



New connection on: : 29-10-2018 : 23:48:29 - Last disconnection on: : 26-10-2018 : 20:51:56

V 4.0.0.44358(LP,U,linux) (Rev:43856 2017-04-27 09:03:29 +0200#(D201802)) (RPM D201802)

Welcome to EPOQUE Rebuild under the Production Environment

[No database/cluster active] ..fi

Select a database: ..FI EPODOC

 Database: EPODOC

[EPODOC: SS 1] (PURIF+ORDEPURAT+)

Results in EPODOC **577.005**

[SS 2] MONOCHLOROACETIC 1D ACID

Results in EPODOC **818**

[SS 3] CATALYTIC 1D HYDRODECHLORINATION

Results in EPODOC **52**

[SS 4] CATALYTIC HYDRODECHLORINATION

Results in EPODOC **0**

EPODOC: term 'CATALYTIC HYDRODECHLORINATION' not found in index 'BI'. WARNING(1)

[SS 5] CATALYTIC and HYDRODECHLORINATION

Results in EPODOC **81**

[SS 6] 1 and 2 and 5

Results in EPODOC **12**

[SS 7] ..field



Database: EPODOC

Field	Index	Synonym	Type	Title
AB	BI	ABEN	TEXT	Abstract of the invention in English
ABDE	DE		TEXT	Abstract of the invention in German
ABFR	FR		TEXT	Abstract of the invention in French
ABOL	OLAN		TEXT	Abstract of the invention (other languages)
AN	AN		CODE	Accession number
AP	AP		KW	Application number
CCA	C		KW	CPC Single symbols Confirmed Additional Information
CCI	C		KW	CPC Single symbols Confirmed Invention Information
CLC	CL		KW	CPC Linked symbols Confirmed
CLQ	CL		KW	CPC Linked symbols Raise-Hand by EPO
CLU	CL		KW	CPC Linked symbols Unreviewed
CNOA	CNO		KW	CPC National Office Additional Information
CNOI	CNO		KW	CPC National Office Invention Information
CNOL	CNOL		KW	CPC National Office, Linked symbols
CQA	C		KW	CPC Single symbols Raise-Hand by EPO Additional Information
CQI	C		KW	CPC Single symbols Raise-Hand by EPO Invention Information
CT	CTP		KW	Patents cited in the search report
CTNP	CTL		TEXT	Literature cited in the search report
CTSI	CTSI		TEXT	Citation set Information
CUA	C		KW	CPC Single symbols Unreviewed Additional Information
CUI	C		KW	CPC Single symbols Unreviewed Invention Information
DPK	DPK		KW	DPK classification
DT	DT		KW	Document type
EX	CTP		KW	Patents cited during examination
EXNP	CTL		TEXT	Literature cited during examination
FAMN	FAMN		TEXT	EPO family number
FI	FI		KW	JPO classification
FT	FT		KW	Theme/FTerm identification
IC	IC		KW	IPC issuing office
ICAI	IC		KW	IPC -Advanced Level- Invention
ICAN	IC		KW	IPC -Advanced Level- Additional
ICCI	IC		KW	IPC -Core Level- Invention
ICCN	IC		KW	IPC -Core Level- Additional
IDT	IDT		KW	IDT classification
IN	IN		KW	Inventor name
INW	IN		TEXT	Inventor name
LA	LA		TEXT	Languages
NPR	NPR		ONUM	Number of priorities
OC	CTP		KW	Other patent citations
OCAP	CTA		KW	Other applications citations
OCNP	CTL		TEXT	Other literature citations
OP	CTP		KW	Patents used in opposition

OPAP	CTA		KW	Applications used in opposition
OPD	OPD		ODATE	Oldest priority date
OPNP	CTL		TEXT	Literature used in opposition
PA	PA		KW	Applicant name
PAW	PA		TEXT	Applicant name
PD	PD		ODATE	Oldest publication date
PN	PN	TRID	KW	Publication number
PNFP	PN		KW	Publication numbers
PR	PR		KW	Priority data
PULA	PULA		TEXT	Publication languages
RF	CTP		KW	Patents cited by the applicant
RFAP	CTA		KW	Applications cited by the applicant
RFNP	CTL		TEXT	Literature cited by the applicant
RID	RID01		TEXT	Document Identifier
TI	BI	TIEN	TEXT	Title of the invention in English
TIDE	DE		TEXT	Title of the invention in German
TIFR	FR		TEXT	Title of the invention in French
TIOL	OLAN	OT	TEXT	Title of the invention (other languages)
TXT	BI		TEXT	Free text
UC	UC		KW	USPTO classification
UKC	UKC		KW	UKPO classification
UNAP	UNAP		KW	Application number - unstandardised
UNIN	UNIN		TEXT	Inventor name - unstandardised
UNPA	UNPA		TEXT	Applicant name - unstandardised
UNPN	UNPN		TEXT	Publication numbers - unstandardised
UNPR	UNPR		KW	Priority data - unstandardised
UPA	UPA01		ODATE	Date of addition of record
UPM	UPM01		ODATE	Date of most recent modification of record

[SS 7] ..li 6



6/12 © EPODOC / EPO

PN - [WO2016146556](#) A1 20160922

PR - EP20150159373 20150317

AP - WO2016EP55390 20160314

DT - *; Rep

CT - |EP| ISR (A1)
[WO2013057126](#) A1 20130425 [A] (AKZO NOBEL CHEMICALS INT BV [NL])
[A] 1-15
* the whole document *;
[WO2009087994](#) A1 20090716 [A] (INST NAGOYA IND SCIENCE RES [JP], et al)
[A] 1-15
* the whole document *

CCI - [C07C51/377](#) ; [C07C51/487](#)

- CLC - [C07C51/377](#), [C07C53/16](#) , INV
 - [C07C51/487](#), [C07C53/16](#) , INV
- PA - AKZO NOBEL CHEMICALS INT BV [NL]
- TI - PROCESS FOR THE **PURIFICATION OF MONOCHLOROACETIC ACID**
- AB - The present invention pertains to a process for the **purification** of a feed comprising **monochloroacetic acid** and dichloroacetic acid wherein the feed is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert dichloroacetic acid into **monochloroacetic acid** in the presence of a solid heterogeneous hydrogenation catalyst comprising a Group VIII noble metal on a carrier under **hydrodechlorination** conditions, wherein the reaction is carried out in the presence of a catalyst enhancer which comprises a salt of a metal selected from the group of non-noble metals of Group VIII, Group VIB, Group VIIB, and Group IIB. It was found that the presence of a catalyst enhancer leads to reduced deactivation of the catalyst and/or increased activity of the spent catalyst. This allows longer production cycles, less downtime, and lower formation of side products. The catalyst enhancer preferably comprises one or more salts of one or more of nickel, cobalt, or iron, more in particular of iron. The salts preferably comprise one or more of chloride salts and acetate salts.

[SS 7] pd<20150417

Results in EPODOC 94.949.306

[SS 8] 6 and 7

Results in EPODOC 5

[SS 9] ..li ss 5



1/81 © EPODOC / EPO

- PN - [US2018273462](#) A1 20180927
- PR - EP20150159373 20150317; WO2016EP55390 20160314
- AP - US201615556849 20160314
- DT - **
- CCI - [C07C51/377](#) ; [C07C51/487](#)
- CLC - [C07C51/377](#), [C07C53/16](#) , INV
 - [C07C51/487](#), [C07C53/16](#) , INV
- PA - AKZO NOBEL CHEMICALS INT BV [NL]
- TI - Process for the Purification of Monochloroacetic Acid
- AB - The present invention pertains to a process for the purification of a feed comprising monochloroacetic acid and dichloroacetic acid wherein the feed is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert dichloroacetic acid into monochloroacetic acid in the presence of a solid heterogeneous hydrogenation catalyst comprising a Group VIII noble metal on a carrier under **hydrodechlorination** conditions, wherein the reaction is carried out in the

presence of a catalyst enhancer which comprises a salt of a metal selected from the group of non-noble metals of Group VIII, Group VIB, Group VIIB, and Group IIB. It was found that the presence of a catalyst enhancer leads to reduced deactivation of the catalyst and/or increased activity of the spent catalyst. This allows longer production cycles, less downtime, and lower formation of side products. The catalyst enhancer preferably comprises one or more salts of one or more of nickel, cobalt, or iron, more in particular of iron. The salts preferably comprise one or more of chloride salts and acetate salts.

2/81 © EPODOC / EPO

PN - [MX2017015733](#) A 20180426
 PR - EP20150171965 20150612; WO2016EP63102 20160609
 AP - MX20170015733 20160609
 DT - I
 CCI - [C07C51/377](#)
 CLC - [C07C51/377](#), [C07C53/16](#), INV
 PA - AKZO NOBEL CHEMICALS INT BV [NL]
 TI - PROCESS FOR THE **HYDRODECHLORINATION** OF A FEED COMPRISING DICHLOROACETIC ACID.
 AB - The present invention is directed to a process for **catalytic hydrodechlorination** of dichloroacetic acid, wherein hydrogen gas is contacted with a liquid feed comprising dichloroacetic acid and monochloroacetic acid to form a product stream comprising monochloroacetic acid and an off gas stream comprising hydrogen chloride and hydrogen, and wherein the product stream is contacted with nitrogen gas so as to remove hydrogen gas present in the product stream.

3/81 © EPODOC / EPO

PN - [CN108217846](#) A 20180629
 PR - CN201810131967 20180209
 AP - CN201810131967 20180209
 DT - I
 CNOI - [B01J23/42](#) ; [B01J23/44](#) ; [B01J23/50](#) ; [C02F1/4608](#) ; [C02F1/4672](#) ; [C02F1/4676](#)
 CNOA - [C02F2101/36](#) ; [C02F2305/023](#)
 PA - UNIV SCIENCE & TECHNOLOGY LIAONING
 TI - Method for degrading chlorinated organic matter by **catalytic hydrodechlorination** enhanced contact glow discharge
 AB - The invention provides a method for degrading chlorinated organic matter by **catalytic hydrodechlorination** enhanced contact glow discharge. The method is characterized in that a hydrogen atom equivalent to a hydroxyl radical generated from a contact glow discharge in water is utilized as a hydrogen source, and a noble metal catalyst is utilized to realize **hydrodechlorination** reaction of the chlorinated organic matter in a solution. A generated dechlorination product is oxidized and degraded by strong oxidant such as the hydroxyl radical generated by the contact glow discharge, so that catalytic hydrogenation reduction dechlorination and degradation of chlorinated organic matter by contact glow discharge oxidation are synergistically carried out to

improve the efficiency of a contact glow discharge technology for removing the chlorinated organic matter. The method for degrading the chlorinated organic matter by the **catalytic hydrodechlorination** enhanced contact glow discharge utilizes the hydrogen atom generated by the contact glow discharge to decompose water, and improves the efficiency of contact glow discharge to degrade the chlorinated organic matter. The removal rate of the chlorinated organic matter is high and the method has broad application prospects.

4/81 © EPODOC / EPO

PN - [US2018170852](#) A1 20180621
 PR - EP20150171965 20150612; WO2016EP63102 20160609
 AP - US201615579892 20160609
 DT - **
 CCI - [C07C51/377](#)
 CLC - [C07C51/377](#), [C07C53/16](#), INV
 PA - AKZO NOBEL CHEMICALS INT BV [NL]
 TI - Process for the **Hydrodechlorination** of a Feed Comprising Dichloroacetic Acid
 AB - The present invention is directed to a process for **catalytic hydrodechlorination** of dichloroacetic acid, wherein hydrogen gas is contacted with a liquid feed comprising dichloroacetic acid and monochloroacetic acid to form a product stream comprising monochloroacetic acid and an off gas stream comprising hydrogen chloride and hydrogen, and wherein the product stream is contacted with nitrogen gas so as to remove hydrogen gas present in the product stream.

5/81 © EPODOC / EPO

PN - [CN107744795](#) A 20180302
 PR - CN20171890891 20170927
 AP - CN20171890891 20170927
 DT - I
 CNOI - [B01J19/30](#); [C02F1/00](#); [C02F1/66](#)
 CNOA - [C02F2101/36](#); [C02F2103/06](#); [C02F2301/08](#)
 PA - XUZHOU UNIV OF TECHNOLOGY
 TI - **Hydrodechlorination catalytic** device
 AB - A **hydrodechlorination catalytic** device. A unit gas inlet and a waste gas discharge outlet are respectively disposed on the left and the right ends of a **catalytic** device shell. A plurality of dechlorination heat source pipes are arranged on the left portion of the **catalytic** device shell and are all connected to a high-pressure vapor pipeline. A plurality of dechlorination heat source nozzles are connected to the right side surface of each dechlorination heat source pipe. A plurality of hydrocarbon addition reaction columns are in a hollow tubular structure, wherein a bromopropylamine release nozzle, a hydrogen ejector, a buffer chamber, a motor, a sieve plate and a selective permeation plate are successively and fixedly arranged in the interior of each hydrocarbon addition reaction column from left to right. A transmission shaft is connected to the output shaft of each motor. The transmission shaft passes through the sieve plate and is connected fixedly to a stirring impeller at the left side of the selective transmission

plate. Each stirring impeller is composed of a plurality of stirring blades which are uniformly distributed around and fixedly connected to the transmission shaft. The space between the sieve plate and the selective permeation plate is filled with a **hydrodechlorination** pack. The **hydrodechlorination catalytic** device can increase degradation rate of CCl₄ and can promote separation of the CCl₄ from wastewater.

6/81 © EPODOC / EPO

PN - [MX2017011678](#) A 20171106
 PR - EP20150159373 20150317; WO2016EP55390 20160314
 AP - MX20170011678 20160314
 DT - I
 CCI - [C07C51/377](#) ; [C07C51/487](#)
 CLC - [C07C51/377](#), [C07C53/16](#) , INV
 - [C07C51/487](#), [C07C53/16](#) , INV
 PA - AKZO NOBEL CHEMICALS INT BV [NL]
 TI - PROCESS FOR THE PURIFICATION OF MONOCHLOROACETIC ACID.
 AB - The present invention pertains to a process for the purification of a feed comprising monochloroacetic acid and dichloroacetic acid wherein the feed is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert dichloroacetic acid into monochloroacetic acid in the presence of a solid heterogeneous hydrogenation catalyst comprising a Group VIII noble metal on a carrier under **hydrodechlorination** conditions, wherein the reaction is carried out in the presence of a catalyst enhancer which comprises a salt of a metal selected from the group of non-noble metals of Group VIII, Group VIB, Group VIIB, and Group IIB. It was found that the presence of a catalyst enhancer leads to reduced deactivation of the catalyst and/or increased activity of the spent catalyst. This allows longer production cycles, less downtime, and lower formation of side products. The catalyst enhancer preferably comprises one or more salts of one or more of nickel, cobalt, or iron, more in particular of iron. The salts preferably comprise one or more of chloride salts and acetate salts.

7/81 © EPODOC / EPO

PN - [AU2016277357](#) A1 20171130
 PR - EP20150171965 20150612; WO2016EP63102 20160609
 AP - AU20160277357 20160609
 DT - I
 CCI - [C07C51/377](#)
 CLC - [C07C51/377](#), [C07C53/16](#) , INV
 PA - AKZO NOBEL CHEMICALS INT BV
 TI - Process for the **hydrodechlorination** of a feed comprising dichloroacetic acid
 AB - The present invention is directed to a process for **catalytic hydrodechlorination** of dichloroacetic acid, wherein hydrogen gas is contacted with a liquid feed comprising dichloroacetic acid and monochloroacetic acid to form a product stream comprising monochloroacetic acid and an off gas stream comprising hydrogen chloride and

hydrogen, and wherein the product stream is contacted with nitrogen gas so as to remove hydrogen gas present in the product stream.

8/81 © EPODOC / EPO

PN - [AU2016232404](#) A1 20170824
PR - EP20150159373 20150317; WO2016EP55390 20160314
AP - AU20160232404 20160314
DT - I
CCI - [C07C51/377](#) ; [C07C51/487](#)
CLC - [C07C51/377](#), [C07C53/16](#) , INV
- [C07C51/487](#), [C07C53/16](#) , INV
PA - AKZO NOBEL CHEMICALS INT BV
TI - Process for the purification of monochloroacetic acid
AB - The present invention pertains to a process for the purification of a feed comprising monochloroacetic acid and dichloroacetic acid wherein the feed is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert dichloroacetic acid into monochloroacetic acid in the presence of a solid heterogeneous hydrogenation catalyst comprising a Group VIII noble metal on a carrier under **hydrodechlorination** conditions, wherein the reaction is carried out in the presence of a catalyst enhancer which comprises a salt of a metal selected from the group of non-noble metals of Group VIII, Group VIB, Group VIIB, and Group IIB. It was found that the presence of a catalyst enhancer leads to reduced deactivation of the catalyst and/or increased activity of the spent catalyst. This allows longer production cycles, less downtime, and lower formation of side products. The catalyst enhancer preferably comprises one or more salts of one or more of nickel, cobalt, or iron, more in particular of iron. The salts preferably comprise one or more of chloride salts and acetate salts.

9/81 © EPODOC / EPO

PN - [RO132035](#) A0 20170728
PR - RO20160000872 20161121
AP - RO20160000872 20161121
DT - I
PA - UNIV DIN BUCUREȘTI [RO]
TI - CATALYST AND PROCESS USING THE SAME FOR TREATING WATER POLLUTED WITH NITRATES AND CHLORINATED ORGANIC COMPOUNDS
AB - The invention relates to a catalyst and to a process using the same, with a view to treating water polluted with nitrates and chlorinated organic compounds. According to the invention, the catalyst consists of a support based on ion-exchange resins of the highly basic anionite type and a bimetallic active component having a composition of 1...7% Pd and 0.3...2.0% Cu and an average crystal size of 6...8 nm. The process, as claimed by the invention, comprises two stages: i. the first stage of **catalytic** reduction of nitrate ions and **hydrodechlorination** of chlorinated pollutants using the claimed catalyst and ii. the second stage of advanced oxidation for elimination of nitrite ions and/or ammonium ions and of dehalogenated organic compounds resulting during the

first stage.

10/81 © EPODOC / EPO

- PN - [CN106902886](#) A 20170630
- PR - CN20171103292 20170224
- AP - CN20171103292 20170224
- DT - I
- CNOI - [B01J31/28](#) ; [C02F1/00](#)
- CNOA - [C02F2101/36](#)
- PA - NAT UNIV DONG HWA
- TI - Method for removing chloroacetic acid in water with CTF (covalent triazine-based framework) supported Pd catalyst
- AB - The invention relates to a method for removing chloroacetic acid in water with a CTF (covalent triazine-based framework) supported Pd catalyst. The method comprises the steps as follows: (1) a PdCl₂ solution and a CTF are mixed, a Na₂CO₃ solution is dropwise added with stirring until the pH value of the solution ranges from 10 to 10.5, the solution is stirred continuously, washing, drying, roasting and reduction in the H₂ atmosphere are performed, and a CTF supported Pd catalyst Pd/CTF is obtained; (2) the Pd/CTF is put into water containing chloroacetic acid, the pH value is controlled to range from 4 to 7, and a **catalytic hydrodechlorination** reaction is performed. The Pd/CTF catalyst has larger specific surface area and smaller active metal particles, can perform effective **catalytic** dechlorination on chloroacetic acid in a wider concentration range in water, shows higher **catalytic** conversion activity and stability and has good economic and environmental benefits.

11/81 © EPODOC / EPO

- PN - [CN106795085](#) A 20170531
- PR - EP20150171965 20150612; WO2016EP63102 20160609
- AP - CN2016801978 20160609
- DT - I
- CCI - [C07C51/377](#)
- CNOI - [C07C51/377](#)
- CLC - [C07C51/377](#), [C07C53/16](#), INV
- CNOL - C07C51/377, C07C53/16, INV
- PA - AKZO NOBEL CHEMICALS INT BV
- TI - Process for **hydrodechlorination** of feed comprising dichloroacetic acid
- AB - The present invention is directed to a process for **catalytic hydrodechlorination** of dichloroacetic acid, wherein hydrogen gas is contacted with a liquid feed comprising dichloroacetic acid and monochloroacetic acid to form a product stream comprising monochloroacetic acid and an off gas stream comprising hydrogen chloride and hydrogen, and wherein the product stream is contacted with nitrogen gas so as to remove hydrogen gas present in the product stream.

