CN106062143 A	20161026	CN201580008505	20150212
EP3105304 A1	20161221	EP20150705009	20150212
JP2017511823 T2	20170427	JP20160551805T	20150212
RU2016134943 A	20180315	RU20160134943	20150212
RU2016134943 A3	20180913	RU20160134943	20150212
US2017260463 AA	20170914	US20150115865	20150212
WO15121371 A1	20150820	WO2015EP53010	20150212

Priority:

US20140939100P 20140212 RU20160134943 20150212 WO2015EP53010 20150212
 US20150115865 20150212 RU20160134943 20152112

Probable Assignee: BP PLC**Assignee(s):** (std): BP EUROPA SE ; BP PLC ; SCHLEIFFER ANDREAS ; YANG HONG**Inventor(s):** (std): SCHLEIFFER ANDREAS ; YANG HONG**Agent(s):** HAMER CHRISTOPHER K; YAMAMOTO OSAMU; TAKEUCHI SHIGEO; ONO SHINJIRO; MATSUYAMA MINAKO; KOBAYASHI YASUSHI; PEDLEY MICHAEL EWAN

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

114) Family number: 60159499 (US2018163146A)

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Title: PROCESS FOR HYDROCRACKING HEAVY OIL AND OIL RESIDUE WITH AN ADDITIVE

Abstract: A process for the hydroprocessing of heavy oils and/or oil residues, the process comprising the step of contacting the heavy oils and/or oil residues with a non-metallised carbonaceous additive in the presence of a hydrogen-containing gas at a temperature of from 250 degrees centigrade to 600 degrees centigrade, wherein at least 80 percent of the cumulative pore volume of the non-metallised carbonaceous additive arises from pores having a pore size of at least 2 nm, wherein at least 50 percent of the cumulative pore volume of the non-metallised carbonaceous additive arises from pores having a pore size of at least 5 nm, and/or wherein at least 30 percent of the cumulative pore volume of the non-metallised carbonaceous additive arises from pores having a pore size of at least 10 nm.

Classifications:**International (IPC 8-9):** B01J21/18 B01J35/10 B01J37/14 C10B57/00 C10G47/02 C10G47/22 C10G47/26 C10G47/36 (Advanced/Invention)**CPC:** C10G47/14 C10G47/26 C10G47/22 C10G47/36 C10B57/005 C01P2006/16 C10G2300/1044 C10G2300/80 C01P2006/14 C10G47/10 C10G2300/1033 C10G2300/107 C10G2300/1077**Family:**

Publication number	Publication date	Application number	Application date
CN106062142 A	20161026	CN201580007658	20150212
EP3105303 A1	20161221	EP20150705008	20150212
JP2017511824 T2	20170427	JP20160551835T	20150212
RU2016134427 A	20180315	RU20160134427	20150212
RU2016134427 A3	20181001	RU20160134427	20150212
US2018163146 AA	20180614	US20150115848	20150212
WO15121370 A1	20150820	WO2015EP53009	20150212

Priority:

US20140939050P 20140212 RU20160134427 20150212 WO2015EP53009 20150212
 US20150115848 20150212 RU20160134427 20152112

Probable Assignee: BP PLC**Assignee(s):** (std): BP EUROPA SE ; BP PLC ; SCHLEIFFER ANDREAS ; YANG HONG**Inventor(s):** (std): SCHLEIFFER ANDREAS ; YANG HONG**Agent(s):** HAMER CHRISTOPHER K; YAMAMOTO OSAMU; TAKEUCHI SHIGEO; ONO SHINJIRO; MATSUYAMA MINAKO; KOBAYASHI YASUSHI; PEDLEY MICHAEL EWAN

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

115) Family number: 56776342 (WO14096704A1)

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Title: PROCESS WITH SEPARATION FOR TREATING PETROLEUM FEEDSTOCKS FOR THE PRODUCTION OF FUEL OILS WITH A LOW SULPHUR CONTENT

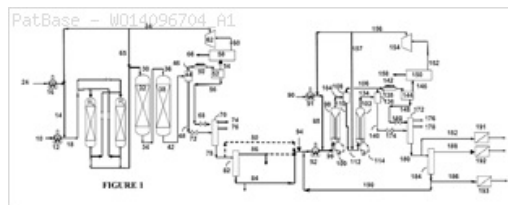
Abstract: The present invention relates to a process for treating heavy petroleum feedstocks for the production of fuel oils and fuel oil bases, in particular bunker fuel oils and bunker fuel oil bases, with a low sulphur content. This process comprises a step (a) of fixed-bed hydrotreatment of a heavy sulphur-comprising hydrocarbon feedstock, followed by a step (b) of separation of the effluent obtained from the hydrotreatment step (a) into at least one light fraction and at least one heavy fraction, a step (c) of hydroconversion of at least part of the heavy fraction of the effluent obtained from step (b) in at least one boiling-bed reactor containing a supported catalyst, and a step (d) of separation of the effluent obtained from step (c) to obtain at least one gaseous fraction and at least said liquid hydrocarbon fraction.

Classifications:

International (IPC 8-9): C10G45/02 C10G47/00 C10G47/02 C10G49/02 C10G65/04 C10L1/08 (Advanced/Invention);

C10G47/00 (Core/Invention)

CPC: C10G47/00 C10G47/02 C10G65/12 C10G49/002 C10G2300/202 C10G45/02 C10G65/04 C10L1/08



Family:

Publication number	Publication date	Application number	Application date
CA2894610 AA	20150610	CA20132894610	20131218
FR3000098 A1	20140627	FR20120062496	20121220
FR3000098 B1	20141226	FR20120062496	20121220
ID201703149 A	20170331	ID2015P0003769	20131218
IN03538CN2015 A	20160701	IN2015CN03538	20150617
KR20150096778 A	20150825	KR20157019490	20131218
RU2015129080 A	20170126	RU20150129080	20131218
RU2660426 C2	20180706	RU20150129080	20131218
SG10201703360X A1	20170629	SG20171003360	20131218
SG11201504854X A1	20150730	SG20151104854	20131218
TH169589 A	20171027	TH20151003498	20131218
TW201432042 A	20140816	TW20130147029	20131218
TWI617661 B	20180311	TW20130147029	20131218
WO14096704 A1	20140626	WO2013FR53166	20131218

Priority:

FR20120062496 20121220 WO2013FR53166 20131218

Probable Assignee: IFP ENERGIES NOUVELLES

Assignee(s): (std): IFP ENERGIES NOUVELLES ; IFP ENERGIES NOW ; IFP ENERZHI NUVELL

Assignee(s): MAJCHER JEROME ; WEISS WILFRIED

Inventor(s): (std): MAJCHER JEROME ; WEISS WILFRIED ; VAJSS VILFRID ; MAZHSHE ZHEROM

Inventor(s): WILFRIED WEISS ; JEROME MAJCHER

Agent(s): ROBIC; IFP ENERGIES NOUVELLES; IR YT WIDJOJO; OOO YURIDICHESKAYA GORODISSKIY I PARTNERY FA; MIRANDAH ASIA SINGAPORE PTE LTD

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

116) Family number: 4216104 (US4430198A)

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Title: Hydrotreating hydrocarbon feedstocks

Abstract: An improved hydrotreating catalyst, and a process for using thereof, comprises a conventional Group VIA and Group VIIIA metal metal oxide or metal sulfide, deposited on an inorganic refractory support and about 0.1 percent by weight to about 7 percent by weight of the catalyst of a promoter comprising a halogenated metal selected from the Group consisting of halogenated metals of Group IB, IIB, IIIB, titanium and tin. The presence of the promoter results in greater degree of desulfurization and in CCR reduction of hydrocarbon feedstocks, especially highly aromatic petroleum residua and synthetically-derived hydrocarbons, e.g., coal liquids.

Classifications:

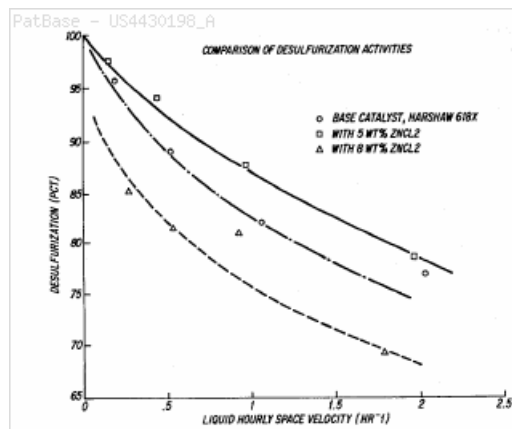
International (IPC 8-9): B01J27/08 C10G45/08 (Advanced/Invention); B01J27/06 C10G45/02 (Core/Invention)

International (IPC 1-7): B01J23/85 B01J27/06 C10G45/06

CPC: B01J27/08 C10G45/08

European: B01J27/08 C10G45/08

US: 208/112 208/216R 208/264 502/222 502/225 502/226 502/227

**Family:**

Publication number	Publication date	Application number	Application date
US4430198 A	19840207	US19820425846	19820928
US4442023 A	19840410	US19830467573	19830217

Priority:

US19800220554 19801229 US19820425846 19820928 US19830467573 19830217

Probable Assignee: MOBIL OIL CORP

Assignee(s): (std): MOBIL OIL ; MOBIL OIL CORP

Inventor(s): (std): HECK ROLAND H ; ROSINSKI EDWARD J ; SHIH STUART S

117) Family number: 64890462 (US2017066971A)

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Title: INTEGRATED PROCESS FOR PRODUCING ANODE GRADE COKE

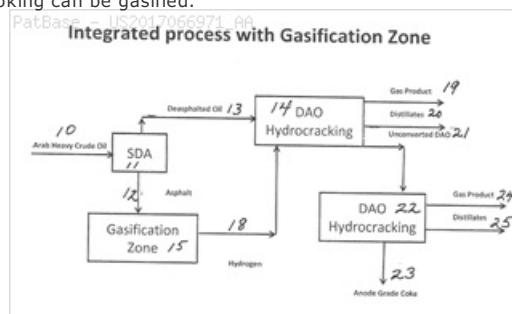
Abstract: The invention relates to processes for producing anode grade coke from whole crude oil. The invention is accomplished by first deasphalting a feedstock, followed by processing resulting DAO and asphalt fractions. The DAO fraction is hydrotreated or hydrocracked, resulting in removal of sulfur and hydrocarbons, which boil at temperatures over 370 degrees centigrade, and gasifying the asphalt portion in one embodiment. This embodiment includes subjecting hydrotreated and/or unconverted DAO fractions to delayed coking. In an alternate embodiment, rather than gasifying the asphalt portion, it is subjected to delayed coking in a separate reaction chamber. Any coke produced via delayed coking can be gasified.

Classifications:

International (IPC 8-9): B01J29/14 B01J35/10 C01B3/26 C01B32/05 C10B55/00 C10B57/04 C10G21/00 C10G25/00 C10G45/02 C10G47/00 C10G47/20 C10G49/00 C10G67/04 C10G67/06 C10G67/14 C10G9/00 C10J3/00 (Advanced/Invention)

CPC: C10G67/0463 C10G2300/1055 C10B57/045 C10B55/00 C10G67/049 C10G2300/202 C10G9/005 C10G21/003 C10G25/00 C10G45/02 C10G47/20 C10G49/007 C10G67/06 C10G67/14 C10G2300/1033 C10J3/00 Y02P20/125

US: 208/50

**Family:**

Publication number	Publication date	Application number	Application date
CN108026456 A	20180511	CN201680045272	20160726
EP3331970 A1	20180613	EP20160751716	20160726
JP2018530636 T2	20181018	JP20180506205T	20160726
KR20180040600 A	20180420	KR20187006223	20160726
US2017066971 AA	20170309	US20160219730	20160726
US2018148651 AA	20180531	US20180877878	20180123
US9909068 BB	20180306	US20160219730	20160726
WO17023611 A1	20170209	WO2016US44019	20160726

Priority:

US20150200830P 20150804 US20160219730 20160726 WO2016US44019 20160726
US20180877878 20180123

Probable Assignee: SAUDI ARABIAN OIL CO

Assignee(s): (std): KOSEOGLU ORNER REFA ; SAUDI ARABIAN OIL CO

Inventor(s): (std): KOSEOGLU ORNER REFA ; KOSEOGLU OMER REFA

Agent(s): ZACCARO ELISABETTA; ABELMAN FRAYNE AND SCHWAB; HANSON NORMAN D

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM

118) Family number: 62244496 (FR3027909A)

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Title: PROCEDE INTEGRE DE PRODUCTION DE COMBUSTIBLES DE TYPE FUEL LOURD A PARTIR D'UNE CHARGE HYDROCARBONEE LOURDE SANS SEPARATION INTERMEDIAIRE ENTRE L'ETAPE D'HYDROTREITEMENT ET L'ETAPE D'HYDROCRAQUAGE
 INTEGRATED PROCESS TYPE OF FUEL PRODUCING HEAVY FUEL FROM A HEAVY HYDROCARBON CHARGE NO SEPARATION BETWEEN INTERMEDIATE STEP AND STEP HYDROTREATING HYDROCRACKING (Machine translation)

Abstract: Source: FR3027909A [FR] La presente invention decrit un procede de production de combustible de type fioul lourd, ce combustible pouvant eventuellement devenir un combustible marin, a partir d'une charge hydrocarbonee lourde ayant une teneur en soufre d'au moins 0,5 percent en poids, une temperature initiale d'ebullition d'au moins 350 degres centigrade et une temperature finale d'ebullition d'au moins 450 degres centigrade, procede integre utilisant une etape d'hydrotraitement en lit fixe et une etape d'hydrocraquage comportant au moins un reacteur de type hybride.

Machine translation: The present invention discloses a process for producing heavy oil fuel type, this fuel may eventually become a marine fuel from a heavy hydrocarbon feed having a sulfur content of at least 0.5 percent by weight, an initial boiling temperature of at least 350 degrees centigrade and a final boiling point of at least 450 degrees centigrade, integrated process using a hydrotreating step and a fixed bed hydrocracking step comprising at least one reactor hybrid type.

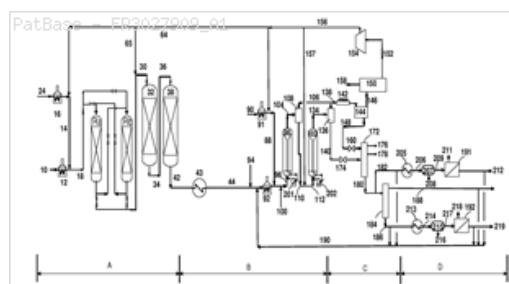
Classifications:

International (IPC 8-9): C10G45/00 C10G47/26

C10G67/02 (Advanced/Invention)

CPC: C10G65/12 C10G49/002 C10G2300/107 C10G2300/1077

C10G2300/202 C10G2300/206 C10G2300/208

**Family:**

Publication number	Publication date	Application number	Application date
FR3027909 A1	20160506	FR20140060626	20141104

Priority:

FR20140060626 20141104

Probable Assignee: IFP ENERGIES NOUVELLES

Assignee(s): (std): IFP ENERGIES NOW

Assignee(s): IFP ENERGIES NOUVELLES

Inventor(s): (std): MEDRIGNAC ISABELLE ; WEISS WILFRIED

Inventor(s): ISABELLE MEDRIGNAC ; WILFRIED WEISS

Agent(s): IFP ENERGIES NOUVELLES

119) Family number: 2874541 (US4808298A)

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Title: Process for reducing resid hydrotreating solids in a fractionator

Abstract: An effective hydrotreating process is provided to minimize precipitation of asphaltenic solids in the product oil. In the preferred process, an aromatic diluent, preferably comprising decanted oil, is injected into one or more of the fractionators downstream of the reactor.