12/81 © EPODOC / EPO

PN - [CN106488903](#) A 20170308

PR - EP20150159373 20150317; WO2016EP55390 20160314

AP - CN20168002040 20160314

DT - I

CT - || STSE (A)
[US3739023](#) A 19730612 [A] (SENNEWALD K, et al)
[A] 1-16
* 全文 *;
[CN1046152](#) A 19901017 [A] (ATOCHEM [FR])
[A] 1-16
* 全文 *;
[US5756840](#) A 19980526 [A] (EBMEYER FRANK [DE], et al)
[A] 1-16
* 全文 *;
[CN102001930](#) A 20110406 [A] (CHINA TIANCHEN ENG CORP, et al)
[A] 1-16
* 全文 *;
[CN102553584](#) A 20120711 [A] (XI AN CATALYST CHEMICAL CO LTD)
[A] 1-16
* 全文 *;
[CN103649039](#) A 20140319 [Y] (AKZO NOBEL CHEMICALS INT BV)
[Y] 1-16
* 权利要求书和说明书第1页第[0002]段 *;
[CN103687840](#) A 20140326 [A] (AKZO NOBEL CHEMICALS INT BV)
[A] 1-16
* 全文 *;
[CN103691487](#) A 20140402 [A] (UNIV HARBIN NORMAL)
[A] 1-16
* 全文 *

CTNP - || STSE (A)
[A] - 李先国 等, "金属铁及其化合物还原脱氯有机氯化物的研究", 《中国海洋大学学报》
[A] 1-16
* 第112-116页 *
[A] - 姚震, "氯乙酸生产工艺和母液的综合利用技术", 《乙醛醋酸化工》
[A] 1-16
* 第17-21页 *
[Y] - 朱晓军 等, "脱氯技术现状与研究进展", 《化工生产与技术》
[Y] 1-16
* 第25页左栏第1段 *
[A] - 周红艺 等, "金属铁及其化合物还原脱氯有机氯化物的研究", 《浙江工业大学学报》
[A] 1-16
* 第63-67页 *
[A] - 丁军委 等, "催化加氢处理醋酸氯化液", 《精细化工》
[A] 1-16
* 第398-402页 *

CCI - [C07C51/377](#) ; [C07C51/487](#)

CNOI - [C07C51/377](#) ; [C07C51/487](#)

CLC - [C07C51/377](#), [C07C53/16](#) , INV
- [C07C51/487](#), [C07C53/16](#) , INV

CNOL - C07C51/377, C07C53/16, INV
- C07C51/487, C07C53/16, INV

PA - AKZO NOBEL CHEMICALS INT BV

TI - PROCESS FOR THE PURIFICATION OF MONOCHLOROACETIC ACID

AB - The present invention pertains to a process for the purification of a feed comprising monochloroacetic acid and dichloroacetic acid wherein the feed is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert dichloroacetic acid into monochloroacetic acid in the presence of a solid heterogeneous hydrogenation catalyst comprising a Group VIII noble metal on a carrier under **hydrodechlorination** conditions, wherein the reaction is carried out in the presence of a catalyst enhancer which comprises a salt of a metal selected from the group of non-noble metals of Group VIII, Group VIB, Group VIIB, and Group IIB. It was found that the presence of a catalyst enhancer leads to reduced deactivation of the catalyst and/or increased activity of the spent catalyst. This allows longer production cycles, less downtime, and lower formation of side products. The catalyst enhancer preferably comprises one or more salts of one or more of nickel, cobalt, or iron, more in particular of iron. The salts preferably comprise one or more of chloride salts and acetate salts.

13/81 © EPODOC / EPO

PN - [CN106489111](#) A 20170308

PR - JP20140144744 20140715; WO2015JP03561 20150714

AP - CN2015838510 20150714

DT - I

CCI - [G06F3/011](#) ; [G06F3/015](#) ; [G06F3/017](#) ; [G06K9/00355](#)

CUI - [G11B27/00](#)

CQI - [G06F3/165](#) ; [G06F3/0383](#) ; [G06F3/0346](#)

CCA - [G06K2009/00939](#)

PA - AKZO NOBEL CHEMICALS INT BV

TI - Process for the purification of monochloroacetic acid

AB - The present invention pertains to a process for the purification of a feed comprising monochloroacetic acid and dichloroacetic acid wherein the feed is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert dichloroacetic acid into monochloroacetic acid in the presence of a solid heterogeneous hydrogenation catalyst comprising a Group VIII noble metal on a carrier under **hydrodechlorination** conditions, wherein the reaction is carried out in the presence of a catalyst enhancer which comprises a salt of a metal selected from the group of non-noble metals of Group VIII, Group VIB, Group VIIB, and Group IIB. It was found that the presence of a catalyst enhancer leads to reduced deactivation of the catalyst and/or increased activity of the spent catalyst. This allows longer production cycles, less downtime, and lower formation of side products. The catalyst enhancer preferably comprises one or more salts of one or more of nickel, cobalt, or iron, more in

particular of iron. The salts preferably comprise one or more of chloride salts and acetate salts.

14/81 © EPODOC / EPO

- PN - [CN106140193](#) A 20161123
- PR - CN20151150655 20150401
- AP - CN20151150655 20150401
- DT - I
- CT - || STSE (A)
[CN1460549](#) A 20031210 [Y] (DALIAN ZHENBENG FLUOROCOATING [CN])
[Y] 5-12
* 说明书第2页第20-22行, 第3页第3-7行, 说明书第5页第15~18行 *;
[CN101003021](#) A 20070725 [A] (SHANXI COAL CHEM INST [CN])
[A] 1-12
* 全文 *;
[CN101811973](#) A 20100825 [YX] (UNIV ZHEJIANG TECHNOLOGY)
[Y] 5-12
* 说明书第10段第6-7行, 第15-17段 *
[X] 1-4;
[CN102211028](#) A 20111012 [Y] (SINOCHEN LANTIAN CO LTD)
[Y] 7-8,10-12
* 说明书第12段、第17-23段、第26段和第28段 *
PA - ZHEJIANG LANTIAN ENV PROT HI-TECH CO LTD; SINOCHEN LANTIAN CO LTD
TI - Preparation method of catalyst for CFC and HCFC **hydrodechlorination**
AB - The invention discloses a method for preparing a catalyst for CFC and HCFC **hydrodechlorination** through a wet reduction activation method. In the embodiment, trifluorochloroethene is prepared through CFC-113 **catalytic hydrodechlorination** in the presence of the catalyst and the catalyst obviously improves trifluorochloroethene selectivity.

15/81 © EPODOC / EPO

- PN - [CN105944734](#) A 20160921
- PR - CN201610325741 20160517
- AP - CN201610325741 20160517
- DT - I
- CT - || STSE (A)
[US5089454](#) A 19920218 [A] (LEROT LUC [BE], et al)
[A] 1-4
* 全文 *;
[CN103420782](#) A 20131204 [A] (XIAN MODERN CHEMISTRY RES INST)
[A] 1-4
* 全文 *;
[CN103586032](#) A 20140219 [A] (CHINA PETROLEUM & CHEMICAL, et al)
[A] 1-4
* 全文 *;
[CN104140356](#) A 20141112 [A] (CHANGSHU 3F FLUOROCHEMICAL INDUSTRY CO LTD)

[A] 1-4

* 全文 *;

[CN105562042](#) A 20160511 [A] (CHANGSHU 3F FLUOROCHEMICAL IND CO LTD)

[A] 1-4

* 全文 *

- CNOI - [B01J37/08](#) ; [B01J23/864](#) ; [B01J23/8896](#) ; [B01J37/0207](#) ; [C07C17/23](#)
- CNOL - C07C17/23, C07C21/18, INV
- PA - CHANGSHU 3F FLUOROCHEMICAL IND CO LTD
- TI - Catalyst for preparing chlorotrifluoroethene from trichlorotrifluoroethane through **catalytic hydrodechlorination** and preparation method of catalyst
- AB - The invention discloses a catalyst for preparing chlorotrifluoroethene from trichlorotrifluoroethane through **catalytic hydrodechlorination** and a preparation method of the catalyst. The method comprises steps as follows: SiO₂ particles are roasted at a temperature of 400 DEG C; a mixed solution containing CoCl₂·6H₂O or RhCl₃·3H₂O, CrCl₃·6H₂O or MnCl₂·4H₂O, KCl·6H₂O or perrhenic acid and Ni (H₂PO₂)₆H₂O is prepared; the SiO₂ particles are subjected to isometric impregnation and dried at a temperature of 60-80 DEG C for 12-16 h; dried substances are put into a tube furnace, nitrogen is introduced, the temperature is raised to 240-300 DEG C at the speed of 6-8 DEG C/min, the reaction pressure is 0-2 MPa, and the reaction time is 4 h; products are naturally cooled to the room temperature, and O₂ containing 2% of N₂ is introduced for passivating treatment for 4 h. The prepared catalyst contains 0.1%-15% of Co or Rh, 0.5%-22% of Cr or Mn and 0.1%-5% of alkali metal K or rare-earth metal Re. The catalyst has the advantages of high activity, good stability, good reaction selectivity, mild reaction condition and the like.

16/81 © EPODOC / EPO

PN - [CN105646190](#) A 20160608

PR - EP20110185953 20111020

AP - CN20161031231 20121017

DT - I

CT - || STSE (A)

[GB1249718](#) A 19711013 [A] (KNAPSACK AG [DE])

[A] 1-14

* 全文 *;

[US3754029](#) A 19730821 [A] (HOLTERMANN R, et al)

[A] 1-14

* 全文 *;

[CN102001930](#) A 20110406 [X] (CHINA TIANCHEN ENG CORP, et al)

[X] 1-14

* 权利要求1-8 *

CCI - [C07C51/487](#)

CUI - [C07C51/347](#)

CNOI - [C07C51/487](#)

CLC - [C07C51/487](#), [C07C53/16](#), INV

CNOL - C07C51/487, C07C53/16, INV

PA - AKZO NOBEL CHEMICALS INT BV

TI - Process for the **hydrodechlorination** of a liquid feed comprising dichloroacetic acid

AB - The invention relates to a process. In the process, a liquid feed comprising monochloroacetic acid, dichloroacetic acid, and optionally acetic acid and/or trichloroacetic acid is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen in the presence of a solid heterogeneous hydrogenation catalyst situated in a fixed catalyst bed. The liquid feed is fed to the top of a vertical tubular reactor at a superficial mass velocity of between 0.5 and 10 kg/s per square meter of the horizontal cross-section of the vertical tubular reactor and a rate of between 250 and 3,000 kg/hr per m of the catalyst bed, wherein the source of hydrogen is fed to the top or bottom of the vertical tubular reactor at a rate of between 0.025 to 0.25 Nm/s per square meter of the horizontal cross-section of the vertical tubular reactor, so as to obtain an average axial pressure gradient of at least 2 kPa per meter of the catalyst bed, the temperature in the top of the vertical tubular reactor is between 100 and 200 DEG C., and the pressure in the top of the vertical tubular reactor is between 0.2 and 1.0 MPa.

17/81 © EPODOC / EPO

PN - [WO2016198495](#) A1 20161215

PR - EP20150171965 20150612

AP - WO2016EP63102 20160609

DT - *; Rep

CT - |EP| ISR (A1)
[WO2013057126](#) A1 20130425 [A] (AKZO NOBEL CHEMICALS INT BV [NL])
 [A] 1-15
 * the whole document *;
[US3754029](#) A 19730821 [AD] (HOLTERMANN R, et al)
 [AD] 1-15
 * the whole document *;
[US3739023](#) A 19730612 [A] (SENNEWALD K, et al)
 [A] 1-15
 * the whole document *

CCI - [C07C51/377](#)

CLC - [C07C51/377](#), [C07C53/16](#), INV

PA - AKZO NOBEL CHEMICALS INT BV [NL]

TI - PROCESS FOR THE **HYDRODECHLORINATION** OF A FEED COMPRISING DICHLOROACETIC ACID

AB - The present invention is directed to a process for **catalytic hydrodechlorination** of dichloroacetic acid, wherein hydrogen gas is contacted with a liquid feed comprising dichloroacetic acid and monochloroacetic acid to form a product stream comprising monochloroacetic acid and an off gas stream comprising hydrogen chloride and hydrogen, and wherein the product stream is contacted with nitrogen gas so as to remove hydrogen gas present in the product stream.

18/81 © EPODOC / EPO

PN - [CN105503707](#) A 20160420

PR - CN2016146277 20160122

AP - CN2016146277 20160122

DT - I

CT - || STSE (A)
[US4287347](#) A 19810901 [Y] (FAEH HANSJAKOB, et al)
 [Y] 1-10
 * 参见说明书第3-4栏实施例 *;
[JPS6475468](#) A 19890322 [A] (HOKKO CHEM IND CO)
 [A] 1-10
 * 全文 *;
[CN104478793](#) A 20150401 [A] (YANCHENG HENGSHENG CHEMICAL IND CO LTD)
 [A] 1-10
 * 全文 *;
[CN104529880](#) A 20150422 [Y] (NANJING RED SUN BIOCHEMISTRY CO LTD)
 [Y] 1-10
 * 参见说明书第2页实施例1、权利要求1 *

CNOI - [C07D213/61](#)

PA - JIANGSU FENGSHAN GROUP CO LTD

TI - Preparation method of 2, 3, 5-trichloropyridine

AB - The invention discloses a preparation method of 2, 3, 5-trichloropyridine. The preparation method comprises the following steps: 1, dissolving sodium trichloropyrindinol into a sodium hydroxide solution, and conducting **hydrodechlorination** through a hydrogenation catalyst; 2, acidizing a mixture obtained in step 1, and conducting crystallization and filtration, so that 3,5-dichloropyrindinol is obtained; 3, making the 3,5-dichloropyrindinol obtained in step 2 react with a chlorinating agent. According to the preparation method of the 2, 3, 5-trichloropyridine, 3,5- sodium dichloropyrindinol is prepared by conducting **catalytic** hydrogenation on the sodium trichloropyrindinol, then the 2, 3, 5-trichloropyridine is prepared, synthesis cost is low, and the yield is high; **hydrodechlorination** is conducted on the 2, 3, 5- sodium trichloropyrindinol directly through the hydrogenation catalyst, the problem that a great amount of waste water is generated in the tetrachloropyridine and pentachloropyridine zinc powder reduction process is avoided, and harm caused to the environment is lowered; the pressure of hydrogen ranges from 0.1 Mpa to 3 Mpa, and the requirement for equipment is low; a great amount of heat is not generated in the reaction process, and the reaction temperature is easy to control.

19/81 © EPODOC / EPO

PN - [CN105503574](#) A 20160420

PR - CN20151888729 20151207

AP - CN20151888729 20151207

DT - I

CNOI - [B01J23/44](#) ; [B01J23/58](#) ; [B01J23/63](#) ; [B01J23/8906](#) ; [B01J23/8946](#) ; [C07C51/487](#)

CNOL - C07C51/487, C07C53/16, INV

PA - XI'AN CATALYST NEW MAT CO LTD

TI - **Hydrodechlorination** method for producing high-purity monochloro acetic acid

AB - The invention discloses a **hydrodechlorination** method for producing high-purity monochloro acetic acid. The **Hydrodechlorination** method comprises the following steps: 1, filling a fixed bed reactor with a catalyst bed; 2, uniformly mixing hydrogen and a reaction mixed solution in a gas-liquid mixer, and injecting the obtained mixture into a heat exchanger to be pre-heated so as to obtain a reaction raw material; 3, discharging air in the fixed bed reactor by the nitrogen gas pump-in method, then discharging nitrogen gas in the fixed bed reactor by the hydrogen pump-in method, and injecting the reaction raw material into the fixed bed reactor for **hydrodechlorination** reaction so as to obtain an intermediate product; 4, performing distillation separation on the intermediate product to obtain monochloro acetic acid with the quality purity not less than 99.5%. The method continually and selectively conducts **catalytic** hydrogenation to remove dichloroacetic acid in the reaction mixed solution, inhibits formation of a by-product (acetic acid) in the intermediate product to be within an acceptable range, and reduces the mass content of dichloroacetic acid in the obtained by-products to be 0.5% or below.

20/81 © EPODOC / EPO

PN - [CN105457651](#) A 20160406

PR - CN20141451710 20140905

AP - CN20141451710 20140905

DT - I

CT - || STSE (A)

[US5089454](#) A 19920218 [A] (LEROT LUC [BE], et al)

[A] 1-11

* 全文 *;

[CN1351903](#) A 20020605 [A] (MINGCHEN ZHENBANG FLUOROPAINT [CN])

[A] 1-11

* 全文 *;

[CN1460549](#) A 20031210 [X] (DALIAN ZHENBENG FLUOROCOATING [CN])

[X] 1-11

* 说明书第2页第2段至第3页第5段、实施例2-3 *;

[CN1548226](#) A 20041124 [A] (DALIAN CHEMICAL PHYSICS INST [CN])

[A] 1-11

* 全文 *;

[CN101015803](#) A 20070815 [A] (UNIV JIANGSU POLYTECHNIC [CN])

[A] 1-11

* 全文 *;

[CN103754883](#) A 20140430 [X] (UNIV HENAN SCIENCE & TECH)

[X] 1,9

* 说明书第[0004]-[0016]段 *;

[CN103977795](#) A 20140813 [A] (XI AN CATALYST CHEMICAL CO LTD, et al)

[A] 1-11

* 全文 *

CTNP - || STSE (A)

[A] - Ryuichiro Ohnishi et al., "Selective hydrodechlorination of CFC-113 on Bi- and Ti-modified palladium catalysts", 《Applied Catalysis A:General》,

[A] 1-11

* 第29-41页 *

[A] - 陈淼等, "CFC-113气固相加氢脱氯制备三氟氯乙烯的研究进展", 《有机氟工业》, [A] 1-11

* 第26-29页 *

- PA - ZHEJIANG LANTIAN ENV PROT HI-TECH CO LTD; SINOCHEN LANTIAN CO LTD
- TI - **Hydrodechlorination** catalyst and application thereof in preparation of chlorotrifluoroethylene
- AB - The invention discloses a **hydrodechlorination** catalyst. The **hydrodechlorination** catalyst consists of main catalysts, an adjuvant and a carrier, wherein the main catalysts are Pd and Cu, the adjuvant is selected from one or a combination of two or three or more of Mg, Ca, Ba, Co, Mo, Ni, Sm and Ce, and the main catalysts and the adjuvant are loaded onto the activated carbon carrier. The **hydrodechlorination** catalyst provided by the invention is applicable to the preparation of chlorotrifluoroethylene from CFC-113 through **catalytic hydrodechlorination** and has the advantages of long service life, high chlorotrifluoroethylene selectivity and the like.

21/81 © EPODOC / EPO

PN - [CN105413682](#) A 20160323

PNFP - CN105413682B B 20171017

PR - CN20151818166 20151122

AP - CN20151818166 20151122

DT - I

CT - || STSE (A)
[WO0222861](#) A1 20020321 [A] (CALIFORNIA INST OF TECHN [US], et al)
[A] 1-10
* 全文 *;
[CN101368194](#) A 20090218 [] (UNIV XIAMEN [CN])
[]
* 说明书第1页第2段和第2页第2-9段 *;
[CN103060307](#) A 20130424 [A] (UNIV HUNAN AGRICULTURAL)
[A] 1-10
* 全文 *;
[CN103071808](#) A 20130501 [A] (UNIV SHANDONG TECHNOLOGY)
[A] 1-10
* 全文 *

CTNP - || STSE (A)
[A] - Kamalika Sen et al., "Time dependent formation of gold nanoparticles in yeast cells: A comparative study", 《Biochemical Engineering Journal》,
[A] 1-10
* 第1-6页 *
[A] - Liqin Lin et al., "Catalytic gold nanoparticles immobilized on yeast: From biosorption to bioreduction", 《Chemical Engineering Journal》,
[A] 1-10
* 第857-864页 *
[] - 石国荣, "新型微胶囊化壁材-改性酵母细胞的研究与应用", 《中国博士学位论文全文数据库基础科学辑》,
[]

* 第18-19和33-43页 *

[A] - 高玉荣, "啤酒废酵母自溶条件的研究", 《酿酒科技》,

[A] 1-10

* 第74-76页 *

- CNOI - (A)
[B01J23/52](#) ; [C02F1/70](#) ; [C07C209/36](#)
- CNOL - C07C209/36, C07C215/76, INV
- CNOA - (A)
[C02F2101/18](#) ; [C02F2101/30](#)
- PA - (A)
UNIVHUNANAGRICULTURAL
- TI - (A)
Gold nano catalyst with stable yeast cells and preparation method and application thereof
- AB - (A)
The invention provides a gold nano catalyst with stable yeast cells and a preparation method and application thereof, and relates to yeast cell culture and treatment and the preparation method and application of the gold nano catalyst. Yeast cells or chemically-treated modified yeast cells which are subjected to shake-flask culture on the appropriate condition are used as a carrier, a stabilizing agent and a reducing agent, chloroauric acid is reduced on the mild reaction condition, and therefore the gold nano catalyst with the stable yeast cells is prepared, wherein the gold nano catalyst is good in dispersity and stability, uniform in particle size distribution and good in **catalytic** activity for reduction of nitril in nitro-compounds, **hydrodechlorination** of chlorinated organic compounds and degradation of dye and other organic pollutants. Particularly, according to the method, the particle size of gold nano particles can be effectively adjusted and controlled by controlling the reaction condition. The preparation technology is simple, the process is environmentally friendly, and the gold nano catalyst is widely used for reduction of the nitril in the nitro-compounds, **hydrodechlorination** of the chlorinated organic compounds and degradation of the dye and other organic pollutants.

22/81 © EPODOC / EPO

- PN - [WO2016146556](#) A1 20160922
- PR - EP20150159373 20150317
- AP - WO2016EP55390 20160314
- DT - *; Rep
- CT - |EP| ISR (A1)
[WO2013057126](#) A1 20130425 [A] (AKZO NOBEL CHEMICALS INT BV [NL])
[A] 1-15
* the whole document *;
[WO2009087994](#) A1 20090716 [A] (INST NAGOYA IND SCIENCE RES [JP], et al)
[A] 1-15
* the whole document *
- CCI - [C07C51/377](#) ; [C07C51/487](#)
- CLC - [C07C51/377](#), [C07C53/16](#) , INV

- [C07C51/487](#), [C07C53/16](#), INV

PA - AKZO NOBEL CHEMICALS INT BV [NL]

TI - PROCESS FOR THE PURIFICATION OF MONOCHLOROACETIC ACID

AB - The present invention pertains to a process for the purification of a feed comprising monochloroacetic acid and dichloroacetic acid wherein the feed is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert dichloroacetic acid into monochloroacetic acid in the presence of a solid heterogeneous hydrogenation catalyst comprising a Group VIII noble metal on a carrier under **hydrodechlorination** conditions, wherein the reaction is carried out in the presence of a catalyst enhancer which comprises a salt of a metal selected from the group of non-noble metals of Group VIII, Group VIB, Group VIIB, and Group IIB. It was found that the presence of a catalyst enhancer leads to reduced deactivation of the catalyst and/or increased activity of the spent catalyst. This allows longer production cycles, less downtime, and lower formation of side products. The catalyst enhancer preferably comprises one or more salts of one or more of nickel, cobalt, or iron, more in particular of iron. The salts preferably comprise one or more of chloride salts and acetate salts.