Classifications:

International (IPC 8-9): C10G45/02 C10G45/16

C10G67/04 (Advanced/Invention);

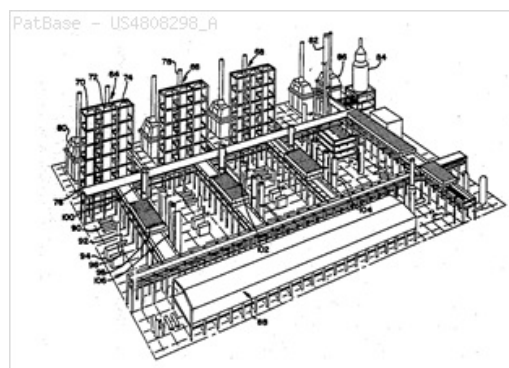
C10G45/02 C10G67/00 (Core/Invention)

International (IPC 1-7): C10G45/02 C10G45/16 C10G67/04 C10G7/00

CPC: C10G45/16 C10G67/0463

European: C10G45/16 C10G67/04F2

US: 208/100 208/108 208/112 208/162 208/177 208/210 208/212 208/348 208/48AA

**Family:**

Publication number	Publication date	Application number	Application date
CA1282362 A1	19910402	CA19870539673	19870615
DE3720513 A1	19880107	DE19873720513	19870620
IT1206044 A	19890405	IT19870048066	19870616

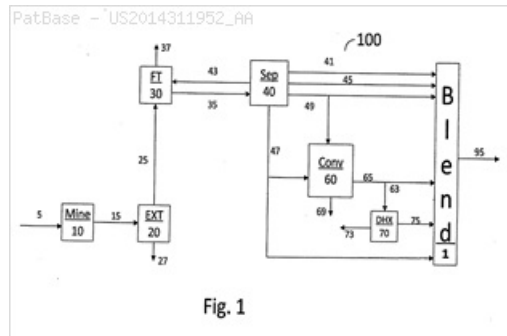
Title: PROCESS FOR TREATING MINED OIL SANDS DEPOSITS

Abstract: Disclosed is a method for improving a heavy hydrocarbon, such as mined bitumen, to a lighter more fluid product and, more specifically, to a hydrocarbon product that is refinery-ready and that meets pipeline transport criteria without requiring the addition of diluent. The invention is suitable for enhancing recovery from mined Canadian bitumen, but has general application for processing any heavy hydrocarbon, converting the heavy hydrocarbon to a product that is more suitable for pipeline transport. The invention is directed to a process for converting a heavy hydrocarbon stream into a pipelineable product, said process comprising: (a) using a froth treatment process to separate bitumen present in the heavy hydrocarbon stream from water creating a solvent/bitumen stream and a water-rich stream; (b) extracting the solvent/bitumen stream to generate multiple product streams comprising: i) a bitumen bottoms stream; ii) a virgin heavy vacuum gas oil stream; iii) a light virgin vacuum gasoil stream; and iv) a light virgin atmospheric gas oil stream; (c) converting, in a conversion unit, a portion of the heavy vacuum gas oil stream and/or bitumen bottoms obtained from step (b) to produce a stream of lighter hydrocarbons; and (d) blending a portion or all of the virgin heavy vacuum gas oil stream, the light virgin vacuum gasoil stream, the light virgin atmospheric gas oil stream from step (b) and the stream of lighter hydrocarbons produced in step (c) to create a pipelineable product.

Classifications:**International (IPC 8-9):** C10C3/08 C10G1/00 C10G1/02 C10G1/04

C10G1/06 C10G21/00 C10G55/02 C10G67/04

E21C41/00 (Advanced/Invention)

CPC: C10G1/002 C10G1/045 C10G21/003 C10G67/049**US:** 208/391 299/7**Family:**

Publication number	Publication date	Application number	Application date
CA2819073 AA	20141018	CA20132819073	20130419
CA2848789 AA	20141018	CA20142848789	20140414
US2014311952 AA	20141023	US20140255459	20140417
US9637686 BB	20170502	US20140255459	20140417

Priority:

US20130813356P 20130418

CA20132819073 20130419

CA20142848789 20140414

US20140255459 20140417

Probable Assignee: CANADIAN NATURAL RESOURCES LTD**Assignee(s):** (std): CANADIAN NATURAL RESOURCES LTD**Assignee(s):** CANADIAN NATURAL RESOURCES LTD2500, 855 - 2ND STREET, S.W.CALGARYA1T2P 4J8CA ; REMESAT DARIUS SIMON JOHN211 TUSCANY GLEN PARK NWCALGARYA1T3L 3E5CA ; REMESAT DARIUS SIMON JOHN ; BLANCO ALVARO ; BLANCO ALVARO106 FULLERTON DRIVEFORT MCMURRAYA1T9K 1L5CA**Inventor(s):** (std): BLANCO ALVARO ; REMESAT DARIUS SIMON JOHN**Inventor(s):** REMESAT DARIUS SIMON JOHN211 TUSCANY GLEN PARK NWCALGARYA1T3L 3E5CA ; BLANCO ALVARO106 FULLERTON DRIVEFORT MCMURRAYA1T9K 1L5CA**Agent(s):** BURNET DUCKWORTH AND PALMER LLP; KILPATRICK TOWNSEND AND STOCKTON LLP**122) Family number: 11705539 (US5358629A)**

© PatBase

Title: Hydroconversion process containing a molybdenum complex recovered from epoxidation of olefinic hydrocarbons

Abstract: A waste molybdenum-containing stream recovered from the work-up of a reaction mixture wherein propylene has reacted with t-butyl hydroperoxide to form propylene oxide (in the presence of a complex of ethylene glycol and a molybdenum compound) is passed as an oil-miscible/soluble molybdenum-containing catalyst to a reaction wherein heavy hydrocarbon is hydroconverted to lower boiling products in the presence of heterogeneous catalyst.

Classifications:**International (IPC 8-9):** C10G49/12 (Advanced/Invention);

C10G49/00 (Core/Invention)

International (IPC 1-7): C10G45/04 C10G47/02**CPC:** C10G49/12**European:** C10G49/12**US:** 208/111 208/111.15 208/111.3 208/112 208/216R 208/217 208/251H**Family:**

Publication number	Publication date	Application number	Application date
US5358629 A	19941025	US19930006594	19930121

Priority:

US19930006594 19930121

Probable Assignee: TEXACO INC**Assignee(s):** (std): TEXACO INC**Inventor(s):** (std): BHATTACHARYA AJIT K ; CHESS DAVID D ; GIPSON ROBERT M ; PATEL MAHENDRA S ; TAMALIS GEORGE R

Title: Process for converting petroleum fractions, comprising an ebullated bed hydroconversion step, a separation step, a hydrodesulphurisation step and a cracking step

Abstract: A process for converting a hydrocarbon fraction comprises a step a) for treating a hydrocarbon feed in the presence of hydrogen in at least one three-phase reactor (1), containing at least one ebullated bed hydroconversion catalyst, a step b) in which at least a portion of the effluent from step a) is sent to a separation zone (2) from which a fraction F1 normally containing at least a portion of the gas, gasoline and atmospheric gas oil contained in the effluent from step a) is recovered, and a fraction F2 is recovered normally principally containing compounds with boiling points of more than that of the atmospheric gas oil, a step c) for hydrodesulphurization of at least a portion of fraction F1 in at least on reactor (4) containing at least one fixed bed hydrotreatment catalyst under conditions for producing an effluent with a reduced sulphur content, and a step d) in which at least a portion of fraction F2 is sent to a catalytic cracking section (6).

Classifications:

International (IPC 8-9): C10G65/04 C10G65/12 C10G69/00

C10G69/04 (Advanced/Invention);

C10G65/00 C10G69/00 (Core/Invention)

International (IPC 1-7): C10G11/00 C10G45/00 C10G45/02 C10G65/12 C10G69/00 C10G69/04

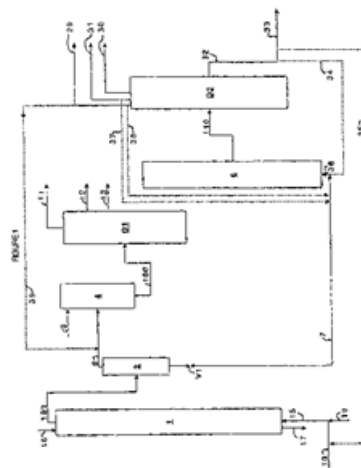
CPC: C10G65/04 C10G65/12 C10G69/00

European: C10G65/04 C10G65/12 C10G69/00

US: 208/100 208/113 208/209 208/210 208/212 208/57 208/57P 208/58 208/61

PatBase - US2001027936_AA

Patent Application Publication Oct. 11, 2001 Sheet 1 of 4 US 2001/0027936 A1



Family:

Publication number	Publication date	Application number	Application date
CA2330461 AA	20010711	CA20012330461	20010109
CA2330461 C	20100608	CA20012330461	20010109
EP1116777 A1	20010718	EP20000403582	20001218
FR2803596 A1	20010713	FR20000000368	20000111
FR2803596 B1	20030117	FR20000000368	20000111
US2001027936 AA	20011011	US20010757602	20010111
US6620311 BB	20030916	US20010757602	20010111

Priority:

FR20000000368 20000111 CA20012330461 20010109

Probable Assignee: IFP ENERGIES NOUVELLES

Assignee(s): (std): INST FRANCAIS DU PETROL ; INST FRANCAIS DU PETROLE

Assignee(s): MOREL FREDERIC ; KRESSMANN STEPHANE ; INSTITUT FRANCAIS DU PETROLE ; COLYAR JAMES ; COLYAR JAMES J ; FRANCAIS DU PETROLE INST ; IFP ENERGIES NOUVELLES

Inventor(s): (std): COLYAR JAMES ; COLYAR JAMES J ; KRESSMANN STEPHANE ; MOREL FREDERIC

Inventor(s): STEPHANE KRESSMANN ; FREDERIC MOREL ; JAMES COLYAR

Agent(s): ROBIC ; IFP ; IFP ENERGIES NOUVELLES

Designated states: DE ES GB IT NL

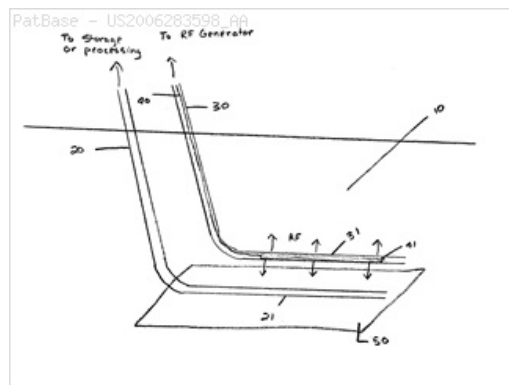
Title: METHOD AND APPARATUS FOR IN-SITU RADIOFREQUENCY ASSISTED GRAVITY DRAINAGE OF OIL (RAGD)

Abstract: The present invention relates generally to the use of radiofrequency energy to heat heavy crude oil or both heavy crude oil and subsurface water in situ, thereby enhancing the recovery and handling of such oil. The present invention further relates to methods for applying radiofrequency energy to heavy oils in the reservoir to promote in situ upgrading to facilitate recovery. This invention also relates to systems to apply radiofrequency energy to heavy oils in situ.

Classifications:

International (IPC 8-9): E21B36/00 E21B43/00

E21B43/24 (Advanced/Invention);
E21B36/00 E21B43/00 E21B43/16 (Core/Invention)
CPC: E21B43/2401 E21B43/003 E21B43/2408
European: E21B43/00C E21B43/24B
US: 166/177.1 166/247 166/248 166/249 166/272.1 166/302 166/369
166/57 166/57S 166/60



Family:

Publication number	Publication date	Application number	Application date
US2006283598 AA	20061221	US20060471276	20060620
US2009050318 AA	20090226	US20080259828	20081028
US2010065265 AA	20100318	US20090626137	20091125
US7441597 BB	20081028	US20060471276	20060620
US7891421 BB	20110222	US20090626137	20091125
WO07002111 A1	20070104	WO2006US24012	20060620

Priority:

US20050692112P 20050620 US20060471276 20060620 US20080259828 20081028
US20090626137 20091125

Probable Assignee: TURBOSHALE INC

Assignee(s): (std): JR TECHNOLOGIES LLC ; KASEVICH RAYMOND S ; KSN EN LLC ; KSN ENERGY LLC

Assignee(s): TURBOSHALE INC ; KSN ENERGIES LLC

Inventor(s): (std): KASEVICH RAYMOND S

Inventor(s): KASEVICH RAYMOND

Agent(s): DORSEY AND WHITNEY LLP, INTELLECTUAL PROPERTY DEPARTMENT; DORSEY AND WHITNEY LLP
INTELLECTUAL PROPERTY DEPARTMENT; OCCHIUTI ROHLICEK AND TSAO LLP; DORSEY AND WHITNEY LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK
DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN
KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM
PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN
ZA ZM ZW

125) Family number: 53733545 (US2013124105A)

© PatBase

Title: METHOD FOR PREDICTING SEDIMENT CONTENT OF A HYDROPROCESSED HYDROCARBON PRODUCT

Abstract: Disclosed herein is a method of predicting sediment content of a hydroprocessed hydrocarbon product. The method involves: (a) precipitating an amount of asphaltenes from a liquid sample of a first hydrocarbon-containing feedstock having solvated asphaltenes therein with one or more first solvents; (b) determining one or more solubility characteristics of the precipitated asphaltenes; (c) analyzing the one or more solubility characteristics; (d) determining asphaltene content of the liquid sample from the results of analyzing the one or more solubility characteristics; (e) determining one or more asphaltene stability parameters of the liquid sample from the results of analyzing the one or more solubility characteristics; and (f) correlating the asphaltene content and one of the asphaltene stability parameters of the liquid sample with at least two operation conditions associated with a refinery to predict sediment content.

Classifications:

International (IPC 8-9): G01N30/02 G01N31/00 G01N33/28 G01N33/38

G06F19/00 (Advanced/Invention);

G01N30/86 G01N30/88 (Advanced/Non-invention)

CPC: G01N33/2829 G01N33/2823 G01N30/8631 G01N2030/8854

US: 702/25 73/61.52

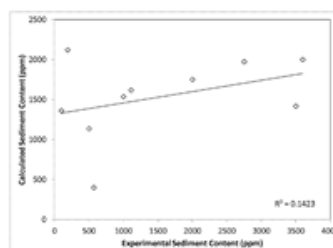


Figure 1

Family:

Publication number	Publication date	Application number	Application date
US2013124105 AA	20130516	US20110294566	20111111
US9921203 BB	20180320	US20110294566	20111111
WO13070389 A1	20130516	WO2012US60233	20121015

Priority:

US20110294566 20111111

Probable Assignee: CHEVRON USA INC**Assignee(s):** (std): CHEVRON USA INC ; LEUNG PAK ; OVALLES CESAR ; ROGEL ESTRELLA ; CHEN NAN**Assignee(s):** CHEVRON U S A INC**Inventor(s):** (std): CHEN NAN ; LEUNG PAK ; OVALLES CESAR ; ROGEL ESTRELLA**Agent(s):** RYAN MASON AND LEWIS LLP; SCHULTE RICHARD J ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

126) Family number: 2979732 (EP0458675A1)

© PatBase

Title: REGENERATION PROCESS OF A USED CATALYST BY AN AQUEOUS HYDROGEN PEROXIDE SOLUTION STABILIZED BY AN ORGANIC COMPOUND.

Abstract: A process for regenerating a catalyst containing at least one contaminating metal of the vanadium, nickel and iron group and a composition which can be employed in this process are described. The catalyst originating from a zone for hydroconversion of hydrocarbons is stripped in a zone (1) and then introduced into a boiling-bed reactor (3) in the presence of hydrogen peroxide introduced via a conduit (4). The extraction solution is drawn off via the conduit (5). Application to the regeneration of spent catalysts, especially for hydrotreatment in the oil industry.

Classifications:**International (IPC 8-9):** B01J23/72 B01J23/92 B01J23/94 B01J38/04

B01J38/48 B01J38/52 B01J38/56 C09K3/00 C10G45/04

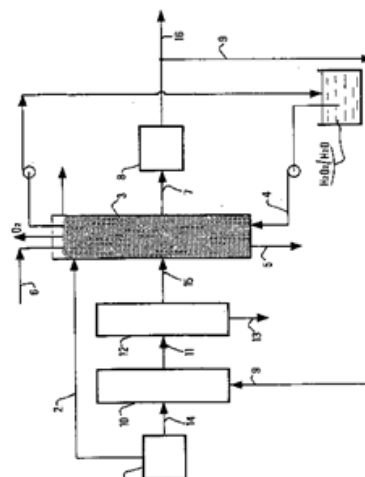
C10G47/02 (Advanced/Invention);

B01J23/72 B01J23/90 B01J38/00 C10G45/02 C10G47/00 (Core/Invention)

International (IPC 1-7): B01J23/94 B01J38/04 B01J38/48 B01J38/50

B01J38/52 B01J38/56 B01J38/62 C09K3/00 C10G45/04 C10G47/02

CPC: B01J23/72 B01J23/92 B01J23/94 B01J38/56**European:** B01J23/72 B01J23/92 B01J23/94 B01J38/56



Publication number	Publication date	Application number	Application date
AT110004 E	19940915	AT19910401225T	19910510
CA2043070 AA	19911124	CA19912043070	19910523
DE69103471 D1	19940922	DE19916003471	19910510
DE69103471 T2	19941208	DE19916003471T	19910510
DK0458675 T3	19941212	DK19910401225T	19910510
EP0458675 A1	19911127	EP19910401225	19910510
EP0458675 B1	19940817	EP19910401225	19910510
ES2062710 T3	19941216	ES19910401225T	19910510
FR2662371 A1	19911129	FR19900006558	19900523
FR2662371 B1	19920828	FR19900006558	19900523
JP4227858 A2	19920817	JP19910118397	19910523

FR19900006558 19900523 CA19912043070 19910523

Assignee(s): (std): INST FRANCAIS DU PETROL ; INST FRANCAIS DU PETROLE ; FRANCAIS DU PETROLE INST

Assignee(s): IFP ENERGIES NOUVELLES ; INST FR PETROLE ; INSTITUT FRANCAIS DU PETROL ; INSTITUT FRANCAIS DU PETROLE ; INSTITUT FRANCAIS PETROLE ; INSTITUT FRANCAIS DU PETROLE RUEIL MALMAISON HAUTS DE SEINE FR ; LLIDO ERIC ; TRINH DINH CHAN

Inventor(s): (std): CHIYAN TORIN DEIN ; ERITSUKU RIDO ; LLIDO ERIC ; TRINH DINH CHAN ; ERIC LLIDO ; CHAN TRINH DINH

Inventor(s): TRINH DINH CHAN F 78110 LE VESINET FR ; LLIDO ERIC F 69360 SEREZIN DU RHONE FR

Agent(s): ROBIC; KISHIMOTO EINOSUKE; WATANABE AKIRA; HIBI NORIHIKO

Designated states: AT BE DE DK ES GB IT LU NL

127) Family number: 64049854 (US2016340591A)

Title: INTEGRATED DIRECT COAL LIQUEFACTION PROCESS AND SYSTEM

Abstract: An integrated direct coal liquefaction and upgrading process and system in which feed coal is mixed with a coal liquefaction nominal 650 degrees Fahrenheit + (343 degrees centigrade +) fraction from atmospheric fractionator, vacuum fractionator bottoms, and recycled catalyst containing vacuum gas oil (VGO) from and upgrader and pumped to the input of the liquefaction reactor where it is mixed with preheated hydrogen. Part of the VGO fraction from the liquefaction vacuum fractionator is mixed with make-up catalyst and catalyst containing VGO fraction from the upgrader atmospheric fractionator and fed with preheated hydrogen to the input of the upgrading reactors. The output of the upgrading reactors is cooled in hot and cold separators to recover hydrogen containing gaseous components and the liquid fraction is separated in the upgrader atmospheric fractionator into product and a catalyst containing unconverted VGO stream, a portion of which forms the recycled VGO to the liquefaction slurry mix tank. A portion of the catalyst containing vacuum fractionator bottoms are sent as fuel to a cement plant in which the catalyst is gasified and recovered.

Classifications:

International (IPC 8-9): C10G1/00 C10G1/06 C10G1/08 C10G7/00
C10G7/06 (Advanced/Invention)

CPC: C10G1/002 C10G2300/706 C10G7/00 C10G7/06 C10G1/06
C10G1/083 C10G1/086

US: 208/413

EP2556134 A4	20140716	EP20110766492	20110330
GC6663 A	20171211	GC2011P018131	20110406
IN00470DN2012 A	20150605	IN2012DN00470	20120117
IN297999 B	20180629	IN2012DN00470	20120117
JP2013505338 T2	20130214	JP20120529989T	20110330
JP2015038226 A2	20150226	JP20140237518	20141125
KR101542292 B1	20150806	KR20127014449	20110330
KR20120099714 A	20120911	KR20127014449	20110330
MX2012001713 A1	20120402	MX20120001713	20110330
MY155458 A	20151015	MY20120000248	20110330
RU2012110827 A	20140520	RU20120110827	20110330
RU2522447 C1	20140710	RU20120110827	20110330
SG178105 A1	20120427	SG20120005351	20110330
TH140997 A	20150612	TH20121000702	20110330
TW201142007 A	20111201	TW20110112204	20110408
TWI526530 B	20160321	TW20110112204	20110408
US2011247967 AA	20111013	US20100757384	20100409
US8591725 BB	20131126	US20100757384	20100409
WO11126880 A2	20111013	WO2011US30505	20110330
WO11126880 A3	20120405	WO2011US30505	20110330
ZA201203127 A	20130227	ZA20120003127	20120430

Priority:
US20100757384 20100409 JP20120529989 20110330 JP20120529989T 20110330
WO2011US30505 20110330

Probable Assignee: LUMMUS TECHNOLOGY INC

Assignee(s): (std): LAMMUS TEKNOLODZHI INK ; LUMMUS TECH INC ; LUMMUS TECHNOLOGY INC ; MUKHERJEE UJJAL K ; SUNDARAM KANDASAMY MEENAKSHI ; VENNER RONALD M
Inventor(s): (std): SUNDARAM KANDASSMY MEENAKSHI ; SUNDARAM KANDASAMI MEENAKSHI ; MUKERDZHI UDZHAL K ; VENNER RONALD M ; RONALD VENNER ; MEENAKSHI SUNDARAM KANDASAMY ; VENNER RONALD ; RONALD M VENNER ; KANDASAMY MEENAKSHI SUNDARAM ; MUKHERJEE UJJAL K ; VENNER RONALD M ; SUNDARAM KANDASAMY MEENAKSHI ; MUKHERJEE UJJAL K ; UJJAL K MUKHERJEE ; SUNDARUM KANDASAMY MEENAKSHI
Inventor(s): MUKHERJEE UJJAL
Agent(s): BORDEN LADNER GERVAIS LLP; ESTUDIO CLARKE MODET; Osha Liang SARL; SULEIMAN I AL AMMAR LAW OFFICE; FUKAMI PATENT OFFICE PC; OSHA LIANG LLP; BERGMAN JEFFREY S ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

129) Family number: 11456845 (US6802958B)

PatBase

Title: Process for producing spherical oxide particles

Abstract: The invention pertains to a process for preparing spherical oxide particles comprising the steps of shaping a starting material comprising an oxide hydrate into particles of substantially constant length by leading the material to a set of two rolls rotating towards each other followed by leading the material to a roll equipped with grooves to form rod-type shapes, cutting the rod-type shapes into particles of substantially constant length, converting the thus formed particles into spheres, and heating the particles to convert the oxide hydrate into an oxide. The process results in particles in which there is substantially no difference in density between the core portion and the shell portion of the particles, which results in a high abrasion resistance. The particles prepared by the claimed process are particularly suitable for the preparation of hydroprocessing catalysts, more in particular for the preparation of hydroprocessing catalysts suitable for the hydroprocessing of heavy hydrocarbon feeds.

Classifications:
International (IPC 8-9): B01J2/22 B01J21/00 B01J23/85 B01J29/06 B01J32/00 B01J35/02 B01J35/08 B01J35/10 B01J37/00 (Advanced/Invention); B01J21/00 B01J32/00 B01J37/00 (Advanced/Non-invention); B01J2/00 B01J2/22 B01J21/00 B01J23/76 B01J29/00 B01J32/00 B01J35/00 B01J37/00 (Core/Invention)
International (IPC 1-7): B01J2/22 B01J21/00 B01J21/08 B01J21/12 B01J21/14 B01J23/00 B01J29/06 B01J32/00 B01J35/02 B01J35/08 B01J35/10 B01J37/00 C10G47/00
CPC: B01J2/22 B01J23/85 B01J35/08
European: B01J2/22 B01J23/85 B01J35/08
US: 208/111.3 208/111.35 502/242 502/254 502/255 502/256 502/257 502/258 502/259 502/260 502/261 502/262 502/263 502/308 502/309 502/313 502/314 502/315 502/316 502/319 502/320 502/321 502/322 502/323 502/327 502/332 502/333 502/334 502/335 502/336 502/337 502/338 502/339 502/349 502/350 502/351 502/355 502/407 502/415 502/439

Family:

Publication number	Publication date	Application number	Application date
AU199941423 A1	19991129	AU19990041423	19990511
CA2331454 AA	20001109	CA19992331454	19990511
CA2331454 C	20070724	CA19992331454	19990511
CN1154534 C	20040623	CN19998007621	19990511
CN1306456 A	20010801	CN19998007621	19990511

PatBase - JP11319584 表 1 表 実施例と比較例で得られた粒状アルミナ及び触媒の物理性状と触媒性能							
		全 粉 率 (wt.%)	平均粒径 (μ m)	1,000 μ m以上の粉孔の 占める割合(%)	触媒表面と 内部濃度の 差	摩 耗 率 (%)	活性 (転化率) HDS (%) HDM (%)
実施例 1	粒状アルミナ A	0.91	170	20	なし	<0.1	—
	粒状触媒 B	0.88	200	18	なし	<0.1	80 58
実施例 2	粒状アルミナ C	0.88	200	18	なし	<0.1	—
実施例 3	粒状触媒 D	0.78	200	2	なし	<0.1	82 50
比較例 1	造粒不能	—	—	—	—	—	—
比較例 2	造粒不能	—	—	—	—	—	—
比較例 3	粒状アルミナ E	0.81	200	18	有り	2.5	—
比較例 4	粒状アルミナ F	0.87	165	20	有り	2.0	—
比較例 5	粒状触媒 G	0.80	210	5	なし	<0.1	82 46
比較例 6	粒状触媒 H	0.79	143	15	なし	<0.1	65 40
比較例 7	粒状触媒 I	0.70	312	15	なし	<0.1	42 47
HDS (%): 水素化脱硫反応により起こった硫黄転化率を表す。 HDM (%): 水素化脱金属反応により起こった脱金属転化率を表す。							

DE69901100 D1	20020502	DE19996001100	19990511
DE69901100 D1	20020502	DE19996001100T	19990511
DE69901100 T2	20020905	DE19996001100T	19990511
DK1077762 T3	20020617	DK19990924950T	19990511
EP1077762 A1	20010228	EP19990924950	19990511
EP1077762 B1	20020327	EP19990924950	19990511
JP11319584 A2	19991124	JP19980127008	19980511
PL198751 B1	20080731	PL19990345239	19990511
PL345239 A1	20011203	PL19990345239	19990511
SK200001700 A5	20010510	SK20000001700	19990511
SK285704 B6	20070607	SK20000001700	19990511
US6802958 BA	20041012	US20000710950	20001113
WO9958236 A1	19991118	WO1999EP03266	19990511

Priority:

JP19980127008 19980511 WO1999EP03266 19990511

Probable Assignee: AKZO NOBEL NV

Assignee(s): (std): AKZO NOBEL NV ; ALBEMARLE NETHERLANDS B V ; ALBEMARLE NETHERLANDS BV ; KAMO TETSURO ; NIPPON KETJEN CO LTD ; MATSUMOTO NOBUHITO ; YANO EIICHI ; SHIMOWAKE MASAFUMI ; NIPPON KECCHEN KK ; NIPPON KETJEN CO

Assignee(s): ALBERMARLE NETHERLANDS BV ; AKZO NOBEL N V ; AKZO NOBEL N V ARNHEIM ARNHEM

Inventor(s): (std): EIICHI YANO ; KAMO TETSUO ; KAMO TETSURO ; MASAFUMI SHIMOWAKE ; MATSUMOTO NOBUHITO ; NOBUHITO MATSUMOTO ; SHIMOWAKE MASAFUMI ; SHIMOWAKE MASASHI ; YANO EIICHI

Inventor(s): TETSURO KAMO

Agent(s): OGILVY RENAULT LLP SENCRL SRL

Designated states: AL AM AT AU AZ BA BB BE BF BG BJ BR BY CA CF CG CH CI CM CN CU CY CZ DE DK EE ES FI FR GA GB GD GE GH GM GN GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MC MD MG MK ML MN MR MW MX NE NL NO NZ PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TR TT UA UG US UZ VN YU ZA ZW

130) Family number: 23195876 (US7001502B)

© PatBase

Title: PROCESS FOR TREATING CRUDE OIL USING HYDROGEN IN A SPECIAL UNIT

Abstract: A process is provided for treating crude oil to visbreak and/or upgrade such oil using hydrogen gas. The process includes the steps of introducing hydrogen into a heated stream of crude oil or partially upgraded crude oil and mixing such introduced hydrogen with the oil to achieve intimate dispersion of hydrogen to enhance thereby visbreaking and/or upgrading.