23/81 © EPODOC / EPO

PN - [RU2014118949](#) A 20151127

PNFP - RU2609408 C2 20170201

PR - EP20110185948 20111020; WO2012EP70523 20121017

AP - RU20140118949 20121017

DT - I

CT - || STSE (C2)
[WO2008025758](#) A1 20080306 [] (BUSS CHEMTECH AG [CH], et al);
[US3754029](#) A 19730821 [] (HOECHST AG);
[EP1451136](#) B1 20100602 [] (AKZO NOBEL NV [NL]);
[US2671803](#) A 19540309 [] (KNAPSACK AG);
[RU2060244](#) C1 19960520 [] (NII SINTEZ S K B [RU], et al)

CCI - [C07C51/487](#)

CUI - [C07C51/377](#)

CLC - [C07C51/487](#), [C07C53/16](#), INV

CNOA - (C2)
[C07C51/377](#) ; [C07C51/487](#) ; [C07C53/16](#)

PA - (C2)
 AKTSO NOBEL KEMIKAŁZ INTERNESHNL B V [NL]

TI - (C2)
 PROCESS FOR PURIFICATION OF LIQUID FEED COMPRISING MCA AND DCA

AB - (C2)
 FIELD: chemistry. SUBSTANCE: invention relates to a process of cleaning substantially anhydrous liquid raw material, containing monochloroacetic acid, dichloroacetic acid, optionally acid chlorides, optionally anhydrides and optionally acetic acid, which comprises following steps: (a) adding water to liquid raw material, so liquid material is obtained, containing between 0.01 and 5% by weight of water, based on total weight of

liquid raw material, and (b) further, subjecting liquid material obtained at step (a), to a **catalytic hydrodechlorination** step by bringing into contact with a source of hydrogen for conversion of dichloroacetic acid into monochloroacetic acid in presence of a solid heterogeneous hydrogenation catalyst, containing one or more metals of group VIII of periodic table, deposited on a support to obtain a hydrogenation product, where hydrogenation product is a product containing monochloroacetic acid, with low content of dichloroacetic acid and colouring, equal to or less than 300 units Pt-Co, measured in accordance with ISO 6271.EFFECT: purification of liquid feed.12 cl, 4 ex

24/81 © EPODOC / EPO

PN - [RU2014118948](#) A 20151127

PNFP - RU2608630 C2 20170123

PR - EP20110185953 20111020; WO2012EP70524 20121017

AP - RU20140118948 20121017

DT - I

CT - || STSE (C2)
[RU2318796](#) C1 20080310 [];
[US3754029](#) A 19730821 [] (HOECHST AG);
[GB1249718](#) A 19711013 [] (KNAPSACK AG [DE]);
[WO2008025758](#) A1 20080306 [] (BUSS CHEMTECH AG [CH], et al)

CCI - [C07C51/487](#)

CUI - [C07C51/347](#)

CNOI - (C2)
[C07C51/377](#) ; [C07C51/487](#) ; [C07C53/16](#)

CLC - [C07C51/487](#), [C07C53/16](#), INV

PA - (C2)
 AKTISO NOBEL KEMIKALZ INTERNESHNL B V [NL]

TI - (C2)
 PROCESS FOR **HYDRODECHLORINATION** OF LIQUID FEED COMPRISING DICHLOROACETIC ACID

AB - (C2)
 FIELD: chemistry.SUBSTANCE: invention relates to a process wherein a liquid feed comprising monochloroacetic acid, dichloroacetic acid and optionally acetic acid and/or trichloroacetic acid, is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert dichloroacetic acid into monochloroacetic acid in presence of a solid heterogeneous hydrogenation catalyst, comprising one or more metals of Group VIII of Periodic Table of Elements, deposited on a carrier, characterised in that said **catalytic hydrodechlorination** step is carried out in a vertical tubular reactor with a diameter exceeding 0.4 m, with solid heterogeneous hydrogenation catalyst being situated in a fixed catalyst bed, wherein liquid feed is fed to top of said vertical tubular reactor at a superficial mass velocity of between 1 and 10 kg/s per square meter of horizontal cross-section of vertical tubular reactor and a rate of between 250 and 3,000 kg/hr per mof said catalyst bed, wherein source of hydrogen is fed to top or bottom of vertical tubular reactor at a superficial gas velocity of between 0.025 to 0.25 Nm/s per square meter of horizontal cross-section of vertical tubular reactor, so as to obtain an average axial pressure gradient of at least 2 kPa per

meter of said catalyst bed, and wherein temperature in top of vertical tubular reactor is between 100 and 200 °C, and wherein pressure in top of vertical tubular reactor is between 0.2 and 1.0 MPa.EFFECT: method achieves higher speed of mass transfer in combination with distribution of duration of stay, close to distribution mode ideal displacement and higher degree of conversion.14 cl, 8 ex

25/81 © EPODOC / EPO

PN - [IN3586CHENP2014](#) A 20151009
 PR - EP20110185953 20111020; WO2012EP70524 20121017
 AP - IN2014CHENP3586 20140513
 DT - I
 CCI - [C07C51/487](#)
 CUI - [C07C51/347](#)
 CLC - [C07C51/487](#), [C07C53/16](#), INV
 PA - AKZO NOBEL CHEMICALS INT BV [NL]
 TI - PROCESS FOR THE **HYDRODECHLORINATION** OF A LIQUID FEED COMPRISING DICHLOROACETIC ACID
 AB - The process of the present invention pertains to a process wherein a liquid feed comprising monochloroacetic acid dichloroacetic acid and optionally acetic acid and/or trichloroacetic acid is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen in the presence of a solid heterogeneous hydrogenation catalyst situated in a fixed catalyst bed wherein the liquid feed is fed to the top of a vertical tubular reactor at a superficial mass velocity of between and 10 kg/s per square meter of the horizontal cross section of the vertical tubular reactor and a rate of between 250 and 3 000 kg/hr per m of said catalyst bed wherein the source of hydrogen is fed to the top or bottom of the vertical tubular reactor at a rate of between 0.025 to 0.25 Nm/s per square meter of the horizontal cross section of the vertical tubular reactor so as to obtain an average axial pressure gradient of at least 2 kPa per meter of said catalyst bed and wherein the temperature in the top of the vertical tubular reactor is between 100 and 200 DEG C and wherein the pressure in the top of the vertical tubular reactor is between 0.2 and 1.0 MPa.

26/81 © EPODOC / EPO

PN - [CN104815681](#) A 20150805
 PNFP - CN104815681B B 20171117
 PR - CN201510111870 20150313
 AP - CN201510111870 20150313
 DT - I
 CT - || STSE (A)
[JPH11309373](#) A 19991109 [A] (CHINA PETROCHEMICAL CORP, et al)
 [A] 1-10
 * 全文 *;
[CN1339563](#) A 20020313 [YX] (CHINA PETROCHEMICAL CORP [CN])
 [Y] 10
 * 第1页倒数1-2段-第2页第1段;说明书第2页第3段-第3页第5段 *

[X] 1-9;
[CN103611566](#) A 20140305 [Y] (WUHAN KELIN FINE CHEMICAL CO LTD)
[Y] 10
* 说明书第[0005]-[0007]段 *

PA - (A)
LUOYANG RUIZE PETROCHEMICAL ENG CO LTD

TI - (A)
Hydrodechlorination catalyst, preparation method and application thereof

AB - (A)
The invention relates to a **hydrodechlorination** catalyst, a preparation method and application thereof. The **hydrodechlorination** catalyst comprises, by mass, 18-28% of molybdenum trioxide, 3-10% of phosphorus oxide, 2-8% of nickel oxide, and the balance aluminum oxide or aluminum oxide and silicon oxide. The preparation method of the **hydrodechlorination** catalyst comprises: (a) preparation of a catalyst carrier, (b) preparation an active component solution, (c) dipping, (d) drying and (e) roasting. The **hydrodechlorination** catalyst is applied to removal of organic chlorides in pyrolysis oil generated by waste tire pyrolysis. The technical scheme provided by the invention can effectively remove the organic chlorides in pyrolysis oil generated by waste tire pyrolysis, especially remove organic chlorides in gasoline and diesel oil components. By means of **catalytic** hydrogenation treatment, organochlorine in the pyrolysis oil is converted into hydrogen chloride and discharged out of the system, thus protecting a downstream further processing device from being interfered by chlorine ions.

27/81 © EPODOC / EPO

PN - [US2014357892](#) A1 20141204

PNFP - US9505693 B2 20161129

PR - EP20110185953 20111020; WO2012EP70524 20121017

AP - US201214351331 20121017

DT - **

CCI - [C07C51/487](#)

CUI - [C07C51/347](#)

CLC - [C07C51/487](#), [C07C53/16](#), INV

PA - (A1)
AKZO NOBEL CHEMICALS INT BV [NL]
- (B2)
NIEUWHOF MELLE RINZE [NL]; KOOIJMAN CORNELIS [NL]; VOS HENDRIK JAN [NL]; TOLLIN LARS MAGNUS [SE]; VAN DEN BERG JACOBUS [NL]; VAN HAL HENRICUS JOHANNES MARINUS PETRUS [NL]; AKZO NOBEL CHEMICALS INT BV [NL]

TI - (A1)
PROCESS FOR THE **HYDRODECHLORINATION** OF A LIQUID FEED COMPRISING DICHLOROACETIC ACID
- (B2)
Process for the **hydrodechlorination** of a liquid feed comprising dichloroacetic acid

AB - (A1)
The process of the present invention pertains to a process wherein a liquid feed

comprising monochloroacetic acid, dichloroacetic acid, and optionally acetic acid and/or trichloroacetic acid is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen in the presence of a solid heterogeneous hydrogenation catalyst situated in a fixed catalyst bed, wherein the liquid feed is fed to the top of a vertical tubular reactor at a superficial mass velocity of between and 10 kg/s per square meter of the horizontal cross-section of the vertical tubular reactor and a rate of between 250 and 3,000 kg/hr per m of said catalyst bed, wherein the source of hydrogen is fed to the top or bottom of the vertical tubular reactor at a rate of between 0.025 to 0.25 Nm/s per square meter of the horizontal cross-section of the vertical tubular reactor, so as to obtain an average axial pressure gradient of at least 2 kPa per meter of said catalyst bed, and wherein the temperature in the top of the vertical tubular reactor is between 100 and 200° C., and wherein the pressure in the top of the vertical tubular reactor is between 0.2 and 1.0 MPa.

- (B2)

The process of the present invention pertains to a process wherein a liquid feed comprising monochloroacetic acid, dichloroacetic acid, and optionally acetic acid and/or trichloroacetic acid is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen in the presence of a solid heterogeneous hydrogenation catalyst situated in a fixed catalyst bed, wherein the liquid feed is fed to the top of a vertical tubular reactor at a superficial mass velocity of between and 10 kg/s per square meter of the horizontal cross-section of the vertical tubular reactor and a rate of between 250 and 3,000 kg/hr per m of said catalyst bed, wherein the source of hydrogen is fed to the top or bottom of the vertical tubular reactor at a rate of between 0.025 to 0.25 Nm/s per square meter of the horizontal cross-section of the vertical tubular reactor, so as to obtain an average axial pressure gradient of at least 2 kPa per meter of said catalyst bed, and wherein the temperature in the top of the vertical tubular reactor is between 100 and 200° C., and wherein the pressure in the top of the vertical tubular reactor is between 0.2 and 1.0 MPa.

28/81 © EPODOC / EPO

PN - [US2014275625](#) A1 20140918

PNFP - US9505694 B2 20161129

PR - EP20110185948 20111020; WO2012EP70523 20121017

AP - US201214351313 20121017

DT - **

CT - || R141 (A1)

[WO2008025758](#) A1 20080306 [] (BUSS CHEMTECH AG [CH], et al);
[NL109769C](#) A 00000000 []

- || STSE (B2)

[NL109769C](#) C 19641015 [];
[WO2008025758](#) A1 20080306 [] (BUSS CHEMTECH AG [CH], et al)

CCI - [C07C51/487](#)

CUI - [C07C51/377](#)

CLC - [C07C51/487](#), [C07C53/16](#), INV

PA - (A1)

NIEUWHOF MELLE RINZE [NL]; KOOIJMAN CORNELLIS [NL]; KOELEWIJN WILLEM [NL]; VOS

	HENDRIK JAN [NL]; TOLLIN LARS MAGNUS [SE]; VAN HAL HENRICUS JOHANNES MARINUS PETRUS [NL]; AKZO NOBEL CHEMICALS INT BV [NL]
	- (B2) NIEUWHOF MELLE RINZE [NL]; KOOIJMAN CORNELIS [NL]; KOELEWIJN WILLEM [NL]; VOS HENDRIK JAN [NL]; TOLLIN LARS MAGNUS [SE]; VAN HAL HENRICUS JOHANNES MARINUS PETRUS [NL]; AKZO NOBEL CHEMICALS INT BV [NL]
TI	- (A1) PROCESS FOR THE PURIFICATION OF A LIQUID FEED COMPRISING MCA AND DCA
	- (B2) Process for the purification of a liquid feed comprising MCA and DCA
AB	- (A1 B2) The present invention pertains to a process for the purification of a substantially water-free liquid feed comprising monochloroacetic acid, dichloroacetic acid, optionally acid chlorides, optionally anhydrides, and optionally acetic acid, which comprises the steps of (a) adding water to the liquid feed so that a liquid feed is obtained comprising between 0.01 and 5% by weight of water, based on the total weight of the liquid feed, and (b) subsequently subjecting the liquid feed obtained in step (a) to a catalytic hydrodechlorination step by contacting it with a source of hydrogen to convert the dichloroacetic acid into monochloroacetic acid in the presence of a solid heterogeneous hydrogenation catalyst comprising one or more metals of Group VIII of the Periodic Table of the Elements deposited on a carrier.
29/81	© EPODOC / EPO
PN	- CN104028283 A 20140910
PNFP	- CN104028283B B 20160203
PR	- CN20141308813 20140701
AP	- CN20141308813 20140701
DT	- I
CT	- STSE (A) CN103111306 A 20130522 [A] (UNIV ZHEJIANG TECHNOLOGY) [A] CN102921143 A 20130213 [A] (YANTAI INST COASTAL ZONE RES CAS) [A]
CTNP	- STSE (A) [] Yanlin, et al, "Effective hydrodechlorination of 4-chlorophenol catalysed by magnetic palladium/reduced graphene oxide under mild conditions", <<RSC Advances>>, (20140416), vol. 4, no. 48 [] 邓红英等, "Pd负载磁性多壁碳纳米管催化对氯苯酚脱氯的研究", <<应用化工>>, (20131130), vol. 42, no. 11
PA	- (A) UNIV CHINA WEST NORMAL
TI	- (A) Metal-loaded magnetic carbon material catalyst and method for catalyzing dechlorination of chlorinated phenol through metal-loaded magnetic carbon material

catalyst

AB

- (A)

The invention relates to a metal-loaded magnetic carbon material catalyst and a method for catalyzing dechlorination of chlorinated phenol through the metal-loaded magnetic carbon material catalyst, and belongs to the field of organic synthesis and **catalytic** reaction. The metal-loaded magnetic carbon material catalyst and the method for catalyzing dechlorination of the chlorinated phenol through the catalyst are provided. The metal-loaded magnetic carbon material catalyst is a compound obtained by loading Fe₃O₄ and active metal elements on a carbon material, wherein the carbon material is activated carbon or carbon nano tubes or graphene, and the active metal elements are one or two of platinum, palladium and rhodium. The preparation steps of the catalyst are simple, reduction is carried out simultaneously in the preparation process of the catalyst, and the reduction step is omitted. The catalyst has terrific **hydrodechlorination** performance on the chlorinated phenol and is used for dechlorination of the chlorinated phenol, reaction conditions are milder, no inorganic or organic additive is added to a reaction system, and the catalyst can be recycled.

30/81 © EPODOC / EPO

PN

- [MX2014004617](#) A 20140512

PNFP

- MX347055 B 20170410

PR

- EP20110185948 20111020; WO2012EP70523 20121017

AP

- MX20140004617 20121017

DT

- I

CCI

- [C07C51/487](#)

CUI

- [C07C51/377](#)

CLC

- [C07C51/487](#), [C07C53/16](#), INV

PA

- (A B)

AKZO NOBEL CHEMICALS INT BV [NL]

TI

- (A B)

PROCESS FOR THE PURIFICATION OF A LIQUID FEED COMPRISING MCA AND DCA.

AB

- (A B)

The present invention pertains to a process for the purification of a substantially water-free liquid feed comprising monochloroacetic acid, dichloroacetic acid, optionally acid chlorides, optionally anhydrides, and optionally acetic acid, which comprises the steps of (a) adding water to the liquid feed so that a liquid feed is obtained comprising between 0.01 and 5% by weight of water, based on the total weight of the liquid feed, and (b) subsequently subjecting the liquid feed obtained in step (a) to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert the dichloroacetic acid into monochloroacetic acid in the presence of a solid heterogeneous hydrogenation catalyst comprising one or more metals of Group VIII of the Periodic Table of the Elements deposited on a carrier.

31/81 © EPODOC / EPO

PN

- [MX2014004616](#) A 20140512

PNFP

- MX349701 B 20170808

PR - EP20110185953 20111020; WO2012EP70524 20121017

AP - MX20140004616 20121017

DT - I

CCI - [C07C51/487](#)

CUI - [C07C51/347](#)

CLC - [C07C51/487](#), [C07C53/16](#), INV

PA - (A B)
AKZO NOBEL CHEMICALS INT BV [NL]

TI - (A B)
PROCESS FOR THE **HYDRODECHLORINATION** OF A LIQUID FEED COMPRISING
DICHLOROACETIC ACID.

AB - (A)
The process of the present invention pertains to a process wherein a liquid feed comprising monochloroacetic acid, dichloroacetic acid, and optionally acetic acid and/or trichloroacetic acid is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen in the presence of a solid heterogeneous hydrogenation catalyst situated in a fixed catalyst bed, wherein the liquid feed is fed to the top of a vertical tubular reactor at a superficial mass velocity of between and 10 kg/s per square meter of the horizontal cross-section of the vertical tubular reactor and a rate of between 250 and 3,000 kg/hr per m of said catalyst bed, wherein the source of hydrogen is fed to the top or bottom of the vertical tubular reactor at a rate of between 0.025 to 0.25 Nm/s per square meter of the horizontal cross-section of the vertical tubular reactor, so as to obtain an average axial pressure gradient of at least 2 kPa per meter of said catalyst bed, and wherein the temperature in the top of the vertical tubular reactor is between 100 and 200°C, and wherein the pressure in the top of the vertical tubular reactor is between 0.2 and 1.0 MPa.

- (B)
The process of the present invention pertains to a process wherein a liquid feed comprising monochloroacetic acid, dichloroacetic acid, and optionally acetic acid and/or trichloroacetic acid is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen in the presence of a solid heterogeneous hydrogenation catalyst situated in a fixed catalyst bed, wherein the liquid feed is fed to the top of a vertical tubular reactor at a superficial mass velocity of between and 10 kg/s per square meter of the horizontal cross-section of the vertical tubular reactor and a rate of between 250 and 3,000 kg/hr per m of said catalyst bed, wherein the source of hydrogen is fed to the top or bottom of the vertical tubular reactor at a rate of between 0.025 to 0.25 Nm/s per square meter of the horizontal cross-section of the vertical tubular reactor, so as to obtain an average axial pressure gradient of at least 2 kPa per meter of said catalyst bed, and wherein the temperature in the top of the vertical tubular reactor is between 100 and 200°C, and wherein the pressure in the top of the vertical tubular reactor is between 0.2 and 1.0 MPa.