Classifications:

International (IPC 8-9): C10G45/00 C10G45/02 C10G45/22 C10G45/58 C10G47/00 C10G49/00 C10G65/02 (Advanced/Invention); C10G45/58 (Advanced/Non-invention); C10G45/00 C10G45/02 C10G45/58 C10G47/00 C10G49/00 C10G65/00 (Core/Invention)

International (IPC 1-7): C10G45/22 C10G47/00

CPC: C10G45/00 C10G45/22 C10G45/58 C10G47/00 C10G49/007

European: C10G45/00 C10G45/22 C10G45/58 C10G47/00 C10G49/00H

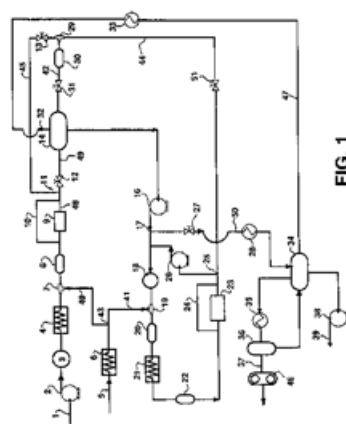
US: 208/210 208/212 208/59

PatBase - US7001502_BA

U.S. Patent

Feb. 21, 2006

US 7,001,502 B1



Family:

Publication number	Publication date	Application number	Application date
AU199958462 A1	20000417	AU19990058462	19990929
AU199958462 A5	20000417	AU19990058462	19990929
BRPI9914129 A	20010619	BR1999PI14129	19990929
CA2249051 AA	20000329	CA19982249051	19980929
CA2306069 AA	20000411	CA19992306069	19990929
CA2306069 C	20070925	CA19992306069	19990929
EP1121400 A1	20010808	EP19990945823	19990929
PE12002000 A1	20001215	PE19990000980	19990928

US7001502 BA	20060221	US20000529438	20000512
WO0018854 A1	20000406	WO1999CA00914	19990929

Priority:

CA19982249051 19980929 CA19992306069 19990929 WO1999CA00914 19990929

Probable Assignee: GENOIL INC

Assignee(s): (std): BANNARD KENNETH ; CANADIAN ENVIROMENTAL EQUIPMEN ; CANADIAN ENVIROMNENTAL EQUIPME ; CANADIAN ENVIRONMENTAL EQUIPMENT AND ENGINEERING T ; CANADIAN ENVIRONMENTAL INC ; SATCHWELL ROBERT ; LOURENCO JOSE ; COCHRANE PATRICK J ; FACEY RODERICK M ; SALOKANGAS HANNU ; RODRIGUES JOAO ; CANADIAN ENVIRONMENTAL EQUIPME

Assignee(s): CANADIAN ENVIROMNENTAL EQUIPMENT AND ; CANADIAN ENVIROMNENTAL EQUIPMENT AND ENGINEERING T ; ABBOTT BRUCE ; GENOIL INC ; LIFSCHULTZ DAVID K ; LIFSCHULTZ ENTERPRISES CO LLC ; SIDNEY B LIFSCHULTZ 1992 FAMILY TRUST ; CANADIAN ENVIRONMENTAL EQUIPMENT AND ENGINEERING TECHNOLOGIES INC ; CANADIAN ENVIRONMENTAL EQUIPMENT AND ENGINEERING THECHNOLOGIES INC ; CANADIAN ENVIROMNENTAL EQUIPMENT AND ENGINEERING TECHNOLOGIES INC ; CE3 TECHNOLOGIES INC ; CANADIAN ENVIROMENTAL EQUIPMENT AND ENGINEERING TE ; CANADIAN ENVIROMENTAL EQUIPMENT AND ENGINEERING TECHNOLOGIES INC

Inventor(s): (std): BANNARD KENNETH ; COCHRANE PATRICK J ; FACEY RODERICK M ; HANNU SALOKANGAS ; JOAO RODRIGUES ; JOSE LOURENCO ; KENNETH BANNARD ; LOURENCO JOSE ; PATRICK J COCHRANE ; ROBERT SATCHWELL ; RODERICK M FACEY ; RODRIGUES JOAO ; SALOKANGAS HANNU ; SATCHWELL ROBERT

Agent(s): DAVIES COLLISON CAVE; DAVIES COLLISON CAVE PTY LTD; SIM AND MCBURNEY; OYEN WIGGS GREEN AND MUTALA LLP; SWANSON AND BRATSCHUN LLC

Designated states: AE AL AM AT AU AZ BA BB BE BF BG BJ BR BY CA CF CG CH CI CM CN CR CU CY CZ DE DK DM EE ES FI FR GA GB GD GE GH GM GN GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MC MD MG MK ML MN MR MW MX NE NL NO NZ PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

131) Family number: 14341775 (FR2776298A)

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Title: Conversion of hydrocarbons with high sulfur and metal content

Abstract: The hydrocarbons are distilled under vacuum, giving a distillate (DSV) and a residue (RSV). Part of the residue is hydrotreated and part is hydroconverted, producing liquids with reduced sulfur and metal content. These are distilled at atmospheric pressure, each giving a residue and a distillate. Part of the residue is treated in the presence of hydrogen in a treatment zone with a 3 phase reactor containing a boiling bed of hydrotreatment catalyst, in conditions which produce a liquid with reduced Conradson Carbon content, metals and sulfur. Part of the residue is treated in the presence of hydrogen in a hydroconversion section containing at least one 3-phase reactor containing at least one boiling bed of hydroconversion catalyst in conditions which produce a liquid with reduced Conradson Carbon content, in metals and sulfur. The hydrotreatment and hydroconversion reactors have upward gas and liquid flow with a catalyst extractor near the base of the reactor and a source of fresh catalyst near the top. The atmospheric distillations occur with an initial boiling point of about 300 deg C, more commonly between 350 and 370 deg C. The two atmospheric residues are mixed and sent to a catalytic cracker to obtain a gaseous fraction, a fuel fraction containing petrol and diesel, and a slurry. Part of the distillate under vacuum is mixed with the residue under vacuum during hydroconversion. The hydrotreatment and hydroconversion are at a pressure of between 2 and 35 MPa absolute and between 300 and 550 deg C, with a spatial duration of 0.1 to 10 per hour. The atmospheric distillations and distillation under vacuum have independent cutoff points of between 300 and 400 deg C, or the atmospheric distillations have the same cutoff between 300 and 400 deg C. Part of the atmospheric residue is returned to the hydroconversion and/or part to the refinery heavy fuel pool.

Classifications:

International (IPC 8-9): C10G65/08 C10G65/16

C10G69/00 (Advanced/Invention);

C10G65/08 (Advanced/Non-invention);

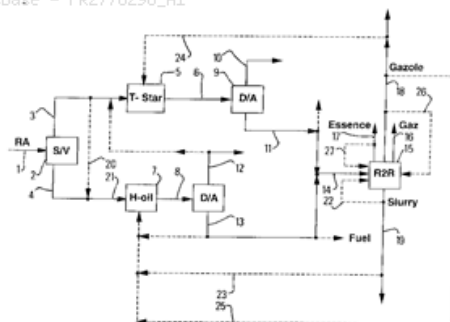
C10G65/00 C10G69/00 (Core/Invention)

International (IPC 1-7): C10G65/08 C10G65/12

CPC: C10G65/16 C10G69/00

European: C10G65/16 C10G69/00

PatBase - FR2776298_A1



Family:

Publication number	Publication date	Application number	Application date
FR2776298 A1	19990924	FR19980003655	19980323
FR2776298 B1	20000428	FR19980003655	19980323
KR100552610 B1	20060217	KR19990009595	19990322
KR19990078105 A	19991025	KR19990009595	19990322

Priority:

FR19980003655 19980323

Probable Assignee: IFP ENERGIES NOUVELLES

Assignee(s): (std): IFP ENERGIES NOUVELLES ; INST FRANCAIS DU PETROL ; INST FRANCAIS DU PETROLE

Assignee(s): INSTITUT FRANCAIS DU PETROLE ; FRANCAIS DU PETROLE INST

Inventor(s): (std): DUPLAN JEAN LUC ; BILLON ALAIN ; MOREL FREDERIC ; KRESSMANN STEPHANE

Inventor(s): STEPHANE KRESSMANN ; JEAN LUC DUPLAN ; FREDERIC MOREL ; ALAIN BILLON

Agent(s): IFP; IFP ENERGIES NOUVELLES

Title: METHOD AND APPARATUS FOR HYDROPROCESSING LOW-VOLATILE HYDROCARBON MATERIALS INTO VOLATILE LIQUIDS

Abstract: A method and apparatus for catalytic hydroconversion processing of less volatile carbonaceous material to volatile liquid products is disclosed. The process is carried out in a plug-flow reactor system using nanosize metallic catalyst particles dispersed in the reactant slurry with compressed hydrogen/hydrogen-sulfide at a temperature between about 275 degrees centigrade and 525 degrees centigrade at a pressure of between about 800 psi and 6000 psi and a residence time in the reactors between about 1 minute and 4 hours.

Classifications:

International (IPC 8-9): C10G1/06 C10G45/08 C10G49/04 C10G49/06

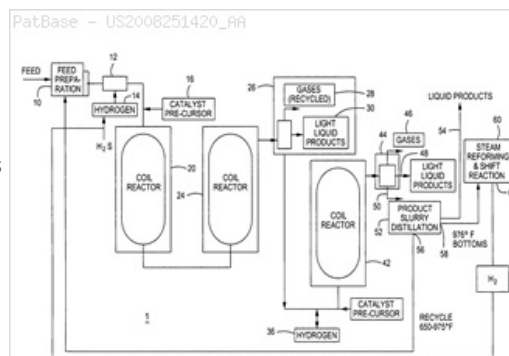
C10G49/10 C10G49/22 C10G65/02 (Advanced/Invention);

C10G45/02 C10G49/00 (Core/Invention)

CPC: C10G2300/207 C10G2300/301 C10G2300/4006 C10G65/18 C10G47/26

European: C10G47/26 C10G65/18

US: 208/143 208/145 208/413 208/423 208/57 208/59 422/140 422/140S 422/142 422/142S



Family:

Publication number	Publication date	Application number	Application date
CA2629101 AA	20081016	CA20082629101	20080415
US2008251420 AA	20081016	US20080082522	20080411
US8092672 BB	20120110	US20080082522	20080411

Priority:

US20070923684P 20070416

US20080082522 20080411

CA20082629101 20080415

Probable Assignee: ENERGY CATALYSIS INC

Assignee(s): (std): COMOLLI ALFRED G ; ENERGY CATALYSIS INC ; GANGULI PARTHA S ; SPECIALTIES GROUP INC

Inventor(s): (std): COMOLLI ALFRED G ; GANGULI PARTHA S

Agent(s): SMART AND BIGGAR; RAYMOND R MOSER JR ESQ MOSER IP LAW GROUP; MOSER TABOADA

Title: TWO-ZONE, CLOSE-COUPLED, DUAL-CATALYTIC HEAVY OIL HYDROCONVERSION PROCESS UTILIZING IMPROVED HYDROTREATING

Abstract: A process for hydroconversion of heavy oil feedstocks that effectively controls asphaltene condensation by utilization of a combination of dispersed coal, dispersed catalyst using a two- zone close-coupled thermo-catalytic reactor/catalytic-hydrotreating reactor configuration. The process converts heavy hydrocarbonaceous feed-stocks, a significant portion of which boils above 540 degrees centigrade, to high yields of high quality products boiling below 540 degrees centigrade. The first zone of the process is a thermo-catalytic zone, in which the feedstock is substantially converted to lower boiling products. The product of the thermo-catalytic zone is cooled somewhat and passed directly, without substantial loss of hydrogen partial pressure, into a catalytic-hydrotreating zone, where the thermo- catalytic zone effluent is hydrotreated to produce hydrotreated products suitable for further treatment into transportation fuels and other products. The catalytic-hydrotreating zone is comprised of two sub-zones, one before and one after a hot separator. The first treating sub-zone accomplishes the immediate hydrogenation of unstable molecules. The hot separator removes light products and gases providing a heavy product stream that can be more efficiently treated with higher purity recycle and make-up hydrogen-rich streams.

Classifications:

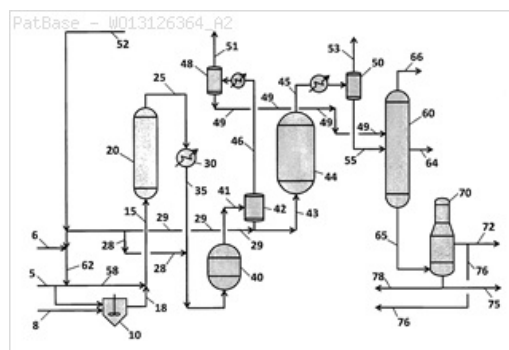
International (IPC 8-9): B01J21/18 C10G1/00 C10G1/06 C10G45/04

C10G47/02 C10G47/22 C10G47/26 C10G65/10

C10G65/12 (Advanced/Invention)

CPC: C10G47/22 C10G47/26 C10G65/10 C10G1/002 C10G1/06

C10G1/065 C10G45/04 C10G47/02 C10G65/12 C10G2300/4081



Family:

Publication number	Publication date	Application number	Application date
AR090102 AA	20141022	AR2013P100515	20130221
WO13126364 A2	20130829	WO2013US26789	20130220
WO13126364 A3	20131128	WO2013US26789	20130220

Priority:

US20120601344P 20120221

Probable Assignee: 4CRGROUP LLC**Assignee(s):** (std): 4CRGROUP LLC ; CASH DENNIS R ; GRAHAM FORDER J ; MITCHELL DAVID S ; ROSENTHAL JOEL W**Inventor(s):** (std): CASH DENNIS R ; DAVID S MITCHELL ; DENNIS R CASH ; GRAHAM FORDER J ; GRAHAM J FORDER ; JOEL W ROSENTHAL ; MITCHELL DAVID S ; ROSENTHAL JOEL W**Agent(s):** SOFFEN STEPHEN A**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW**134) Family number: 32519807 (US2008210600A)**

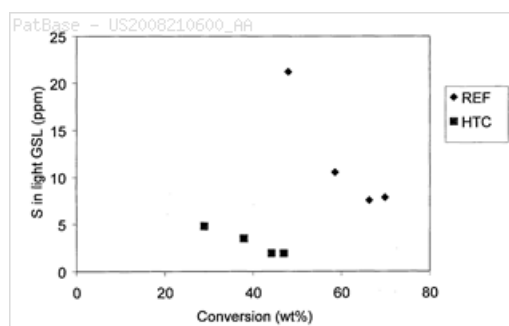
© PatBase

Title: PROCESS FOR UPGRADING LIQUID HYDROCARBON FEED

Abstract: Process for upgrading a liquid hydrocarbon feed comprising the steps of (a) preparing a slurry comprising the hydrocarbon feed having a boiling range above 350 degrees centigrade and solid particles comprising a rehydratable material, (b) thermally treating said slurry at a temperature in the range of 250 to 550 degrees centigrade, (c) optionally separating the thermally treated slurry into (i) a lower boiling fraction and (ii) a higher boiling fraction containing the solid particles and formed coke, if any, and (d) separating the solid particles and formed coke, if any, from the thermally treated slurry resulting from step b) or the higher boiling fraction of step c).

Classifications:**International (IPC 8-9):** B01J23/00 C10G11/00 C10G11/16 C10G11/18 C10G29/00 C10G31/06 C10G55/02 C10G55/06 C10G67/02 C10G69/02 C10G9/28 (Advanced/Invention);

B01J23/00 C10G11/00 C10G29/00 C10G31/00 C10G55/00 C10G67/00 C10G69/00 (Core/Invention)

International (IPC 1-7): C10G**CPC:** B01J23/007 C10G55/06 C10G11/16 C10G11/18 C10G69/02**European:** C10G11/16 C10G11/18 C10G55/06 C10G69/02 L01J23/00Z**US:** 208/113 208/118 208/120.01 208/126 208/127**Family:**

Publication number	Publication date	Application number	Application date
BRPI0512534 A	20080325	BR2005PI12534	20050616
CA2570004 AA	20061211	CA20052570004	20050616
CN101023154 A	20070822	CN200580020438	20050616
EP1763572 A2	20070321	EP20050758142	20050616
JP2008503622 T2	20080207	JP20070517160T	20050616
US2008210600 AA	20080904	US20050629053	20050616
US7824540 BB	20101102	US20050629053	20050616
WO05123881 A2	20051229	WO2005EP06555	20050616
WO05123881 A3	20060831	WO2005EP06555	20050616

Priority:

US20040581788P 20040622 EP20040077616 20040920 EP20050758142 20050616

US20050629053 20050616 WO2005EP06555 20050616

Probable Assignee: ALBEMARLE CORP**Assignee(s):** (std): ALBEMARLE CORP ; ALBEMARLE NETHERLANDS BV ; ALBERMALE NETHERLANDS BV ; BRADY MICHAEL F ; CERQUEIRA HENRIQUE SOARES ; CHAMBERLAIN PRAVIA OSCAR RENE ; LAHEIJ ERIK JEROEN ; PETROLEO BRASILEIRO SA ; O CONNOR PAUL ; STAMIREN DENNIS ; MAS CABRE FRANCISCO RENE ; SOARES CERQUEIRA HENRIQUE ; LOPES DE AZEVEDO FABIO**Assignee(s):** PETROLEO BRASILEIRO S A PETROBRAS ; PETROLEO BRASILEIRO S A ; PETROLEO BRASILEIRO PETROBRAS SA**Inventor(s):** (std): AZEVEDO FABIO LOPES DE ; BRADY MICHAEL F ; CERQUEIRA HENRIQUE SOARES ; CHAMBERLA O CONNOR PAUL LAHEIJ ; CHAMBERLAIN PRAVIA OSCAR RENE ; LAHEIJ ERIK JEROEN ; LOPES DE AZEVEDO FABIO ; MAS CABRE FRANCISCO RENE ; MASCABRE FRANCISCO RENE ; O CONNOR PAUL ; PRAVIA OSCAR RENE CHAMBERLAIN ; SOARES CERQUEIRA HENRIQUE ; STAMIREN DENNIS**Inventor(s):** O CONNOR PAUL LAHEIJ ERIK JEROEN STAMIREN ; O'CONNOR PAUL ; OSCAR RENE CHAMBERLAIN PRAVIA ; PAUL O CONNOR ; MICHAEL F BRADY ; O AND 39 CONNOR PAUL ; DENNIS STAMIREN ; ERIK JEROEN LAHEIJ ; FABIO LOPES DE AZEVEDO ; FRANCISCO RENE MASCABRE ; HENRIQUE SOARES CERQUEIRA**Agent(s):** MACRAE AND CO; ALBEMARLE PATENT DEPARTMENT CORP; JAMES A**Designated states:** AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW**135) Family number: 43255529 (US2009127161A)**

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Title: PROCESS AND APPARATUS FOR INTEGRATED HEAVY OIL UPGRADING

Abstract: A process and apparatus is disclosed for converting heavy hydrocarbon feed into lighter hydrocarbon products. The heavy hydrocarbon feed is slurried with a particulate solid material to form a heavy hydrocarbon slurry and hydrocracked to produce vacuum gas oil (VGO). A light portion of the VGO may be hydrotreated and subjected to fluid catalytic cracking to produce fuels such as gasoline. A heavy portion of the VGO may be recycled to the slurry hydrocracking reactor. FCC slurry oil may be recycled to the slurry for hydrocracking.

Classifications:

International (IPC 8-9): C10G65/02 (Advanced/Invention);

C10G65/00 (Core/Invention)

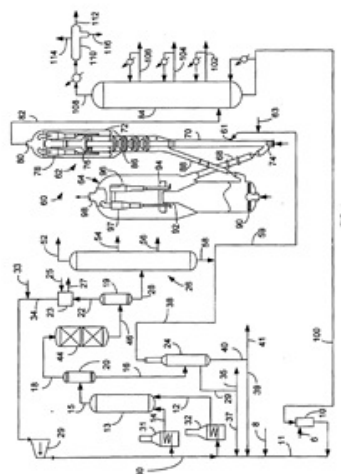
CPC: C10G11/18 C10G47/00

European: C10G11/18 C10G47/00

US: 208/59 208/59P

PatBase - US2009127161_AA

Patent Application Publication May 21, 2009 Sheet 1 of 2 US 2009/0127161 A1

**Family:**

Publication number	Publication date	Application number	Application date
US2009127161 AA	20090521	US20070942373	20071119

Priority:

US20070942373 20071119

Probable Assignee: UOP LLC

Assignee(s): (std): HAIZMANN ROBERT S ; MCGEHEE JAMES F

Assignee(s): UOP LLC

Inventor(s): (std): MCGEHEE JAMES F ; HAIZMANN ROBERT S

Agent(s): HONEYWELL INTERNATIONAL INC,PATENT SERVICES; HONEYWELL INT INC PATENT SERVICES

136) Family number: 55475324 (US2014001092A)

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Title: HYDROCARBON CONVERSION PROCESS TO REMOVE METALS

Abstract: The invention involves a process for hydrocarbon conversion. The process can include providing a feed to a primary upgrading zone and then treating the product from the primary upgrading zone with a feed-immiscible ionic liquid to remove metal compounds.

Classifications:

International (IPC 8-9): C10G21/18 C10G47/00 C10G55/02 C10G55/04 C10G67/04 (Advanced/Invention)

CPC: C10G55/04 C10G67/04 C10G21/18 C10G47/00 C10G2300/205 C10G2400/02 C10G2400/04 C10G2400/08

US: 1/1 208/251R 208/96

Family:

Publication number	Publication date	Application number	Application date
US2014001092 AA	20140102	US20130760247	20130206
US9133403 BB	20150915	US20130760247	20130206

Priority:

US20120665935P 20120629 US20130760247 20130206

Probable Assignee: UOP LLC

Assignee(s): (std): UOP LLC

Inventor(s): (std): MEZZA BECKAY J ; NICHOLAS CHRISTOPHER P ; HUOVIE BRENN E ; WANG HAIYAN ; BHATTACHARYYA ALAKANANDA ; GATTUPALLI RAJESWAR R

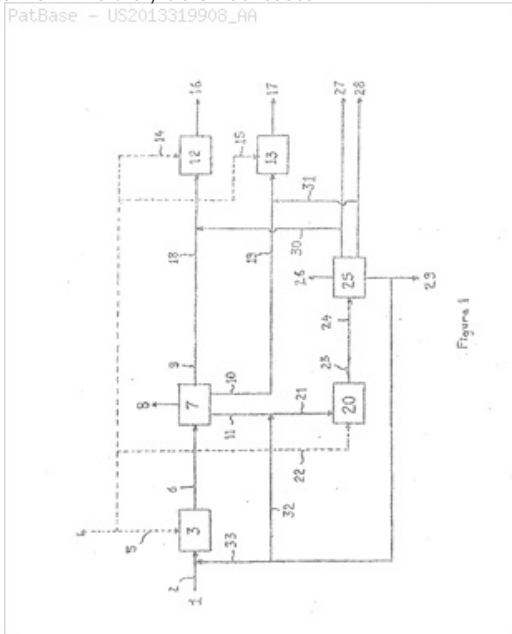
137) Family number: 51342015 (US2013319908A)

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Title: METHOD FOR CONVERTING HYDROCARBON FEEDSTOCK COMPRISING A SHALE OIL BY HYDROCONVERSION IN AN

Classifications:

US: 208/14 208/59 422/140



Publication number	Publication date	Application number	Application date
AU2011347042 AA	20120628	AU20110347042	20111216
AU2011347042 BB	20151119	AU20110347042	20111216
BR112013015358 A2	20170718	BR20131115358	20111216
CA2816666 AA	20130501	CA20112816666	20111216
CA2816666 C	20181023	CA20112816666	20111216
CN103328613 A	20130925	CN201180062159	20111216
CN103328613 B	20160323	CN201180062159	20111216
EE05782 B1	20161115	EE20130000024	20111216
EE201300024 A	20131015	EE20130000024	20111216
FR2969648 A1	20120629	FR20100061246	20101224
FR2969648 B1	20140411	FR20100061246	20101224
GC5129 A	20170309	GC2011P020127	20111224
IL226641 A0	20130829	IL20110226641	20111216
IL226641 A1	20170529	IL20110226641	20111216
MA34752 B1	20131203	MA20130036030	20130620
RU2013134377 A	20150127	RU20130134377	20111216
RU2592688 C2	20160727	RU20130134377	20111216
US2013319908 AA	20131205	US20110997330	20111216
WO12085407 A1	20120628	WO2011FR53021	20111216
WO12085407 A8	20130711	WO2011FR53021	20111216

FR20100061246 20101224 WO2011FR53021 20111216

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: SIMULTANEOUS UPGRADING AND DEDUSTING OF LIQUID HYDROCARBON FEEDSTOCKS

Abstract: A process of concurrently dedusting and upgrading particulate laden raw, whole retort oil is provided which comprises the steps of: retorting solid hydrocarbon-containing material such as oil shale to liberate an effluent stream of dust laden hydrocarbons; injecting the dust-laden retort effluent product stream into a catalytic hydrotreater; agitating the product stream in the hydrotreater to constantly maintain the particulates in suspension within the oil; catalytically hydrotreating the agitated product stream in the presence of a hydroprocessing gas at a pressure of from 500 to 3000 psi, a temperature of from 650 DEG to 850 DEG F. and a space velocity of from 0.1 to 6.0 hr⁻¹, whereby the suspended particulates are agglomerated to facilitate solid-liquid separation and substantial amounts of sulfur and nitrogen contaminants are simultaneously removed from the resulting ungraded oil; and mechanically separating the agglomerated particulates from the upgraded whole oil. The product oil may be further upgraded either by treatment with aqueous sulfuric acid or by hydrotreatment.

Classifications:

International (IPC 8-9): C10G1/00 C10G45/02

C10G67/08 (Advanced/Invention);

C10G1/00 C10G45/02 C10G67/00 (Core/Invention)

International (IPC 1-7): C10G13/02 C10G23/00

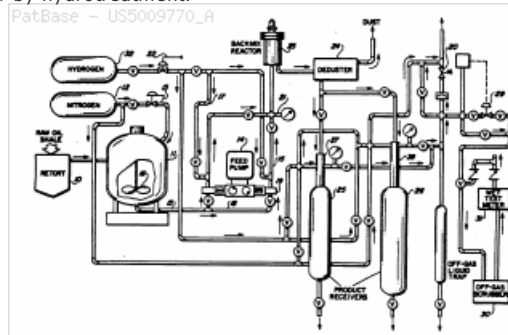
CPC: B01J8/0214 B01J2208/00814 B01J2208/00876 C10G1/002

C10G45/02 C10G67/08

European: C10G1/00B C10G45/02 C10G67/08

US: 208/177 208/209 208/211 208/212 208/213 208/251H 208/254H

208/400 208/412 208/424 208/426 208/428 208/435



Assignee(s): (std): SAFINYA KAMBIZ A ; SCHLUMBERGER CA LTD ; SCHLUMBERGER SERVICES PETROL ; SCHLUMBERGER HOLDINGS ; SCHLUMBERGER TECHNOLOGY BV ; PRAD RES AND DEV LTD

Assignee(s): PRAD RESEARCH AND DEVELOPMENT LIMITED ; PRAD RESEARCH AND DEVELOPMENT LTD ; SCHLUMBERGER TECHNOLOGY CORP ; SCHLUMBERGER CANADA LTD ; SCHLUMBERGER CANADA LIMITED ; SERVICES PETROLIERS SCHLUMBERGER ; SCHLUMBERGER HOLDINGS LIMITED ; SCHLUMBERGER TECHNOLOGY B V

Inventor(s): (std): SAFINYA KAMBIZ A ; SAFINYA KAMBIZ

Inventor(s): KAMBIZ A SAFINYA

Agent(s): SMART AND BIGGAR; LUIS FELIPE CASTILLO GIBSON; HYDEN MARTIN DOUGLAS; KANAK WAYNE I

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

140) Family number: 55303466 (US2013319910A)

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Title: INTEGRATED PROCESS FOR DEASPHALTING AND DESULFURIZING WHOLE CRUDE OIL

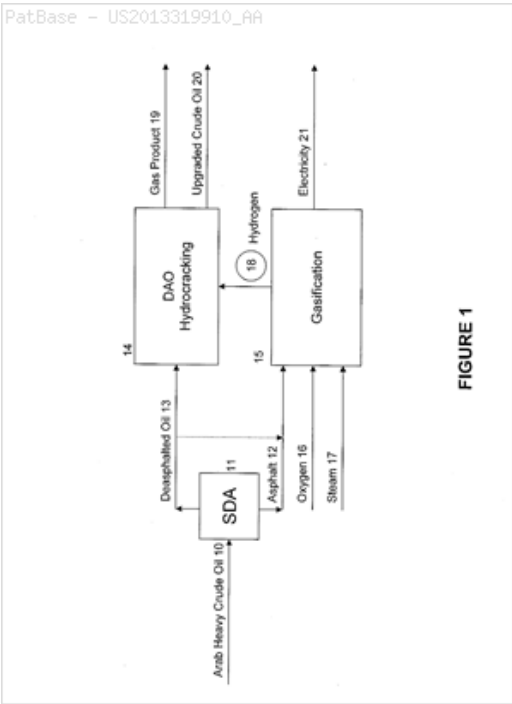
Abstract: The invention relates to processes for removing impurities, such as asphalt, from whole crude oil. The invention is accomplished by first deasphalting a feedstock, followed by processing resulting DAO and asphalt fractions. The DAO fraction is hydrocracked, resulting in removal of sulfur and hydrocarbons which boil at temperatures over 370 degrees centigrade, and gasifying the asphalt portion.