32/81 © EPODOC / EPO

PN - [CN103977744](#) A 20140813

PNFP - CN103977744B B 20160203

PR - CN20141244652 20140605

AP - CN20141244652 20140605

DT - I

CT - || STSE (A)
[CN101037374](#) A 20070919 [A] (UNIV TIANJIN [CN])
 [A] 1-10
 全文
[CN101979141](#) A 20110223 [A] (UNIV TIANJIN)
 [A] 1-10
 全文
[CN101774882](#) A 20100714 [A] (ZHEJIANG QUHUA FLUORINE CHEMIC, et al)
 [A] 1-10
 全文
[XP004272527](#) A 00000000 [A]

CTNP - || STSE (A)
 [A] 曾宪委,
 "基于零价铁的双金属体系对六氯苯还原脱氯研究", <<环境科学>>, (20130115), vol. 34, no. 1, PAGE 182 - 186
 [A] 1-10
 第182-186页
 [A] Xiaojin Nie et al., "Rapid degradation of hexachlorobenzene by micron Ag/Fe bimetal particles", <<Journal of Environmental Sciences>>, (20130501), vol. 25, no. 3, PAGE 473 - 478
 [A] 1-10
 第473-478页
 [A] F.J.Berry et al., "Microwave heating during catalyst preparation:influence on the hydrodechlorination activity of alumina-supported palladium-iron bimetallic catalysts", <<Applied Catalysis A:General>>, (20041204), vol. 204, no. 2, doi:doi:[10.1016/S0926-860X\(00\)00515-9](#) , PAGE 191 - 201, XP004272527
 [A] 1-10
 第191-201页

PA - (A)
 XI AN CATALYST CHEMICAL CO LTD; JUHUA GROUP TECHNOLOGY CT

TI - (A)
 Method for **catalytic** degradation of hexachlorobenzene

AB - (A)
 The invention discloses a method for **catalytic** degradation of hexachlorobenzene. The method comprises the following steps: firstly, filling a catalyst into a fixed bed reactor, and carrying out reduction treatment on the catalyst; secondly, mixing hexachlorobenzene steam and preheated hydrogen uniformly to obtain a mixed gas, introducing the mixed gas into the fixed bed reactor after reduction treatment, and carrying out **catalytic hydrodechlorination** reaction on the catalyst, thereby obtaining the mixed gas of benzene steam, hydrogen chloride gas and unreacted hydrogen; and thirdly, feeding the mixed gas of benzene steam, hydrogen chloride gas and unreacted hydrogen into a condenser for condensing, converting benzene into liquid, then feeding the hydrogen chloride gas and unreacted hydrogen in the mixed gas into an absorption

tower for absorbing hydrogen chloride by ammonia water, compressing the unreacted hydrogen by a compressor, and returning for recycling. A solvent is not required to be added in **catalytic** hydrogenation and degradation of hexachlorobenzene by the method provided by the invention, benzene and ammonium chloride are produced as byproducts, and zero emission of pollutants can be reached, and the method is an environmental-friendly technology for degrading hexachlorobenzene efficiently.

33/81 © EPODOC / EPO

PN - [CN103754883](#) A 20140430

PNFP - CN103754883B B 20150506

PR - CN2014100553 20140102

AP - CN2014100553 20140102

DT - I

PA - (A B)
UNIV HENAN SCIENCE & TECH

TI - (A B)
Catalyst for transforming silicon tetrachloride into trichlorosilane through **hydrodechlorination** and preparation method of catalyst

AB - (A)
The invention discloses a catalyst for transforming silicon tetrachloride into trichlorosilane through **hydrodechlorination** and a preparation method of the catalyst. Nickel, copper and palladium are taken as major active ingredients of the **hydrodechlorination** catalyst, nickel particles, copper particles and palladium particles are slowly adsorbed, reduced and deposited in surface and pore of activated carbon layer by layer through step-by-step controlled reduction and in-situ deposition, and the three metallic particles are uniformly distributed and mutually cooperated, so as to effectively improve a **catalytic** efficiency of transforming silicon tetrachloride into trichlorosilane through **hydrodechlorination**. The catalyst preparation method disclosed by the invention has the characteristics of simple process, moderate condition and relatively low investment; the prepared catalyst has certain magnetism, which is favorable for magnetic separation and recovery after using the catalyst. According to the catalyst, mass percentage of loading three metals on an activated carbon load is 15-30%, and specific surface area is 300-700m²/g.

34/81 © EPODOC / EPO

PN - [CN103687840](#) A 20140326

PNFP - CN103687840B B 20161123

PR - WO2012EP70523 20121017; EP20110185948 20111020

AP - CN2012835267 20121017

DT - I

CT - || STSE (A)
[US2863917](#) A 19581209 [A] (RUCKER JOHN T, et al)
[A] 1-12
* 全文 *;
[US4383121](#) A 19830510 [A] (SUGAMIYA RYOJI [JP], et al)
[A] 1-12

* 全文 *;

[CN1599709](#) A 20050323 [A] (AKZO NOBEL NV [NL])

[A] 1-12

* 全文 *;

[CN102001930](#) A 20110406 [A] (CHINA TIANCHEN ENG CORP, et al)

[A] 1-12

* 全文 *;

[CN101528657](#) A 20090909 [YX] (BUSS CHEMTECH AG [CH])

[Y] 5-12

* 说明书第5页，实施例1-3 *

[X] 1,3-4,6-12;

[CN1046152](#) A 19901017 [Y] (ATOCHEM [FR])

[Y] 5-12

* 说明书第6页第2-3段 *

CCI	- C07C51/487
CUI	- C07C51/377
CNOI	- (A) C07C51/377 ; C07C51/487
CLC	- C07C51/487 , C07C53/16 , INV
CNOL	- C07C51/487, C07C53/16, INV - C07C51/377, C07C53/16, INV
PA	- (A) AKZO NOBEL CHEMICALS INT BV
TI	- (A) Process for the purification of a liquid feed comprising mca and dca
AB	- (A) The present invention pertains to a process for the purification of a substantially water-free liquid feed comprising monochloroacetic acid, dichloroacetic acid, optionally acid chlorides, optionally anhydrides, and optionally acetic acid, which comprises the steps of (a) adding water to the liquid feed so that a liquid feed is obtained comprising between 0.01 and 5% by weight of water, based on the total weight of the liquid feed, and (b) subsequently subjecting the liquid feed obtained in step (a) to a catalytic hydrodechlorination step by contacting it with a source of hydrogen to convert the dichloroacetic acid into monochloroacetic acid in the presence of a solid heterogeneous hydrogenation catalyst comprising one or more metals of Group VIII of the Periodic Table of the Elements deposited on a carrier.

35/81 © EPODOC / EPO

PN	- AU2012324958 A1 20140320
PNFP	- AU2012324958B B2 20160317
PR	- EP20110185953 20111020; WO2012EP70524 20121017
AP	- AU20120324958 20121017
DT	- I
CT	- STSE (B2) US3754029 A 19730821 [] (HOECHST AG)

CCI - [C07C51/487](#)
 CUI - [C07C51/347](#)
 CLC - [C07C51/487](#), [C07C53/16](#), INV
 PA - (A1 B2)
 AKZO NOBEL CHEMICALS INT BV
 TI - (A1 B2)
 Process for the **hydrodechlorination** of a liquid feed comprising dichloroacetic acid
 AB - (A1 B2)
 The process of the present invention pertains to a process wherein a liquid feed comprising monochloroacetic acid, dichloroacetic acid, and optionally acetic acid and/or trichloroacetic acid is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen in the presence of a solid heterogeneous hydrogenation catalyst situated in a fixed catalyst bed, wherein the liquid feed is fed to the top of a vertical tubular reactor at a superficial mass velocity of between and 10 kg/s per square meter of the horizontal cross-section of the vertical tubular reactor and a rate of between 250 and 3,000 kg/hr per m of said catalyst bed, wherein the source of hydrogen is fed to the top or bottom of the vertical tubular reactor at a rate of between 0.025 to 0.25 Nm/s per square meter of the horizontal cross-section of the vertical tubular reactor, so as to obtain an average axial pressure gradient of at least 2 kPa per meter of said catalyst bed, and wherein the temperature in the top of the vertical tubular reactor is between 100 and 200 DEG C, and wherein the pressure in the top of the vertical tubular reactor is between 0.2 and 1.0 MPa.

36/81 © EPODOC / EPO

PN - [AU2012324957](#) A1 20140320
 PNFP - AU2012324957B B2 20150820
 PR - EP20110185948 20111020; WO2012EP70523 20121017
 AP - AU20120324957 20121017
 DT - I
 CT - || STSE (B2)
[WO2008025758](#) A1 20080306 [] (BUSS CHEMTECH AG [CH], et al)
[US3754029](#) A 19730821 [] (HOECHST AG)
[EP1451136](#) A2 20040901 [] (AKZO NOBEL NV [NL])
[US2671803](#) A 19540309 [] (KNAPSACK AG)
 CCI - [C07C51/487](#)
 CUI - [C07C51/377](#)
 CLC - [C07C51/487](#), [C07C53/16](#), INV
 PA - (A1 B2)
 AKZO NOBEL CHEMICALS INT BV
 TI - (A1 B2)
 Process for the purification of a liquid feed comprising MCA and DCA
 AB - (A1 B2)
 The present invention pertains to a process for the purification of a substantially water-free liquid feed comprising monochloroacetic acid, dichloroacetic acid, optionally acid chlorides, optionally anhydrides, and optionally acetic acid, which comprises the steps

of (a) adding water to the liquid feed so that a liquid feed is obtained comprising between 0.01 and 5% by weight of water, based on the total weight of the liquid feed, and (b) subsequently subjecting the liquid feed obtained in step (a) to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert the dichloroacetic acid into monochloroacetic acid in the presence of a solid heterogeneous hydrogenation catalyst comprising one or more metals of Group VIII of the Periodic Table of the Elements deposited on a carrier.

37/81 © EPODOC / EPO

PN - [CN103649039](#) A 20140319

PNFP - CN103649039B B 20160120

PR - WO2012EP70524 20121017; EP20110185953 20111020

AP - CN2012835254 20121017

DT - I

CT - || STSE (A)

[GB1249718](#) A 19711013 [A] (KNAPSACK AG [DE])
[A] 1-14

[US3754029](#) A 19730821 [A] (HOLTERMANN R, et al)
[A] 1-14

CCI - [C07C51/487](#)

CUI - [C07C51/347](#)

CNOI - (A)

[C07C51/377](#) ; [C07C51/487](#)

CLC - [C07C51/487](#), [C07C53/16](#), INV

CNOL - C07C51/377, C07C53/16, INV

- C07C51/487, C07C53/16, INV

PA - (A)

AKZO NOBEL CHEMICALS INT BV

TI - (A)

Process for the **hydrodechlorination** of a liquid feed comprising dichloroacetic acid

AB - (A)

The process of the present invention pertains to a process wherein a liquid feed comprising monochloroacetic acid, dichloroacetic acid, and optionally acetic acid and/or trichloroacetic acid is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen in the presence of a solid heterogeneous hydrogenation catalyst situated in a fixed catalyst bed, wherein the liquid feed is fed to the top of a vertical tubular reactor at a superficial mass velocity of between and 10 kg/s per square meter of the horizontal cross-section of the vertical tubular reactor and a rate of between 250 and 3,000 kg/hr per m of said catalyst bed, wherein the source of hydrogen is fed to the top or bottom of the vertical tubular reactor at a rate of between 0.025 to 0.25 Nm/s per square meter of the horizontal cross-section of the vertical tubular reactor, so as to obtain an average axial pressure gradient of at least 2 kPa per meter of said catalyst bed, and wherein the temperature in the top of the vertical tubular reactor is between 100 and 200 DEG C, and wherein the pressure in the top of the vertical tubular reactor is between 0.2 and 1.0 MPa.

38/81 © EPODOC / EPO

PN - [RU2478090](#) C1 20130327
PR - RU20120106452 20120222
AP - RU20120106452 20120222
DT - I
PA - OOO SINTEZ 2 [RU]
TI - METHOD OF PRODUCING PERCHLOROETHYLENE
AB - FIELD: chemistry.SUBSTANCE: invention relates to a method of producing perchloroethylene by **catalytic hydrodechlorination** of carbon tetrachloride with hydrogen. The disclosed method is characterised by that the process is carried out in a solution of NaOH, in the presence of a palladium catalyst on a carbon support, at temperature of 110-130°C and pressure in the system of 0.9-1.1 MPa.EFFECT: use of the present method increases catalyst efficiency and prolongs service life thereof.1 cl, 1 tbl, 9 ex

39/81 © EPODOC / EPO

PN - [US2013216464](#) A1 20130822
PR - DE20101000980 20100118; WO2010EP69920 20101216
AP - US201013522514 20101216
DT - **
CT - || R141 (A1)
[US2013095026](#) A1 [];
[US2008112875](#) A1 [];
[US2007173671](#) A1 [];
[US5716590](#) A [];
[US4217334](#) A []
CCI - [B01J8/062](#) ; [B01J12/007](#) ; [B01J19/02](#) ; [B01J19/2425](#) ; [C01B33/1071](#)
CUI - [B01J8/06](#)
CCA - [B01J2208/00415](#) ; [B01J2208/00504](#) ; [B01J2208/00513](#) ; [B01J2219/00157](#) ;
[B01J2219/0263](#)
PA - STOCHNIOL GUIDO [DE]; MUELLER THOMAS [DE]; PAULI INGO [DE]; EVONIK DEGUSSA GMBH [DE]
TI - **CATALYTIC** SYSTEMS FOR CONTINUOUS CONVERSION OF SILICON TETRACHLORIDE TO TRICHLOROSILANE
AB - The invention relates to an improved method for converting silicon tetrachloride having hydrogen in a **hydrodechlorination** reactor comprising a catalyst. The invention further relates to a **catalytic** system for such a **hydrodechlorination** reactor.

40/81 © EPODOC / EPO

PN - [CN102909214](#) A 20130206
PR - CN20121424626 20121030
AP - CN20121424626 20121030
DT - I

CT	- STSE (A) CN102512783 A 20120627 [Y] (YANTAI INST COASTAL ZONE RES CAS) [Y] 7-8 说明书第0013-0014段
CTNP	- STSE (A) [] M.Aresta et.al, "<<Thermal desorption of polychlorobiphenyls from contaminated soils and their hydrodechlorination using Pd-and Rh-supported catalysts>>", <<Chemosphere>>, (20080131) [] 黄洋等, "<<DDT 污染土壤的修复技术>>", <<南京工业大学学报(自然科学版)>>, (20110331) [] 刘琪等, "<<水-乙醇混合体系中1,2,4-三氯苯催化加氢降解>>", <<第六届全国环境催化与环境材料学术会议论文>>, (20090817) [A] 马宣宣等, "<<多氯联苯的多相催化加氢脱氯>>", <<第六届全国环境化学大会>>, (20110921), PAGE 131 [A] 1-8 第131页 [A] 周世伟等, "<<温和反应条件下RaneyNi催化4_溴联苯加氢脱溴研究>>", <<第五届全国环境化学大会>>, (20091131), PAGE 334 [A] 1-8 第334页 [Y] 叶茂等, "<<有机溶剂对DDT污染场地土壤淋洗修复研究>>", <<第六届全国环境化学大会>>, (20110921), PAGE 621 - 1 [Y] 1-8 第621页右栏第1段
PA	- YANTAI INST COASTAL ZONE RES CAS
TI	- Combined treatment method of purifying DDT (Dichloro-Diphenyl-Tricloroethane) heavily-polluted ground soil
AB	- The invention relates to a combined treatment method of repairing DDT (Dichloro-Diphenyl-Tricloroethane) heavily-polluted ground soil. Particularly, the combined treatment method is a combined treatment technology combining thermal elution and heterogeneous catalytic hydrogenation; and DDT is eluted out from the polluted soil by adopting an organic solvent and then is converted into a matter which has lower toxicity and is easy to biologically degrade through the heterogeneous catalytic hydrogenation. A thermal elution method comprises the following steps: eluting by adopting the organic solvent and controlling the elution temperature within 50-100 DEG C; and adopting a supported noble metal catalyst for heterogeneous catalytic reduction, taking hydrogen as a hydrogen source, carrying out hydrodechlorination on the soil elute DDT in a liquid phase under the existence of alkali, controlling the reaction pressure within 0.05-0.5 MPa and controlling the reaction temperature within 20-80 DEG C. The combined treatment method has the advantages of high efficiency, mild reaction condition, thorough reactant degradation, easiness in operation control and low cost.

41/81 © EPODOC / EPO

- PN - [WO2013057126](#) A1 20130425
- PR - EP20110185953 20111020
- AP - WO2012EP70524 20121017
- DT - *; Rep
- CT - |EP| ISR (A1)
[US3754029](#) A 19730821 [AD] (HOLTERMANN R, et al)
[AD] 1-13
* claim 1 *
* fixed bed catalyst; column 2, line 39 - line 47; claim 7 *
* Monochloroacetic acid is obtained in 99.7% purity; column 4, line 12 *;
[GB1249718](#) A 19711013 [A] (KNAPSACK AG [DE])
[A] 1-13
* figure 1; claim 1 *
* Tubular reactor ; column 5, line 29; figure 1 *
* The presence of acetic acid.....has been found to favour the running of the purification process; page 2, column right, line 122 - line 125 *
- CCI - [C07C51/487](#)
- CUI - [C07C51/347](#)
- CLC - [C07C51/487](#), [C07C53/16](#), INV
- PA - AKZO NOBEL CHEMICALS INT BV [NL]
- TI - PROCESS FOR THE **HYDRODECHLORINATION** OF A LIQUID FEED COMPRISING DICHLOROACETIC ACID
- AB - The process of the present invention pertains to a process wherein a liquid feed comprising monochloroacetic acid, dichloroacetic acid, and optionally acetic acid and/or trichloroacetic acid is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen in the presence of a solid heterogeneous hydrogenation catalyst situated in a fixed catalyst bed, wherein the liquid feed is fed to the top of a vertical tubular reactor at a superficial mass velocity of between and 10 kg/s per square meter of the horizontal cross-section of the vertical tubular reactor and a rate of between 250 and 3,000 kg/hr per m of said catalyst bed, wherein the source of hydrogen is fed to the top or bottom of the vertical tubular reactor at a rate of between 0.025 to 0.25 Nm/s per square meter of the horizontal cross-section of the vertical tubular reactor, so as to obtain an average axial pressure gradient of at least 2 kPa per meter of said catalyst bed, and wherein the temperature in the top of the vertical tubular reactor is between 100 and 200°C, and wherein the pressure in the top of the vertical tubular reactor is between 0.2 and 1.0 MPa.

42/81 © EPODOC / EPO

- PN - [WO2013057125](#) A1 20130425
- PR - EP20110185948 20111020
- AP - WO2012EP70523 20121017
- DT - *; Rep
- CT - |EP| ISR (A1)
[US3754029](#) A 19730821 [A] (HOLTERMANN R, et al)

[A] 1-11
 * claim 1 *;
[EP1451136](#) B1 20100602 [A] (AKZO NOBEL NV [NL])
 [A] 1-11
 * "preparation of MCA is an anhydrous process..."; column 4, paragraph 0029 *
 * "A process ... comprising the removal of aldehydes from a process stream [of MCA] by peroxidation using a peroxycarboxylic acid" ;; claim 1 *;
[US2671803](#) A 19540309 [A] (KURT SENNEWALD, et al)
 [A] 1-11
 * addition of water generates disadvantage with respect to recycling catalyst ;;
 column 1, line 33 - line 43 *

CCI - [C07C51/487](#)
 CUI - [C07C51/377](#)
 CLC - [C07C51/487](#), [C07C53/16](#), INV
 PA - AKZO NOBEL CHEMICALS INT BV [NL]
 TI - PROCESS FOR THE PURIFICATION OF A LIQUID FEED COMPRISING MCA AND DCA
 AB - The present invention pertains to a process for the purification of a substantially water-free liquid feed comprising monochloroacetic acid, dichloroacetic acid, optionally acid chlorides, optionally anhydrides, and optionally acetic acid, which comprises the steps of (a) adding water to the liquid feed so that a liquid feed is obtained comprising between 0.01 and 5% by weight of water, based on the total weight of the liquid feed, and (b) subsequently subjecting the liquid feed obtained in step (a) to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert the dichloroacetic acid into monochloroacetic acid in the presence of a solid heterogeneous hydrogenation catalyst comprising one or more metals of Group VIII of the Periodic Table of the Elements deposited on a carrier.

43/81 © EPODOC / EPO

PN - [CN102725059](#) A 20121010
 PR - WO2010EP69920 20101216; DE20101000980 20100118
 AP - CN2010861763 20101216
 DT - I
 CT - || STSE (A)
[EP1454670](#) A1 20040908 [A] (HEMLOCK SEMICONDUCTOR CORP [US])
 [A]
[CN1946637](#) A 20070411 [X] (DEGUSSA [DE])
 [X]

CCI - [B01J8/062](#) ; [B01J12/007](#) ; [B01J19/02](#) ; [B01J19/2425](#) ; [C01B33/1071](#)
 CUI - [B01J8/06](#)
 CCA - [B01J2208/00415](#) ; [B01J2208/00504](#) ; [B01J2208/00513](#) ; [B01J2219/00157](#) ;
[B01J2219/0263](#)
 PA - EVONIK DEGUSSA GMBH
 TI - **Catalytic** systems for continuous conversion of silicon tetrachloride to trichlorosilane
 AB - The invention relates to an improved method for converting silicon tetrachloride having hydrogen in a **hydrodechlorination** reactor comprising a catalyst. The invention further

relates to a **catalytic** system for such a **hydrodechlorination** reactor.

44/81 © EPODOC / EPO

PN - [CA2786667](#) A1 20110721
PR - DE20101000980 20100118; WO2010EP69920 20101216
AP - CA20102786667 20101216
DT - I
CCI - [B01J8/062](#) ; [B01J12/007](#) ; [B01J19/02](#) ; [B01J19/2425](#) ; [C01B33/1071](#)
CUI - [B01J8/06](#)
CCA - [B01J2208/00415](#) ; [B01J2208/00504](#) ; [B01J2208/00513](#) ; [B01J2219/00157](#) ;
[B01J2219/0263](#)
PA - EVONIK DEGUSSA GMBH [DE]
TI - **CATALYTIC** SYSTEMS FOR CONTINUOUS CONVERSION OF SILICON TETRACHLORIDE TO TRICHLOROSILANE
AB - The invention relates to an improved method for converting silicon tetrachloride having hydrogen in a **hydrodechlorination** reactor comprising a catalyst. The invention further relates to a **catalytic** system for such a **hydrodechlorination** reactor.