Classifications:

International (IPC 8-9): B01J23/883 B01J29/076 B01J35/10 C01B3/36 C10G21/14 C10G25/00 C10G27/04 C10G31/08 C10G47/12 C10G47/20 C10G67/04 C10G67/06 C10G67/16 C10J3/00 (Advanced/Invention)

CPC: C10J2300/0946 C10G2300/201 Y02P20/125 Y02P20/52 C10G67/0463 C10G47/20 C10G67/049 C10J3/00

US: 208/86



Family:

Publication number	Publication date	Application number	Application date
CN104540926 A	20150422	CN201380029767	20130529
EP2855639 A1	20150408	EP20130730395	20130529
GC7433 A	20180326	GC2013P024572	20130604
JP2015520271 T2	20150716	JP20150516064T	20130529
JP5991562 B2	20160914	JP20150516064T	20130529
KR101716986 B1	20170315	KR20157000070	20130529
KR20150021559 A	20150302	KR20157000070	20130529
SG11201408000X A1	20150129	SG20141108000	20130529
US2013319910 AA	20131205	US20130904545	20130529
WO13184462 A1	20131212	WO2013US43055	20130529

Priority:

US20120655732P 20120605 US20130904545 20130529 WO2013US43055 20130529

Probable Assignee: JGC CATALYSTS AND CHEMICALS LTD

Assignee(s): (std): JGC CATALYSTS AND CHEMICALS LTD ; KOSEOGLU OMER REFA ; NAKANO KOJI ; SAUDI ARABIAN OIL CO ; SAUDI ARABIAN OIL CO ; USHIO MASARU

Inventor(s): (std): KOSEOGLU OMER REFA ; NAKANO KOJI ; USHIO MASARU

Inventor(s): OMER REFA KOSEOGLU ; MASARU USHIO ; KOJI NAKANO

Agent(s): GERVAZI GEMMA; SULEIMAN I AL AMMAR LAW OFFICE; MORIZUMI KEN ICHI; TANAKA MITSUO; YAMADA TAKUJI; HANSON NORMAN D

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU

CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN
IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX
MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST
SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

141) Family number: 43256989 (US2009129998A)

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Title: APPARATUS FOR INTEGRATED HEAVY OIL UPGRADING

Abstract: An apparatus is disclosed for converting heavy hydrocarbon feed into lighter hydrocarbon products. The heavy hydrocarbon feed is slurried with a particulate solid material to form a heavy hydrocarbon slurry and hydrocracked to produce vacuum gas oil (VGO). A light portion of the VGO may be hydrotreated and subjected to fluid catalytic cracking to produce fuels such as gasoline. A heavy portion of the VGO may be recycled to the slurry hydrocracking reactor. FCC slurry oil may be recycled to the slurry for hydrocracking.

Classifications:

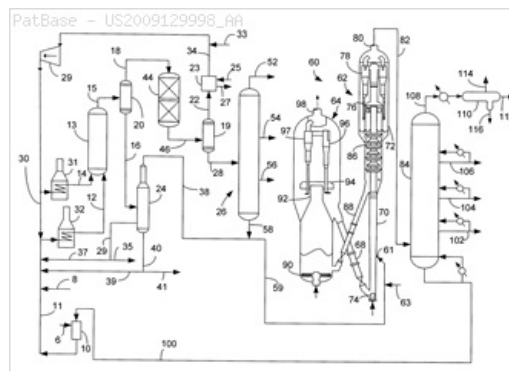
International (IPC 8-9): B01J8/04 (Advanced/Invention);

B01J8/04 (Core/Invention)

CPC: B01J2219/00006 C10G65/12 C10G69/04

European: C10G65/12 C10G69/04 L01J219/00A2B

US: 422/190 422/600 422/600P



Family:

Publication number	Publication date	Application number	Application date
US2009129998 AA	20090521	US20070942401	20071119

Priority:

US20070942401 20071119

Probable Assignee: UOP LLC

Assignee(s): (std): HAIZMANN ROBERT S ; MCGEHEE JAMES F

Assignee(s): UOP LLC

Inventor(s): (std): MCGEHEE JAMES F ; HAIZMANN ROBERT S

Agent(s): HONEYWELL INTERNATIONAL INC,PATENT SERVICES

142) Family number: 55475328 (US2014001094A)

© PatBase

Title: HYDROCARBON CONVERSION PROCESS TO REMOVE CARBON RESIDUE CONTAMINANTS

Abstract: The invention involves a process for hydrocarbon conversion. The process can include providing a feed to a primary upgrading zone and then treating the product from the primary upgrading zone with a feed-immiscible ionic liquid to remove carbon residue compounds.

Classifications:

International (IPC 8-9): C10G21/24 C10G55/02 C10G55/04 C10G55/06 C10G67/04 (Advanced/Invention)

CPC: C10G21/24 C10G67/04 C10G55/04 C10G55/06

US: 1/1 208/290 208/291 208/96

Family:

Publication number	Publication date	Application number	Application date
US2014001094 AA	20140102	US20130760299	20130206
US9133400 BB	20150915	US20130760299	20130206

Priority:

US20120665954P 20120629 US20130760299 20130206

Probable Assignee: UOP LLC

Assignee(s): (std): UOP LLC

Inventor(s): (std): MEZZA BECKAY J ; NICHOLAS CHRISTOPHER P ; HUOVIE BRENN E ; WANG HAIYAN ; BHATTACHARYYA ALAKANANDA ; GATTUPALLI RAJESWAR R

143) Family number: 58240743 (US2016369188A)

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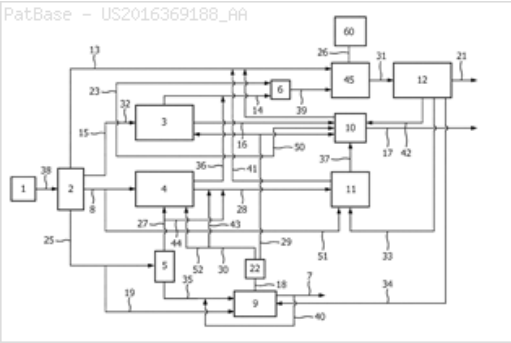
Title: PROCESS FOR UPGRADING REFINERY HEAVY RESIDUES TO PETROCHEMICALS

Abstract: The present invention relates to a process for upgrading refinery heavy residues to petrochemicals, comprising the following steps of: (a) separating a hydrocarbon feedstock in a distillation unit into a top overhead stream and a bottom stream (b)

feeding said bottom stream to a hydrocracking reaction area (c) separating reaction products, which are generated from said reaction area of step (b) into a stream rich in mono-aromatics and in a stream rich in poly-aromatics (d) feeding said stream rich in mono-aromatics to a gasoline hydrocracker (GHC) unit, (e) feeding said stream rich in poly-aromatics to a ring opening reaction area.

Classifications:

International (IPC 8-9): C10G21/00 C10G21/06 C10G47/00 C10G65/00 C10G65/10 C10G65/18 C10G67/00 C10G67/04 C10G69/00 C10G69/02 C10G69/06 C10G69/14 (Advanced/Invention)
CPC: C10G69/02 C10G2300/107 C10G2300/1044 C10G2300/1077 C10G2300/1051 C10G2300/1055 C10G2300/1059 C10G2400/30 C10G65/00 C10G65/10 C10G65/18 C10G67/0445 C10G69/06 C10G69/14 C10G2400/20
US: 585/315



Family:

Publication number	Publication date	Application number	Application date
CN105378037 A	20160302	CN201480033020	20140630
CN105378037 B	20181116	CN201480033020	20140630
CN109593552 A	20190409	CN201811214036	20140630
DE602014019099 D1	20180215	DE201460019099T	20140630
EP3017024 A1	20160511	EP20140735909	20140630
EP3017024 B1	20171227	EP20140735909	20140630
ES2663145 T3	20180411	ES20140735909T	20140630
GC7113 A	20180221	GC2014P027479	20140701
IN10046DN2015 A	20160401	IN2015DN10046	20151028
JP2016526592 T2	20160905	JP20160522559T	20140630
JP2019039008 A2	20190314	JP20180201614	20181026
JP6427180 B2	20181121	JP20160522559T	20140630
KR20160025512 A	20160308	KR20157036206	20140630
KR20190042778 A	20190424	KR20197011221	20140630
SG10201807497V A1	20180927	SG20181007497	20140630
SG11201508916T A1	20160128	SG20151108916	20140630
US2016369188 AA	20161222	US20140901947	20140630
US2019062655 AA	20190228	US20180115982	20180829
WO15000841 A1	20150108	WO2014EP63849	20140630

Priority:

EP20130174770 20130702 CN201480033020 20140630 EP20140735909 20140630
JP20160522559T 20140630 WO2014EP63849 20140630 US20150901947 20151229
US20180115982 20180829

Probable Assignee: SABIC GLOBAL TECHNOLOGIES BV

Assignee(s): (std): HOUSMANS THOMAS HUBERTUS MARIA ; OPRINS ARNO JOHANNES MARIA ; SABIC GLOBAL TECH BV ; SABIC GLOBAL TECHNOLOGIES BV ; SAUDI BASIC IND CORP

Assignee(s): SAUDI BASIC IND CORPORATION SABIC

Inventor(s): (std): HOUSMANS THOMAS HUBERTUS MARIA ; OPRINS ARNO JOHANNES MARIA ; OPRINS ARNO ; HOUSMANS THOMAS

Agent(s): TERPSMA JELLE PHILIP; ALGEMEEN OCTROOI EN MERKENBUREAU BV; LEHMANN MARIA ISABEL; SABA AND CO TMP; DREW AND NAPIER LLC; SABIC INTELLECTUAL PROPERTY GROUP

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

144) Family number: 5088957 (US4606809A)

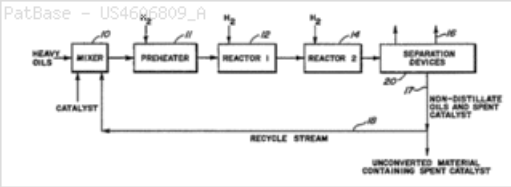
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Title: Hydroconversion of heavy oils

Abstract: High yields of desired distillate oil are obtained by subjecting heavy oil to catalytic conversion with hydrogen at superatmospheric pressure in a temperature staged process, wherein the oil-catalyst slurry is subjected in the initial stage to a temperature in the range of 780 DEG -825 DEG F. (415 DEG -440 DEG C.) and in a subsequent stage to a temperature which is at least 20 DEG F. higher than that employed in the previous stage, preferably in the range of 800 DEG -860 DEG F. (DIFFERENCE 425 DEG -460 DEG C.).

Classifications:

International (IPC 8-9): C10G65/10 (Advanced/Invention); C10G65/00 (Core/Invention)
International (IPC 1-7): C10G65/10
CPC: C10G65/10
European: C10G65/10
US: 208/112 208/59 208/85



Family:

Publication number	Publication date	Application number	Application date
US4606809 A	19860819	US19850750623	19850701

Priority:

US19850750623 19850701

Probable Assignee: AIR PROD AND CHEM**Assignee(s):** (std): AIR PROD AND CHEM**Assignee(s):** AIR PRODUCTS AND CHEMICALS INC**Inventor(s):** (std): GARG DIWAKAR**145) Family number: 55475320 (US2014001091A)**

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Title: HYDROCARBON CONVERSION PROCESS

Abstract: The invention involves a process for hydrocarbon conversion. The process can include providing a feed to a primary upgrading zone and then treating the product from the primary upgrading zone with a feed-immiscible ionic liquid to remove nitrogen compounds.

Classifications:

International (IPC 8-9): C10G21/18 C10G21/20 C10G21/24 C10G21/28 C10G47/00 C10G55/02 C10G55/04 C10G55/06 C10G57/00 C10G67/04 (Advanced/Invention)

CPC: C10G55/04 C10G67/04 C10G21/18 C10G47/00 C10G2300/202 C10G2400/02 C10G2400/04 C10G2400/08

US: 1/1 208/254R 208/96

Family:

Publication number	Publication date	Application number	Application date
US2014001091 AA	20140102	US20130760146	20130206
US9133402 BB	20150915	US20130760146	20130206
WO14123561 A1	20140814	WO2013US42863	20130528

Priority:

US20120665932P 20120629

US20130760292 20130206

US20130760146 20130206

US20130760299 20130206

US20130760247 20130206

Probable Assignee: UOP LLC**Assignee(s):** (std): UOP LLC

Inventor(s): (std): MEZZA BECKAY J ; NICHOLAS CHRISTOPHER P ; HUOVIE BRENNIA E ; WANG HAIYAN ; BHATTACHARYYA ALAKANANDA ; GATTUPALLI RAJESWAR R ; GATTAPALLI RAJESWAR R

Agent(s): GOLDBERG MARK

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

146) Family number: 11809064 (US6153087A)

© PatBase

Title: Process for converting heavy crude oil fractions, comprising an ebullating bed conversion step and a hydrocracking step

Abstract: A process for converting a hydrocarbon fraction comprises a step a) for treating a hydrocarbon feed in the presence of hydrogen in at least one three-phase reactor, containing at least one hydrotreatment catalyst in an ebullating bed, operating in riser mode of liquid and of gas, the reactor comprising at least one means located close to the bottom of the reactor for extracting catalyst from the reactor and at least one means located close to the top of the reactor for adding fresh catalyst to the reactor, a step b) for treating at least a portion of the effluent from step a) in the presence of hydrogen in at least one reactor containing at least one hydrocracking catalyst in a fixed bed under conditions for producing an effluent with a reduced sulphur content, and a step c) in which at least a portion of the product from step b) is sent to a distillation zone from which a gaseous fraction, a gasoline type engine fuel fraction, a diesel type engine fuel fraction and a liquid fraction which is heavier than the diesel type fraction are recovered. The process can also comprise a step d) for catalytic cracking of the heavy fraction obtained from step c).

Classifications:

International (IPC 8-9): C10G45/66 C10G65/12 (Advanced/Invention); C10G45/58 C10G65/00 (Core/Invention)

International (IPC 1-7): C10G45/66 C10G65/12 C10G69/02

CPC: C10G65/12

European: C10G65/12

US: 208/210 208/213 208/58 208/86 208/89

Family:

Publication number	Publication date	Application number	Application date
CA2239827 AA	19981224	CA19982239827	19980622
CA2239827 C	20080826	CA19982239827	19980622
FR2764902 A1	19981224	FR19970007984	19970624
FR2764902 B1	19990716	FR19970007984	19970624
US6153087 A	20001128	US19980103526	19980624

Priority:

FR19970007984 19970624

CA19982239827 19980622

Probable Assignee: IFP ENERGIES NOUVELLES

Assignee(s): (std): INST FRANCAIS DU PETROL ; INST FRANCAIS DU PETROLE

Assignee(s): MARION PIERRE ; MOREL FREDERIC ; INSTITUT FRANCAIS DU PETROLE ; INSTITUT FRAN AIS DU PETROLE ; BIGEARD PIERRE HENRI ; BRIOT PATRICK ; FRANCAIS DU PETROLE INST ; GUERET CHRISTOPHE ; IFP ENERGIES NOUVELLES

Inventor(s): (std): GUERET CHRISTOPHE ; MARION PIERRE ; MOREL FREDERIC ; BIGEARD PIERRE HENRI ; BRIOT PATRICK

Inventor(s): CHRISTOPHE GUERET ; FREDERIC MOREL ; PATRICK BRIOT ; PIERRE HENRI BIGEARD ; PIERRE MARION

Agent(s): ROBIC ; IFP

147) Family number: 63732685 (US2016298039A)

© PatBase

Title: DECREASING FOULING IN HYDROCARBON-BASED FLUIDS

Abstract: An effective amount of at least one first component and an effective amount of at least one second component may contact a hydrocarbon-based fluid or be introduced into a hydrocarbon-based fluid having at least one foulant for decreasing the fouling by the foulant(s) as compared to an otherwise identical hydrocarbon-based fluid absent the first component(s) and second component(s). The first component(s) may be considered a dispersant, and the second component(s) may be considered free radical inhibitors in a non-limiting embodiment.

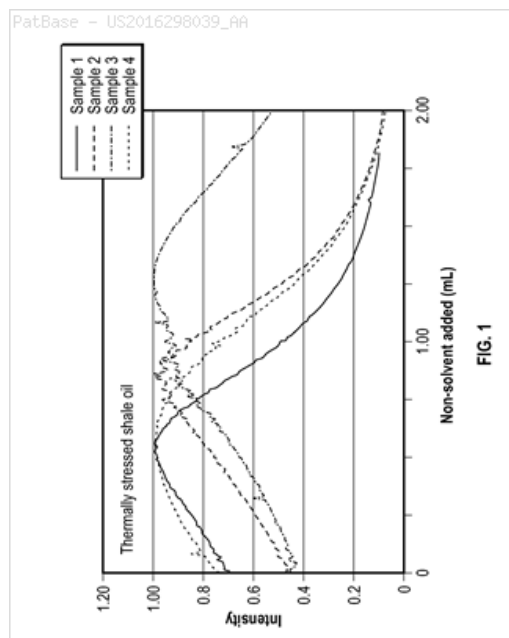
Classifications:

International (IPC 8-9): C10G1/00 C10G47/00

C10G75/04 (Advanced/Invention)

CPC: C10G75/04 C10G1/00 C10G47/00 C10G2300/80

US: 508/578



Family:

Publication number	Publication date	Application number	Application date
EP3280784 A1	20180214	EP20160777189	20160406
EP3280784 A4	20180905	EP20160777189	20160406
KR20180011082 A	20180131	KR20177032183	20160406
US2016298039 AA	20161013	US20160090912	20160405
WO16164445 A1	20161013	WO2016US26192	20160406

Priority:

US20150144649P 20150408

US20160090912 20160405

WO2016US26192 20160406

Probable Assignee: BAKER HUGHES INC

Assignee(s): (std): BAKER HUGHES A GE CO LLC ; BAKER HUGHES INC

Inventor(s): (std): FALKLER THOMAS J ; METZLER ROGER D

Agent(s): DAVIES CHRISTOPHER ROBERT; MATHENY ANTHONY F

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

148) Family number: 74018164 (US6533925B)

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Title: Asphalt and resin production to integration of solvent deasphalting and gasification

Abstract: This invention involves heat integration of a solvent deasphalting process with a gasification process and an improved process for separating a resin phase from a solvent solution comprising a solvent, deasphalted oil (DAO) and resin. This improved process comprises heating the solvent solution so as to precipitate the resin from the solvent solution, and then separating the resin and some solvent from the solvent solution. This will produce a resin product and a mixture comprising the DAO and the remaining solvent. The DAO/solvent mixture is then boiled so as to vaporize a fraction of the solvent, with waste heat from a

gasification unit providing the heat source for the boiling. The vaporized solvent is removed from the DAO/solvent mixture leaving a resin-free DAO product that contains any unvaporized solvent. The vaporized solvent is used for heating the aforementioned solvent solution and preheating the resin-free DAO/solvent mixture. The solvent solution heating and DAO/solvent mixture preheating steps are usually done in series, where the DAO/solvent mixture is first preheated prior to the boiling step leaving a cooled vaporized solvent fraction. The cooled vaporized solvent fraction is then used to provide the heat to the solvent solution prior to the resin separation step. The asphalt that is recovered in the deasphalting step is then used as feedstock in the gasification process.

Classifications:

International (IPC 8-9): C10G21/00 C10G21/14 C10G67/14 C10J3/02 G02B6/36 G02B6/38 G02B6/40 G02B6/43 (Advanced/Invention); C10G21/00 G02B6/42 G02B6/44 (Advanced/Non-invention); C10G21/00 C10J3/02 G02B6/36 G02B6/38 G02B6/40 G02B6/43 (Core/Invention); G02B6/42 G02B6/44 (Core/Non-invention)

International (IPC 1-7): C10C3/04 C10C3/08 C10G21/00 C10G21/14 C10G67/14 C10J3/02

CPC: C10G21/003 G02B6/387 G02B6/3821 G02B6/3825 G02B6/3829 G02B6/3849 G02B6/3869 G02B6/3879 G02B6/3885 G02B6/3887 G02B6/389 G02B6/3893 G02B6/3897 G02B6/4277 G02B6/43 G02B6/4478 G02B2006/4297

European: C10G21/00A G02B6/38D10G G02B6/38D12 G02B6/38D14P G02B6/38D16 G02B6/38D2N G02B6/38D6H2 G02B6/38D8 G02B6/38D8P G02B6/42C30D G02B6/43 S02B6/38D10A6L S02B6/38D10G S02B6/38D12 S02B6/38D14 S02B6/38D2K4 S02B6/38D2S2 S02B6/38D6H2 S02B6/38D8 S02B6/42H2 S02B6/43 S02B6/44C8Z4 Y02E20/18

US: 208/309 208/40 208/44 208/45 208/86 208/87

PatBase - US6533925_BA

U.S. Patent Mar. 18, 2003 Sheet 1 of 2 US 6,533,925 B1

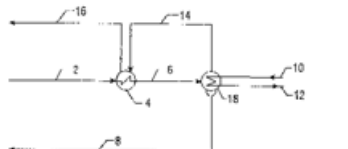


FIG. 1

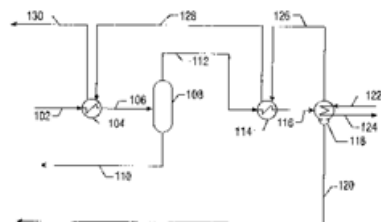


FIG. 2

Family:

Publication number	Publication date	Application number	Application date
AR028751 AA	20030521	AR2001P103009	20010625
AU2001255384 AA	20020304	AU20010255384	20010413
CA2420138 AA	20020228	CA20012420138	20010413
EP1313824 A1	20030528	EP20010928537	20010413
JP2004525989 T2	20040826	JP20020521611T	20010413
KR20030029842 A	20030416	KR20037002627	20010413
TW539742 B	20030701	TW20010116134	20010702
US6533925 BA	20030318	US20000643444	20000822
WO0216530 A1	20020228	WO2001US12226	20010413

Priority:

US20000643444 20000822 WO2001US12226 20010413

Probable Assignee: TEXACO INC

Assignee(s): (std): TEXACO DEVELOPMENT CORP

Assignee(s): PENROSE CLINT F ; WALLACE PAUL S ; TEXACO INC ; JOHNSON KAY A ; NICCUM JACQUELYN G

Inventor(s): (std): JOHNSON KAY A ; NICCUM JACQUELYN G ; NICCUM JACQUELINE G ; WALLACE PAUL S ; PENROSE CLINT F

Inventor(s): PAUL S WALLACE ; KAY A JOHNSON ; CLINT F PENROSE ; JACQUELYN G NICCUM

Agent(s): DAVIES COLLISON CAVE; DAVIES COLLISON CAVE PTY LTD; SIM AND MCBURNEY

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EE ES FI FR GA GB GD GE GH GM GN GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

149) Family number: 44229826 (WO10004125A2)

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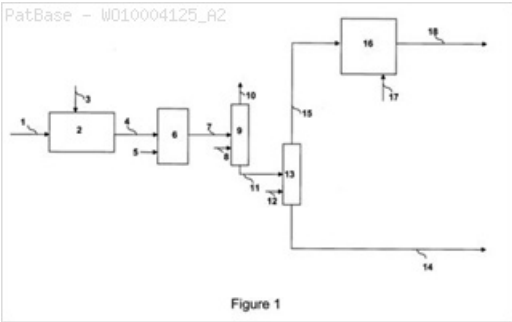
Title: CONVERSION PROCESS COMPRISING A HYDROCONVERSION OF THE FEEDSTOCK THEN A VISBREAKING AND A FRACTIONATION

Abstract: The invention relates to a conversion process comprising a step a of hydroconversion of the feedstock, a step b of reduction of the viscosity of the effluent obtained in step a, a step c of fractionation of a portion of the effluent resulting from step b, and a step d of hydrotreatment.

Classifications:

International (IPC 8-9): C10G45/00 C10G45/02 C10G45/18 C10G47/20 C10G47/28 C10G65/12 C10G69/06 C10G7/00 C10G9/00 (Advanced/Invention); C10G45/00 C10G45/02 C10G47/00 C10G65/00 C10G69/00 C10G7/00 C10G9/00 (Core/Invention)

CPC: C10G9/00 C10G45/18 C10G47/28 C10G65/12 C10G69/06
European: C10G45/18 C10G47/28 C10G65/12 C10G69/06 C10G9/00



Family:

Publication number	Publication date	Application number	Application date
FR2933708 A1	20100115	FR20080003943	20080710
FR2933708 B1	20110722	FR20080003943	20080710
WO10004125 A2	20100114	WO2009FR00812	20090701
WO10004125 A3	20100304	WO2009FR00812	20090701

Priority:

FR20080003943 20080710

Probable Assignee: IFP ENERGIES NOUVELLES

Assignee(s): (std): IFP ENERGIES NOUVELLES ; INST FRANCAIS DU PETROLE ; LENGLET ERIC ; SARRAZIN PATRICK ; MOREL FREDERIC ; PLUMAIL JEAN CLAUDE

Assignee(s): IFP

Inventor(s): (std): LENGLET ERIC ; MOREL FREDERIC ; PLUMAIL JEAN CLAUDE ; SARRAZIN PATRICK

Inventor(s): PATRICK SARRAZIN ; ERIC LENGLET ; FREDERIC MOREL ; JEAN CLAUDE PLUMAIL

Agent(s): IFP; IFP ENERGIES NOUVELLES; ELMALEH ALFRED

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

150) Family number: 44229829 (WO10004126A2)

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Title: CONVERSION METHOD COMPRISING HYDROCONVERSION OF A CHARGE, FRACTIONATION THEN DEASPALTATION OF THE RESIDUE FRACTION IN VACUO

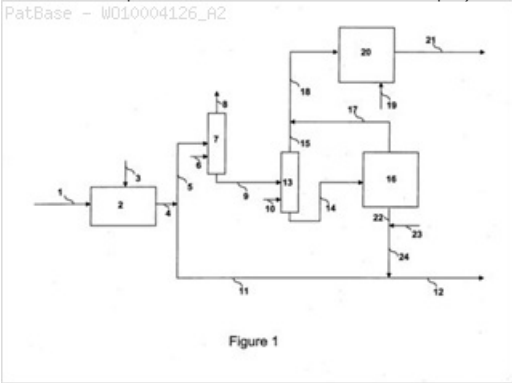
Abstract: The invention relates to a method for conversion of a charge comprising at least one step a) of hydroconversion of the charge b) fractionation of the effluent from step a), c) de-asphalting the residue from step b) and d) hydrotreatment of the mixture made up of the head fraction from the vacuum distillation column and the de-asphalted oil fraction obtained in step c).

Classifications:

International (IPC 8-9): C10G21/00 C10G21/04 C10G45/02 C10G47/00 C10G47/20 C10G47/24 C10G47/28 C10G67/04 C10G7/00 (Advanced/Invention); C10G21/00 C10G45/02 C10G47/00 C10G67/00 C10G7/00 (Core/Invention)

CPC: C10G21/003 C10G47/00 C10G47/24 C10G47/28 C10G67/0454 C10G67/0463 C10G67/049

European: C10G21/00A C10G47/00 C10G47/24 C10G47/28 C10G67/04F C10G67/04F12 C10G67/04F2



Family:

Publication number	Publication date	Application number	Application date
FR2933709 A1	20100115	FR20080003944	20080710
FR2933709 B1	20110722	FR20080003944	20080710
WO10004126 A2	20100114	WO2009FR00813	20090701
WO10004126 A3	20100514	WO2009FR00813	20090701

Priority:

FR20080003944 20080710

Probable Assignee: IFP ENERGIES NOUVELLES

Assignee(s): (std): IFP ENERGIES NOUVELLES ; INST FRANCAIS DU PETROLE ; LENGLET ERIC ; MOREL FREDERIC ; SARRAZIN PATRICK ; PLUMAIL JEAN CLAUDE

Assignee(s): IFP

Inventor(s): (std): SARRAZIN PATRICK ; LENGLET ERIC ; MOREL FREDERIC ; PLUMAIL JEAN CLAUDE

Inventor(s): PATRICK SARRAZIN ; ERIC LENGLET ; JEAN CLAUDE PLUMAIL ; FREDERIC MOREL
Agent(s): IFP; IFP ENERGIES NOUVELLES; ELMALEH ALFRED
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

151) Family number: 44229832 (WO10004127A2)

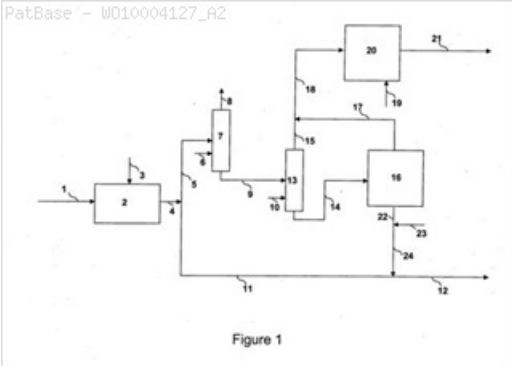
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Title: CONVERSION METHOD COMPRISING A VISCOREDUCTION OF RESIDUE THEN DE-ASPHALTING AND A HYDROCONVERSION

Abstract: The invention relates to a method comprising at least the following steps: a) viscoreduction of all or part of the charge, b) solvent de-asphalting of all or part of the product from step a), c) hydroconversion of the fraction comprising the large part of the asphaltenes from step b), d) fractionation of the de-asphalted oil from step c) and e) hydrotreatment of the de-asphalted residue from the fractionation step d).