45/81 © EPODOC / EPO

PN - [TW201139274](#) A 20111116
PR - DE20101000980 20100118
AP - TW20110101286 20110113
DT - I
CCI - [B01J8/062](#) ; [B01J12/007](#) ; [B01J19/02](#) ; [B01J19/2425](#) ; [C01B33/1071](#)
CUI - [B01J8/06](#)
CCA - [B01J2208/00415](#) ; [B01J2208/00504](#) ; [B01J2208/00513](#) ; [B01J2219/00157](#) ;
[B01J2219/0263](#)
PA - EVONIK DEGUSSA GMBH [DE]
TI - **Catalytic** systems for continuous conversion of silicon tetrachloride to trichlorosilane
AB - The invention relates to an improved process for reacting silicon tetrachloride with hydrogen in a **hydrodechlorination** reactor comprising a catalyst. The invention further relates to a **catalytic** system for such a **hydrodechlorination** reactor.

46/81 © EPODOC / EPO

PN - [RU2010152888](#) A 20120627
PNFP - RU2458030 C1 20120810
PR - RU20100152888 20101223
AP - RU20100152888 20101223
DT - I
PA - (C1)
GOBRAZOVATEL NOE UCHREZHDENIE VYSSHEGO PROFESSIONAL NOGO OBRAZOVANIJA
UFIM G NEFTJANOJ TEKHN UNI [RU]

TI - (C1)
 METHOD OF PROCESSING ORGANOCHLORINE WASTES VIA LIQUID-PHASE **CATALYTIC HYDRODECHLORINATION**

AB - (C1)
 FIELD: chemistry. ^ SUBSTANCE: invention relates to a method of processing organochlorine wastes via liquid-phase **catalytic hydrodechlorination** in the presence of a heterogeneous catalyst in the medium of an inert high-boiling hydrocarbon solvent with molar ratio hydrogen : organochlorine waste equal to 20-40:1, while recycling the solvent which contains unreacted wastes and separation of gaseous reaction products using existing methods, characterised by that the process is carried out at temperature 280-350C in the presence of a fused Ni-Al-Ti catalyst which is pre-activated by leaching, wherein the inert solvent used is a solvent with boiling point 350-500C, and excess thereof with respect to the processed organochlorine wastes is kept in the range of 5-10: 1. ^ EFFECT: use of the present method increases technological effectiveness of the process by avoiding the need for periodic restoration of **catalytic** activity of the used catalyst. ^ 2 cl, 1 tbl

47/81 © EPODOC / EPO

PN - [RU2451005](#) C1 20120520

PR - RU20110121536 20110530

AP - RU20110121536 20110530

DT - I

PA - OOO NI ITS SINTEZ OOO NIITS SINTEZ [RU]

TI - COMPOUND METHOD FOR **CATALYTIC** PROCESSING OF NATURAL GAS TO OBTAIN LOWER OLEFINS

AB - FIELD: chemistry. ^ SUBSTANCE: method involves oxidative chlorination of methane, pyrolysis of the methyl obtained from methane oxychlorination, and is characterised by that after extracting chloromethanes from the methane oxychlorination step, the remaining still liquor, which primarily contains methylene chloride and chloroform, undergoes **hydrodechlorination** at temperature 150-300C on a palladium or nickel-molybdenum catalyst on a support, and the obtained stream of reaction gas is split into two fractions. One of said fractions with high-boiling point **hydrodechlorination** products, which contain unreacted methylene chloride and chloroform, is fed into a chloromethane separation unit for the methane oxychlorination step, and the other fraction with low-boiling point gases from the chloromethane **hydrodechlorination** process, which contain hydrogen, methane, hydrogen chloride and partially methyl chloride, is merged with the gas stream coming from the methyl chloride pyrolysis step, followed by combined separation thereof into hydrogen, methane, lower olefins and unreacted methyl chloride, which is returned to the **catalytic** pyrolysis step. ^ EFFECT: use of present method enables to increase output of methyl chloride and, consequently, light olefins obtained during conversion thereof. ^ 1 cl, 1 tbl, 2 ex, 2 dwg

48/81 © EPODOC / EPO

PN - [US2012149558](#) A1 20120614

PR - DE20091028653 20090819; WO2010EP61780 20100812

AP - US201013390850 20100812

DT - **

CCI - [B01J37/04](#) ; [B01J37/18](#) ; [B01J21/08](#) ; [B01J23/06](#) ; [B01J23/80](#) ; [B01J37/0009](#) ; [C01B33/1071](#) ; [C07F7/126](#)

PA - ZIPP ALEXANDER [DE]; EBERLE HANS-JUERGEN [DE]; WACKER CHEMIE AG [DE]

TI - Catalyst for **hydrodechlorination** of chlorosilanes to hydrogen silanes and method for implementing hydrogen silanes using said catalyst

AB - The invention relates to a method for producing hydrogen silanes of general formula $RnCl3-nSiH$ by converting chlorosilanes of general formula $RnCl4-nSi$, where R, in both formulas simultaneously and independently of each other, is a hydrogen atom, an optionally substituted or unsubstituted hydrocarbon radical having 1 to 18 carbon atoms, and n can have the value of 1-3, and hydrogen gas in the presence of a **catalytic** quantity (K): zinc and/or an alloy comprising zinc on a metal oxide carrier.

49/81 © EPODOC / EPO

PN - [CN102482299](#) A 20120530

PNFP - CN102482299B B 20160316

PR - WO2010EP61780 20100812; DE20091028653 20090819

AP - CN2010836844 20100812

DT - I

CT - || STSE (A)
[CN1683077](#) A 20051019 [X] (LIGONG FINE CHEMICAL TECHNOLOG [CN])
 [X] 7-10
 参见权利要求1-2
[US5329038](#) A 19940712 [Y] (CHADWICK KIRK M [US], et al)
 [Y] 1-3,6
 参见权利要求1
[EP0068603](#) A2 19830105 [A] (COAL INDUSTRY PATENTS LTD [GB])
 [A] 1-10
 全文
[WO2005068077](#) A1 20050728 [A] (SUED CHEMIE INC [US], et al)
 [A] 7-9
 参见权利要求20,第3页倒数第2段
[JP2005186620](#) A 20050714 [A] (SEKIKAWA HIDETOMO, et al)
 [A] 1-10
 全文
[US5646326](#) A 19970708 [Y] (SCHULER JOACHIM [DE])
 [Y] 1-3,6
 参见第4栏实施例3

CCI - [B01J37/04](#) ; [B01J37/18](#) ; [B01J21/08](#) ; [B01J23/06](#) ; [B01J23/80](#) ; [B01J37/0009](#) ; [C01B33/1071](#) ; [C07F7/126](#)

PA - (A)
 WACKER CHEMIE AG

TI - (A)
 Catalyst for **hydrodechlorination** of chlorosilanes to hydrogen silanes and method for implementing hydrogen silanes using said catalyst

AB - (A)

The invention relates to a method for producing hydrogen silanes of general formula $RnCl3-nSiH$ by converting chlorosilanes of general formula $RnCl4-nSi$, where R, in both formulas simultaneously and independently of each other, is a hydrogen atom, an optionally substituted or unsubstituted hydrocarbon radical having 1 to 18 carbon atoms, and n can have the value of 1-3, and hydrogen gas in the presence of a **catalytic** quantity (K): zinc and/or an alloy comprising zinc on a metal oxide carrier.

50/81 © EPODOC / EPO

PN - [TW201102127](#) A 20110116
 PR - TW20090122391 20090702
 AP - TW20090122391 20090702
 DT - I
 CCA - [Y02P20/544](#)
 PA - WAI CHIEN M [US]; LIAO WEI-SHENG [TW]; CHIU KONG-HWA [TW]; YAK HWA-KWANG [MY]; TAKESHITA YUKITOSHI [US]
 TI - A new supercritical fluid technology for remediation of polychlorinated biphenyls
 AB - This invention is a new **catalytic hydrodechlorination** process coupling supercritical fluid extraction (SFE) over polymer-stabilized metal nanoparticles as heterogeneous catalysts in a green solvent supercritical carbon dioxide (sc-CO₂) for remediation of polychlorinated biphenyls (PCBs) contaminated matrix. PCBs can be continuously extracted from matrix and on-line converted to non-toxic saturated hydrocarbon products. The features of this new **catalytic** hydrodechlorination process include high efficiency, liquid waste minimization, facile product separation, and extended catalyst lifetime.

51/81 © EPODOC / EPO

PN - [WO2011085900](#) A1 20110721
 PR - DE20101000980 20100118
 AP - WO2010EP69920 20101216
 DT - *; Rep
 CT - |EP| ISR (A1)
 [EP1737790](#) A1 20070103 [XAI] (DEGUSSA [DE])
 [X] 1-4,8-14
 * claims 1,6 *
 * paragraphs [0019] , [0020] , [0023] *
 [A] 17
 [I] 5-7,15,16;
 [US4791079](#) A 19881213 [XAI] (HAZBUN EDWARD A [US])
 [X] 12,13,17
 * example 3 *
 [A] 1-11
 [I] 14-16;
 [US2004016650](#) A1 20040129 [XA] (KLUG KARL H [DE])
 [X] 12-16
 * paragraph [0015] *
 [A] 1-11

CCI - [B01J8/062](#) ; [B01J12/007](#) ; [B01J19/02](#) ; [B01J19/2425](#) ; [C01B33/1071](#)
 CUI - [B01J8/06](#)
 CCA - [B01J2208/00415](#) ; [B01J2208/00504](#) ; [B01J2208/00513](#) ; [B01J2219/00157](#) ;
[B01J2219/0263](#)
 PA - EVONIK DEGUSSA GMBH [DE]; STOCHNIOL GUIDO [DE]; MUELLER THOMAS [DE]; PAULI INGO [DE]
 TI - **CATALYTIC** SYSTEMS FOR CONTINUOUS CONVERSION OF SILICON TETRACHLORIDE TO TRICHLOROSILANE
 AB - The invention relates to an improved method for converting silicon tetrachloride having hydrogen in a **hydrodechlorination** reactor comprising a catalyst. The invention further relates to a **catalytic** system for such a **hydrodechlorination** reactor.

52/81 © EPODOC / EPO

PN - [RU2400434](#) C1 20100927
 PR - RU20090111647 20090330
 AP - RU20090111647 20090330
 DT - I
 PA - BORESKOVA INST KATALIZA SIBIR [RU]
 TI - METHOD FOR ADSORPTION-**CATALYTIC** PURIFICATION OF WATER FROM CHLOROAROMATIC COMPOUNDS, ADSORBENT-CATALYST AND PREPARATION METHOD THEREOF
 AB - FIELD: chemistry. ^ SUBSTANCE: method for adsorption-**catalytic** purification of water from chloroaromatic compounds involves two successive steps: extraction of chloroaromatic compounds from an aqueous medium using an adsorbent catalyst; **hydrodechlorination** of organochlorine compounds adsorbed in the porous space of adsorbent catalysts with molecular hydrogen. The adsorbent catalyst used is characterised by bifunctional properties - as an adsorbent of chloroaromatic compounds from aqueous solutions and as a catalyst for **hydrodechlorination** of chloroaromatic compounds. Said catalyst contains a palladium active component deposited on porous carbon material in amount of not more than 1.0 wt %. ^ EFFECT: obtaining commercially valuable aromatic products for chemical industry; high sorption capacity of adsorbent catalysts enables efficient elimination of effects of accidental emission of chloroaromatic compounds into natural and man-made water bodies, where said compounds are in an aqueous medium, in dissolved state as well as in form of a water-organic emulsion. ^ 17 cl, 11 ex, 1 tbl

53/81 © EPODOC / EPO

PN - [WO2011020773](#) A1 20110224
 PR - DE20091028653 20090819
 AP - WO2010EP61780 20100812
 DT - **
 CT - [EP] ISR (A1)
[EP0068603](#) A2 19830105 [X] (COAL INDUSTRY PATENTS LTD [GB])
 [X] 7-10
 * the whole document *;

[WO2005068077](#) A1 20050728 [X] (SUED CHEMIE INC [US], et al)

[X] 7-10

* the whole document *;

[EP0661288](#) A1 19950705 [Y] (DOW CORNING [US])

[Y] 1-6

* the whole document *;

[EP0714900](#) A2 19960605 [YD] (HUELS CHEMISCHE WERKE AG [DE])

[YD] 1-6

* the whole document *

- CCI - [B01J37/04](#) ; [B01J37/18](#) ; [B01J21/08](#) ; [B01J23/06](#) ; [B01J23/80](#) ; [B01J37/0009](#) ;
[C01B33/1071](#) ; [C07F7/126](#)
- PA - WACKER CHEMIE AG [DE]; ZIPP ALEXANDER [DE]; EBERLE HANS-JUERGEN [DE]
- TI - CATALYST FOR **HYDRODECHLORINATION** OF CHLOROSILANES TO HYDROGEN SILANES AND
METHOD FOR IMPLEMENTING HYDROGEN SILANES USING SAID CATALYST
- AB - The invention relates to a method for producing hydrogen silanes of general formula
 R_nCl_3-nSiH by converting chlorosilanes of general formula R_nCl_4-nSi , where R, in both
formulas simultaneously and independently of each other, is a hydrogen atom, an
optionally substituted or unsubstituted hydrocarbon radical having 1 to 18 carbon
atoms, and n can have the value of 1-3, and hydrogen gas in the presence of a **catalytic**
quantity (K): zinc and/or an alloy comprising zinc on a metal oxide carrier.

54/81 © EPODOC / EPO

- PN - [CN101774882](#) A 20100714
- PR - CN2010104079 20100121
- AP - CN2010104079 20100121
- DT - I
- PA - ZHEJIANG QUHUA FLUORINE CHEMIC; UNIV ZHEJIANG NORMAL
- TI - Method for **catalytic hydrodechlorination** of CFC125 into HFC-125
- AB - The invention discloses a method for the **catalytic hydrodechlorination** of CFC125 into
HFC-125. Under optimized reaction conditions, the method can lead the conversion rate
of the CFC-115 to over 90% and simultaneously maintain the selectivity of the HFC-125
over 95%. The method for the **catalytic hydrodechlorination** of CFC125 into OFD-
substitutes HFC-125 has great industrial application prospect.

55/81 © EPODOC / EPO

- PN - [CN201308829Y](#) Y 20090916
- PR - CN20082201541U 20081007
- AP - CN20082201541U 20081007
- DT - I
- PA - GUANGDONG LIWEN CHEMICAL R & D [CN]
- TI - Gas-phase **catalytic hydrodechlorination** reaction device
- AB - The utility model provides a reaction device for gas-solid-phase **catalytic**
hydrodechlorination of carbon tetrachloride. The reaction device comprises a columnar
reactor (1), and an air outlet pipe (2) coaxially embedded at the center of the columnar
reactor (1), wherein the columnar reactor includes a preheating segment (3) and

a **catalytic** reactor (5); an inlet (7) is formed on the preheating segment; a catalyst bed sealing structure (4) is arranged between the preheating segment and the **catalytic** reactor; the **catalytic** reactor (5) includes an outer wall (51) and an inner wall (52); an air inlet passage (9) is arranged between the outer wall (51) of the **catalytic** reactor and the inner wall of the columnar reactor; and a group of air holes are formed on the outer wall (51) and the inner wall (52) of the **catalytic** reactor. The reaction device has the advantages of simple structure, convenient operation and easy popularization.

56/81 © EPODOC / EPO

PN - [US2002077514](#) A1 20020620

PNFP - US6627777 B2 20030930

PR - IT2000MI02361 20001031

AP - US20010973391 20011009

DT - **

CT - (B2)

[US3894963](#) A []; [US3926850](#) A [];
[US3931050](#) A []; [US4041087](#) A [];
[US4082699](#) A []; [USRE29771E](#) E [];
[US4111848](#) A []; [US4132673](#) A [];
[US4171288](#) A []; [US4264475](#) A [];
[US4301308](#) A []; [US4323542](#) A [];
[US4451580](#) A []; [US4572904](#) A [];
[US4713363](#) A []; [US4952543](#) A [];
[US5081092](#) A []; [US5176897](#) A [];
[US5192733](#) A []; [US5474965](#) A [];
[US5565399](#) A []; [US5849661](#) A [];
[US5851948](#) A []; [US5880057](#) A [];
[US5914432](#) A []; [US6025297](#) A [];
[US6083467](#) A []; [US6121186](#) A [];
[US6147027](#) A []; [US6150296](#) A [];
[US6172000](#) B1 []; [US6221804](#) B1 [];
[US6514905](#) B1 []

CCI - [B01J37/0201](#) ; [B01J23/42](#) ; [B01J23/56](#) ; [C07C17/23](#)

CLC - [C07C17/23](#) , [C07C19/04](#) , INV

CCA - [B01J35/006](#) ; [B01J35/0093](#) ; [B01J35/023](#)

PA - (B2)

SUED CHEMIE MT SRL [IT]

TI - (A1 B2)

Catalysts for **hydrodechlorination** of carbon tetrachloride to chloroform

AB - (A1 B2)

Catalysts for the fluid-bed **hydrodechlorination** of carbon tetrachloride to chloroform having high **catalytic** stability and comprising platinum supported on microspheroidal gamma alumina, characterized in that the platinum is in the form of particles dispersed throughout the mass of the support.

57/81 © EPODOC / EPO

PN - [US5721189](#) A 19980224

PR - US19960755759 19961121; US19950568710 19951207; US19960647091 19960509

AP - US19960755759 19961121

DT - *

CT - [US4374047](#) A []; [US4863890](#) A [];
[US4980324](#) A []; [US5057470](#) A [];
[US5105032](#) A []; [US5474964](#) A [];
[US5625110](#) A []; [EP0535619](#) A1 []

CTNP - [] J. Hancsok et al., The Effect of Platinum Dispersion on the Isomerization of N Pentane , Hungarian Journal of Industrial Chemistry, vol. 17, pp. 131 137 (1989)
[] A. Bellare et al., Evolution of Bimodal Distributions in the Sintering of Model Supported Metal Catalysts , Journal of Catalysis, vol. 117, pp. 78 90 (1989)
[] I. Sushumna et al., Events Observed and Evidence for Crystallite Migration in Pt/Al₂O₃ Catalysts , Journal of Catalysis, vol. 109, pp. 433 462 (1988)
[] D.J. Smith, The Characterisation of a Model Platinum/Alumina Catalyst by High Resolution Electron Microscopy , Journal of Catalysis, vol. 81, pp. 107 118 (1983)
[] R.W. McCabe et al., The Passivating Oxidation of Platinum , Journal of Catalysis, vol. 114, pp. 354 367 (1988)
[] Chemical Abstracts, vol. 118, 83281w (1993)

CCI - [B01J37/22](#) ; [B01J37/24](#) ; [B01J23/58](#) ; [B01J27/13](#) ; [C07C17/23](#)

CLC - [C07C17/23](#) , [C07C19/04](#) , INV

CCA - [Y10S502/503](#) ; [Y10S502/504](#)

PA - AKZO NOBEL NV [NL]

TI - Treatment to improve the durability of a **hydrodechlorination** catalyst and catalyst

AB - The durability of a supported noble metal **hydrodechlorination** catalyst can be improved by (1) treating the supported catalyst, which comprises support and **catalytic** noble metal, with a non-elemental halide compound, which is not a mineral acid (such as an alkali metal halide, an ammonium halide, an alkaline earth metal halide, and/or a halogenated hydrocarbon); and (2) then using the treated catalyst in a **hydrodechlorination** reaction. Suitable treatment compounds include ammonium chloride, lithium chloride, or a chlorinated hydrocarbon. The treated catalyst is a novel composition of matter comprising at least one platinum group metal supported by an oxidic support wherein the metal, which is in the zero valent state, predominantly resides adjacent the surface of the support and is predominantly visible under a microscope having a resolution of about 5 Å.

58/81 © EPODOC / EPO

PN - [US2001016555](#) A1 20010823

PR - US19960647091 19960509; US20000727024 20001130; US19950568710 19951207; US19960755759 19961121; US19970926704 19970910

AP - US20000727024 20001130

DT - *

CCI - [C07C17/23](#) ; [B01J23/58](#) ; [B01J27/13](#) ; [B01J37/22](#) ; [B01J37/24](#)

CLC - [C07C17/23](#) , [C07C19/04](#) , INV

TI - Supported noble metal **hydrodechlorination** catalyst

AB - The durability of a supported noble metal hydrodechlorination catalyst can be improved by (1) treating the supported catalyst, which comprises support and **catalytic** noble metal, with a non-elemental halide compound, which is not a mineral acid (such as an alkali metal halide, an ammonium halide, an alkaline earth metal halide, and/or a halogenated hydrocarbon); and (2) then using the treated catalyst in a **hydrodechlorination** reaction. Suitable treatment compounds include ammonium chloride, lithium chloride, or a chlorinated hydrocarbon. The treated catalyst is a novel composition of matter comprising at least one platinum group metal supported by an oxidic support wherein the metal, which is in the zero valent state, predominantly resides adjacent the surface of the support and is predominantly visible under a microscope having a resolution of about 5 AA.

59/81 © EPODOC / EPO .

PN - [US5476984](#) A 19951219

PR - US19950397315 19950302; US19940227841 19940414

AP - US19950397315 19950302

DT - **

CT - [US3892818](#) A []; [US4895995](#) A [];
[US4899001](#) A []; [US4943671](#) A [];
[US5105032](#) A []; [JPH05320076](#) A [];
[WO9218447](#) A1 []

CCI - [C07C1/26](#)

CCA - [C07C2523/42](#) ; [C07C2523/46](#)

PA - DOW CHEMICAL CO [US]

TI - **Hydrodechlorination** process and catalyst for use therein

AB - A novel, improved process and catalyst are provided for the **catalytic hydrodechlorination** of a chlorinated alkane to its corresponding less-chlorinated and preferably non-chlorinated alkane, for example the **hydrodechlorination** of 1,2-dichloropropane to propane, the catalyst comprising a mixture of active Group VIII hydrogenating metals in elemental or compound form on a support.

60/81 © EPODOC / EPO .

PN - [US5561096](#) A 19961001

PR - BE19930001374 19931210

AP - US19940352218 19941201

DT - **

CT - [US3505417](#) A []; [US4101593](#) A [];
[US5089454](#) A []; [US5202510](#) A [];
[US5219816](#) A []; [US5342603](#) A [];
[EP0053657](#) A1 []; [EP0343707](#) A1 [];

[EP0349115](#) A1 []; [EP0486091](#) A1 [];
[EP0508660](#) A1 []; [EP0548743](#) A2 [];
[GB621902](#) A []; [GB2219796](#) A []

- CTNP - [] McGraw Hill Book Company, pp. 82 83, 1980 Heterogeneous Catalysis In Practice , Charles H. Satterfield. (month unknown)
- CCI - [B01J27/125](#) ; [B01J27/12](#) ; [B01J27/138](#) ; [C07C17/23](#)
- PA - SOLVAY [BE]
- TI - **Catalytic** system comprising a hydrogenation catalyst on a support and process for the **hydrodechlorination** of chlorofluorinated hydrocarbons
- AB - **Catalytic** system comprising a hydrogenation catalyst on a support which comprises at least one alkali metal and/or alkaline-earth metal and at least one fluorine-containing aluminium compound. Process for the **hydrodechlorination** of chlorinated hydrocarbons, more particularly of chlorofluorinated hydrocarbons, by means of hydrogen and in the presence of a **catalytic** system comprising a hydrogenation catalyst, especially palladium, on such a support.

61/81 © EPODOC / EPO

- PN - [US5962366](#) A 19991005
- PR - US19980168490 19981008; US19980022755 19980212; US19970942944 19971002; US19960755759 19961121
- AP - US19980168490 19981008
- DT - *
- CT - [US3951782](#) A []; [US4716143](#) A [];
[US4786625](#) A []; [US5012027](#) A [];
[US5017541](#) A []; [US5105032](#) A [];
[US5561096](#) A []
- CCI - [B01J37/22](#) ; [B01J27/13](#)
- CCA - [Y10S502/504](#)
- PA - AKZO NOBEL NV [NL]
- TI - Treatment to improve the durability and selectivity of a **hydrodechlorination** catalyst and catalyst
- AB - The durability and selectivity of a supported noble metal hydrodechlorination catalyst can be improved by treating the supported catalyst, which comprises support and **catalytic** noble metal, with a late transition metal halide salt, a post transition metal containing halide salt, or a combination thereof, and with an alkali metal halide, ammonium halide, or a combination thereof. Suitable late transition metal and post transition metal halides for use herein include zinc chloride, tin chloride, and cupric chloride. A suitable alkali metal halide for use herein include lithium chloride. The novel resulting supported catalyst has its noble metal component, which is in the zero valent state, predominantly residing adjacent the surface of the support in a form which is predominantly visible under a microscope having a resolution of about 5 ANGSTROM . The catalyst also comprises the late transition metal, the post transition metal, or combination thereof, in the presence of the alkali metal moiety, ammonium moiety, or combination thereof.

62/81 © EPODOC / EPO

- PN - [US5426252](#) A 19950620
- PR - US19930138291 19931015
- AP - US19930138291 19931015
- DT - *
- CT - [US3579596](#) A []; [US4192822](#) A [];
[US4980324](#) A []; [US5057470](#) A [];
[US5094988](#) A []; [US5097081](#) A [];
[US5105032](#) A []; [US5146020](#) A [];
[US5202510](#) A []; [JPH01319442](#) A []
- CTNP - [] Journal of Catalysis 74, 136 143 (1982)
[] Inorganic Chemistry, vol. 31, No. 10, 1992, 1965 1968
[] Catalysis Today, 15 (1992) 179 200
[] A. M. Lovelace et al., Aliphatic Fluorine Compounds (ACS Monogram Series 1958), pp. 44 47, 92 93, 100 104, 133 136
[] Fluorocarbons and Their Derivatives by R. E. Banks (MacDonald Technical & Scientific, 1970) pp. 17 18 and 65
[] Journal of Catalysis 22, 245 254 (1971)
- CCI - [B01J27/22](#) ; [B01J37/0244](#) ; [C07C17/23](#)
- PA - AKZO NOBEL NV [NL]
- TI - **Catalytic hydrodechlorination** of a chloromethane
- AB - Chloromethane compounds including carbon tetrachloride and the chlorofluoromethane compounds, such as dichlorodifluoromethane, can be catalytically hydrodechlorinated, e.g., in the case of dichlorodifluoromethane to monochlorodifluoromethane and/or difluoromethane, by treatment with hydrogen in the presence of a transition metal carbide catalyst, for example, a Group IVB metal carbide, such as tungsten carbide, supported on an oxidic support, such as alumina, optionally with a passivating layer of ceramic, such as silicon carbide, between the oxidic support and catalyst. The catalyst preferably has a surface area of no less than about 1 m²/gm.

63/81 © EPODOC / EPO

- PN - [WO9427937](#) A1 19941208
- PR - US19930068444 19930527
- AP - WO1994US05487 19940520
- DT - **
- CT - [EP] ISR (A1)
[US5136113](#) A 19920804 [A] (RAO V N M [US])
[A] 1
* the whole document *;
[EP0352164](#) A1 19900124 [A] (RHONE POULENC CHIMIE [FR])
[A] 1,2
* claim - *
- CTNP - [EP] ISR (A1)

[DA] - D.T. FERRUGHELLI ET AL., "Hydrodechlorination of Chloroaromatics : the Use of a Bifunctional Homogeneous Rhodium Catalyst for the Conversion of Chloroaromatics into Saturated Hydrocarbons.", JOURNAL OF THE CHEMICAL SOCIETY, CHEMICAL COMMUNICATIONS, LETCHWORTH GB, (1992), pages 806 - 807,

[DA] 1,2

* the whole document *

CCI - [C07C17/23](#)

PA - DU PONT [US]

TI - HOMOGENEOUS **CATALYTIC HYDRODECHLORINATION** OF CHLOROCARBONS

AB - This invention relates to a liquid phase process for the preparation of RfCHXY by the homogeneous **catalytic hydrodechlorination** of RfCCIXY wherein X and Y are independently H, F, Cl or Rf' provided X and Y are not both Cl, Rf and Rf' are independently F, CF₃, (CF₂)_nCl or (CF₂)_nCF₃, and n is 1-4, by reacting the RfCCIXY with hydrogen while in solution with a Periodic Table Group 6-10 metal complex catalyst which contains tertiary Periodic Table Group 15 ligands without added base.

64/81 © EPODOC / EPO

PN - [WO9427936](#) A1 19941208

PR - US19930068499 19930527

AP - WO1994US05486 19940520

DT - **

CT - |EP| ISR (A1)
[US5136113](#) A 19920804 [A] (RAO V N M [US])

[A] 1

* the whole document *;

[EP0352164](#) A1 19900124 [A] (RHONE POULENC CHIMIE [FR])

[A] 1,2

* claim - *

CTNP - |EP| ISR (A1)
[DA] - D.T. FERRUGHELLI ET AL., "Hydrodechlorination of Chloroaromatics : the Use of a Bifunctional Homogeneous Rhodium Catalyst for the Conversion of Chloroaromatics into Saturated Hydrocarbons.", JOURNAL OF THE CHEMICAL SOCIETY, CHEMICAL COMMUNICATIONS, LETCHWORTH GB, (1992), pages 806 - 807,

[DA] 1,2

* the whole document *

CCI - [C07C17/23](#)

PA - DU PONT [US]

TI - HOMOGENEOUS **CATALYTIC HYDRODECHLORINATION** OF CHLOROCARBONS

AB - This invention relates to a liquid phase process for the preparation of RfCHCl₂ by the selective homogeneous **catalytic hydrodechlorination** of RfCCl₃ wherein Rf is F, CF₃, (CF₂)_nCl or (CF₂)_nCF₃ by reacting the compound with hydrogen while in solution with a Periodic Table Group 8-10 metal complex catalyst which contains tertiary Periodic Table Group 15 ligands, without added base.

65/81 © EPODOC / EPO

PN - [US6482996](#) B1 20021119
 PR - DE1999143035 19990909; WO2000EP08364 20000828
 AP - US20020070596 20020412
 DT - **
 CT - [US4749817](#) A [
 CCI - [C07C17/23](#) ; [B01J23/44](#) ; [C07C17/395](#)
 CLC - [C07C17/23](#) , [C07C25/02](#) , INV
 - [C07C17/395](#) , [C07C25/02](#) , INV
 PA - BAYER AG [DE]
 TI - Method for the production or preparation of 2,6-dichlorotoluol
 AB - Disclosed is a method for the production or preparation of 2,6-dichlorotoluol by the **catalytic hydrodechlorination** of polychlorotoluol-containing mixtures in the presence of hydrogen, whereby the reaction is performed in the presence of an aluminium silicate-supported Pd-containing catalyst.

66/81 © EPODOC / EPO

PN - [US5300712](#) A 19940405
 PR - US19930068499 19930527
 AP - US19930068499 19930527
 DT - *
 CT - [US5053564](#) A [
 ; [US5068473](#) A [
 ; [US5136113](#) A [
 ; [EP0308923](#) A1 [
 ; [GB1578933](#) A [
 CTNP - [] Lokteva et al., Izv. Akad. Nauk. SSSR, Ser. Khim , 3:539
 542 (1989)
 [] Ferruhgelli and Horvath, J. Chem. Soc., Chem. Commun. , pp.
 806 807 (1992)
 CCI - [C07C17/23](#)
 PA - DU PONT [US]
 TI - Homogeneous **catalytic hydrodechlorination** of chlorocarbons
 AB - This invention relates to a liquid phase process for the preparation of RfCHCl₂ by the selective homogeneous **catalytic hydrodechlorination** of RfCCl₃ wherein Rf is F, CF₃, (CF₂)_nCl or (CF₂)_nCF₃ by reacting the compound with hydrogen while in solution with a Periodic Table Group 8-10 metal complex catalyst which contains tertiary Periodic Table Group 15 ligands, without added base.

67/81 © EPODOC / EPO

PN - [US5326914](#) A 19940705
 PR - US19930068444 19930527
 AP - US19930068444 19930527
 DT - *
 CT - [US3857900](#) A [
 ; [US5136113](#) A [
 ; [GB1578933](#) A [

CTNP - [] Lokteva et al., Izv. Akad. Nauk, SSSR, Ser. Khim, 3:539 542 (1989)
 [] Ferrughelli and Horvath, J. Chem. Soc., Chem. Commun., pp. 806 807 (1992)

CCI - [C07C17/23](#)

PA - DU PONT [US]

TI - Homogeneous **catalytic hydrodechlorination** of chlorocarbons

AB - This invention relates to a liquid phase process for the preparation of RfCHXY by the homogeneous **catalytic hydrodechlorination** of RfCClXY wherein X and Y are independently H, F, Cl or Rf' provided X and Y are not both Cl, Rf and Rf' are independently F, CF₃, (CF₂)_nCl or (CF₂)_nCF₃, and n is 1-4, by reacting the RfCClXY with hydrogen while in solution with a Periodic Table Group 6-10 metal complex catalyst which contains tertiary Periodic Table Group 15 ligands without added base.

68/81 © EPODOC / EPO

PN - [TW521067B](#) B 20030221

PR - DE1999143035 19990909

AP - TW20000118383 20000908

DT - I

CCI - [C07C17/23](#) ; [B01J23/44](#) ; [C07C17/395](#)

CLC - [C07C17/23](#), [C07C25/02](#) , INV
 - [C07C17/395](#), [C07C25/02](#) , INV

PA - BAYERAG [DE]

TI - Process for the preparation or isolation of 2,6-dichlorotoluene

AB - This invention provides a process for the preparation or isolation of 2,6-dichlorotoluene by **catalytic hydrodechlorination** of mixtures containing polychlorotoluenes in the presence of hydrogen, wherein the **hydrodechlorination** is carried out in the presence of a Pd-containing catalyst on an aluminium silicate support.

69/81 © EPODOC / EPO

PN - [JPH07194980](#) A 19950801

PR - BE19930001374 19931210

AP - JP19940302558 19941207

DT - I

CCI - [B01J27/125](#) ; [B01J27/12](#) ; [B01J27/138](#) ; [C07C17/23](#)

FI - B01J27/125&Z; B01J27/13&Z; B01J27/138&Z; C07B61/00&300; C07C17/23; C07C19/08; C07C21/18

FT - 4G069/AA03; 4G069/AA08; 4G069/BA01B; 4G069/BB02A; 4G069/BB02B; 4G069/BB06B; 4G069/BB06C; 4G069/BB08A; 4G069/BB08B; 4G069/BB08C; 4G069/BC01A; 4G069/BC01B; 4G069/BC02A; 4G069/BC02B; 4G069/BC04A; 4G069/BC04B; 4G069/BC06A; 4G069/BC06B; 4G069/BC08A; 4G069/BC08B; 4G069/BC16A; 4G069/BC16B; 4G069/BC65A; 4G069/BC65B; 4G069/BC69A; 4G069/BC69B; 4G069/BC70A; 4G069/BC70B; 4G069/BC71A; 4G069/BC71B; 4G069/BC72A; 4G069/BC72B; 4G069/BD01C; 4G069/BD12B; 4G069/BD15A; 4G069/BD15B;

4G069/BD15C; 4G069/CA19; 4G069/CB01; 4G069/CB02; 4G069/DA05; 4G069/EC02Y;
 4G069/EC07Y; 4G069/EC25; 4G069/FA01; 4G069/FA08; 4G069/FB13; 4G069/FB30;
 4G069/FB44; 4G069/FB54; 4G069/FB57; 4G069/FC02; 4G069/FC04; 4G069/FC08;
 4G169/AA03; 4G169/AA08; 4G169/BA01B; 4G169/BB02A; 4G169/BB02B; 4G169/BB06B;
 4G169/BB06C; 4G169/BB08A; 4G169/BB08B; 4G169/BB08C; 4G169/BC01A;
 4G169/BC01B; 4G169/BC02A; 4G169/BC02B; 4G169/BC04A; 4G169/BC04B;
 4G169/BC06A; 4G169/BC06B; 4G169/BC08A; 4G169/BC08B; 4G169/BC16A;
 4G169/BC16B; 4G169/BC65A; 4G169/BC65B; 4G169/BC69A; 4G169/BC69B;
 4G169/BC70A; 4G169/BC70B; 4G169/BC71A; 4G169/BC71B; 4G169/BC72A;
 4G169/BC72B; 4G169/BD01C; 4G169/BD12B; 4G169/BD15A; 4G169/BD15B;
 4G169/BD15C; 4G169/CA19; 4G169/CB01; 4G169/CB02; 4G169/DA05; 4G169/EC02Y;
 4G169/EC07Y; 4G169/EC25; 4G169/FA01; 4G169/FA08; 4G169/FB13; 4G169/FB30;
 4G169/FB44; 4G169/FB54; 4G169/FB57; 4G169/FC02; 4G169/FC04; 4G169/FC08;
 4H006/AA02; 4H006/AC13; 4H006/BA02; 4H006/BA03; 4H006/BA06; 4H006/BA09;
 4H006/BA17; 4H006/BA37; 4H006/BA55; 4H006/EA02; 4H006/EB20; 4H039/CA11;
 4H039/CB30

- PA - SOLVAY [BE]
 TI - CATALYST SYSTEM CONTAINING HYDROGENATION CATALYST ON CARRIER AND HYDROGEN
 DECHLORINATION METHOD FOR CHLOROFLUOROHYDROCARBON
 AB - PURPOSE: To obtain a hydrogenation catalyst and to provide a process for
 the **hydrodechlorination** of a chlorofluorinated hydrocarbon using the catalyst.
 CONSTITUTION: In the **catalytic** system containing the carrier of the catalyst containing
 the hydrogenation catalyst containing at least one kind metal selected from the group
 VIII elements in element periodic table and at least one kind fluorine-containing
 aluminum compd., the carrier contains at least one kind alkali metal and/or alkaline
 earth metal. In this way, the catalyst is low in deactivation and stable with time, and
 the **hydrodechlorination** of the chlorofluorinated hydrocarbon is efficiently executed.

70/81 © EPODOC / EPO

- PN - [EP0700369](#) A1 19960313
 PR - WO1994US05487 19940520; US19930068444 19930527
 AP - EP19940918009 19940520
 DT - I
 CCI - [C07C17/23](#)
 PA - DU PONT [US]
 TI - HOMOGENEOUS **CATALYTIC HYDRODECHLORINATION** OF CHLOROCARBONS

71/81 © EPODOC / EPO

- PN - [EP0700368](#) A1 19960313
 PNFP - EP0700368 B1 19971229
 PR - WO1994US05486 19940520; US19930068499 19930527
 AP - EP19940917411 19940520
 DT - I
 CCI - [C07C17/23](#)
 PA - (A1 B1)

	DU PONT [US]
TI	- (A1 B1) HOMOGENEOUS CATALYTIC HYDRODECHLORINATION OF CHLOROCARBONS
72/81	© EPODOC / EPO
PN	- EP0657211 A1 19950614
PNFP	- EP0657211 B1 20000524
PR	- BE19930001374 19931210
AP	- EP19940203490 19941201
DT	- *; Rep
CT	- STSE (A1) EP0548743 A2 19930630 [XY] (AUSIMONT SPA [IT]) [X] 1,3 * page 3, line 40 - line 42 * * claims 6-8 * [Y] 8; EP0053657 A1 19820616 [A] (ALLIED CORP [US]) [A] * claims 1-6 *; GB621902 A 19490422 [X] (STANDARD OIL DEV CO) [X] 1 * claims 1,3 *; EP0349115 A1 19900103 [Y] (DU PONT [US]) [Y] 8 * claims 1-6 *; EP0343707 A1 19891129 [X] (SOLVAY [BE]) [X] 1,11-14 * claim 1 * * page 3, line 1 - line 7 *; GB2219796 A 19891220 [A] (CENTRAL GLASS CO LTD [JP])
CCI	- B01J27/12 ; B01J27/125 ; B01J27/138 ; C07C17/23
PA	- (A1 B1) SOLVAY [BE]
TI	- (A1) Catalytic system comprising a supported hydrogenation catalyst and hydrodechlorination process of chlorofluorohydrocarbons. - (B1) Catalytic system comprising a supported hydrogenation catalyst and hydrodechlorination process of chlorofluorohydrocarbons
AB	- (A1) Catalyst system including a hydrogenation catalyst on a support which includes at least one alkali and/or alkaline-earth metal and at least one fluorine compound of aluminium. Process for dehydrochlorination of chlorinated hydrocarbons, more particularly of chlorofluorohydrocarbons by means of hydrogen and in the presence of a catalyst system including a hydrogenation catalyst, especially palladium, on such a support.

73/81 © EPODOC / EPO

PN - [EP0677501](#) A1 19951018
PR - US19940227841 19940414
AP - EP19940113056 19940822
DT - *; Rep
CT - || STSE (A1)
[US3892818](#) A 19750701 [DX] (SCHARFE GERHARD, et al)
[DX] 1-10
* column 2, line 3 - column 3, line 52 *
* example - *
CCI - [C07C1/26](#)
CCA - [C07C2523/42](#) ; [C07C2523/46](#)
PA - DOW CHEMICAL CO [US]
TI - **Hydrodechlorination** process.
AB - A novel, improved process and catalyst are provided for the **catalytic hydrodechlorination** in the gaseous phase of a chlorinated alkane to its corresponding less-chlorinated and preferably non-chlorinated alkane, for example the **hydrodechlorination** of 1,2-dichloropropane to propane, the catalyst comprising a mixture of active Group VIII hydrogenating metals in elemental or compound form on a support.

74/81 © EPODOC / EPO

PN - [EP1201300](#) A1 20020502
PNFP - EP1201300 B1 20040908
PR - IT2000MI02361 20001031
AP - EP20010123356 20011009
DT - *; Rep
CT - || STSE (A1)
[WO9117825](#) A1 19911128 [XY] (ENGELHARD CORP [US])
[X] 1,2,5,6
* claim 1 *
[Y] 3;
[US3992331](#) A 19761116 [Y] (PETROW HENRY G, et al)
[Y] 3
* claim 1 *;
[EP0479116](#) A1 19920408 [X] (DOW CHEMICAL CO [US])
[X] 1,2,10
* page 2, line 28 - page 3, line 44 *;
[EP0536420](#) A1 19930414 [A] (AG TECHNOLOGY CORP [JP]);
[EP0486091](#) A1 19920520 [A] (SOLVAY [BE])
CCI - [B01J23/42](#) ; [B01J23/56](#) ; [B01J37/0201](#) ; [C07C17/23](#)
CLC - [C07C17/23](#) , [C07C19/04](#) , INV
CCA - [B01J35/006](#) ; [B01J35/0093](#) ; [B01J35/023](#)

PA - (A1 B1)
SUED CHEMIE MT SRL [IT]

TI - (A1 B1)
Catalysts for **hydrodechlorination** of carbon tetrachloride to chloroform

AB - (A1)
Catalysts for the fluid-bed **hydrodechlorination** of carbon tetrachloride to chloroform having high **catalytic** stability and comprising platinum supported on microspheroidal gamma alumina, characterized in that the platinum is in the form of particles dispersed throughout the mass of the support.

75/81 © EPODOC / EPO

PN - [WO9917877](#) A1 19990415

PR - US19970942944 19971002; US19980022755 19980212

AP - WO1998EP06349 19981001

DT - *; Rep

CT - [EP] ISR (A1)
[WO9720629](#) A1 19970612 [A] (AKZO NOBEL NV [NL]);
[US5721189](#) A 19980224 [DA] (ZHANG ZONGCHAO [US]);
[EP0738540](#) A1 19961023 [A] (PHILLIPS PETROLEUM CO [US])
[A]
* page 4, line 20 - page 5, line 9 *;
[US5105032](#) A 19920414 [DA] (HOLBROOK MICHAEL T [US], et al);
[WO9220759](#) A1 19921126 [A] (EXXON RESEARCH ENGINEERING CO [US])
[A]
* page 14, paragraph 2 *

CCI - [B01J37/22](#) ; [B01J27/13](#) ; [C07C17/23](#)

PA - AKZO NOBEL NV [NL]

TI - TREATMENT TO IMPROVE THE DURABILITY AND SELECTIVITY OF
A **HYDRODECHLORINATION** CATALYST AND CATALYST

AB - The durability and selectivity of a supported noble metal **hydrodechlorination** catalyst can be improved by treating the supported catalyst, which comprises support and **catalytic** noble metal, with a halide salt (such as a late transition metal halide salt, a post transition metal containing halide salt, or a combination thereof), together with the use of an alkali metal halide, ammonium halide, or a combination thereof. Suitable late transition metal and post transition metal halides for use herein include zinc chloride, tin chloride, and cupric chloride. A suitable alkali metal halide for use herein includes lithium chloride. The novel resulting supported catalyst has its noble metal component, which is in the zero valent state, predominantly residing adjacent, the surface of the support in a form which is predominantly visible under a microscope having a resolution of about 5 Å. The catalyst also comprises the late transition metal, the post transition metal or combination thereof, optionally in the presence of the alkali metal moiety, ammonium moiety, or combination thereof.

76/81 © EPODOC / EPO

PN - [WO9917876](#) A1 19990415

PNFP - WO9917876 B1 19990527

PR - US19970942945 19971002

AP - WO1998EP06348 19981001

DT - *; Rep

CT - |EP| ISR (A1)
[US5179059](#) A 19930112 [X] (DOMESLE RAINER [DE], et al)
[X] 1-4,9,10
* example 11 *;
[US4902849](#) A 19900220 [X] (MCKAY DWIGHT L [US], et al)
[X] 1-4,9,10
* example -; claim - *;
[US4780447](#) A 19881025 [X] (KIM GWAN [US], et al)
[X] 1-4,7-10
* example 1 *;
[US4491640](#) A 19850101 [X] (SADAMORI HIROKI [JP], et al)
[X] 1-4,7-10
* examples 9-12 *;
[US5105032](#) A 19920414 [DA] (HOLBROOK MICHAEL T [US], et al)

CCI - [B01J37/18](#) ; [B01J23/38](#) ; [C07C17/23](#)

CLC - [C07C17/23](#) , [C07C19/04](#) , INV

PA - (A1 B1)
AKZO NOBEL NV [NL]

TI - (A1 B1)
TREATMENT TO IMPROVE THE DURABILITY OF A **HYDRODECHLORINATION** CATALYST AND CATALYST

AB - (A1 B1)
The durability of a supported noble metal **hydrodechlorination** catalyst can be improved by treating the supported catalyst, which comprises support and **catalytic** noble metal, with hydrogen, in the presence of water, at elevated temperature. The temperature of the treatment can be at least about 400 DEG C and the time of treatment can be at least one half hour. The amount of water that is used can range from about 0.1 to 99.9 molar % based on the total moles of water and hydrogen that are utilized.

77/81 © EPODOC / EPO

PN - [WO9720629](#) A1 19970612

PR - US19950568710 19951207; US19960647091 19960509

AP - WO1996EP05585 19961203

DT - **

CT - |EP| ISR (A1)
[US4980324](#) A 19901225 [DXA] (KELLNER CARL S [US], et al)
[DX] 1-6,9,13
* column 2, line 15 - column 3, line 10; example 1; claims 1,4,6-9 *
[A] 7,8,10,11;
[US5105032](#) A 19920414 [Y] (HOLBROOK MICHAEL T [US], et al)
[Y] 1-6
* claims 1-3 *;
[US4035283](#) A 19770712 [Y] (MYERS JOHN W)

[Y] 1-6
 * abstract *;
[US5004859](#) A 19910402 [X] (SCHMIDT ROBERT J [US], et al)
 [X] 14-19
 * column 5, line 50 - column 6, line 54; figure 1; claim 1 *;
[US5545779](#) A 19960813 [PA] (PIES MICHAEL DIPL CHEM DR [DE], et al)
 [PA] 14-19
 * abstract *

CCI - [B01J37/22](#) ; [B01J37/24](#) ; [B01J23/58](#) ; [B01J27/13](#) ; [C07C17/23](#)
 CLC - [C07C17/23](#) , [C07C19/04](#) , INV
 CCA - [Y10S502/503](#) ; [Y10S502/504](#)
 PA - AKZO NOBEL NV [NL]
 TI - TREATMENT TO IMPROVE THE DURABILITY OF A **HYDRODECHLORINATION** CATALYST AND CATALYST
 AB - The durability of a supported noble metal **hydrodechlorination** catalyst can be improved by (1) treating the supported catalyst, which comprises support and **catalytic** noble metal, with a non-elemental halide compound, which is not a mineral acid (such as an alkali metal halide, an ammonium halide, an alkaline earth metal halide, and/or a halogenated hydrocarbon); and (2) then using the treated catalyst in a **hydrodechlorination** reaction. Suitable treatment compounds include ammonium chloride, lithium chloride, or a chlorinated hydrocarbon. The treated catalyst is a novel composition of matter comprising at least one platinum group metal supported by an oxidic support wherein the metal, which is in the zero valent state, predominantly resides adjacent the surface of the support and is predominantly visible under a microscope having a resolution of about 5 ANGSTROM .

78/81 © EPODOC / EPO .

PN - [WO0117932](#) A1 20010315
 PR - DE1999143035 19990909
 AP - WO2000EP08364 20000828
 DT - **
 CT - |EP| ISR (A1)
[DE4426390](#) C1 19950817 [A] (LEUNA WERKE GMBH [DE])
 [A] 1,5-8
 * the whole document *;
[DE4334792](#) A1 19950420 [DA] (BAYER AG [DE])
 [DA] 1,9
 * claim - *;
[US4749817](#) A 19880607 [A] (GEORGE JACOB [US], et al)
 [A] 1,5
 * claim - *;
[JPS56133221](#) A 00000000 [A]

CTNP - |EP| ISR (A1)
 [A] - PATENT ABSTRACTS OF JAPAN, (19820116), vol. 006, no. 007, Database accession no. (C - 087),
 [A] 1

* abstract *

- CCI - [B01J23/44](#) ; [C07C17/23](#) ; [C07C17/395](#)
- CLC - [C07C17/23](#) , [C07C25/02](#) , INV
- [C07C17/395](#) , [C07C25/02](#) , INV
- PA - BAYER AG [DE]; EICHINGER WOLFRAM [DE]; SCHULZE TILLING ANDREAS [US]; ROEHLK KAI [DE]
- TI - METHOD FOR THE PRODUCTION OR PREPARATION OF 2,6-DICHLOROTOLUOL
- AB - Disclosed is a method for the production or preparation of 2,6-dichlorotoluol by the **catalytic hydrodechlorination** of polychlorotoluol-containing mixtures in the presence of hydrogen, whereby the reaction is performed in the presence of an aluminium silicate-supported Pd-containing catalyst.

79/81 © EPODOC / EPO

- PN - [DE19943035](#) A1 20010322
- PNFP - DE19943035 C2 20030612
- PR - DE1999143035 19990909
- AP - DE1999143035 19990909
- DT - *
- CT - (A1 C2)
[DE4426391](#) C1 []; [DE4426390](#) C1 [];
[DE4426389](#) C1 []; [DE4314299](#) A1 [];
[DE4138272](#) A1 []
- CCI - [C07C17/23](#) ; [B01J23/44](#) ; [C07C17/395](#)
- CLC - [C07C17/23](#) , [C07C25/02](#) , INV
- [C07C17/395](#) , [C07C25/02](#) , INV
- PA - (A1 C2)
BAYER AG [DE]
- AB - (A1)
Disclosed is a method for the production or preparation of 2,6-dichlorotoluol by the **catalytic hydrodechlorination** of polychlorotoluol-containing mixtures in the presence of hydrogen, whereby the reaction is performed in the presence of an aluminium silicate-supported Pd-containing catalyst.

80/81 © EPODOC / EPO

- PN - [DE4426390](#) C1 19950817
- PR - DE19944426390 19940726
- AP - DE19944426390 19940726
- DT - *; Rep
- CT - || STSE (C1)
[DE4200790](#) A1 19930729 [] (TECH HOCHSCHULE C SCHORLEMMER [DE]);
[US3855347](#) A 19741217 [] (ORICCHIO F)
- CCI - [B01J23/44](#) ; [B01D53/8662](#) ; [C07C1/26](#)
- CCA - [B01J35/0006](#) ; [B01J21/12](#) ; [C07C2521/12](#) ; [C07C2523/44](#)

- PA - LEUNA WERKE GMBH [DE]
- TI - Gas phase **catalytic** hydro-dechlorination of chloro:hydrocarbons
- AB - In the gas phase **catalytic hydrodechlorination** of chlorohydrocarbons (I) and/or technical mixts. enriched in (I) with (gas contg.) H₂ at 30-350 deg C, up to 50 bar and 0.1-1.5 v/v.hr., a regenerable Pd-aluminosilicate supported catalyst (II), which is Cl-free in the unspent state, is used. (II) contains 0.5-8 wt.% Pd and wt.% SiO₂. The Pd concn. in the zone 50-250 μ m below the outside surface of the moulding passes through a max. and the Pd concn. in this zone is 1.5-7 times the average Pd content.

81/81 © EPODOC / EPO

- PN - [CN1701846](#) A 20051130
- PR - CN2005120701 20050413
- AP - CN2005120701 20050413
- DT - I
- PA - CHENGDU ORGANIC CHEMICALS CO [CN]
- TI - Highly efficient catalyst for **catalytic** hydrogenation and dechlorination of carbon tetrachloride in fixed bed
- AB - This invention relates to hollow Al₂O₃ activator carried Pt with high **catalytic** activity and stability used to gas phase **catalytic hydrodechlorination** on carbon tetrachloride fixed bed. Import metallic ion with function of concerted catalysis with Pt for **hydrodechlorination** and chloride ion anti-HCl toxic together, use air to activate the activator before reduction. The method can improve activator activity and catalysis stability.

[SS 9] ..li ss 6



1/12 © EPODOC / EPO

- PN - [US2018273462](#) A1 20180927
- PR - EP20150159373 20150317; WO2016EP55390 20160314
- AP - US201615556849 20160314
- DT - **
- CCI - [C07C51/377](#) ; [C07C51/487](#)
- CLC - [C07C51/377](#), [C07C53/16](#) , INV
- [C07C51/487](#), [C07C53/16](#) , INV
- PA - AKZO NOBEL CHEMICALS INT BV [NL]
- TI - Process for the **Purification of Monochloroacetic Acid**
- AB - The present invention pertains to a process for the **purification** of a feed comprising **monochloroacetic acid** and dichloroacetic acid wherein the feed is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert dichloroacetic acid into **monochloroacetic acid** in the presence of a solid heterogeneous hydrogenation catalyst comprising a Group VIII noble metal on a carrier under **hydrodechlorination** conditions, wherein the reaction is carried out in the presence of a catalyst enhancer which comprises a salt of a metal selected from the group of non-noble metals of Group VIII, Group VIB, Group VIIB, and Group IIB. It was

found that the presence of a catalyst enhancer leads to reduced deactivation of the catalyst and/or increased activity of the spent catalyst. This allows longer production cycles, less downtime, and lower formation of side products. The catalyst enhancer preferably comprises one or more salts of one or more of nickel, cobalt, or iron, more in particular of iron. The salts preferably comprise one or more of chloride salts and acetate salts.

2/12 © EPODOC / EPO

- PN - [MX2017011678](#) A 20171106
- PR - EP20150159373 20150317; WO2016EP55390 20160314
- AP - MX20170011678 20160314
- DT - I
- CCI - [C07C51/377](#) ; [C07C51/487](#)
- CLC - [C07C51/377](#), [C07C53/16](#) , INV
- [C07C51/487](#), [C07C53/16](#) , INV
- PA - AKZO NOBEL CHEMICALS INT BV [NL]
- TI - PROCESS FOR THE **PURIFICATION OF MONOCHLOROACETIC ACID**.
- AB - The present invention pertains to a process for the **purification** of a feed comprising **monochloroacetic acid** and dichloroacetic acid wherein the feed is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert dichloroacetic acid into **monochloroacetic acid** in the presence of a solid heterogeneous hydrogenation catalyst comprising a Group VIII noble metal on a carrier under **hydrodechlorination** conditions, wherein the reaction is carried out in the presence of a catalyst enhancer which comprises a salt of a metal selected from the group of non-noble metals of Group VIII, Group VIB, Group VIIB, and Group IIB. It was found that the presence of a catalyst enhancer leads to reduced deactivation of the catalyst and/or increased activity of the spent catalyst. This allows longer production cycles, less downtime, and lower formation of side products. The catalyst enhancer preferably comprises one or more salts of one or more of nickel, cobalt, or iron, more in particular of iron. The salts preferably comprise one or more of chloride salts and acetate salts.

3/12 © EPODOC / EPO

- PN - [AU2016232404](#) A1 20170824
- PR - EP20150159373 20150317; WO2016EP55390 20160314
- AP - AU20160232404 20160314
- DT - I
- CCI - [C07C51/377](#) ; [C07C51/487](#)
- CLC - [C07C51/377](#), [C07C53/16](#) , INV
- [C07C51/487](#), [C07C53/16](#) , INV
- PA - AKZO NOBEL CHEMICALS INT BV
- TI - Process for the **purification of monochloroacetic acid**
- AB - The present invention pertains to a process for the **purification** of a feed comprising **monochloroacetic acid** and dichloroacetic acid wherein the feed is subjected

to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert dichloroacetic acid into **monochloroacetic acid** in the presence of a solid heterogeneous hydrogenation catalyst comprising a Group VIII noble metal on a carrier under **hydrodechlorination** conditions, wherein the reaction is carried out in the presence of a catalyst enhancer which comprises a salt of a metal selected from the group of non-noble metals of Group VIII, Group VIB, Group VIIB, and Group IIB. It was found that the presence of a catalyst enhancer leads to reduced deactivation of the catalyst and/or increased activity of the spent catalyst. This allows longer production cycles, less downtime, and lower formation of side products. The catalyst enhancer preferably comprises one or more salts of one or more of nickel, cobalt, or iron, more in particular of iron. The salts preferably comprise one or more of chloride salts and acetate salts.

4/12 © EPODOC / EPO

PN - [CN106488903](#) A 20170308

PR - EP20150159373 20150317; WO2016EP55390 20160314

AP - CN20168002040 20160314

DT - I

CT - || STSE (A)

[US3739023](#) A 19730612 [A] (SENNEWALD K, et al)

[A] 1-16

* 全文 *;

[CN1046152](#) A 19901017 [A] (ATOCHEM [FR])

[A] 1-16

* 全文 *;

[US5756840](#) A 19980526 [A] (EBMEYER FRANK [DE], et al)

[A] 1-16

* 全文 *;

[CN102001930](#) A 20110406 [A] (CHINA TIANCHEN ENG CORP, et al)

[A] 1-16

* 全文 *;

[CN102553584](#) A 20120711 [A] (XI AN CATALYST CHEMICAL CO LTD)

[A] 1-16

* 全文 *;

[CN103649039](#) A 20140319 [Y] (AKZO NOBEL CHEMICALS INT BV)

[Y] 1-16

* 权利要求书和说明书第1页第[0002]段 *;

[CN103687840](#) A 20140326 [A] (AKZO NOBEL CHEMICALS INT BV)

[A] 1-16

* 全文 *;

[CN103691487](#) A 20140402 [A] (UNIV HARBIN NORMAL)

[A] 1-16

* 全文 *

CTNP - || STSE (A)

[A] - 李先国 等, "金属铁及其化合物还原脱氯有机氯化物的研究", 《中国海洋大学学报》

[A] 1-16

* 第112-116页 *

[A] - 姚震, "氯乙酸生产工艺和母液的综合利用技术", 《乙醛醋酸化工》
 [A] 1-16
 * 第17-21页 *

[Y] - 朱晓军 等, "脱氯技术现状与研究进展", 《化工生产与技术》
 [Y] 1-16
 * 第25页左栏第1段 *

[A] - 周红艺 等, "金属铁及其化合物还原脱氯有机氯化物的研究", 《浙江工业大学学报》
 [A] 1-16
 * 第63-67页 *

[A] - 丁军委 等, "催化加氢处理醋酸氯化液", 《精细化工》
 [A] 1-16
 * 第398-402页 *

CCI - [C07C51/377](#) ; [C07C51/487](#)

CNOI - [C07C51/377](#) ; [C07C51/487](#)

CLC - [C07C51/377](#), [C07C53/16](#) , INV
 - [C07C51/487](#), [C07C53/16](#) , INV

CNOL - C07C51/377, C07C53/16, INV
 - C07C51/487, C07C53/16, INV

PA - AKZO NOBEL CHEMICALS INT BV

TI - PROCESS FOR THE **PURIFICATION OF MONOCHLOROACETIC ACID**

AB - The present invention pertains to a process for the **purification** of a feed comprising **monochloroacetic acid** and dichloroacetic acid wherein the feed is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert dichloroacetic acid into **monochloroacetic acid** in the presence of a solid heterogeneous hydrogenation catalyst comprising a Group VIII noble metal on a carrier under **hydrodechlorination** conditions, wherein the reaction is carried out in the presence of a catalyst enhancer which comprises a salt of a metal selected from the group of non-noble metals of Group VIII, Group VIB, Group VIIB, and Group IIB. It was found that the presence of a catalyst enhancer leads to reduced deactivation of the catalyst and/or increased activity of the spent catalyst. This allows longer production cycles, less downtime, and lower formation of side products. The catalyst enhancer preferably comprises one or more salts of one or more of nickel, cobalt, or iron, more in particular of iron. The salts preferably comprise one or more of chloride salts and acetate salts.

5/12 © EPODOC / EPO

PN - [CN106489111](#) A 20170308

PR - JP20140144744 20140715; WO2015JP03561 20150714

AP - CN2015838510 20150714

DT - I

CCI - [G06F3/011](#) ; [G06F3/015](#) ; [G06F3/017](#) ; [G06K9/00355](#)

CUI - [G11B27/00](#)

CQI - [G06F3/165](#) ; [G06F3/0383](#) ; [G06F3/0346](#)

CCA - [G06K2009/00939](#)

PA - AKZO NOBEL CHEMICALS INT BV

TI - Process for the **purification of monochloroacetic acid**

AB - The present invention pertains to a process for the **purification** of a feed comprising **monochloroacetic acid** and dichloroacetic acid wherein the feed is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert dichloroacetic acid into **monochloroacetic acid** in the presence of a solid heterogeneous hydrogenation catalyst comprising a Group VIII noble metal on a carrier under **hydrodechlorination** conditions, wherein the reaction is carried out in the presence of a catalyst enhancer which comprises a salt of a metal selected from the group of non-noble metals of Group VIII, Group VIB, Group VIIB, and Group IIB. It was found that the presence of a catalyst enhancer leads to reduced deactivation of the catalyst and/or increased activity of the spent catalyst. This allows longer production cycles, less downtime, and lower formation of side products. The catalyst enhancer preferably comprises one or more salts of one or more of nickel, cobalt, or iron, more in particular of iron. The salts preferably comprise one or more of chloride salts and acetate salts.

6/12 © EPODOC / EPO

PN - [WO2016146556](#) A1 20160922

PR - EP20150159373 20150317

AP - WO2016EP55390 20160314

DT - *; Rep

CT - |EP| ISR (A1)
[WO2013057126](#) A1 20130425 [A] (AKZO NOBEL CHEMICALS INT BV [NL])
 [A] 1-15
 * the whole document *;
[WO2009087994](#) A1 20090716 [A] (INST NAGOYA IND SCIENCE RES [JP], et al)
 [A] 1-15
 * the whole document *

CCI - [C07C51/377](#) ; [C07C51/487](#)

CLC - [C07C51/377](#), [C07C53/16](#) , INV
 - [C07C51/487](#), [C07C53/16](#) , INV

PA - AKZO NOBEL CHEMICALS INT BV [NL]

TI - PROCESS FOR THE **PURIFICATION OF MONOCHLOROACETIC ACID**

AB - The present invention pertains to a process for the **purification** of a feed comprising **monochloroacetic acid** and dichloroacetic acid wherein the feed is subjected to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert dichloroacetic acid into **monochloroacetic acid** in the presence of a solid heterogeneous hydrogenation catalyst comprising a Group VIII noble metal on a carrier under **hydrodechlorination** conditions, wherein the reaction is carried out in the presence of a catalyst enhancer which comprises a salt of a metal selected from the group of non-noble metals of Group VIII, Group VIB, Group VIIB, and Group IIB. It was found that the presence of a catalyst enhancer leads to reduced deactivation of the catalyst and/or increased activity of the spent catalyst. This allows longer production cycles, less downtime, and lower formation of side products. The catalyst enhancer preferably comprises one or more salts of one or more of nickel, cobalt, or iron, more in

particular of iron. The salts preferably comprise one or more of chloride salts and acetate salts.

7/12 © EPODOC / EPO

PN - [RU2014118949](#) A 20151127

PNFP - RU2609408 C2 20170201

PR - EP20110185948 20111020; WO2012EP70523 20121017

AP - RU20140118949 20121017

DT - I

CT - || STSE (C2)
[WO2008025758](#) A1 20080306 [] (BUSS CHEMTECH AG [CH], et al);
[US3754029](#) A 19730821 [] (HOECHST AG);
[EP1451136](#) B1 20100602 [] (AKZO NOBEL NV [NL]);
[US2671803](#) A 19540309 [] (KNAPSACK AG);
[RU2060244](#) C1 19960520 [] (NII SINTEZ S K B [RU], et al)

CCI - [C07C51/487](#)

CUI - [C07C51/377](#)

CLC - [C07C51/487](#), [C07C53/16](#), INV

CNOA - (C2)
[C07C51/377](#); [C07C51/487](#); [C07C53/16](#)

PA - (C2)
 AKTSO NOBEL KEMIKAŁZ INTERNESHNL B V [NL]

TI - (C2)
 PROCESS FOR **PURIFICATION** OF LIQUID FEED COMPRISING MCA AND DCA

AB - (C2)
 FIELD: chemistry. SUBSTANCE: invention relates to a process of cleaning substantially anhydrous liquid raw material, containing **monochloroacetic acid**, dichloroacetic acid, optionally acid chlorides, optionally anhydrides and optionally acetic acid, which comprises following steps: (a) adding water to liquid raw material, so liquid material is obtained, containing between 0.01 and 5% by weight of water, based on total weight of liquid raw material, and (b) further, subjecting liquid material obtained at step (a), to a **catalytic hydrodechlorination** step by bringing into contact with a source of hydrogen for conversion of dichloroacetic acid into **monochloroacetic acid** in presence of a solid heterogeneous hydrogenation catalyst, containing one or more metals of group VIII of periodic table, deposited on a support to obtain a hydrogenation product, where hydrogenation product is a product containing **monochloroacetic acid**, with low content of dichloroacetic acid and colouring, equal to or less than 300 units Pt-Co, measured in accordance with ISO 6271. EFFECT: **purification** of liquid feed. 12 cl, 4 ex

8/12 © EPODOC / EPO

PN - [US2014275625](#) A1 20140918

PNFP - US9505694 B2 20161129

PR - EP20110185948 20111020; WO2012EP70523 20121017

AP - US201214351313 20121017

DT - **

CT - || R141 (A1)
[WO2008025758](#) A1 20080306 [] (BUSS CHEMTECH AG [CH], et al);
[NL109769C](#) A 00000000 []

- || STSE (B2)
[NL109769C](#) C 19641015 [];
[WO2008025758](#) A1 20080306 [] (BUSS CHEMTECH AG [CH], et al)

CCI - [C07C51/487](#)

CUI - [C07C51/377](#)

CLC - [C07C51/487](#), [C07C53/16](#), INV

PA - (A1)
NIEUWHOF MELLE RINZE [NL]; KOOIJMAN CORNELLIS [NL]; KOELEWIJN WILLEM [NL]; VOS HENDRIK JAN [NL]; TOLLIN LARS MAGNUS [SE]; VAN HAL HENRICUS JOHANNES MARINUS PETRUS [NL]; AKZO NOBEL CHEMICALS INT BV [NL]

- (B2)
NIEUWHOF MELLE RINZE [NL]; KOOIJMAN CORNELIS [NL]; KOELEWIJN WILLEM [NL]; VOS HENDRIK JAN [NL]; TOLLIN LARS MAGNUS [SE]; VAN HAL HENRICUS JOHANNES MARINUS PETRUS [NL]; AKZO NOBEL CHEMICALS INT BV [NL]

TI - (A1)
PROCESS FOR THE **PURIFICATION** OF A LIQUID FEED COMPRISING MCA AND DCA

- (B2)
Process for the **purification** of a liquid feed comprising MCA and DCA

AB - (A1 B2)
The present invention pertains to a process for the **purification** of a substantially water-free liquid feed comprising **monochloroacetic acid**, dichloroacetic acid, optionally acid chlorides, optionally anhydrides, and optionally acetic acid, which comprises the steps of (a) adding water to the liquid feed so that a liquid feed is obtained comprising between 0.01 and 5% by weight of water, based on the total weight of the liquid feed, and (b) subsequently subjecting the liquid feed obtained in step (a) to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert the dichloroacetic **acid** into **monochloroacetic acid** in the presence of a solid heterogeneous hydrogenation catalyst comprising one or more metals of Group VIII of the Periodic Table of the Elements deposited on a carrier.

9/12 © EPODOC / EPO

PN - [MX2014004617](#) A 20140512

PNFP - MX347055 B 20170410

PR - EP20110185948 20111020; WO2012EP70523 20121017

AP - MX20140004617 20121017

DT - I

CCI - [C07C51/487](#)

CUI - [C07C51/377](#)

CLC - [C07C51/487](#), [C07C53/16](#), INV

PA - (A B)
AKZO NOBEL CHEMICALS INT BV [NL]

TI - (A B)

PROCESS FOR THE **PURIFICATION** OF A LIQUID FEED COMPRISING MCA AND DCA.

AB - (A B)
 The present invention pertains to a process for the **purification** of a substantially water-free liquid feed comprising **monochloroacetic acid**, dichloroacetic acid, optionally acid chlorides, optionally anhydrides, and optionally acetic acid, which comprises the steps of (a) adding water to the liquid feed so that a liquid feed is obtained comprising between 0.01 and 5% by weight of water, based on the total weight of the liquid feed, and (b) subsequently subjecting the liquid feed obtained in step (a) to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert the dichloroacetic **acid** into **monochloroacetic acid** in the presence of a solid heterogeneous hydrogenation catalyst comprising one or more metals of Group VIII of the Periodic Table of the Elements deposited on a carrier.

10/12 © EPODOC / EPO

PN - [CN103687840](#) A 20140326
 PNFP - CN103687840B B 20161123
 PR - WO2012EP70523 20121017; EP20110185948 20111020
 AP - CN2012835267 20121017
 DT - I
 CT - || STSE (A)
[US2863917](#) A 19581209 [A] (RUCKER JOHN T, et al)
 [A] 1-12
 * 全文 *;
[US4383121](#) A 19830510 [A] (SUGAMIYA RYOJI [JP], et al)
 [A] 1-12
 * 全文 *;
[CN1599709](#) A 20050323 [A] (AKZO NOBEL NV [NL])
 [A] 1-12
 * 全文 *;
[CN102001930](#) A 20110406 [A] (CHINA TIANCHEN ENG CORP, et al)
 [A] 1-12
 * 全文 *;
[CN101528657](#) A 20090909 [YX] (BUSS CHEMTECH AG [CH])
 [Y] 5-12
 * 说明书第5页, 实施例1-3 *
 [X] 1,3-4,6-12;
[CN1046152](#) A 19901017 [Y] (ATOCHEM [FR])
 [Y] 5-12
 * 说明书第6页第2-3段 *
 CCI - [C07C51/487](#)
 CUI - [C07C51/377](#)
 CNOI - (A)
[C07C51/377](#) ; [C07C51/487](#)
 CLC - [C07C51/487](#), [C07C53/16](#), INV
 CNOL - C07C51/487, C07C53/16, INV
 - C07C51/377, C07C53/16, INV

PA - (A)
AKZO NOBEL CHEMICALS INT BV

TI - (A)
Process for the **purification** of a liquid feed comprising mca and dca

AB - (A)
The present invention pertains to a process for the **purification** of a substantially water-free liquid feed comprising **monochloroacetic acid**, dichloroacetic acid, optionally acid chlorides, optionally anhydrides, and optionally acetic acid, which comprises the steps of (a) adding water to the liquid feed so that a liquid feed is obtained comprising between 0.01 and 5% by weight of water, based on the total weight of the liquid feed, and (b) subsequently subjecting the liquid feed obtained in step (a) to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert the dichloroacetic acid into **monochloroacetic acid** in the presence of a solid heterogeneous hydrogenation catalyst comprising one or more metals of Group VIII of the Periodic Table of the Elements deposited on a carrier.

11/12 © EPODOC / EPO

PN - [AU2012324957](#) A1 20140320

PNFP - AU2012324957B B2 20150820

PR - EP20110185948 20111020; WO2012EP70523 20121017

AP - AU20120324957 20121017

DT - I

CT - || STSE (B2)
[WO2008025758](#) A1 20080306 [] (BUSS CHEMTECH AG [CH], et al)
[US3754029](#) A 19730821 [] (HOECHST AG)
[EP1451136](#) A2 20040901 [] (AKZO NOBEL NV [NL])
[US2671803](#) A 19540309 [] (KNAPSACK AG)

CCI - [C07C51/487](#)

CUI - [C07C51/377](#)

CLC - [C07C51/487](#), [C07C53/16](#), INV

PA - (A1 B2)
AKZO NOBEL CHEMICALS INT BV

TI - (A1 B2)
Process for the **purification** of a liquid feed comprising MCA and DCA

AB - (A1 B2)
The present invention pertains to a process for the **purification** of a substantially water-free liquid feed comprising **monochloroacetic acid**, dichloroacetic acid, optionally acid chlorides, optionally anhydrides, and optionally acetic acid, which comprises the steps of (a) adding water to the liquid feed so that a liquid feed is obtained comprising between 0.01 and 5% by weight of water, based on the total weight of the liquid feed, and (b) subsequently subjecting the liquid feed obtained in step (a) to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert the dichloroacetic acid into **monochloroacetic acid** in the presence of a solid heterogeneous hydrogenation catalyst comprising one or more metals of Group VIII of the Periodic Table of the Elements deposited on a carrier.

12/12 © EPODOC / EPO

PN - [WO2013057125](#) A1 20130425

PR - EP20110185948 20111020

AP - WO2012EP70523 20121017

DT - *; Rep

CT - |EP| ISR (A1)
[US3754029](#) A 19730821 [A] (HOLTERMANN R, et al)
[A] 1-11
* claim 1 *;
[EP1451136](#) B1 20100602 [A] (AKZO NOBEL NV [NL])
[A] 1-11
* "preparation of MCA is an anhydrous process..."; column 4, paragraph 0029 *
* "A process ... comprising the removal of aldehydes from a process stream [of MCA] by peroxidation using a peroxycarboxylic acid" ;; claim 1 *;
[US2671803](#) A 19540309 [A] (KURT SENNEWALD, et al)
[A] 1-11
* addition of water generates disadvantage with respect to recycling catalyst ;;
column 1, line 33 - line 43 *

CCI - [C07C51/487](#)

CUI - [C07C51/377](#)

CLC - [C07C51/487](#), [C07C53/16](#), INV

PA - AKZO NOBEL CHEMICALS INT BV [NL]

TI - PROCESS FOR THE **PURIFICATION** OF A LIQUID FEED COMPRISING MCA AND DCA

AB - The present invention pertains to a process for the **purification** of a substantially water-free liquid feed comprising **monochloroacetic acid**, dichloroacetic acid, optionally acid chlorides, optionally anhydrides, and optionally acetic acid, which comprises the steps of (a) adding water to the liquid feed so that a liquid feed is obtained comprising between 0.01 and 5% by weight of water, based on the total weight of the liquid feed, and (b) subsequently subjecting the liquid feed obtained in step (a) to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert the dichloroacetic **acid** into **monochloroacetic acid** in the presence of a solid heterogeneous hydrogenation catalyst comprising one or more metals of Group VIII of the Periodic Table of the Elements deposited on a carrier.

[SS 9] ..li ss 8



1/5 © EPODOC / EPO

PN - [US2014275625](#) A1 20140918

PNFP - US9505694 B2 20161129

PR - EP20110185948 20111020; WO2012EP70523 20121017

AP - US201214351313 20121017

DT - **

CT - || R141 (A1)

[WO2008025758](#) A1 20080306 [] (BUSS CHEMTECH AG [CH], et al);
[NL109769C](#) A 00000000 []

- || STSE (B2)
[NL109769C](#) C 19641015 [];
[WO2008025758](#) A1 20080306 [] (BUSS CHEMTECH AG [CH], et al)

CCI - [C07C51/487](#)

CUI - [C07C51/377](#)

CLC - [C07C51/487](#), [C07C53/16](#), INV

PA - (A1)
NIEUWHOF MELLE RINZE [NL]; KOOIJMAN CORNELLIS [NL]; KOELEWIJN WILLEM [NL]; VOS
HENDRIK JAN [NL]; TOLLIN LARS MAGNUS [SE]; VAN HAL HENRICUS JOHANNES MARINUS
PETRUS [NL]; AKZO NOBEL CHEMICALS INT BV [NL]

- (B2)
NIEUWHOF MELLE RINZE [NL]; KOOIJMAN CORNELIS [NL]; KOELEWIJN WILLEM [NL]; VOS
HENDRIK JAN [NL]; TOLLIN LARS MAGNUS [SE]; VAN HAL HENRICUS JOHANNES MARINUS
PETRUS [NL]; AKZO NOBEL CHEMICALS INT BV [NL]

TI - (A1)
PROCESS FOR THE **PURIFICATION** OF A LIQUID FEED COMPRISING MCA AND DCA

- (B2)
Process for the **purification** of a liquid feed comprising MCA and DCA

AB - (A1 B2)
The present invention pertains to a process for the **purification** of a substantially water-
free liquid feed comprising **monochloroacetic acid**, dichloroacetic acid, optionally acid
chlorides, optionally anhydrides, and optionally acetic acid, which comprises the steps
of (a) adding water to the liquid feed so that a liquid feed is obtained comprising
between 0.01 and 5% by weight of water, based on the total weight of the liquid feed,
and (b) subsequently subjecting the liquid feed obtained in step (a) to a **catalytic**
hydrodechlorination step by contacting it with a source of hydrogen to convert the
dichloroacetic **acid** into **monochloroacetic acid** in the presence of a solid heterogeneous
hydrogenation catalyst comprising one or more metals of Group VIII of the Periodic
Table of the Elements deposited on a carrier.

2/5 © EPODOC / EPO

PN - [MX2014004617](#) A 20140512

PNFP - MX347055 B 20170410

PR - EP20110185948 20111020; WO2012EP70523 20121017

AP - MX20140004617 20121017

DT - I

CCI - [C07C51/487](#)

CUI - [C07C51/377](#)

CLC - [C07C51/487](#), [C07C53/16](#), INV

PA - (A B)
AKZO NOBEL CHEMICALS INT BV [NL]

TI - (A B)
PROCESS FOR THE **PURIFICATION** OF A LIQUID FEED COMPRISING MCA AND DCA.

AB - (A B)

The present invention pertains to a process for the **purification** of a substantially water-free liquid feed comprising **monochloroacetic acid**, dichloroacetic acid, optionally acid chlorides, optionally anhydrides, and optionally acetic acid, which comprises the steps of (a) adding water to the liquid feed so that a liquid feed is obtained comprising between 0.01 and 5% by weight of water, based on the total weight of the liquid feed, and (b) subsequently subjecting the liquid feed obtained in step (a) to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert the dichloroacetic **acid** into **monochloroacetic acid** in the presence of a solid heterogeneous hydrogenation catalyst comprising one or more metals of Group VIII of the Periodic Table of the Elements deposited on a carrier.

3/5 © EPODOC / EPO

PN - [CN103687840](#) A 20140326

PNFP - CN103687840B B 20161123

PR - WO2012EP70523 20121017; EP20110185948 20111020

AP - CN2012835267 20121017

DT - I

CT - || STSE (A)

[US2863917](#) A 19581209 [A] (RUCKER JOHN T, et al)
[A] 1-12
* 全文 *;

[US4383121](#) A 19830510 [A] (SUGAMIYA RYOJI [JP], et al)
[A] 1-12
* 全文 *;

[CN1599709](#) A 20050323 [A] (AKZO NOBEL NV [NL])
[A] 1-12
* 全文 *;

[CN102001930](#) A 20110406 [A] (CHINA TIANCHEN ENG CORP, et al)
[A] 1-12
* 全文 *;

[CN101528657](#) A 20090909 [YX] (BUSS CHEMTECH AG [CH])
[Y] 5-12
* 说明书第5页，实施例1-3 *

[CN1046152](#) A 19901017 [Y] (ATOCHEM [FR])
[Y] 5-12
* 说明书第6页第2-3段 *

CCI - [C07C51/487](#)

CUI - [C07C51/377](#)

CNOI - (A)
[C07C51/377](#) ; [C07C51/487](#)

CLC - [C07C51/487](#), [C07C53/16](#), INV

CNOL - C07C51/487, C07C53/16, INV
- C07C51/377, C07C53/16, INV

PA - (A)

AKZO NOBEL CHEMICALS INT BV

- TI - (A)
Process for the **purification** of a liquid feed comprising mca and dca
- AB - (A)
The present invention pertains to a process for the **purification** of a substantially water-free liquid feed comprising **monochloroacetic acid**, dichloroacetic acid, optionally acid chlorides, optionally anhydrides, and optionally acetic acid, which comprises the steps of (a) adding water to the liquid feed so that a liquid feed is obtained comprising between 0.01 and 5% by weight of water, based on the total weight of the liquid feed, and (b) subsequently subjecting the liquid feed obtained in step (a) to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert the dichloroacetic **acid** into **monochloroacetic acid** in the presence of a solid heterogeneous hydrogenation catalyst comprising one or more metals of Group VIII of the Periodic Table of the Elements deposited on a carrier.

4/5 © EPODOC / EPO

- PN - [AU2012324957](#) A1 20140320
- PNFP - AU2012324957B B2 20150820
- PR - EP20110185948 20111020; WO2012EP70523 20121017
- AP - AU20120324957 20121017
- DT - I
- CT - || STSE (B2)
[WO2008025758](#) A1 20080306 [] (BUSS CHEMTECH AG [CH], et al)
[US3754029](#) A 19730821 [] (HOECHST AG)
[EP1451136](#) A2 20040901 [] (AKZO NOBEL NV [NL])
[US2671803](#) A 19540309 [] (KNAPSACK AG)
- CCI - [C07C51/487](#)
- CUI - [C07C51/377](#)
- CLC - [C07C51/487](#), [C07C53/16](#), INV
- PA - (A1 B2)
AKZO NOBEL CHEMICALS INT BV
- TI - (A1 B2)
Process for the **purification** of a liquid feed comprising MCA and DCA
- AB - (A1 B2)
The present invention pertains to a process for the **purification** of a substantially water-free liquid feed comprising **monochloroacetic acid**, dichloroacetic acid, optionally acid chlorides, optionally anhydrides, and optionally acetic acid, which comprises the steps of (a) adding water to the liquid feed so that a liquid feed is obtained comprising between 0.01 and 5% by weight of water, based on the total weight of the liquid feed, and (b) subsequently subjecting the liquid feed obtained in step (a) to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert the dichloroacetic **acid** into **monochloroacetic acid** in the presence of a solid heterogeneous hydrogenation catalyst comprising one or more metals of Group VIII of the Periodic Table of the Elements deposited on a carrier.

5/5 © EPODOC / EPO

- PN - [WO2013057125](#) A1 20130425
- PR - EP20110185948 20111020
- AP - WO2012EP70523 20121017
- DT - *; Rep
- CT - |EP| ISR (A1)
[US3754029](#) A 19730821 [A] (HOLTERMANN R, et al)
[A] 1-11
* claim 1 *;
[EP1451136](#) B1 20100602 [A] (AKZO NOBEL NV [NL])
[A] 1-11
* "preparation of MCA is an anhydrous process..."; column 4, paragraph 0029 *
* "A process ... comprising the removal of aldehydes from a process stream [of MCA] by peroxidation using a peroxycarboxylic acid" ;; claim 1 *;
[US2671803](#) A 19540309 [A] (KURT SENNEWALD, et al)
[A] 1-11
* addition of water generates disadvantage with respect to recycling catalyst ;;
column 1, line 33 - line 43 *
- CCI - [C07C51/487](#)
- CUI - [C07C51/377](#)
- CLC - [C07C51/487](#), [C07C53/16](#), INV
- PA - AKZO NOBEL CHEMICALS INT BV [NL]
- TI - PROCESS FOR THE **PURIFICATION** OF A LIQUID FEED COMPRISING MCA AND DCA
- AB - The present invention pertains to a process for the **purification** of a substantially water-free liquid feed comprising **monochloroacetic acid**, dichloroacetic acid, optionally acid chlorides, optionally anhydrides, and optionally acetic acid, which comprises the steps of (a) adding water to the liquid feed so that a liquid feed is obtained comprising between 0.01 and 5% by weight of water, based on the total weight of the liquid feed, and (b) subsequently subjecting the liquid feed obtained in step (a) to a **catalytic hydrodechlorination** step by contacting it with a source of hydrogen to convert the dichloroacetic **acid** into **monochloroacetic acid** in the presence of a solid heterogeneous hydrogenation catalyst comprising one or more metals of Group VIII of the Periodic Table of the Elements deposited on a carrier.

[SS 9] ..v

[EPODOC: SS 9]