Classifications:

International (IPC 8-9): C10G21/00 C10G21/04 C10G45/02 C10G47/12 C10G47/20 C10G47/28 C10G67/04 C10G67/16 C10G69/06 C10G7/00 C10G7/06 C10G9/00 (Advanced/Invention); C10G21/00 C10G45/02 C10G47/00 C10G67/00 C10G69/00 C10G7/00 C10G9/00 (Core/Invention)
CPC: C10G7/06 C10G9/007 C10G21/003 C10G45/02 C10G47/12 C10G47/28 C10G67/0454 C10G67/0463 C10G67/049 C10G69/06
European: C10G21/00A C10G45/02 C10G47/12 C10G47/28 C10G67/04F C10G67/04F12 C10G67/04F2 C10G69/06 C10G7/06 C10G9/00V



Family:

Publication number	Publication date	Application number	Application date
FR2933711 A1	20100115	FR20080003942	20080710
FR2933711 B1	20100827	FR20080003942	20080710
WO10004127 A2	20100114	WO2009FR00814	20090701
WO10004127 A3	20100617	WO2009FR00814	20090701

Priority:

FR20080003942 20080710

Probable Assignee: IFP ENERGIES NOUVELLES

Assignee(s): (std): IFP ENERGIES NOUVELLES ; INST FRANCAIS DU PETROLE ; LENGLET ERIC ; MOREL FREDERIC ; SARRAZIN PATRICK ; PLUMAIL JEAN CLAUDE

Assignee(s): IFP

Inventor(s): (std): LENGLET ERIC ; MOREL FREDERIC ; PLUMAIL JEAN CLAUDE ; SARRAZIN PATRICK

Inventor(s): PATRICK SARRAZIN ; ERIC LENGLET ; FREDERIC MOREL ; JEAN CLAUDE PLUMAIL

Agent(s): IFP; ELMALEH ALFRED

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

152) Family number: 64968114 (US9574145B)

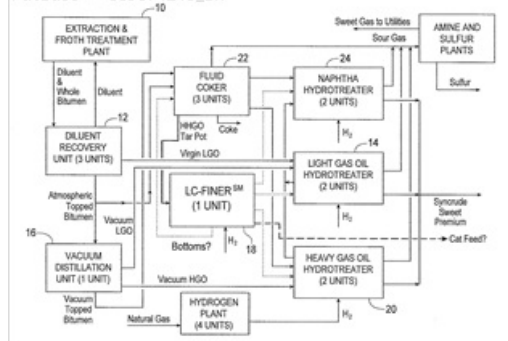
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Title: UPGRADING OF BITUMEN

Abstract: A method of upgrading bitumen in a plant comprising a diluent recovery unit that processes diluted bitumen and outputs atmospheric topped bitumen (ATB), a vacuum distillation unit which processes ATB and outputs vacuum topped bitumen (VTB), and at least one fluid coker unit which processes VTB and outputs a tar pot bottom stream comprising heavy heavy gas oil is provided comprising the step of processing the tar pot bottom stream in a catalytic hydrocracking unit comprising an ebullated bed reactor to produce naphtha, light gas oil, and heavy gas oil.

Classifications:

International (IPC 8-9): C10G47/30 C10G69/04 C10G69/06 (Advanced/Invention)
CPC: C10G69/06 C10G47/30 C10G69/04 C10G9/005 C10G47/26 C10G2400/02

**Family:**

Publication number	Publication date	Application number	Application date
US9574145 BA	20170221	US20150885745	20151016

Priority:

US20150885745 20151016

Probable Assignee: SYNCRUDE CANADA LTD**Assignee(s):** (std): SYNCRUDE CANADA LTD**Assignee(s):** SYNCRUDE CANADA LTD IN TRUST FOR OWNERS OF SYNCRUDE PROJECT SUCH OWNERS EXIST NOW AND IN FUTURE AS**Inventor(s):** (std): MCKNIGHT CRAIG A ; WIENS JASON**Agent(s):** BENNETT JONES LLP**153) Family number: 12641573 (US5534135A)**

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Title: SYNTHESIS OF ZEOLITES**Abstract:** A novel zeolite characterized by a large number of secondary pores, a substantially decreased Lattice Constant of below about 24.19 ANGSTROM, and a substantially decreased Acid Site Density is attained by hydrothermal and acid-treating of an ultrastable Y-zeolite.**Classifications:****International (IPC 8-9):** B01J29/08 C10G11/05

C10G49/08 (Advanced/Invention);

B01J29/00 C10G11/00 C10G49/00 (Core/Invention)

International (IPC 1-7): B01J29/08 C10G11/05 C10G45/00**CPC:** B01J29/084 C10G11/05 C10G49/08 Y10S423/21**European:** B01J29/08Y C10G11/05 C10G49/08**US:** 208/108 208/111 208/113 208/120 208/120.01 208/120.15 208/135 208/138 208/216R 208/217 208/251H 208/254H 423/714 423/DIG.21 502/79 502/85

PatBase - US5534135_A

U.S. Patent

Jul. 9, 1996

5,534,135

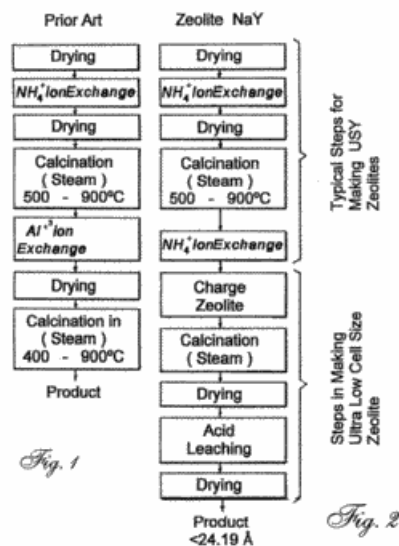


Fig. 1

Fig. 2

Family:

Publication number	Publication date	Application number	Application date
US5534135 A	19960709	US19940206803	19940307

Priority:

US19940206803 19940307

Probable Assignee: ABB LUMMUS GLOBAL INC

Assignee(s): (std): ABB LUMMUS GLOBAL INC
Assignee(s): TEXACO INC
Inventor(s): (std): BARTLEY BURTON H ; DAI PEI SHING E ; SHERWOOD JR DAVID E

154) Family number: 53733546 (US2013124106A)

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Title: METHOD FOR ESTIMATING SEDIMENT CONTENT OF A HYDROPROCESSED HYDROCARBON-CONTAINING FEEDSTOCK

Abstract: Disclosed herein is a method of estimating sediment content of a hydroprocessed hydrocarbon-containing feedstock. The method involves the steps of: (a) precipitating an amount of asphaltenes from a liquid sample of a first hydroprocessed hydrocarbon-containing feedstock having solvated asphaltenes therein with one or more first solvents in a column; (b) determining one or more solubility characteristics of the precipitated asphaltenes; (c) analyzing the one or more solubility characteristics of the precipitated asphaltenes; (d) determining asphaltene content of the liquid sample from the results of analyzing the one or more solubility characteristics of the precipitated asphaltenes; (e) determining one or more asphaltene stability parameters of the liquid sample from the results of analyzing the one or more solubility characteristics of the precipitated asphaltenes; and (f) correlating the asphaltene content and one of the asphaltene stability parameters of the liquid sample to estimate sediment content of the liquid sample.

Classifications:

International (IPC 8-9): G01N1/28 G01N30/02 G01N30/04 G01N33/38 G06F19/00 (Advanced/Invention)

CPC: G01N33/2823 G01N30/8631 G01N2001/4061 G01N2030/8854

US: 702/25 73/61.55 73/61.59

PatBase - US2013124106_AA

Patent Application Publication May 16, 2013 Sheet 1 of 2 US 2013/0124106 A1

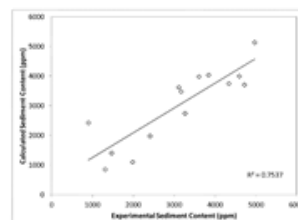


Figure 1

Family:

Publication number	Publication date	Application number	Application date
US2013124106 AA	20130516	US20110294609	20111111
WO13070412 A1	20130516	WO2012US60960	20121019

Priority:

US20110294609 20111111

Probable Assignee: CHEVRON USA INC

Assignee(s): (std): CHEVRON USA INC ; LEUNG PAK ; OVALLES CESAR ; ROGEL ESTRELLA ; CHEN NAN

Assignee(s): CHEVRON U S A INC

Inventor(s): (std): CHEN NAN ; LEUNG PAK ; OVALLES CESAR ; ROGEL ESTRELLA

Agent(s): SCHULTE RICHARD J ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

155) Family number: 55406270 (US2013341245A)

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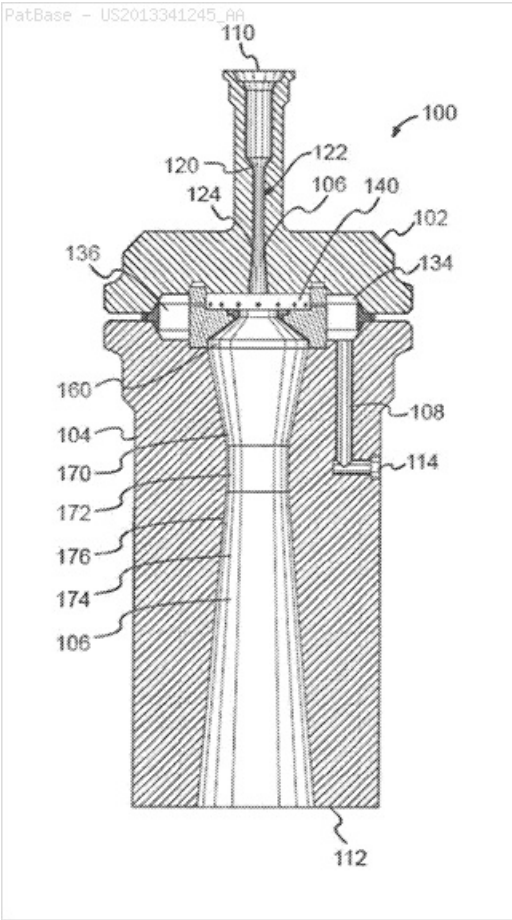
Title: METHODS AND SYSTEMS FOR UPGRADING HYDROCARBON RESIDUUM

Abstract: A hydrocarbon upgrading method is described. The method can generally include a step of providing a nozzle reactor, a step of injecting hydrocarbon residuum into the feed passage of the nozzle reactor, and a step of injecting a cracking material into the main passage of the nozzle reactor, and a step of collecting a product stream exiting the exit opening of the main passage of the nozzle reactor. The hydrocarbon residuum used in the method can be obtained from a hydroconversion-type upgrader, such as an ebullating bed hydrocracker.

Classifications:

International (IPC 8-9): B01D29/00 B01D43/00 B01J8/00 B01J8/18 C10G47/02 (Advanced/Invention)

CPC: B01J3/08 B01J4/002 B01J19/26 B01J2219/00006 B01J2219/00105
C10G47/26 C10G2300/1033 C10G2300/107 C10G2300/1077 C10G9/18
US: 208/108 422/140 422/187 422/236



Family:

Publication number	Publication date	Application number	Application date
US2013341245 AA	20131226	US20120532453	20120625

Priority:

US20120532453 20120625

Probable Assignee: MARATHON OIL CANADA CORP

Assignee(s): (std): JOSHI MAHENDRA ; MARATHON OIL CANADA CORP ; SALAZAR GUILLEN JOSE ARMANDO ; ZELNIK DOMINIC J

Assignee(s): MARATHON CANADIAN OIL SANDS HOLDING LTD

Inventor(s): (std): JOSHI MAHENDRA ; ZELNIK DOMINIC J ; SALAZAR GUILLEN JOSE ARMANDO

156) Family number: 57411420 (US2016032198A)

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Title: PROCESS FOR INTRODUCING FINE AND COARSE ADDITIVES FOR HYDROCONVERSION OF HEAVY HYDROCARBONS

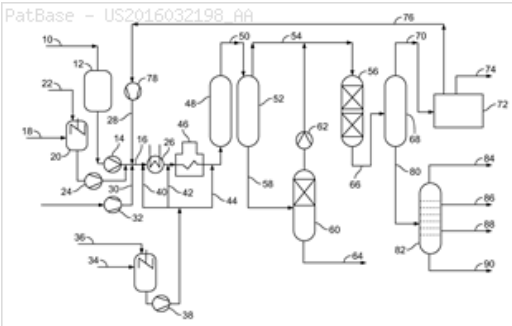
Abstract: A process for slurry-phase hydrocracking of a heavy hydrocarbon feedstock in a reactor, such as an upflow bubble column reactor, includes separately introducing additive in two size ranges into the feedstock. A fine size particle additive is introduced upstream of a coarse size particle additive.

Classifications:

International (IPC 8-9): B01J8/00 C10G11/00 C10G45/00 C10G47/22 C10G47/26 C10G75/04 (Advanced/Invention)

CPC: C10G75/04 C10G47/26 B01J8/008 C10G47/22 C10G2400/02 C10G2400/04 C10G2400/08

US: 208/48AA 585/350 585/400 585/653 585/752



Family:

Publication number	Publication date	Application number	Application date
CN105358658 A	20160224	CN201380074696	20130314
CN105358658 B	20190416	CN201380074696	20130314

DE602013033006 D1	20180308	DE201360033006T	20130314
EP2970777 A1	20160120	EP20130878145	20130314
EP2970777 A4	20161109	EP20130878145	20130314
EP2970777 B1	20180207	EP20130878145	20130314
ES2668484 T3	20180518	ES20130878145T	20130314
JP2016514189 T2	20160519	JP20160500040T	20130314
JP6231653 B2	20171115	JP20160500040T	20130314
RU2015143553 A	20170419	RU20150143553	20130314
RU2654852 C2	20180523	RU20150143553	20130314
US2016032198 AA	20160204	US20130774587	20130314
US9951282 BB	20180424	US20130774587	20130314
WO14142874 A1	20140918	WO2013US31321	20130314

Priority:

EP20130878145 20130314 US20130774587 20130314 WO2013US31321 20130314

Probable Assignee: KELLOGG BROWN AND ROOT LLC

Assignee(s): (std): BIPI EUROPA SE ; BP EUROPA SE ; KELLOGG BROWN AND ROOT LLC

Assignee(s): KELLOGG BROWN AND ROOT LLC HOUSTON ; BP OIL MARKETING GMBH ; KELLOGG BRAUN END RUT
ELELSI

Inventor(s): (std): SUBRAMANIAN ANAND ; SCHLEIFFER ANDREAS ; SHLAJFFER ANDREAS

Inventor(s): SUBRAMANIAN ANAND SUGARLAND

Agent(s): WEICKMANN AND WEICKMANN PATENT U RECHTSANWAELTE PARTMBB; BOEHM BRIGITTE; ELZABURU SLP
ELZABURU SLP; OOO YURIDICHESKAYA GORODISSKIJ I PARTNERY FA; BRINKS GILSON AND LIONE;
RICHARDS MARC V

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU
CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN
IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX
MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST
SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW