

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO	
RAD: 14-171736- -5	FECHA: 2016-05-12 16:22:19
DEP: 2020 DIRECCION DE NUEVAS CREACIONES	EVE: 378 FASE NACIONAL INCLUIDO CAPITULO I
TRA: 11 PCT-PATENTE DE INVENCION CAPITULOS I Y II	FOLIOS: 9
ACT: 519 TRASLADOINFORME	

DIRECCIÓN DE NUEVAS CREACIONES

2020
Bogotá, D.C.,

Abogado(a)/Señor(a)
SILVANA MARÍA LÓPEZ DÍAZ

Asunto: Radicación: 14-171736- -5
Trámite: 11
Evento: 378
Actuación: 519
Oficio: 5624
Folios: 9

Patente de Invención	X			Patente de Modelo de Utilidad	
Vía Nacional					
Vía PCT (Fase Nacional)	X	Capítulo I	X	Capítulo II	
No. Solicitud Internacional	PCT/EP2013/052614				
Fecha de Presentación Internacional	08/02/2013				

Como resultado del examen de fondo realizado, con fundamento en el Artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se comunica:

1. Documentos estudiados

Descripción:	Rad. N° 14-171736-00000-0000	06/agosto/2014
Reivindicaciones:	Rad. N° 14-171736-00003-0000	15/septiembre/2014
Dibujos:	Rad. N° 14-171736-00000-0000	06/agosto/2014
Prioridad:	US61/596,789	09/febrero/2012

2. Análisis de la Prioridad

Se acepta la reivindicación de prioridad porque ésta solicitud fue presentada dentro del plazo establecido (Art. 9 D 486) y su contenido técnico corresponde con el de la prioridad reivindicada.

3. Objeto de la invención

De acuerdo con lo establecido en el numeral 1.2.2.2 del capítulo primero del Título X de la Circular Única para efectos del examen de patentabilidad, se tendrá en cuenta la tasa pagada por la solicitante al momento de comenzar el examen para las reivindicaciones adicionales; esto es que cuando la solicitud contenga más de diez (10) reivindicaciones y no se haya pagado la tasa complementaria, sólo se estudiarán las cubiertas por la

tasa pagada. En el presente caso se estudiarán las reivindicaciones 1 a 22 del capítulo reivindicatorio modificado (Radicado N°. 14-171736-00003-0000 páginas 1 a 4).

Título de la solicitud: “Procedimiento de recuperación mejorada del petróleo usando agua de baja salinidad” (Radicado N°. 14-171736-00003-0000).

El problema planteado en esta solicitud consiste en la necesidad de desarrollar un procedimiento mejorado para disminuir la diferencia de movilidad del fluido de inyección comparado con la del petróleo y así aumentar su recuperación.

Para resolver este problema técnico la solicitud en estudio proporciona un procedimiento que incluye el uso de un polímero en un agua de inyección de baja salinidad, una combinación de inundación con agua de baja salinidad e inundación con polímero, en el cual se inyecta agua que cuenta con un contenido de sólidos menor a 15000 ppmv (baja salinidad) y un polímero viscosante en dispersión en un tamaño de chorro en el rango de 0,4 a 1,5 volúmenes de poro (VP).

El objeto de la presente solicitud se relaciona con la Clasificación Internacional de Patentes (CIP): C09K 7/58AC, C09K 8/58, E21B 43/16, E21B 43/20.

4. De la solicitud de patente

Título

El título “Procedimiento de recuperación mejorada del petróleo usando agua de baja salinidad” si bien está relacionado con el objeto de la solicitud tiene carácter genérico, por lo cual se sugiere a la solicitante ampliarlo de acuerdo a la descripción y reivindicaciones presentadas, por ejemplo, “Procedimiento de recuperación del petróleo usando un polímero y agua de baja salinidad”.

Reivindicaciones (Art 30 D 486, Art 22 PCT)

Durante el examen de las 22 reivindicaciones se encontraron las siguientes faltas de claridad:

La reivindicación 1 incluye más de un enlace gramatical (caracterizado por que, caracterizado por que, comprende) lo cual no permite distinguir claramente la materia que pretende reivindicar. Se sugiere realizar las aclaraciones del caso.

En las reivindicaciones 1-3, 9-12,16-22 los términos “*polímero viscosificante*”, “*fluido de arrastre*”, “*fluido de inyección*”, “*polímero de acrilamida*”, “*fluido espaciador*”, “*baja salinidad*” son términos generales los cuales aunque corresponden a términos ampliamente conocidos, abarcan una extensa gama de posibilidades; sugiriendo de forma imprecisa que la protección se extiende a otras posibles variaciones, se propone realizar las modificaciones respectivas utilizando términos que describan de forma menos general, definir claramente los rangos a aquellos que tienen un efecto técnico demostrado.

En las reivindicaciones 1, 5, 6-8, 12, 19, 21 los términos “o menos”, “menor de”, “uno o más”, “al menos”, “inferior”, son imprecisos y/o relativos, por lo cual no permite distinguir la invención del estado de la técnica. Se sugiere sustituirlo por un término preciso o un rango concreto.

Las reivindicaciones 10 y 11 no guardan concisión ya que están reivindicando la misma materia. Se sugiere realizar las aclaraciones del caso.

En las reivindicaciones 2, 5-8 y 20, los términos “preferiblemente” y “por ejemplo” precediendo una característica no son limitativos, porque hace opcional a la característica y no limita el alcance de la reivindicación. Se sugiere incluir las características opcionales o preferentes en una reivindicación dependiente aparte.

La reivindicación 13 no es clara porque presenta efectos y/o resultados: “la movilidad del petróleo con respecto a la movilidad in situ del fluido de inyección está próxima a, o es de, 1:1.” lo cual no es permitido. Las reivindicaciones deben caracterizar un producto por la forma o constitución del mismo y las partes que lo componen. No se aceptan reivindicaciones que caractericen resultados, usos, ventajas o efectos.

En la reivindicación 18, las expresiones “tras la inyección del fluido de inyección” y “se puede inyectar un fluido de arrastre en el reservorio, cuyo fluido de arrastre barre el fluido de inyección” contienen términos repetitivos que no contribuyen a clarificar el objeto de la invención. Se sugiere eliminarlos y redactar de una forma más adecuada.

En la reivindicación 20, no hay necesidad de ejemplificar un rango, en este caso ya que se encuentra definido totalmente. Se sugiere prescindir de los valores puntuales sino hay un sustento suficiente para reclamarlos.

Descripción

En la figura 2 se sugiere en el eje Y colocar el nombre completo, es decir especificar a qué viscosidad se refiere.

5. Determinación del Estado de la Técnica

El estado de la técnica se determinó con base en la fecha de presentación de la solicitud de prioridad: 09 de febrero de 2012 y consultadas las fuentes con que se cuenta, se encontraron los siguientes documentos que anticipan el objeto de esta solicitud:

Ítem	Documento	Título	Fecha de Publicación*
D1	WO2008029124	“Hydrocarbon recovery process”	13/Marzo/2008
D2	CA 2'745.911	“Improvement in enhanced oil recovery by polymer without supplementary equipment or product”	24/Junio/2010

El documento D1¹ divulga un método de recuperación de hidrocarburos de una formación porosa subterránea permeable por medio de inyección de un agua de baja salinidad a la formación. (Pág.1, Líneas 3-5)

El documento D2² revela un método de recuperación de petróleo en una perforación con zonas de alta permeabilidad que incluye tratar los pasajes de inyección con una solución acuosa más viscosa que la del crudo (Resumen)

6. Examen de Patentabilidad (Art 14 D486)

El siguiente examen de patentabilidad se realizó teniendo en cuenta las objeciones señaladas en el numeral 4 de la presente comunicación.

Nivel inventivo (Art 18 D486)

La reivindicación 1 consiste en: *“Un método de recuperación de petróleo de un reservorio portador de petróleo subterráneo usando un fluido de inyección que comprende:”* (Ver Pág. 1 del Radicado N°. 14-171736-00003-0000).

Comparación de las características técnicas esenciales, con las del estado de la técnica:

Características esenciales	D1	D2
Un método de recuperación de petróleo de un reservorio portador de petróleo subterráneo usando un fluido de inyección que comprende un polímero viscosificante en un agua de baja salinidad:	Método de recuperación de hidrocarburos de una formación porosa subterránea permeable por medio de inyección de un agua de baja salinidad a la formación. (Pág.1, Líneas 3-5) El fluido de desplazamiento acuoso puede contener viscosantes poliméricos hidrosolubles (Pág. 12, Líneas 1-4).	Un método de recuperación de petróleo de un reservorio portador de petróleo subterráneo usando un fluido de inyección que comprende un polímero viscosificante en un agua de baja salinidad:
caracterizado por que el agua de baja salinidad tiene un contenido en sólidos disueltos totales (SDT) de 15.000 ppmv o menos	El agua de desplazamiento tiene un contenido total de sólidos entre 200-10.000ppm (Pág. 14, líneas 3-5)	El agua tiene una salinidad de 5000 ppm SDT (Pág.10, Línea 24)
y caracterizado por que la proporción entre el contenido en cationes multivalentes del agua de baja salinidad y el contenido en cationes multivalentes del agua intersticial del reservorio es menor de 1,	La fracción del contenido de cationes multivalentes en el fluido de desplazamiento acuoso con respecto al contenido del agua subterránea es menor a 1 (Pág.14, Líneas 5-7)	No menciona
y caracterizado por que la viscosidad del fluido de inyección está en el rango de 3 a 200 cP	No menciona	La viscosidad del polímero primero se ajustó a 19 cP y luego para obtener un mejor efecto a 35 cP (Pág.11, Líneas 5-17).
siendo penetrado el reservorio por uno o más pozos de inyección y por uno o más	El fluido acuoso en desplazamiento se inyecta en al menos un pozo de inyección que	No menciona

1 [https://worldwide.espacenet.com/publicationDetails/originalDocument?](https://worldwide.espacenet.com/publicationDetails/originalDocument?CC=WO&NR=2008029124A1&KC=A1&FT=D&ND=3&date=20080313&DB=&locale=en_EP)

CC=WO&NR=2008029124A1&KC=A1&FT=D&ND=3&date=20080313&DB=&locale=en_EP

2 <http://google.com/patents/CA2745911A1?cl=zh-CN>

pozos de producción,	está separado por un pozo de producción (Pág.12, Líneas 18-19).	
cuyo método comprende la inyección del fluido de inyección en al menos uno de los pozos de inyección en un tamaño de chorro en el rango de 0,4 a 1,5 volúmenes de poro (VP).	El volumen de poro del fluido acuoso en desplazamiento es menor a 1,0VP (Reivindicación 5).	Se inyecta una solución polimérica en la formación (Reivindicación 1) Se inyectó una solución polimérica a una tasa de flujo de 130m³/día para un volumen inyectado de 3400m³ en 17 días (Pág.11, Líneas 12-20). (Tamaño de chorro 0,65 VP)

El documento D1 se considera el estado de la técnica más cercano a la invención definida en la reivindicación 1 porque divulga un método de recuperación de hidrocarburos de una formación porosa subterránea permeable por medio de inyección de un agua de baja salinidad a la formación (Pág.1, Líneas 3-5).

La diferencia entre la invención, definida en la reivindicación 1 y el método divulgado de D1 consiste en que éste último no menciona que la viscosidad del fluido de inyección esté en el rango de 3 a 200cP.

El efecto que logra que la viscosidad del fluido de inyección esté entre 3 a 200 cP es reducir el diferencial de movilidad de éste con respecto al crudo, tal que la movilidad del fluido de inyección sea cercana pero no superior a la del petróleo y por lo tanto se mejore la recuperación.

Por lo tanto, el problema técnico objetivo que pretende resolver esta invención se puede formular así: ¿Cómo modificar el método de recuperación de hidrocarburos conocido en D1 para incrementar la recuperación de una forma más eficiente?

Sin embargo, inyectar una solución de un polímero hidrofílico a una viscosidad alta durante un tiempo limitado para mejorar la tasa de recuperación de petróleo ya está divulgada en el documento D2 (Pág. 1, Líneas 5-7) que usa una solución polimérica que actúa como fluido de inyección en un pozo con una viscosidad de 19cP y 35cP (Pág.11, Líneas 5-17). La recuperación es posible gracias a que se potencia la energía de enjuague y la acción requerida para que el crudo remanente se expela uniformemente en los pozos vecinos (Pág.1, Líneas 35-37) de tal forma que la efectividad del enjuague se mejora reduciendo la movilidad del fluido de inyección mediante la adición del polímero hidrosoluble (Pág. 1, Líneas 30-32). Dicho documento se refiere a un método de recuperación de petróleo en una perforación con zonas de alta permeabilidad que incluye tratar los pasajes de inyección con una solución acuosa más viscosa que la del crudo (Resumen). Por lo tanto, la solución al anterior problema técnico objetivo estaría inmersa en un proceso de optimización³ empezando por valores bajos de viscosidad (~19cP) y de tamaño de chorro, por ejemplo 1,0 VP hasta llegar a un valor que satisfaga tanto el porcentaje de recuperación como el costo de la materia prima, lo cual se encuentra dentro de la práctica habitual de la persona versada en la materia que trabaja en el campo técnico específico.

En consecuencia, la persona del oficio normalmente versada en la materia, incluiría una

3 Perry Manual del Ingeniero Químico. Tomo I. Sección 2. Sexta edición. 1992.

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solución polimérica de una viscosidad entre 19 y 35 cP, del documento D2 en el método divulgado en el documento D1 para llegar así al objeto de la reivindicación 1 de la solicitud. Por lo cual se considera obvia.

Asimismo, el documento D1 divulga las características de las reivindicaciones dependientes así:

- Reivindicaciones 2, 14 y 15: El volumen de poro del fluido acuoso en desplazamiento es menor a 1,0VP. Preferiblemente menos de 0,9 (Reivindicación 5).
- Reivindicación 3: Un método donde el fluido en desplazamiento acuoso se inyecta durante la recuperación secundaria (Reivindicación 7).
- Reivindicación 5 y 6: El agua de desplazamiento tiene un contenido total de sólidos entre 200-10.000ppm (Pág. 14, líneas 3-5).
- Reivindicación 7: La fracción del contenido total de cationes multivalentes en el fluido acuoso con respecto al total en el agua subterránea del peso es menor a 0,8. (Reivindicación 11)
- Reivindicación 8: El contenido total de cationes multivalentes varía entre 1-200ppm. Especialmente entre 5-50 ppm (Pág.7, Líneas 9-11).
- Reivindicación 9: El fluido acuoso puede contener poliacrilamida (Pág. 12, Líneas 1-2)
- Reivindicación 10 y 11: El fluido de desplazamiento puede también contener un polímero viscosificante hidrosoluble.(Pág.12, Líneas 1-5)
- Reivindicación 16 y 17: Después de la inyección de un volumen de poro del fluido acuoso de desplazamiento, un agua post-enjuague con alto contenido de cationes multivalente se inyecta a la formación, asegurando que el lodo resultante del primer fluido acuoso se barra a través de la formación hacia el pozo de producción (Pág. 9, Líneas 4-10).
- Reivindicación 18: La inyección del fluido de post-enjuague tiene un mayor volumen de poro que el lodo del primer fluido acuoso (Pág. 9, Líneas 12-13).
- Reivindicación 21: El fluido acuoso en desplazamiento se inyecta en al menos un pozo de inyección que está separado por un pozo de producción y pasa directamente hacia la formación que contiene el petróleo desde el pozo de inyección (Pág.12, Líneas 18-20).
- Reivindicación 22: El fluido acuoso en desplazamiento se inyecta bajo presión, por ejemplo 10.000-100.000kPa (100-1000bar) (Página 12, Líneas 17-20)

Asimismo, el documento D2 divulga las características de las reivindicaciones dependientes así:

- Reivindicación 4: La viscosidad del crudo es de 25 cP (Pág. 10, Línea 25). Adicionalmente es conocimiento del técnico, que la inundación con polímero no es recomendable para crudos de viscosidades mayores a 200mPa.s (200 cP).⁴
- Reivindicación 9: El polímero inyectado es un copolímero de acrilato de sodio/acrilamida.
- Reivindicación 12: Una solución con un contenido polimérico de 800ppm se inyectó dando una recuperación del 32% en un crudo del 2% (Pág.11, Líneas 10-

⁴ "De acuerdo al criterio de proyección para recuperación terciaria de crudo (EOR por sus siglas en inglés)": Resumen: <http://www.sciencedirect.com/science/article/pii/S0920410509001168>

11).

- Reivindicación 20: Se inyecta una solución acuosa de composición idéntica a la usada en la primera inyección solo que con una concentración más baja de polímero (Resumen).

La reivindicación 19 que consiste en: “*Un método caracterizado porque*”: (Ver Pág. 3 del Radicado N°. 14-171736-00003-0000).

Comparación de las características técnicas esenciales, con las del estado de la técnica:

Características esenciales	D1
Un método según se reivindica en la reivindicación 18, caracterizado por que el fluido de arrastre es inyectado en el reservorio en un volumen de poro de al menos 1, preferiblemente de al menos 2, por ejemplo, en el rango de 2 a 10.	La inyección del agua post-enjuague tiene un VP mayor que la lechada del fluido de desplazamiento (Pág.9, Líneas 11-15). No menciona específicamente el rango del volumen de poro.

El documento D1 se considera el estado de la técnica más cercano a la invención definida en la reivindicación 4 porque divulga un método de recuperación de hidrocarburos de una formación porosa subterránea permeable por medio de inyección de un agua de baja salinidad a la formación (Pág.1, Líneas 3-5).

La diferencia entre la invención, definida en la reivindicación 19 y el método divulgado de D1 consiste en que éste último no menciona que el fluido de arrastre sea inyectado a un volumen de poro de al menos 1, preferentemente en el rango de 2 a 10.

El efecto que logra inyectar el fluido de arrastre a un volumen de poro de al menos 1 es que se barre el fluido de inyección y es posible mantener la presión en el reservorio.

Por lo tanto, el problema técnico objetivo que pretende resolver esta invención se puede formular así: ¿Cómo modificar el método de recuperación de hidrocarburos conocido en D1 para barrer el fluido de inyección y sea posible mantener la presión en el reservorio?

Sin embargo, es de conocimiento del técnico medio versado en la materia que los diferenciales de presión se estabilizan a volúmenes de poro por encima de 2 VP⁵, por otro lado, al mencionar D1 que el fluido de post-enjuague asegura que el fluido de desplazamiento acuoso sea barrido a través de la formación hacia el pozo de producción y al sugerir que éste sea requerido para mantener la presión en el reservorio, donde típicamente dicho fluido post-enjuague tiene un volumen de poro de inyección mayor que el fluido acuoso de desplazamiento, siendo el volumen de poro de éste último menor de 1 (Pág.9, Líneas 1-15), hay motivación para que el técnico medianamente versado en la materia realice experimentación de rutina⁶ empezando por valores de inyección del fluido impulsor o post-enjuague cercanos a 1,0 VP, aumentándolos hasta llegar a 2 VP e incluso valores mayores como 10VP, lo cual se encuentra dentro de la práctica habitual de la persona versada en la materia que trabaja en el campo técnico específico.

5 MORADI, Hojatollah. “*Experimental Investigation of polymer flow through water-and oil-wet porous media*”. Págs. 34-36.

6 Perry Manual del Ingeniero Químico. Tomo I. Sección 2. Sexta edición. 1992.

En consecuencia, la persona del oficio normalmente versada en la materia, incluiría valores de inyección de volúmenes de poro mayores de 1,0VP del documento D1, por ejemplo 2 a 10 VP en el método divulgado en el documento D1 para llegar así al objeto de la reivindicación 19 de la solicitud. Por lo cual se considera obvia.

La reivindicación dependiente 13 tampoco le da altura inventiva a la reivindicación 1 por cuanto está redactada en términos de resultados, lo cual no es permitido.

7. Conclusión

Los requisitos de Patentabilidad de la presente solicitud están afectados así:

Ítem	Documento	Reivindicaciones afectadas	Requisito que afecta
D1	WO2008029124	1-3, 5-11,13-19 y 21-22	Nivel Inventivo
D2	CA 2'745.911	1, 4, 9, 12 y 20	

En cumplimiento del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica que debe dar respuesta dentro del término de sesenta (60) días contados a partir de la fecha de notificación de la presente comunicación. En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.

Si como respuesta a este requerimiento el solicitante llegara a modificar: i) el capítulo reivindicatorio, ii) la descripción de la invención a proteger, iii) o presente un nuevo capítulo reivindicatorio, y desee que se realice un nuevo examen de patentabilidad a esta modificación, no deberá pagar la tasa de modificación voluntaria pero sí la correspondiente a la tasa de examen de patentabilidad. En todo caso, el número de requerimientos por no patentabilidad estará supeditado a que el término del estudio de patentabilidad no sea superior a 18 meses, contados desde la publicación de la solicitud de patente de invención. Adicionalmente, se le recuerda al solicitante que si como respuesta a este requerimiento llegara a modificar el capítulo reivindicatorio y éste contenga más de diez (10) reivindicaciones deberá pagar la tasa por reivindicación adicional.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Única No. 10 de 2001.



JOSÉ LUIS SALAZAR LÓPEZ
Director de Nuevas Creaciones (c)

El anterior requerimiento fue notificado por fijación en lista, de fecha 2016-05-17

Elaboró: Natalia Estefania Paez Coy

Revisó: Olga Ximena Benavides Salazar

Estefania Paez

Search history

Search 1: TAC=(polymer and water and (salt or salinity) and flood and (crude or oil) and recovery) and PD=19500101:20120201 (Results 36)

Title: MISCIBLE FLOODING PROCESS USING IMPROVED SOLUBLE OIL COMPOSITIONS

Abstract: Source: US3500919A ABSTRACT OF THE DISCLOSURE A miscible flooding process for the recovery of oil from subterranean reservoirs in which an improved soluble oil composition comprising a liquid hydrocarbon, a preferen- 15 tially oil-soluble organic sulfonate, a preferentially water-soluble organic sulfonate, and a stabilizing agent is injected into the reservoir through an injection well, and thereafter an aqueous flooding agent is injected to drive the soluble oil composition towards a spaced production 20 well. The soluble oil can be injected as a substantially anhydrous liquid or as a water-in-oil microemulsion.

Classifications:

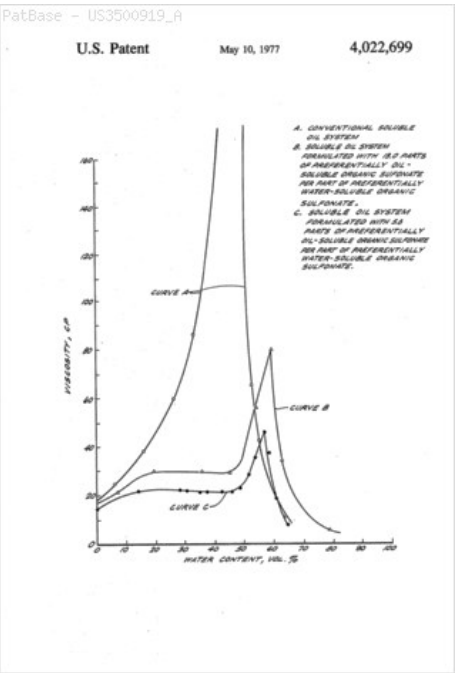
International (IPC 8-9): C09K8/584 (Advanced/Invention); C09K8/58 (Core/Invention)

International (IPC 1-7): C09K3/00 E21B43/16 E21B43/20 E21B43/22

CPC: Y10S507/938 C09K8/584

European: C09K8/584

US: 166/270.1 166/273 166/275 252/8.55D 507/259 507/261 507/266 507/268 507/938 516/25



Family:

Publication number	Publication date	Application number	Application date
US3500919 A	19700317	US19680713496	19680315
US3697424 A	19721010	US19690889640	19691231
US4022699 A	19770510	US19740526245	19741122

Priority:

US19680713496 19680315 US19690889640 19691231 US19740526245 19741122
US19720266284 19720626

Probable Assignee: UNION OIL CO

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

Assignee(s): UNION OIL CO OF CALIFORNIA ; UNION OIL COMPANY OF CALIFORNIA

Inventor(s): (std): HOLM LE ROY W ; HOLM LEROY W

Inventor(s): LE ROY W HOLM

Title: OVERBASED HIGH PLUS LOW MOLECULAR WEIGHT SULFONATE WATERFLOOD ADDITIVE

Abstract: Source: US3847823A ABSTRACT OF THE DISCLOSURE An overbased anionic waterflood additive comprisin- a water-soluble low molecular weight alkali metal hydrocarbon sulfonate having an equival_ent weight of about 200 to about 400 plus a water-insoluble high molecular weight alkali metal hydrocarbon sulfonate having an equivalent weight of about 400 to about 600 plus an over- basing amount of base component such as an alkali metal hydroxide is prepared and is injected into a petroliferous formation to improve a waterflood process. Sufficient overbasing base component is employed that the ratio "Weight of excess base component/weight of sulfonate" is about 0.03 to about 2.0. B

Classifications:
International (IPC 8-9): B01F17/02 B01F17/08 C09K3/00 C09K8/58 C09K8/584 E21B43/16 E21B43/22 (Advanced/Invention); E21B43/22 (Advanced/Non-invention); B01F17/00 B01F17/02 C09K3/00 C09K8/58 E21B43/16 (Core/Invention); E21B43/16 (Core/Non-invention)

International (IPC 1-7): B01F17/02 B01F17/08 C07C139/16 C09K3/00 C10G E21B43/16 E21B43/20 E21B43/22 E21B43/25 E21B43/27

CPC: Y10S507/936 C09K8/58 C09K8/584

European: C09K8/58 C09K8/584

US: 166/270 166/270.1 166/275 166/305.1 252/0.8.55D 252/8.55D 252/855D 507/259 507/936

Family:

Publication number	Publication date	Application number	Application date	
BE809769 A1	19740715	BE19740139830	19740115	
BR7400233 A0	19741119	BR19740000233	19740115	
CA1000723 A1	19761130	CA19730189074	19731228	
CA997549 A1	19760928	CA19730188815	19731221	
CA997550 A1	19760928	CA19730188831	19731221	
DE2401110 A1	19740718	DE19742401110	19740110	
FR2214038 A1	19740809	FR19730047091	19731228	
JP49102582 A2	19740927	JP19740006711	19740114	
US3847823 A	19741112	US19730335995	19730226	
US3865735 A	19750211	US19730324909	19730119	
US3874454 A	19750401	US19740458942	19740408	
US3878894 A	19750422	US19740503550	19740905	
US3912010 A	19751014	US19740514963	19741015	
US3924681 A	19751209	US19730355635	19730430	
US3933201 A	19760120	US19740513919	19741011	
US3952803 A	19760427	US19750539218	19750108	
US3965984 A	19760629	US19740510204	19740930	

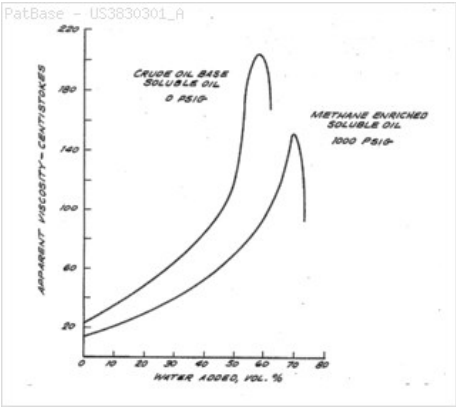
Priority:
US19730323612 19730115 US19730324909 19730119 US19730335995 19730226
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US19730344017 19730322 US19730388689 19730815 US19740513919 19741011
US19740514963 19741015 US19750539218 19750108

Probable Assignee: CONTINENTAL OIL CO
Assignee(s) (std): CONTINENTAL OIL CO
Assignee(s): CONTINENTAL OIL CO PONCA CITY OKLA V ST A ; CONTINENTAL OIL CO US ; CONTINENTAL OIL COMPANY ; CONTINENTAL OIL CY US ; GREGORY MERCER D ; KERFOOT OLIVER C ; KREHBIEL DELMAR D ; KENNEDY CARL D ; CASAD BURTON M ; CLARK CHARLES R
Inventor(s) (std): KERFOOT OLIVER C JR ; VEATCH FRED CHARLES ; PONCA CITY OKLA ; KERFOOT JUN OLIVER CARL ; KENNEDY CARL DAVID ; GREGORY MERCER DUANE ; CASAD BURTON MAURICE ; BUTLER CLAUDE DALE ; VEATCH FRED C ; KENNEDY CARL D ; GREGORY MERCER D ; GREGORY M DUANE ; CASAD B ; BUTLER CLAUD D ; BUTLER C ; VEATCH F ; KREHBIEL DELMAR D ; KREHBIEL D ; KERFOOT O ; KENNEDY C ; GREGORY M ; CLARK CHARLES R ; CLARK C ; KREHBIEL DELMAR DEAN ; CLARK CHARLES RICHARD ; CASAD BURTON M ; KERFOOT OLIVER C ; KERFOOT JR O
Inventor(s): KENNEDY CARL DAVID SAN DIEGO CALIF ; KERFOOT JUN ; VEATCH F US ; KREHBIEL D US ; KERFOOT O US ; KENNEDY C US ; GREGORY M US ; CLARK C US ; KREHBIEL DELMAR DEAN LUBBOCK TEX

Title: MISCIBLE FLOODING PROCESS USING METHANE-ENRICHED SOLUBLE OIL

Abstract: Source: US3830301A A miscible flooding process for the recovery of oil from subterranean reservoirs in which a methane-enriched soluble oil is injected into the reservoir through one or more injection wells at a pressure above the bubble point pressure of the composition, and thereafter an aqueous flooding agent is injected to drive the soluble oil towards a spaced production well. The soluble oil comprises an admixture of a liquid hydrocarbon, surface active organic sulfonates, and a stabilizing agent; and is enriched by the addition of methane in an amount not exceeding the saturation composition at reservoir conditions of temperature and pressure. The soluble oil can be substantially anhydrous, or it can contain water present as a water-in-oil microemulsion.

Classifications:
International (IPC 8-9): E21B43/16 (Advanced/Invention); E21B43/16 (Core/Invention)
International (IPC 1-7): E21B43/20 E21B43/22
CPC: E21B43/16
European: E21B43/16
US: 166/270.1 166/274



Family:

Publication number	Publication date	Application number	Application date
US3830301 A	19740820	US19720307128	19721116

Priority:

US19720307128 19721116

Probable Assignee: UNION OIL CO
Assignee(s): (std): UNION OIL CO
Assignee(s): UNION OIL CO OF CALIFORNIA US
Inventor(s): (std): HOLM L
Inventor(s): HOLM L US

Title: MOBILITY CONTROL IN LOW PERMEABILITY RESERVOIRS

Abstract: Source: US3858652A Improved oil recovery from reservoirs having average permeabilities less than 100 md is obtained by injecting into and displacing through the reservoir an aqueous mobility buffer containing an N-sulfohydrocarbon-substituted acrylamide polymer. A micellar solution slug is preferably injected ahead of the buffer slug. This polymer has a reasonably high intrinsic viscosity and permits high injection rates. "Plugging" of the reservoir is minimal at worst.

Classifications:

International (IPC 8-9): C09K8/588 E21B43/16 (Advanced/Invention);
C09K8/58 E21B43/16 (Core/Invention)

International (IPC 1-7): E21B43/22

CPC: C09K8/588 E21B43/16

European: C09K8/588 E21B43/16

US: 166/274 166/400

Family:

Publication number	Publication date	Application number	Application date
US3858652 A	19750107	US19730359939	19730514

Priority:

US19730359939 19730514

Probable Assignee: MARATHON OIL CO

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

Assignee(s): MARATHON OIL COMPANY

Inventor(s): (std): KNIGHT BRUCE L ; RHUDY JOHN S



Title: MICELLAR DISPERSIONS WITH TOLERANCE FOR EXTREME WATER HARDNESS FOR USE IN PETROLEUM RECOVERY

Abstract: Source: US4059154A A novel, thickened, miscible flooding medium to displace petroleum in subterranean reservoirs is a dispersion of light hydrocarbons, water and a surfactant system. The water may have from about 1500 to 12,000 parts per million polyvalent ions such as calcium and/or magnesium. The surfactant system comprises a water soluble salt of an alkyl or an alkylaryl sulfonate plus a water soluble salt of an alkyl or alkylaryl polyethoxy sulfate anionic surfactant plus a nonionic surfactant such as a polyethoxylated alkyl phenol, a polyethoxylated aliphatic alcohol or a fatty acid mono or dialkanolamide.

Classifications:

International (IPC 8-9): C09K8/584 E21B43/20 (Advanced/Invention); C09K8/58 E21B43/16 (Core/Invention)

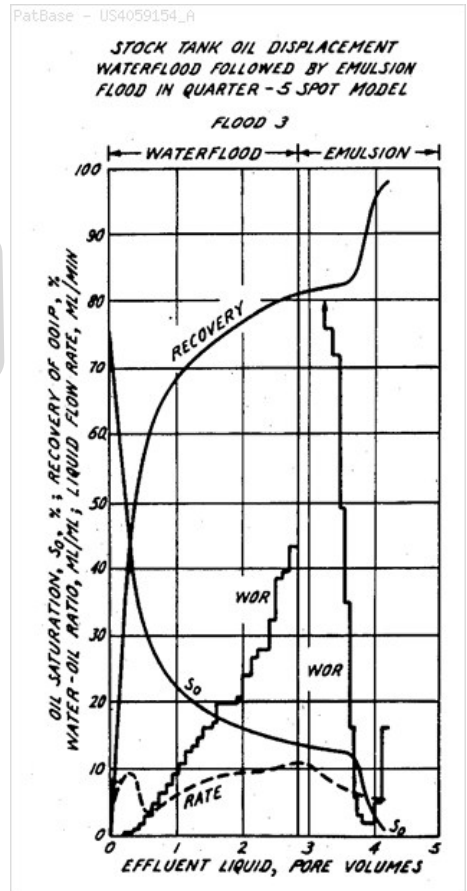
International (IPC 1-7): B01F17/00 C11D1/83 C11D3/18 E21B43/22

CPC: C09K8/584 E21B43/20 Y10S507/936

European: C09K8/584 E21B43/20

US: 166/270.1 166/274 507/244 507/254 507/259 507/261 507/262 507/936

APPROVED



Family:

Publication number	Publication date	Application number	Application date
AU197475413 A1	19760520	AU19740075413	19741115
BR7410064 A	19760608	BR19740010064	19741202
DE2456860 A1	19750605	DE19742456860	19741202
GB1484326 A	19770901	GB19740048620	19741111
NO744341 A	19750630	NO19740004341	19741202
US4059154 A	19771122	US19760657808	19760524

Priority:

US19730421296 19731203 US19760657808 19760524

Probable Assignee: TEXACO INC

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

Assignee(s): TEXACO DEV CORP

Inventor(s): (std): BRADEN JR W B ; BRADEN JR WILLIAM B ; BRADEN JUN WILLIAM BERNARD ; BRADEN W ; BRADEN WILLIAM BERNARD JR ; FLOURNOY K ; FLOURNOY K H ; FLOURNOY KENOTH HUGH ; FLOURNY KENOTH H

Inventor(s): HUGH FLOURNOY KENOTH ; KENOTH HUGH FLOURNOY ; WILLIAM BERNARD BRADEN JR ; BERNARD BRADEN JUN ; BERNARD BRADEN JUN WILLIAM

Title: MICELLAR DISPERSIONS WITH TOLERANCE FOR EXTREME WATER HARDNESS FOR USE IN PETROLEUM RECOVERY

Abstract: Source: GB1484154A 1484154 Hydrocarbon dispersions TEXACO DEVELOPMENT CORP 11 Nov 1974 [3 Dec 19731 48629/74 Heading B1V [Also in Division E] Oil is recovered from a subterranean reservoir by injecting a dispersion comprising (a) a hydrocarbon, (b) an aqueous liquid, and (c) a surfactant composition having a water soluble salt of an alkyl or alkylaryl sulphonate having the formula: in which R is a linear or branched alkyl radical having 5-25 carbon atoms, X is a sulphonate radical, and Y⁺ is a monovalent cation, and a water soluble salt of a sulphated oxyalkylated alkanol or of a sulphated oxyalkylated alkylphenol having the formula: in which R' is a linear or branched alkyl radical having 5-20 carbon atoms, n is a number from 1-10 and W⁺ is a monovalent cation. Preferably Y⁺ and W⁺ are sodium, potassium or ammonium ions, the hydrocarbon is crude oil, a side cut from a crude column overhead, gas oil, kerosene, heavy naptha, straight run gasoline, liquified petroleum, gas or a C 1-6 hydrocarbon, and the aqueous liquid is hard or soft water. The dispersion may comprise 1-90 percent by weight hydrocarbon and 99-10 percent by weight of aqueous liquid and surfactant, each surfactant being in an amount of from 0.05-5.00 percent by weight based on the aqueous liquid. The dispersion may also contain 100-5000 ppm of a hydrophilic polymer or a gas. The dispersion may be preceded by a preflush containing a sacrificial agent and a hydrophilic polymer, and may be followed by a driving fluid e.g. a gas or an aqueous solution of a hydrophilic polymer which may contain gas.

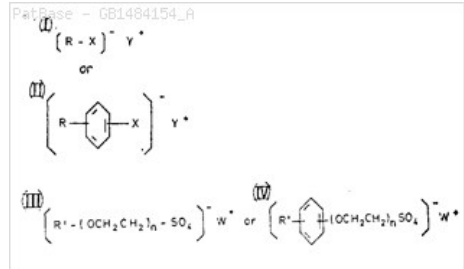
Classifications:

International (IPC 8-9): C09K8/584 E21B43/20 (Advanced/Invention); C09K8/58 E21B43/16 (Core/Invention)

International (IPC 1-7): B01F17/00 C11D1/37 C11D3/18 E21B43/00 E21B43/22

CPC: C09K8/584 E21B43/20

European: C09K8/584 E21B43/20



Family:

Publication number	Publication date	Application number	Application date
AR207964 A1	19761122	AR19740256709	19740101
AU197475414 A1	19760520	AU19740075414	19741115
BR7410065 A	19760608	BR19740010065	19741202
DE2456861 A1	19750605	DE19742456861	19741202
GB1484154 A	19770901	GB19740048629	19741111
NO744340 A	19750630	NO19740004340	19741202

Priority:

US19730421181 19731203

Probable Assignee: TEXACO DEVELOPMENT CORP

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

Assignee(s): TEXACO DEV CORP

Inventor(s): (std): BRADEN JR W B ; BRADEN JUN WILLIAM BERNARD ; BRADEN W ; BRADEN WILLIAM BERNARD JR ; FLOURNOY K ; FLOURNOY K H ; FLOURNOY KENOTH HUGH

Inventor(s): HUGH FLOURNOY KENOTH ; KENOTH HUGH FLOURNOY ; WILLIAM BERNARD BRADEN JR ; BERNARD BRADEN JUN ; BERNARD BRADEN JUN WILLIAM

Title: MICELLAR DISPERSIONS WITH TOLERANCE FOR EXTREME WATER HARDNESS FOR USE IN PETROLEUM RECOVERY

Abstract: Source: GB1484153A 1484153 Hydrocarbon emulsions TEXACO DEVELOPMENT CORP 11 Nov 1974 [3 Dec 1973] 48621/74 Heading B1V [Also in Division E1] Oil is recovered from a subterranean reservoir by injecting a dispersion comprising (a) a hydrocarbon, (b) an aqueous liquid containing 500-10,000 ppm of polyvalent cations, and (c) a surfactant composition having a water soluble salt of an alkyl or alkylaryl sulphonate having the formula: in which R is a linear or branched alkyl radical having 5-25 carbon atoms, X is a sulphonate radical, and Y⁺ is a monovalent cation, and a polyoxyalkylated alcohol or polyoxyalkylated alkyl phenol having the formula: in which R' is a linear or branched alkyl radical having 5-20 carbon atoms and n is a number from 3-20. Preferably Y⁺ is a sodium, potassium or ammonium ion, and the hydrocarbon is crude oil, a side cut from a crude column overhead, gas oil, kerosene, heavy naptha, straight run gasoline, liquified petroleum gas or a light hydrocarbon having 1-6 carbon atoms. The dispersion may comprise 1-90 percent by weight of the hydrocarbon and 99-10 percent by weight of aqueous liquid and surfactant, each surfactant being in an amount of 0.05-5 percent by weight, based on aqueous liquid. The dispersion may also contain 100-5000 ppm of a hydrophilic polymer. The dispersion, which may contain a gas, may be preceded by a preflush containing a sacrificial agent and a hydrophilic polymer, and may be followed by a driving fluid.

Classifications:

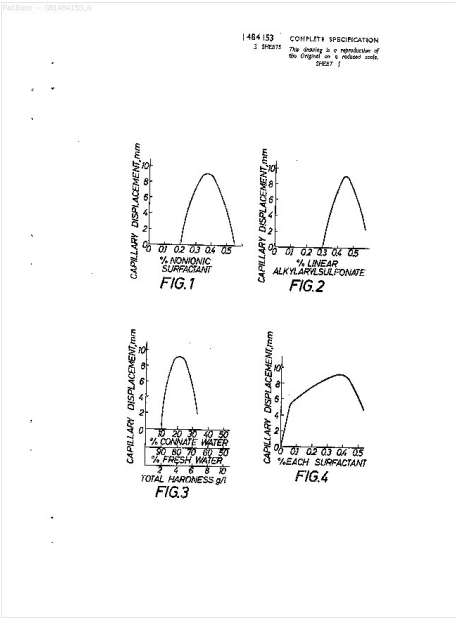
International (IPC 8-9): C09K8/584 E21B43/20 (Advanced/Invention);

C09K8/58 E21B43/16 (Core/Invention)

International (IPC 1-7): B01F17/00 C11D1/83 C11D3/18 E21B43/22

CPC: C09K8/584 E21B43/20

European: C09K8/584 E21B43/20



Family:

Publication number	Publication date	Application number	Application date
AU197475412 A1	19760520	AU19740075412	19741115
BR7410066 A	19760608	BR19740010066	19741202
DE2456946 A1	19750605	DE19742456946	19741202
GB1484153 A	19770901	GB19740048621	19741111
NO744339 A	19750630	NO19740004339	19741202

Priority:

US19730421175 19731203

Probable Assignee: TEXACO DEVELOPMENT CORP

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

Assignee(s): TEXACO DEV CORP

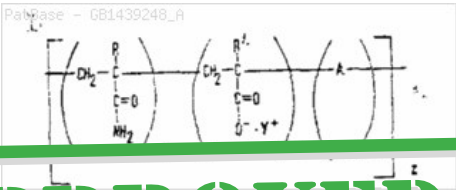
Inventor(s): (std): BRADEN JR W B ; BRADEN JUN WILLIAM BERNARD ; BRADEN W ; BRADEN WILLIAM BERNARD JR ; FLOURNOY K ; FLOURNOY K H ; FLOURNOY KENOTH HUGH

Inventor(s): HUGH FLOURNOY KENOTH ; KENOTH HUGH FLOURNOY ; WILLIAM BERNARD BRADEN JR ; BERNARD BRADEN JUN ; BERNARD BRADEN JUN WILLIAM

Title: PROCESS FOR THE RECOVERY OF OIL

Abstract: Source: GB1439248A 1439248 Secondary recovery from wells DOW CHEMICAL CO and MARATHON OIL CO 22 Nov 1973 54303/73 Heading E1F A process for recovering oil from a subterranean formation comprises introducing through one or more input wells a displacing fluid, and a flooding medium which comprises an aqueous solution of a mobility control polymer having a M.W. of at least 1.5×10^6 , an aqueous solution of a polymer conserving agent being introduced prior to or concurrently with the displacing fluid; the mobility control polymer and the polymer conserving agent are selected from the group defined by the general formula: Z being greater than 200 in the former and less than 70 in the latter. The displacing fluid is an oil and water emulsion or a micellar dispersion.

Classifications:
International (IPC 8-9): C09K8/588 (Advanced/Invention); C09K8/58 (Core/Invention)
International (IPC 1-7): E21B43/22
CPC: C09K8/588
European: C09K8/588



Family:

Publication number	Publication date	Application number	Application date
GB1439248 A	19760616	GB19730054303	19731122

Priority:
GB19730054303 19731122

Probable Assignee: DOW CHEMICAL CO

Assignee(s): (std): DOW CHEMICAL CO ; MARATHON OIL CO

APPROVED

APPROVED

Title: OIL RECOVERY PROCESS

Abstract: Source: GB1441710A 1441710 Secondary recovery from wells TEXACO DEVELOPMENT CORP 8 May 1974 20273/74 Heading E1F Oil is recovered from a reservoir containing water having at least 1,500 ppm of polyvalent ions dissolved therein by injecting, through an injection well, an aqueous solution containing a first anionic surfactant selected: from alkyl sulphonates containing from 5 to 25 carbon atoms, alkyl aryl sulphonates wherein the alkyl constituent contains from 5 to 25 carbon atoms, and petroleum sulphonate; and a second anionic surfactant comprising a water soluble salt of an alkyl polyethoxy sulphate containing from 1 to 10 ethoxy groups and wherein the alkyl constituent contains from 7 to 20 carbon atoms. Preferably the aqueous solution contains a nonionic surfactant selected from polyethoxylated alkylphenols having from 6 to 20 ethoxy groups and wherein the alkyl constituent contains from 5 to 20 carbon atoms, polyethoxylated aliphatic alcohols containing from 5 to 20 carbon atoms in the alcohol moiety and from 6 to 20 ethoxy groups, fatty acid dialkanolamides and fatty acid monoalkanolamides, the fatty acid containing from 5 to 20 carbon atoms. The concentrations of the first and second anionic surfactants and the non-ionic surfactant are from 0.05-5.0 percent by weight. The ratio of the concentrations of the first and second anionic surfactants is from 1:4 to 4:1 and the concentration of the first anionic surfactant to that of the nonionic surfactant is 1 to 8. The viscosity of the solution may be increased by known polymers.

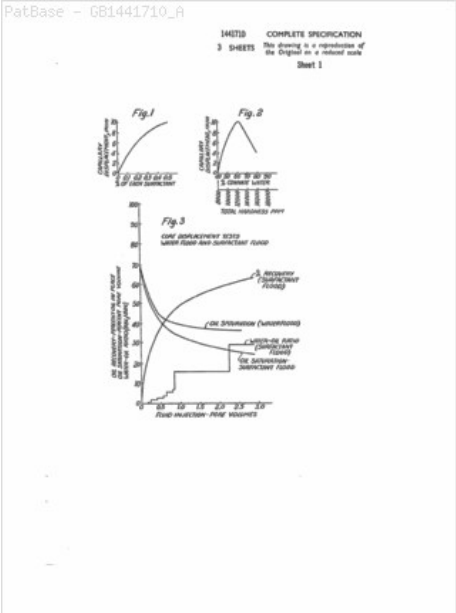
Classifications:

International (IPC 8-9): C09K8/584 (Advanced/Invention); C09K8/58 (Core/Invention)

International (IPC 1-7): E21B43/22

CPC: C09K8/584

European: C09K8/584



Family:

Publication number	Publication date	Application number	Application date
GB1441710 A	19760707	GB19740020273	19740508

Priority:

GB19740020273 19740508

Probable Assignee: TEXACO DEVELOPMENT CORP

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

Assignee(s): TEXACO DEVELOPMENT

Title: OIL RECOVERY PROCESS

Abstract: Source: GB1441709A 1441709 Secondary recovery from wells TEXACO DEVELOPMENT CORP 8 May 1974 20271/74 Heading E1F Oil is recovered from a reservoir containing water having from 500 to 900 ppm of polyvalent ions dissolved therein by injecting, through an injection well, an aqueous solution of an anionic surfactant selected from water soluble salts of alkyl sulphonates or phosphates having from 5 to 25 carbon atoms, and water soluble salts of alkylaryl sulphonates or phosphates wherein the alkyl chains have from 5 to 25 carbon atoms; and a nonionic surfactant selected from polyethoxylated alkyl phenols or polyethoxylated aliphatic alcohols having from 5 to 20 carbon atoms in the alkyl groups and from 6 to 20 polyethoxy groups. The concentrations of the anionic and nonionic surfactants in the aqueous solution are from 0.05 to 5.0 percent by weight. The ratio of the anionic surfactant concentration to the nonionic surfactant concentration is from 1:10 to 10:1. The viscosity of the aqueous solution may be increased by known polymers.

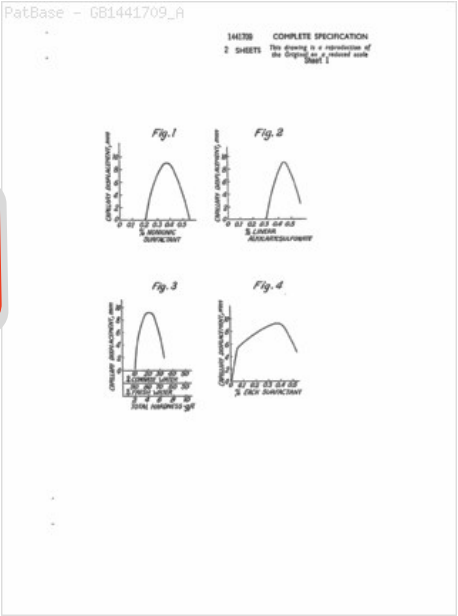
Classifications:

International (IPC 8-9): C09K8/584 (Advanced/Invention);
C09K8/58 (Core/Invention)

International (IPC 1-7): E21B43/22

CPC: C09K8/584

European: C09K8/584



Family:

Publication number	Publication date	Application number	Application date
GB1441709 A	19760707	GB19740020271	19740508

Priority:

GB19740020271 19740508

Probable Assignee: TEXACO DEVELOPMENT CORP

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

Title: STABLE MIXTURES OF POLYMERS AND SURFACTANTS FOR SURFACTANT FLOODING

Abstract: Source: US4049054A An improved fluid for surfactant flooding a subterranean oil-bearing reservoir is prepared by contacting polymer with fresh water in the substantial absence of a salt; thereafter combining the thus-formed polymer solution and a salt solution; and finally adding a surfactant.

Classifications:

International (IPC 8-9): C09K8/588 C09K8/90 (Advanced/Invention);
C09K8/58 C09K8/60 (Core/Invention)

International (IPC 1-7): E21B43/22

CPC: C09K8/584 C09K8/588 Y10S507/936

European: C09K8/584 C09K8/588

US: 166/270.1 166/273 166/275 507/213 507/215 507/224 507/225 507/259 507/936

Family:

Publication number	Publication date	Application number	Application date
US4049054 A	19770920	US19760730773	19761008

Priority:

US19740531158 19741209 US19760730773 19761008

Probable Assignee: PHILLIPS PETROLEUM CO

Assignee(s): (std): PHILLIPS PETROLEUM CO

Assignee(s): PHILLIPS PETROLEUM COMPANY

Inventor(s): (std): WIER DONALD R

APPROVED

APPROVED

Title: POLYMERIZATION OF UNSATURATED MONOMER WITH RADIATION IN THE PRESENCE OF SALT

Abstract: Source: GB1498136A 1498136 Preparing high molecular weight water-soluble polymers HERCULES Inc 4 April 1975 13925/75 Heading C3P Water-soluble, substantially linear, high molecular weight polymers are prepared by irradiating with high energy ionizing radiation, at an intensity of from 1000 to 200,000 rads./hour to a total dose of from 1000 to 30,000 rads, an aqueous solution having a pH of 2 to 12 and containing 10-40 percent by weight of (a) a monomer of the formula $\text{CH}_2 = \text{CR}-\text{CO}-\text{Y}$, (b) a mixture of monomers of the aforesaid formula, or (c) a water-soluble mixture of at least one monomer of the aforesaid formula with (i) up to 50 percent by weight of vinyl sulphonic acid or an alkali metal salt thereof and/or diacetone acrylamide, or (ii) up to 10 percent by weight of another watersoluble ethylenically unsaturated monomer, wherein in the given formula R represents H or methyl and Y represents $-\text{NH}_2$, $-\text{OM}$, wherein M is H, NH_4 , alkali metal or other cation yielding a water-soluble monomer, R 1, R 2 and R 3 are C 1 -C 4 alkyl and X is a monovalent anion; said aqueous solution also containing at least 3 percent by weight of at least one salt selected from various alkali metal or ammonium sulphates, chlorides, fluorides, bisulphates, and mono-, di- and tri-basic phosphates, and aluminium sulphate and aluminium chloride. The presence of the salt is stated to increase the rate of polymerization, increase the molecular weight of the polymer at a given conversion level, give a more linear polymer, and enable high conversion levels of monomer to polymer to be achieved. The polymer products are useful as flocculating agents, viscosity control agents in aqueous solutions, and as mobility control agents in flood water for recovery of crude oil from subterranean reservoirs. In examples the monomers used are sodium acrylate/acrylamide, quaternized dimethyl/- amino ethyl acrylate/acrylamide, acrylamide, and quaternized dimethyl/aminoethyl acrylate, and irradiation is effected with gamma rays from a Co^{60} source. Specification 1,279,108 is referred to.

Classifications:

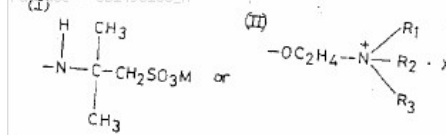
International (IPC 8-9): C08F2/10 C08F2/46 C08F2/54 (Advanced/Invention); C08F2/04 C08F2/46 (Core/Invention)

International (IPC 1-7): C08F2/46 C08F2/54 C08F20/02

CPC: C08F2/10 C08F2/46

European: C08F2/10 C08F2/46

PatBase - GB1498136_A



Family:

Publication number	Publication date	Application number	Application date
GB1498136 A	19780118	GB19750013925	19750404

Priority:

GB19750013925 19750404

Probable Assignee: HERCULES INC

Assignee(s): (std): HERCULES INC

NOT APPROVED

Title: FREMGANGSMAATE VED FORTRENGNING AV OLJE I ET UNDERJORDISK RESERVOIR

Abstract: Source: CA1082101A In displacing oil within a subterranean reservoir with an aqueous surfactant system containing a mixture of petroleum sulphonate and alcohol, an improvement is provided by using particular kinds and amounts of those components. The selected surfactant is one that forms an active aqueous surfactant system in the presence of an effective kind and amount of dissolved electrolyte. The selected alcohol is a preferentially oil-soluble alkanol that provides at least substantially equal activity when mixed with the selected surfactant in an aqueous system containing little or no dissolved electrolyte.

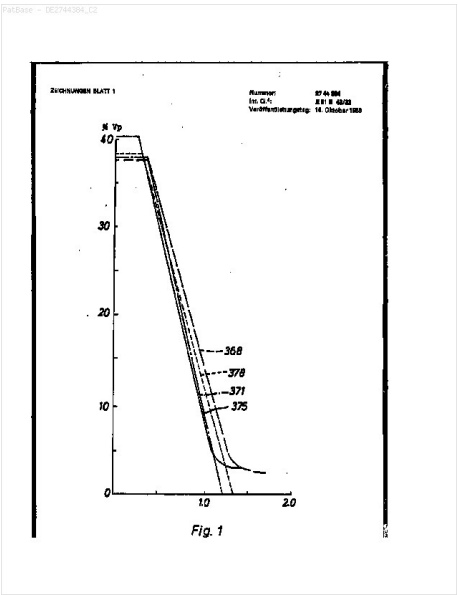
Classifications:

International (IPC 8-9): C09K8/584 E21B43/22 (Advanced/Invention); C09K8/58 (Core/Invention)

International (IPC 1-7): E21B43/20 E21B43/22

CPC: C09K8/584

European: C09K8/584



Family:

Publication number	Publication date	Application number	Application date
CA1082101 A1	19800722	CA19770286879	19770916
DE2744384 A1	19780406	DE19772744384	19771003
DE2744384 C2	19861016	DE19772744384	19771003
GB1542166 A	19790314	GB19770040971	19771003
NO773360 A	19780405	NO19770003360	19771003

Priority:

US19760729524 19761004 CA19770286879 19770916

Probable Assignee: SHELL CANADA LTD

Assignee(s): (std): SHELL CANADA LTD ; SHELL INT RESEARCH

Assignee(s): SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B V ; SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B V DEN HAAG NL ; SHELL INT RES MAATSCHAPPIJ BV ; CHIU YING CHECH ; SHELL CANADA LIMITED

Inventor(s): (std): CHIU YING CHECH

Inventor(s): CHIU YING CHECH HOUSTON TEX ; CHIU YING CHECH HOUSTON TEX US

Agent(s): SMART AND BIGGAR

Title: AQUEOUS SURFACTANT SYSTEMS FOR IN SITU MULTIPHASE MICROEMULSION FORMATION

Abstract: Source: US4125156A The optimum aqueous surfactant system for forming an efficient multiphase microemulsion system in situ is determined by comparing the behavior of oil from the formation to be flooded with the behavior of simple hydrocarbons in an equilibration test with a standard surfactant system. Thereafter, salt concentration, equivalent weight of the sulfonate and/or alcohol solubility is varied based on criterion disclosed herein to arrive at the optimum system for recovery of the specific oil in question.

Classifications:

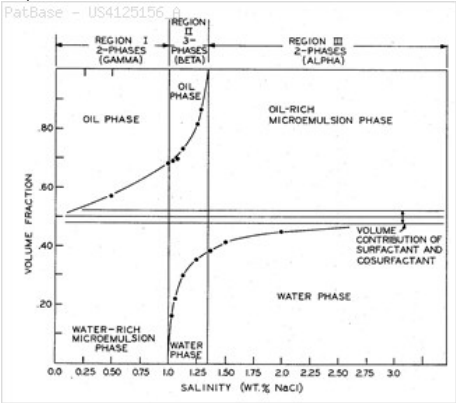
International (IPC 8-9): C09K8/584 E21B43/00 E21B43/16 (Advanced/Invention); C09K8/58 E21B43/16 (Core/Invention)

International (IPC 1-7): C09K7/02 C09K7/06 E21B43/00 E21B43/16 E21B43/22

CPC: Y10S507/938 C09K8/584

European: C09K8/584

US: 166/252 166/270.1 507/259 507/266 507/938



Family:

Publication number	Publication date	Application number	Application date
CA1097052 A1	19810310	CA19780304033	19780525
GB1603368 A	19811125	GB19780025086	19780531
GB1603369 A	19811125	GB19800035065	19780531
MX6074 U	19841029	MX19780101363U	19780531
NO152023 B	19850409	NO19780001942	19780602
NO152023 C	19850731	NO19780001942	19780602
NO781942 A	19781207	NO19780001942	19780602
NO830762 A	19781207	NO19830000762	19830304
US4125156 A	19781114	US19770804132	19770606

Priority:

US19770804132 19770606 CA19780304033 19780525 GB19780025086 19780531
MX19780173633 19780531

Probable Assignee: PHILLIPS PETROLEUM CO

Assignee(s): (std): PHILLIPS PETROLEUM CO

Assignee(s): PHILLIPS PETROLEUM COMP ; PHILLIPS PETROLEUM COMPANY ; GLINSMANN GILBERT R

Inventor(s): (std): GLINSMANN GILBERT ROY ; GLINSMANN GILBERT R ; GLINSMANN GIBERT R

Inventor(s): GILBERT ROY GLINSMANN

Agent(s): OSLER HOSKIN AND HARCOURT LLP

Title: XANTHOMONAS BIPOLYMER FOR USE IN DISPLACEMENT OF OIL FROM PARTIALLY DEPLETED RESERVOIRS

Abstract: Source: US4296203A A mutant strain of the genus Xanthomonas produces a pyruvate-free biopolymer. This biopolymer and the deacetylated form of this new biopolymer provide mobility control solutions which are especially useful for enhanced oil recovery where high brine applications are involved. The mobility control solutions of the present invention may be made from whole or filtered fermentation broth containing the pyruvate-free biopolymer or its deacetylated form. Alternatively, the biopolymer or its deacetylated form may be recovered from the broth and the recovered product used to form the desired mobility control solutions.

Classifications:
International (IPC 8-9): C08B37/00 C09K8/08 C09K8/58 C09K8/90 C12N1/20 C12P19/06 E21B43/22 (Advanced/Invention); C12R1/64 (Advanced/Non-invention); C08B37/00 C09K8/02 C09K8/58 C09K8/60 C12N1/20 C12P19/00 E21B43/16 (Core/Invention)
International (IPC 1-7): C08B37/00 C12B3/00 C12D13/04 C12N1/20 C12N15/00 C12P19/06 C12R1/64 E21B43/00 E21B43/22 E21D
CPC: C08B37/0033 Y10S435/91 Y10S507/936 C09K8/588 C09K8/905 C09K8/08 C12P19/06
US: 166/246 252/8.55D 435/101 435/104 435/252.1 435/253 435/910 507/213 507/936 536/114 536/14

Family:

Publication number	Publication date	Application number	Application date
BE871955 A1	19790514	BE19780191678	19781113
BR7807431 A	19790724	BR19780007431	19781113
CA1113875 A1	19811208	CA19780314034	19781024
DE2848894 A1	19790517	DE19782848894	19781110
DE2848894 C2	19830203	DE19782848894	19781110
DK389178 A	19790516	DK19780003891	19780904
FR2408653 A1	19790608	FR19780032084	19781114
FR2408653 B1	19840427	FR19780032084	19781114
GB2008600 A1	19790606	GB19780044319	19781113
GB2008600 B2	19820324	GB19780044319	19781113
IE47753 B	19840613	IE19780002248	19781114
IE782248 L	19790515	IE19780002248	19781114
IT1101407 A	19850928	IT19780029772	19781114
IT7829772 A0	19781114	IT19780029772	19781114
JP1088429 C3	19820323	JP19780140398	19781114
JP1134276 C3	19830214	JP19800151313	19801028
JP1134277 C3	19830214	JP19800151314	19801028
JP1134278 C3	19830214	JP19800151315	19801028
JP54145290 A2	19791113	JP19780140398	19781114
JP56028921 B4	19810704	JP19780140398	19781114
JP56085284 A2	19810711	JP19800151316	19801028
JP56085292 A2	19810711	JP19800151313	19801028
JP56085293 A2	19810711	JP19800151314	19801028
JP56085294 A2	19810711	JP19800151315	19801028
JP57022321 B4	19820512	JP19800151313	19801028
JP57022322 B4	19820512	JP19800151314	19801028
JP57022323 B4	19820512	JP19800151315	19801028
LU80512 A	19800605	LU19780080512	19781113
MX5311 U	19830614	MX19780101063U	19781114
NL7811234 A	19790517	NL19780011234	19781114
US4296203 A	19811020	US19770851757	19771115
US4340678 A	19820720	US19810222388	19810105
US4352741 A	19821005	US19810269681	19810602

Priority:
US19770851757 19771115 CA19780314034 19781024 MX19780175610 19781114
US19810222388 19810105 US19810269681 19810602

Probable Assignee: OFPG INC
Assignee(s): (std): PFIZER
Assignee(s): PFIZER INC ; SNF ; PFIZER INC TE NEW YORK ; PFIZER INC 10017 NEW YORK N Y US ; WERNAU WILLIAM C ; PFIZER LTD ; FPIZER INC ; OFPG ; OFPG INC
Inventor(s): (std): UIRIAMU CHIYAARUZU WAANOO ; WERNAU W ; WERNAU W C ; WERNAU WILLIAM C ; WERNAU WILLIAM CHARLES
Inventor(s): WERNAU WILLIAM CHARLES GROTON CONN ; WILLIAM CHARLES WERNAU ; CHARLES WERNAU WILLIAM
Agent(s): SMART AND BIGGAR



Title: VERFAHREN ZUR OELGEWINNUNG OIL RECOVERY USING SLUG COMPRISING AQ. POLYMER SOLN. - OF VARYING SURFACTANT CONCN. AND AQ. DRIVE FLUID CONTG. SOLUBILISING AGENT

Abstract: Source: DE2755066A1 Patentansprueche 7 Verfahren zur Oelgewinnung aus einer untertaegigen Formation, in der mindestens eine Injektionsbohrung mit mindestens einer Foerderbohrung in Verbindung stehen, d a d u r c h g e k e n n z e i c h n e t, dass a) eine aus Wasser und einem oberflaechenaktiven, vorzugs weise anionischen Mittel bestehende Menge durch die Injektionsbohrung in die Formation eingegeben wird, wobei eine Konzentrationserhoehung des oberflaechenaktiven Mittels waehrend der Eingabe erfolgt; b) Wasser durch die Injektionsbohrung in die Formation einge geben wird; c) oel durch die Foerderbohrung aus der Formation gewonnen wird 2. Oil is recovered from an underground formation which has an injection well and a prodn. well by (a) injecting a slug consisting of an aq. polymer soln. contg. a small amt. of a surfactant with an increase in the concn. of the surfactant as the slug is injected, (b) injecting water contg. a small amt. of a solubilising agent of formula (i) R-NR2-R1O(CH2CH2O)mA, (ii) R-NR3-R1O(CH2CH2O)mSO3A or (iii) R-NR4-R1O(CH2CH2O)nCH2CH2SO3A (where R is 1-16C alkyl, R1 is 2-4C alkylene, R2 is H, 1-16C alkyl or -R1O(CH2CH2O)mA; R3 is H, 1-16C alkyl or R1O(CH2CH2O)nSO3A; R4 is H, 1-16c alkyl or -R1O(CH2CH2O)nCH2CH2SO3A, A is H, Na, K or NH4, m = 4-60 and n = 4-60); and (c) recovering oil through the prodn. well. Pref. polymer is (hydrolysed) polyacrylamide or a polysaccharide. Interfacial tension between the water and the crude is decreased and fingering is inhibited.

Classifications:
International (IPC 8-9): C09K8/584 E21B43/20 (Advanced/Invention); C09K8/58 E21B43/16 (Core/Invention)
International (IPC 1-7): E21B43/20
CPC: C09K8/584 E21B43/20
European: C09K8/584 E21B43/20

Family:

Publication number	Publication date	Application number	Application date
DE2755066 A1	19790613	DE19772755066	19771210

Priority:

DE19772755066 19771210

Probable Assignee: TEXACO DEVELOPMENT CORP

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

Inventor(s): (std): BOUSAID ISSAM S

Inventor(s): S BOUSAID ISSAM



Title: Oil recovery method employing alternate slugs of surfactant fluid and fresh water

Abstract: Source: US4230182A Disclosed is a petroleum recovery method useful for recovering petroleum from subterranean formations containing water having high salinity and/or divalent ion concentration, employing an aqueous surfactant-containing fluid which is designed to effect low surface tension displacement of petroleum in the formation in the presence of high salinity water. The improvement comprises injecting the total desired volume of surfactant in the form of a plurality of relatively small slugs of surfactant fluid, and alternately injecting similarly small pore volume slugs of fluid comprising fresh water, e.g. salinities less than 10,000 parts per million and preferably less than 1000 parts per million total dissolved solids. The surfactant fluid comprises water containing at least one surfactant and up to 5.0 volume percent hydrocarbon, said hydrocarbon optionally containing an oil soluble silicone compound dissolved therein. The total pore volume of surfactant-containing fluid injected is ordinarily from 0.01 to 1.00 and preferably from 0.20 to 0.50 pore volumes. This total amount of surfactant fluid is injected in from 2 to 15 and preferably from 3 to 6 separate discrete slugs. Each slug of surfactant fluid is followed by injecting a quantity of fresh water. The volume of each fresh water slug is ordinarily from 0.5 to 5.0 and preferably 1 to 2 times the volume of the preceding surfactant fluid slug.

Classifications:

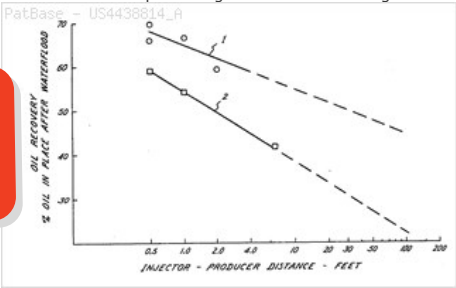
International (IPC 8-9): C09K8/58 C09K8/584 E21C41/24 (Advanced/Invention); C09K8/58 E21C41/00 (Core/Invention)

International (IPC 1-7): E21B43/22 E21C41/10

CPC: C09K8/58

European: C09K8/58 C09K8/584 C09K8/588

US: 166/273



Family:

Publication number	Publication date	Application number	Application date
DE3031856 A1	19810319	DE19803031856	19800823
US4230182 A	19801028	US19790071220	19790830
US4266611 A	19810512	US19790071218	19790830
US4271906 A	19810609	US19790071147	19790830
US4438814 A	19840327	US19820411172	19820825

Priority:

US19790071218 19790830 US19790071220 19790830 US19800193323 19801002
US19790071211 19790830 US19820411172 19820825 US19790071147 19790830

Probable Assignee: TEXACO INC

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

Inventor(s): (std): HO BENNY K C ; BOUSAID ISSAM S

Inventor(s): S BOUSAID ISSAM ; K C HO BENNY

Title: MICROEMULSIONS WHICH COMPATIBLY INCORPORATE VISCOSIFIERS AND THEIR USE IN ENHANCED OIL RECOVERY

Abstract: Source: US4271907A To improve the sweep efficiency of a microemulsion flooding process to recover crude oil from a subterranean formation, a mobility control polymer is added to the microemulsion to increase its viscosity. To enable the compatible incorporation of the polymer and surfactant into the microemulsion, while still utilizing an aqueous component having a salinity near that of the formation, a microemulsion oil component is used for which the surfactant's optimal salinity is substantially higher than for reservoir crude oil.

Classifications:

International (IPC 8-9): C09K8/58 E21B43/22 (Advanced/Invention); C09K8/58 (Core/Invention)

International (IPC 1-7): E21B43/20 E21B43/22

CPC: Y10S507/938 C09K8/588 C09K8/584

European: C09K8/584 C09K8/588

US: 166/270.1 166/274 166/275 507/213 507/224 507/254 507/255 507/259 507/260 507/261 507/262 507/263 507/264 507/265 507/266 507/267 507/268 507/269 507/270 507/271 507/272 507/273 507/274 507/275 507/276 507/277 507/278 507/279 507/280 507/281 507/282 507/283 507/284 507/285 507/286 507/287 507/288 507/289 507/290 507/291 507/292 507/293 507/294 507/295 507/296 507/297 507/298 507/299 507/300 507/301 507/302 507/303 507/304 507/305 507/306 507/307 507/308 507/309 507/310 507/311 507/312 507/313 507/314 507/315 507/316 507/317 507/318 507/319 507/320 507/321 507/322 507/323 507/324 507/325 507/326 507/327 507/328 507/329 507/330 507/331 507/332 507/333 507/334 507/335 507/336 507/337 507/338 507/339 507/340 507/341 507/342 507/343 507/344 507/345 507/346 507/347 507/348 507/349 507/350 507/351 507/352 507/353 507/354 507/355 507/356 507/357 507/358 507/359 507/360 507/361 507/362 507/363 507/364 507/365 507/366 507/367 507/368 507/369 507/370 507/371 507/372 507/373 507/374 507/375 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Family:

Publication number	Publication date	Application number	Application date
CA1136840 A1	19821207	CA19800354624	19800623
DE3024865 A1	19810129	DE19803024865	19800701
FR2461090 A1	19810130	FR19800014750	19800702
FR2461090 B1	19841019	FR19800014750	19800702
GB2053325 A1	19810204	GB19800021739	19800702
GB2053325 B2	19830518	GB19800021739	19800702
US4271907 A	19810609	US19790054380	19790702

Priority:

US19790054380 19790702 CA19800354624 19800623

Probable Assignee: EXXON PRODUCTION RESEARCH CO

Assignee(s): (std): EXXON PRODUCTION RESEARCH CO ; EXXON RESEARCH ENGINEERING CO

Assignee(s): EXXON RESEARCH ENGINEERING CY ; GALE WALTER W ; EXXON PRODUCTION RESEARCH COMPANY ; EXXON PRODUCTION RESEARCH CY

Inventor(s): (std): GALE WALTER W ; GALE WALTER WILSON

Inventor(s): WILSON GALE WALTER

Agent(s): BORDEN LADNER GERVAIS LLP



Title: POLYMER-MICROEMULSION COMPLEXES FOR THE ENHANCED RECOVERY OF OIL

Abstract: Source: US4353806A A polymer-microemulsion complex useful for the enhanced recovery of crude oil is disclosed. The polymer is polyethylene oxide or polyvinyl pyrrolidone and interacts with the surfactant of the microemulsion to form a physical association. The resulting complex is characterized by a complexation energy of at least 2 Kcal/mole. The polymer microemulsion complexes are stable at high salinity, reduce adsorption and retention by the formation, lower interfacial tension, achieve retentions as low as 0.1 mg surfactant/gm sand at high salinity and provide for early banking, as well as high recovery of oil.

Classifications:

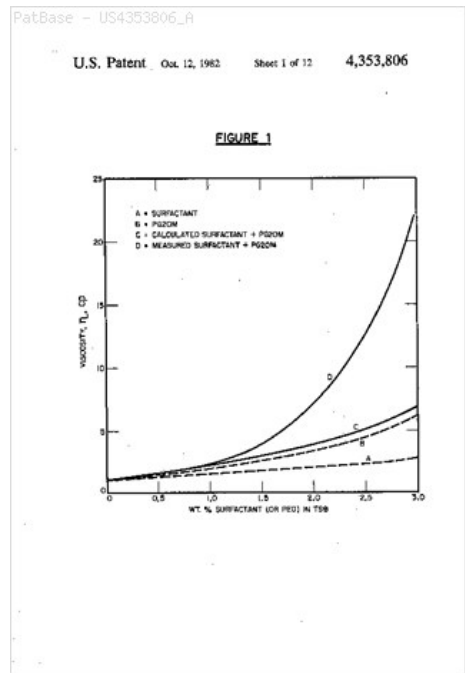
International (IPC 8-9): B01F17/00 C08J3/02 C08J3/09 C09K8/58 C09K8/588 E21B43/22 (Advanced/Invention); B01F17/00 C08J3/02 C09K8/58 (Core/Invention)

International (IPC 1-7): C08J3/08 C08L39/06 C08L71/02 E21B43/22

CPC: C08J3/09 Y10S507/938 C09K8/588 B01F17/00 C08J3/02 C09K8/584

European: B01F17/00 C08J3/02 C08J3/09 C09K8/584 C09K8/588

US: 166/270.1 166/274 252/8.55D 507/219 507/229 507/240 507/246 507/252 507/253 507/254 507/255 507/259 507/261 507/262 507/938



Family:

Publication number	Publication date	Application number	Application date
CA1142742 A1	19830315	CA19810374418	19810401
DE3170092 D1	19850530	DE19813170092	19810331
EP0037699 A2	19811014	EP19810301395	19810331
EP0037699 A3	19820203	EP19810301395	19810331
EP0037699 B1	19850424	EP19810301395	19810331
US4353806 A	19821012	US19800136936	19800403
US4360061 A	19821123	US19800136938	19800403

Priority:

US19800136936 19800403 US19800136938 19800403 CA19810374418 19810401

Probable Assignee: EXXON RESEARCH ENGINEERING CO

Assignee(s): (std): EXXON RESEARCH ENGINEERING CO

Assignee(s): ROBBINS MAX L ; BAKER EDWARD G ; CANTER NATHAN H ; EXXON RESEARCH AND ENGINEERING CO ; EXXON RESEARCH AND ENGINEERING CO A CORP OF DE ; EXXON RESEARCH AND ENGINEERING COMPANY

Inventor(s): (std): ROBBINS MAX LEO ; ROBBINS MAX L ; CANTER NATHAN HARVEY ; CANTER NATHAN H ; BAKER EDWARD GEORGE ; BAKER EDWARD G

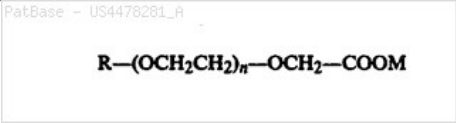
Agent(s): BORDEN LADNER GERVAIS LLP

Designated states: DE FR GB

Title: PROCESS FOR EXTRACTING OIL FROM A SUBTERRANEAN RESERVOIR

Abstract: Source: US4478281A A process for recovering extensively emulsion-free oil from a subterranean deposit of medium or high salinity comprises forcing into an injection well a 1-20 percent strength solution or dispersion in formation water of a carboxymethylated ethoxylate tenside of the formula: R-(OCH2CH2)n-OCH2-COOM wherein R is a linear or branched aliphatic residue of 4-20 carbon atoms or a mono- or dialkylaromatic residue of 1-14 carbon atoms in the alkyl group, n is 3-30, and M is an alkali or alkaline earth metal ion or ammonium, and wherein the degree of carboxymethylation is incomplete, wherein the tenside is selected so that the phase inversion temperature of the system: crude oil/formation water/tenside/optional additives, lies 0 DEG -10 DEG C. above the deposit temperature.

Classifications:
International (IPC 8-9): C09K8/584 E21B43/22 E21B43/28 (Advanced/Invention); C09K8/58 E21B43/16 (Core/Invention)
International (IPC 1-7): C09K7/00 C10G1/00 E21B43/16 E21B43/22 E21B43/28
CPC: Y10S507/936 C09K8/584
European: C09K8/584
US: 166/270.1 166/273 166/274 166/400 252/8.55D 507/261 507/262 507/936



Family:

Publication number	Publication date	Application number	Applica t date
AT17151 E	19860115	AT19830100089T	19830107
AT17772 E	19860215	AT19820105950T	19820703
AT4468 E	19830915	AT19810105345T	19810709
AT4927 E	19831015	AT19820100912T	19820209
CA1159362 A1	19831227	CA19810385512	19810909
CA1179114 A1	19841211	CA19820396426	19820217
CA1189303 A1	19850625	CA19820410295	19820827
CA1199783 A1	19860128	CA19830422855	19830304
DE3105912 C1	19820930	DE19813105912	19810218
DE3134530 A1	19820513	DE19813134530	19810901
DE3134530 C2	19861106	DE19813134530	19810901
DE3208206 A1	19830908	DE19823208206	19820306
DE3268795 D1	19860313	DE19823268795	19820703
DE3361572 D1	19860206	DE19833361572	19830107
EP0047370 A1	19820317	EP19810105345	19810709
EP0047370 B1	19830817	EP19810105345	19810709
EP0058871 A1	19820901	EP19820100912	19820209
EP0058871 B1	19831005	EP19820100912	19820209
EP0073894 A2	19830316	EP19820105950	19820703
EP0073894 A3	19831005	EP19820105950	19820703
EP0073894 B1	19860129	EP19820105950	19820703
EP0088206 A2	19830914	EP19830100089	19830107
EP0088206 A3	19831012	EP19830100089	19830107
EP0088206 B1	19851227	EP19830100089	19830107
HU186421 B	19850729	HU19810002596	19810909
HU187049 B	19851028	HU19830000752	19830304
HU190375 B	19860828	HU19820000480	19820217
NO155896 B	19870309	NO19810003031	19810907
NO155896 C	19870617	NO19810003031	19810907
NO155897 B	19870309	NO19820000489	19820217
NO155897 C	19870617	NO19820000489	19820217
NO158824 B	19880725	NO19820002935	19820831
NO158824 C	19881102	NO19820002935	19820831
NO813031 A	19820311	NO19810003031	19810907
NO820489 A	19820819	NO19820000489	19820217
NO822935 A	19830302	NO19820002935	19820831
NO830761 A	19830907	NO19830000761	19830304
RO85383 B1	19841130	RO19810105264	19810909
RO85383 P	19841125	RO19810105264	19810909
SU1519530 A3	19891030	SU19813328503	19810909
US4478281 A	19841023	US19810300427	19810909
US4485873 A	19841204	US19820413908	19820901
YU196582 A	19850320	YU19820001965	19820831
YU210481 A	19830930	YU19810002104	19810901
YU44283 A	19851031	YU19830000442	19830224

Priority:
DE19803033926 19800910 DE19813105912 19810218 US19810300427 19810909
EP19810105345 19810709 CA19810385512 19810909 DE19813134530 19810901
EP19820100912 19820209 EP19830100089 19830107 EP19820105950 19820703
CA19820410295 19820827 CA19820396426 19820217 DE19823268795 19820703
DE19833361572 19830107 DE19823208206 19820306 CA19830422855 19830304

Probable Assignee: CHEMISCHE WERKE HUELS AG
Assignee(s): (std): HUELS CHEMISCHE WERKE AG ; HUELS AG
Assignee(s): HUELS AKTIENGESSELLSCHAFT ; CHEMISCHE WERKE HULS AG ; HUELS AG 4370 MARL DE ; CHEMISCHE WERKE HULS AKTIENGESSELLSCHAFT ; CHEMISCHE WERKE HULS AG DE ; CHEMISCHE WERKE HULS A G ; HULS AG ; DEGUSSA HULS AG ; CHEMISCHE WERKE HUELS S 4370 MARL GERMANY AG ; CHEMISCHE WERKE HUELS DE AG ; CHEMISCHE WERKE HULS DE AG ; KHEMISHE VERKE KHYULS AG (FIRMA) ; KHEMISHE VERKE KHYULS AG FA ; KOSSWIG KURT ; BALZER DIETER ; CHEMISCHE WERKE HUELS A G ; CHEMISCHE WERKE HUELS AG ; CHEMISCHE WERKE HUELS AG 4370 MARL DE ; CHEMISCHE WERKE HUELS AG DE ; CHEMISCHE WERKE HUELS AKTIENGESSELLSCHAFT ; CHEMISCHE WERKE HUELS D 4370 MARL GERMANY AG
Inventor(s): (std): KOSSWIG KURT DR ; KOSSWIG K ; KOSOVIG KURT ; BALZER DIETER DR ; BLANZER DIETER ; BALZER D ; BALTSE R DITER ; KOSSWIG KURT ; BALZER DIETER
Inventor(s): BALZER DIETER DE ; BALZER DIETER DR 4370 MARL DE ; DITER BALTSE R DE ; BLANZER DIETER DE ; KOSSWIG KURT DR 4370 MARL DE ; KURT KOSOVIG DE ; KOSSWIG KURT DE
Agent(s): FETHERSTONHAUGH AND CO
Designated states: AT BE DE FR GB IT NL SE

Title: PROCESS FOR EXTRACTING EXTENSIVELY EMULSION-FREE OIL FROM A SUBTERRANEAN RESERVOIR

Abstract: Source: US4542790A A process for extracting extensively emulsion-free oil from a subterranean deposit, the formation water of which has a medium or high total salinity and has a relatively low alkaline earth metal ion concentration, comprising injecting into an injection well therein a 1-20 percent strength aqueous tenside solution or dispersion in formation water of a mixture of 10-90 percent of carboxymethylated ethoxylates of the formula R-(OCH2CH2)n-OCH2-COOM and 90-10 percent of ethoxylates of the formula R-(OCH2CH2)n-OH, wherein R is a linear or branched hydrocarbon aliphatic group of 4-20 carbon atoms or an alkylphenyl group of 1-14 carbon atoms in the alkyl group, n is 3-15, and M is an alkali or alkaline earth metal ion or ammonium, wherein alkaline earth metal ions are contained in the tenside solution or dispersion in such a concentration that the phase inversion temperature of the system:crude oil/formation water/tenside solution or dispersion, lies at most 10 DEG C. above the deposit temperature.

Classifications:

International (IPC 8-9): C09K8/584 E21B43/22 E21B43/28 (Advanced/Invention);

C09K8/58 E21B43/16 (Core/Invention)

International (IPC 1-7): C09K7/00 C10G1/00 E21B43/22 E21B43/28

CPC: Y10S507/936 C09K8/584

European: C09K8/584

US: 166/273 166/274 166/400 252/8.55D 507/261 507/262 507/936



Family:

Publication number	Publication date	Application number	Application date	
AT5344 E	19831215	AT19810105344T	19810709	
CA1171778 A1	19840731	CA19810385472	19810909	
DE3033927 A1	19820408	DE19803033927	19800910	
DE3033927 C2	19820909	DE19803033927	19800910	
DE3208208 A1	19830908	DE19823208208	19820306	
DE3361036 D1	19851128	DE19833361036	19830107	
EP0047369 A1	19820317	EP19810105344	19810709	
EP0047369 B1	19831116	EP19810105344	19810709	
EP0088205 A1	19830914	EP19830100088	19830107	
EP0088205 B1	19851023	EP19830100088	19830107	
HU186420 B	19850729	HU19810002578	19810908	
HU187048 B	19851028	HU19830000751	19830304	
NO156701 B	19870727	NO19810003071	19810909	
NO156701 C	19871104	NO19810003071	19810909	
NO813071 A	19820311	NO19810003071	19810909	
SU1445563 A3	19881215	SU19813328504	19810909	
US4542790 A	19850924	US19840633680	19840725	
YU210381 A	19830930	YU19810002103	19810901	
YU44183 A	19851031	YU19830000441	19830224	

Priority:

DE19803033927 19800910 EP19810105344 19810709 US19810300547 19810909

CA19810385472 19810909 DE19833361036 19830107 DE19823208208 19820306

Probable Assignee: HUELS CHEMISCHE WERKE AG

Assignee(s): (std): HUELS CHEMISCHE WERKE AG

Assignee(s): HULS AG ; BALZER DIETER ; CHEMISCHE WERKE H LS AG ; CHEMISCHE WERKE HUELS 4370 MARL DE AG ; CHEMISCHE WERKE HUELS A G ; CHEMISCHE WERKE HUELS AG ; CHEMISCHE WERKE HULS AG ; CHEMISCHE WERKE HUELS AG 4370 MARL DE ; CHEMISCHE WERKE HULS AKTIENGESELLSCHAFT ; CHEMISCHE WERKE HUELS AKTIENGESELLSCHAFT ; CHEMISCHE WERKE HUELS AG DE ; DEGUSSA HULS AG ; CHEMISCHE WERKE HUELS DE AG

Inventor(s): (std): BALTSE R DITER ; BALZER D ; BALZER DIETER ; BALZER DIETER DR ; KOSSVIG KURT

Inventor(s): KURT KOSSVIG DE ; BALZER DIETER DR 4370 MARL DE ; DITER BALTSE R DE ; BALZER DIETER DE

Agent(s): FETHERSTONHAUGH AND CO

Designated states: AT BE DE FR GB IT NL

Title: USE OF POLYAMINES AS DEMULSIFIERS

Abstract: Source: US4411814A This invention relates to the use of polyamines and/or polyamine salts, preferably those having 20 or less amino groups, as demulsifiers. This invention is particularly useful in breaking emulsions formed in surfactant flooding of oil bearing subterranean formations.

Classifications:
International (IPC 8-9): B01D17/04 B01D17/05 (Advanced/Invention);
B01D17/04 (Core/Invention)
International (IPC 1-7): B01D17/04
CPC: Y10S516/03 B01D17/047
European: B01D17/04J
US: 166/267 208/187 252/331 252/344 252/353 252/8.55D 516/180 516/DIG.3

Family:

Publication number	Publication date	Application number	Application date
US4411814 A	19831025	US19810233272	19810210

Priority:
US19770814514 19770711 US19770836123 19770923 US19810233272 19810210

Probable Assignee: BAKER HUGHES INC

Assignee(s): (std): PETROLITE CORP

Assignee(s): BAKER HUGHES INC ; PETROLITE A CORP OF DE CORP

Inventor(s): (std): BURKHARDT CHARLES W

Title: METHOD OF EXTRACTING AND REUTILIZING SURFACTANTS FROM EMULSIONS

Abstract: Source: US4513820A An invention for extracting surfactants from produced emulsions of oil, water and surfactant and concentrating the surfactants into a relatively small volume, emulsion phase that can be reutilized in surfactant flooding. The two phases left behind in the extraction are a substantially water-free and surfactant-free crude oil phase and an oil-free aqueous phase. The extracting compounds employed are the alkali metal salts and ammonium salts of cumene sulfonate, propyl benzene sulfonate, ethyl benzene sulfonate, methyl ethyl benzene sulfonate, diethyl benzene sulfonate, methyl propyl benzene sulfonate, xylene sulfonate and dicyclopentadiene sulfonate.

Classifications:

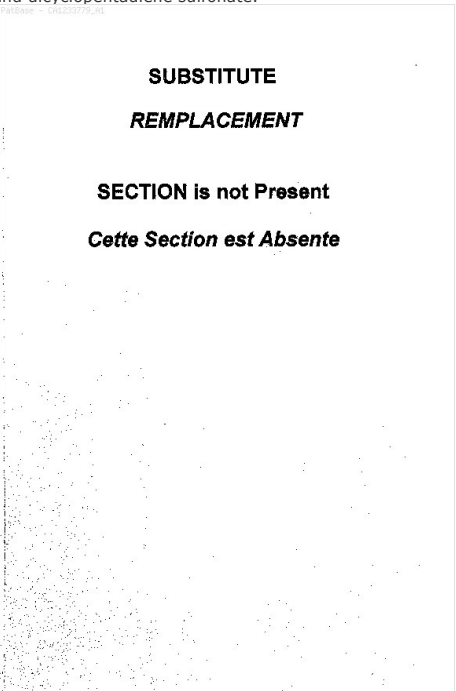
International (IPC 8-9): C09K8/584 E21B43/22 E21B43/40 (Advanced/Invention); C09K8/58 E21B43/34 (Core/Invention)

International (IPC 1-7): E21B43/22 E21B43/34 E21B43/40

CPC: Y10S507/936 E21B43/40 C09K8/584

European: C09K8/584 E21B43/40

US: 166/266 208/188 252/8.55D 252/855D 507/259 507/936



Family:

Publication number	Publication date	Application number	Application date
CA1233779 A1	19880308	CA19840445120	19840111
DE3347729 A1	19840802	DE19833347729	19831231
US4513820 A	19850430	US19830462579	19830131

Priority:

US19830462579 19830131 CA19840445120 19840111

Probable Assignee: TEXACO INC

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

Assignee(s): TEXACO INC A CORP OF DE ; MADDOX JIM JR

Inventor(s): (std): MADDOX JIM JR ; MADDOX JR JIM ; MADDOX JUN JIM

Inventor(s): JUN ; JUN JIM MADDOX

Agent(s): SMART AND BIGGAR

Title: Process for enhanced oil recovery employing synthetic sulfonates and petroleum sulfonate blends

Abstract: Source: US4530400A Enhanced oil recovery from a subterranean petroleum reservoir is realized by successively flooding oil-bearing subterranean formations with (1) a micellar displacement fluid comprising (A) a hydrocarbon, (B) optionally a cosurfactant, (C) brine, and (D) a synthetic sulfonate or a synthetic sulfonate in combination with one or more different petroleum sulfonates, (2) a mobility buffer, and (3) an aqueous drive fluid; the oil is recovered from one or more production wells spaced apart from the injection well in the reservoir.

Classifications:
International (IPC 8-9): C09K8/584 (Advanced/Invention); C09K8/58 (Core/Invention)
International (IPC 1-7): E21B43/16
CPC: C09K8/584
European: C09K8/584
US: 166/270.1 166/273 166/274

Family:

Publication number	Publication date	Application number	Application date
US4530400 A	19850723	US19830565237	19831227

Priority:
US19830565237 19831227

Probable Assignee: UNION OIL CO

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

Assignee(s): UNION OIL COMPANY OF CALIFORNIA

Inventor(s): (std): HSIEH WEN CHING ; KOEPKE JEFFERY W

Title: POLYMER ARTICLE AND ITS USE FOR CONTROLLED INTRODUCTION OF REAGENT INTO A FLUID

Abstract: Source: US4670166A A solid polymeric body comprising a polymer matrix containing a water-soluble reagent leachable into a fluid containing condensed water, said matrix being reagent permeative and insoluble in said fluid containing condensed water and the said body preferably having a softening point substantially above that of the temperature of the fluid environment in which it is to be employed is useful for the introduction of an additive reagent into said fluid particularly when said fluid is located in a subterranean formation.

Classifications:

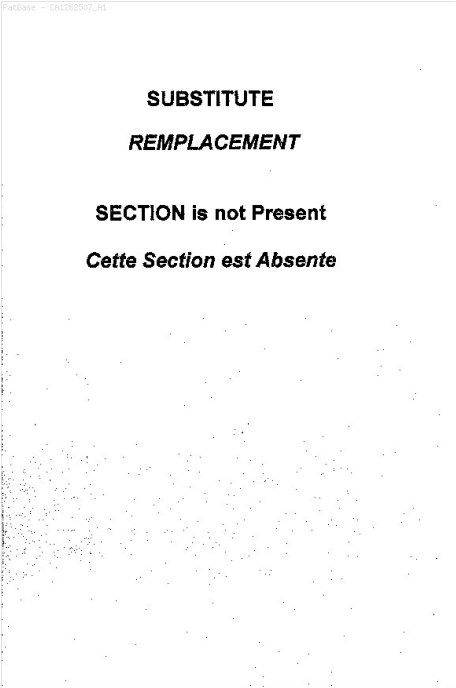
International (IPC 8-9): C09K8/536 C09K8/54 C09K8/584 C09K8/60 C09K8/68 C09K8/70 C09K8/92 E21B37/06 E21B43/22 E21B43/25 E21B43/32 (Advanced/Invention); C09K8/52 C09K8/54 C09K8/58 C09K8/60 E21B37/00 E21B43/00 E21B43/25 (Core/Invention)

International (IPC 1-7): B32B5/16 C02F5/14 C08K5/53 C08L33/02 C08L33/20 C08L33/26 E21B37/06 E21B41/02 E21B43/00 E21B43/22 E21B43/25 E21B43/26 E21B43/28

CPC: Y10S166/902 Y10S507/902 Y10S507/92 Y10S507/922 Y10S507/927 Y10S507/939 C09K8/70 C09K8/536 C09K8/54 C09K8/584 C09K8/68 E21B43/32 C09K8/60 E21B37/06 Y10T428/24942 Y10T428/29 Y10T428/2982 Y10T428/2991 Y10T428/2998

European: C09K8/536 C09K8/54 C09K8/584 C09K8/60 C09K8/60L C09K8/68 C09K8/70 E21B37/06 E21B43/32

US: 166/278 166/279 166/310 166/902 252/180 252/181 252/8.551 252/8.552 252/8.554 252/8.555 424/419 424/81 428/212 428/357 428/402 428/403 428/407 428/522 507/224 507/236 507/237 507/238 507/240 507/243 507/245 507/246 507/254 507/259 507/261 507/262 507/268 507/902 507/920 507/922 507/927 507/939



Family:

Publication number	Publication date	Application number	Application date
AU198654092 A1	19860904	AU19860054092	19860226
AU5409286 A1	19860904	AU19860054092	19860226
AU583095 B2	19890420	AU19860054092	19860226
CA1245435 A1	19881129	CA19850475086	19850225
CA1262507 A1	19891031	CA19860501711	19860212
DE3673190 D1	19900913	DE19863673190	19860224
EP0193369 A2	19860903	EP19860301297	19860224
EP0193369 A3	19880127	EP19860301297	19860224
EP0193369 B1	19900808	EP19860301297	19860224
NO170166 B	19920609	NO19860000713	19860226
NO170166 C	19920916	NO19860000713	19860226
NO860713 A	19860828	NO19860000713	19860226
US4670166 A	19870602	US19850707003	19850227
US4738897 A	19880419	US19870049869	19870513

Priority:
CA19850475086 19850225 US19850707003 19850227 US19870049869 19870513
CA19860501711 19860212

Probable Assignee: NALCO CO

Assignee(s): (std): EXXON CHEMICAL PATENTS INC ; EXXON RESEARCH ENGINEERING CO

Assignee(s): HASLEGRAVE JOHN ANTHONY ; MCDUGALL LEE ALLEN ; EXXON RESEARCH AND ENGINEERING CO ; MCDUGALL LEE A ; ONDEO NALCO ENERGY SERVICES LP ; NEWLOVE JOHN CHRISTOPHER ; NEWLOVE JOHN C ; EXXON CHEMICAL PATENTS INC A CORP OF DE ; NALCO EXXON ENERGY CHEMICALS LP ; NALCO ENERGY SERVICES LP ; NALCO CO ; EXXON CHEMICAL PATENTS INC FLORHAM PARK N J US ; EXXON RESEARCH AND ENGINEERING COMPANY ; CITICORP NORTH AMERICA INC ; CITICORP NORTH AMERICA INC ADMINISTRATIVE AGENT AS

Inventor(s): (std): HASLEGRAVE JOHN A ; HASLEGRAVE JOHN ANTHONY ; MCDUGALL LEE A ; MCDUGALL LEE ALLEN ; NEWLOVE JOHN C ; NEWLOVE JOHN CHRISTOPHER

Inventor(s): NEWLOVE JOHN CHRISTOPHER KINGWOOD TEXAS 77345 US ; MCDUGALL LEE ALLEN HOUSTON TEXAS 77096 US ; HASLEGRAVE JOHN ANTHONY ABINGDON OXFORDSHIRE OX14 ; HASLEGRAVE JOHN ANTHONY ABINGDON OXFORDSHIRE OX14 3YD GB ; HASLEGRAVE JOHN ANTHONY ABINGDON OXFORDSHIRE... ; JOHN ANTHONY HASLEGRAVE ; JOHN CHRISTOPHER NEWLOVE ; LEE ALLEN MCDUGALL

Agent(s): WATERMARK PATENT AND TRADE MARKS ATTORNEYS; BORDEN LADNER GERVAIS LLP

Designated states: DE FR GB IT NL SE

Title: Method for emplacement of a gelatinous foam in gas flooding enhanced recovery

Abstract: Source: US4694906A The permeability of higher permeability zones of a subterranean reservoir of heterogeneous permeability is reduced by injecting (1) an aqueous solution of a crosslinkable water-soluble polymer, a material capable under certain conditions of at least partially crosslinking the polymer to form a gelatinous precipitate, a water-soluble alkaline material in an amount sufficient to maintain the pH of the aqueous solution above the pH at which crosslinking occurs until the composition has passed a desired distance through the reservoir, and a water-soluble surface active agent; and (2) a gas mixture comprising an acid gas. A gelatinous foam forms in situ useful for blocking escape of fluids, both gaseous and liquid, into the higher permeability zones of the reservoir during enhanced recovery, typically by carbon dioxide flooding. The polymer-surfactant solution and the gas mixture can be injected in alternating slugs to enhance formation of the gelatinous foam and to allow for plugging of higher permeability zones progressively encountered during recovery operations.

Classifications:
International (IPC 8-9): C09K8/518 C09K8/594 C09K8/94
E21B43/22 (Advanced/Invention);
C09K8/50 C09K8/58 C09K8/60 (Core/Invention)
International (IPC 1-7): E21B33/13 E21B33/15 E21B33/22 E21B33/23
CPC: C09K8/518 C09K8/594 C09K8/94
European: C09K8/518 C09K8/594 C09K8/94
US: 166/270 166/273 166/274 166/275 166/294



Family:

Publication number	Publication date	Application number	Application date	
CA1262819 A1	19891114	CA19860516779	19860826	
EP0212671 A2	19870304	EP19860111930	19860828	
EP0212671 A3	19880824	EP19860111930	19860828	
NO863473 A	19870302	NO19860003473	19860829	
NO863473 A0	19860829	NO19860003473	19860829	
US4694906 A	19870922	US19850771283	19850830	

Priority:
US19850771283 19850830 CA19860516779 19860826

Probable Assignee: UNION OIL CO OF CALIFORNIA A CORP OF CA

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

Assignee(s): UNION OIL CO OF CALIFORNIA ; UNION OIL CO OF CALIFORNIA A CORP OF CA ; UNION OIL COMPANY OF CALIFORNIA ; DOVAN HOAI T ; HUTCHINS RICHARD D

Inventor(s): (std): HUTCHINS RICHARD D ; DOVAN HOAI T

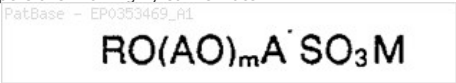
Agent(s): FETHERSTONHAUGH AND CO

Designated states: GB NL

Title: AQUEOUS TENSIDE COMPOSITIONS AND THEIR USE IN COMBINATION WITH A POLYMER IN THE WINNING OF OIL IN HIGHLY SALINE FORMATIONS.

Abstract: Aqueous surfactant compositions containing a surfactant mixture of a) 55 to 85 percent by weight of an alkanesulphonate, petroleumsulphonate, olefinsulphonate or alkylbenzenesulphonate having a mean molecular weight of 280-400 and b) 15 to 45 percent by weight of an ether sulphonate of the formula RO(AO)_mA'SO₃M where R is C₆-C₂₀-alkyl or a phenyl group which is substituted by one to three alkyl groups having a total of 6 to 20 carbon atoms, A is a C₂H₄ or C₃H₆ group or a mixture of the two groups, A' is -C₂H₄- or -C₃H₆-, m is a number of 3 to 25, and M is an alkali metal atom or ammonium. These surfactant mixtures are suitable for tertiary oil recovery in combination with specific salt-stable copolymers based on polyarylamide. They form stable solutions or dispersions with highly saline water.

Classifications:
International (IPC 8-9): B01F17/02 B01F17/12 B01F17/42 C09K8/584 C09K8/588 (Advanced/Invention); B01F17/02 B01F17/12 B01F17/42 C09K8/58 (Core/Invention)
International (IPC 1-7): B01F17/00 B01F17/02 B01F17/12 B01F17/42 E21B43/00 E21B43/22
CPC: C09K8/584 C09K8/588
European: C09K8/584 C09K8/588



Family:

Publication number	Publication date	Application number	Application date	
DE3822834 A1	19900111	DE19883822834	19880706	
EP0353469 A1	19900207	EP19890112064	19890701	
NO892785 A	19900108	NO19890002785	19890705	
NO892785 A0	19890705	NO19890002785	19890705	

Priority:
DE19883822834 19880706

Probable Assignee: HOECHST AG

Assignee(s): (std): HOECHST AG

Assignee(s): HOECHST AKTIENGESSELLSCHAFT

Inventor(s): (std): HALASZ SIGMAR PETER VON ; HALASZ SIGMAR PETER VON DR ; HOLST ARNO ; HOLST ARNO DR ; MILLER DENNIS ; MILLER DENNIS DR ; PUSCH GUENTER ; PUSCH GUENTER PROF DR MONT ; PUSCH GUNTER PROF DR ; ROSENTHAL GERHARD ; ROSENTHAL GERHARD DR ; ROSENTHAL GERHARD DR ING ; SCHMIDT MANFRED ; SCHMIDT MANFRED DR ; VON HALASZ SIGMAR PETER DR

Inventor(s): SCHMIDT MANFRED DR 6233 KELKHEIM DE ; ROSENTHAL GERHARD DR ING 3392 CLAUSTHAL ZELLERFELD ; PUSCH GUENTER PROF DR MONT 3100 CELLE DE ; MILLER DENNIS DR 6239 EPPSTEIN DE ; HOLST ARNO DR 6200 WIESBADEN DE ; HALASZ SIGMAR PETER VON DR 6237 LIEDERBACH DE

Designated states: DE GB NL

Title: Polymer flooding process to recover crude oil from underground deposits - comprising injecting aq. soln. of lignosulphonate as sacrificial material with polymer soln.

Abstract: Source: DE4236679C1 Polymer flooding process to recover crude oil from underground deposits penetrated by an injection borehole and a recovery borehole, which are connected to the deposits, comprises injecting an aq. soln. of lignosulphonate as sacrificial material with the polymer soln. The novelty is that the lignosulphonate, before injection, is solubilised using salt-tolerant surfactants, and then injecting with one part of the polymer soln. ADVANTAGE - The lignosulphonate is not completely soluble.

Classifications:

International (IPC 8-9): C09K8/584 (Advanced/Invention); C09K8/58 (Core/Invention)

International (IPC 1-7): E21B43/22

CPC: C09K8/584

European: C09K8/584



PatBase - DE4236679_C1

ZEICHNUNGEN: 8071

Nummer:

DE 42 36 679 C1

Jahr: 01/92

5.21.91 42:32

Veröffentlichung: 2. Dezember 1993

Abb. 1		Salzwasserlöslichkeit von Ligand/Funktor / $T = 40^{\circ}\text{C}$									
Produkt		Salzgehalt (g/kg ⁻¹)									
		20	40	60	80	100	120	140	160	180	200
Zwee 1, 6		+	+	+	+	+	+	+	+	+	+
Zwee 2, 5		+	+	+	+	+	+	+	+	+	+
Zwee 3, 4, 6		+	+	+	+	+	+	+	+	+	+
Hilfsgruppe 228	8	+	+	+	+	+	+	+	+	+	+
Hilfsgruppe 229	8	+	+	+	+	+	+	+	+	+	+
Hilfsgruppe 230	8	+	+	+	+	+	+	+	+	+	+
Struktur 40 8		+	+	+	+	+	+	+	+	+	+
		(Grenzsalzwasserlösung) (pH 10) kg kg^{-1} 138,68 kg kg^{-1} MeCl 11, 12 $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$ 4, 20 $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$ 1, 20 $\text{CaCl}_2 \cdot \text{H}_2\text{O}$									
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Family:

Publication number	Publication date	Application number	Application date
DE4236679 C1	19931202	DE19924236679	19921030

Priority:

DE19924236679 19921030

Probable Assignee: RWE DEA AG

Assignee(s): (std): RWE DEA AG

Assignee(s): RWE DEA AG FUER MINERALOEL UND CHEMIE 22297 HAMBUR ; RWE DEA AG FUER MINERALOEL UND CHEMIE 22297 HAMBURG DE

Inventor(s): (std): WOJAK KARLHEINZ DR

Inventor(s): WOJAK KARLHEINZ DR 30167 HANNOVER DE

Title: Method for placement of blocking gels or polymers at specific depths of penetration into oil and gas, and water producing formations

Abstract: Source: US2001018972A This patent application relates to a process whereby a filter/seive is produced by injecting the interactive chemicals used to form gels and polymers at reservoir temperatures independently and sequentially into a well in such a manner that the chemicals only come into contact with each other at the desired depth of penetration in the formation. At this location in the reservoir, which can be determined by appropriate calculation, the injection is stopped and the intermixed and superimposed chemicals are allowed to react to form the filter/seive of a gel or polymer depending upon the nature of the individual chemicals injected. Since no reaction takes place during the injection phase, premature gelation or polymerization cannot occur at any point other than where the chemicals come into contact each with the other. Furthermore, by using this placement process not only can the gel or polymer blockage, namely, the desired filter/seive structure, be located at a depth of penetration (between four and thirty feet) where the velocity flow for either the injection or production of fluids into or from the reservoir interval is ideal for maintaining the blockage of water, but the thickness of the filter/seive can also be predetermined by using appropriate volumes of the injected chemicals and nonchemical containing push volumes.

Classifications:

International (IPC 8-9): E21B33/12 E21B33/13 E21B33/138 (Advanced/Invention); E21B33/12 E21B33/13 (Core/Invention)

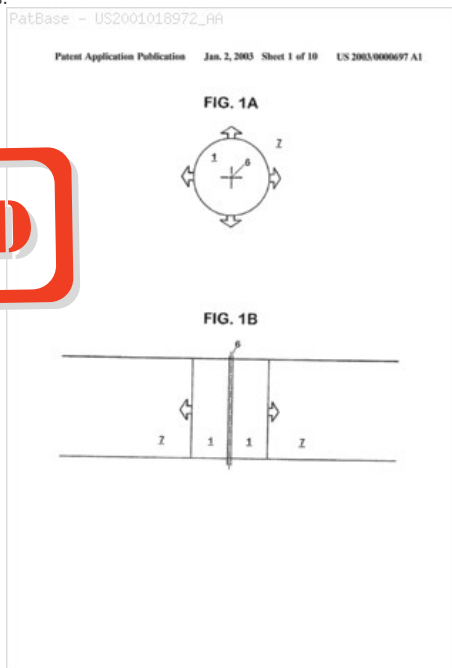
International (IPC 1-7): E21B33/10 E21B33/13 E21B33/138 E21B43/22

CPC: E21B33/12

European: E21B33/12

US: 166/263 166/292 166/292S 166/294 166/294S 166/295 166/295S 166/300 166/300S 166/305.1 166/305.100S

NOT APPROVED



Family:

Publication number	Publication date	Application number	Application date
US2001018972 AA	20010906	US20010824403	20010402
US2003000697 AA	20030102	US20020217256	20020812
US2004118559 AA	20040624	US20030679104	20031006
US6431280 BB	20020813	US20010824403	20010402
US6615918 BB	20030909	US20020217256	20020812
US7021376 BB	20060404	US20030679104	20031006

Priority:

US19980217474 19981221 US20010824403 20010402 US20020217256 20020812
US20030679104 20031006

Probable Assignee: BAYLISS GEOFFREY STANLEY

Assignee(s): (std): BAYLISS GEOFFREY STANLEY ; BAYLISS PAUL STUART

Inventor(s): (std): BAYLISS GEOFFREY STANLEY ; BAYLISS PAUL STUART

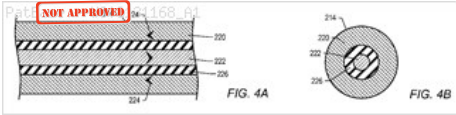
Agent(s): KURT S

Title: ELECTRICALLY ISOLATING INSULATED CONDUCTOR HEATER

Abstract: A heating system for a subsurface formation includes an electrical conductor and an insulation layer at least partially surrounding the electrical conductor. A jacket that includes ferromagnetic material at least partially surrounds the insulation layer. The outside surface of the jacket is configured to be at little or no electric potential while the electrical conductor is conducting electricity and while the jacket is at temperatures below the Curie temperature of the ferromagnetic material.

Classifications:

International (IPC 8-9): E21B36/00 E21B36/02 E21B43/16 E21B43/24 (Advanced/Invention); E21B36/00 E21B43/16 (Core/Invention)
CPC: Y10T29/49083 E21B36/04 E21B43/2401 C10G1/02
European: E21B36/04 E21B43/24B



Family:

Publication number	Publication date	Application number	Application date
AU2008242796 AA	20081030	AU20080242796	20080418
AU2008242796 BB	20110707	AU20080242796	20080418
AU2008242803 AA	20081030	AU20080242803	20080418
AU2008242803 BB	20110623	AU20080242803	20080418
CA2684430 AA	20081030	CA20082684430	20080418
CA2684430 C	20151208	CA20082684430	20080418
CA2684485 AA	20081030	CA20082684485	20080418
CN101680286 A	20100324	CN200880017260	20080418
MX2009011190 A1	20091030	MX20090011190	20080418
WO08131168 A1	20081030	WO2008US60740	20080418
WO08131169 A2	20081030	WO2008US60741	20080418
WO08131169 A3	20081224	WO2008US60741	20080418
WO08131171 A1	20081030	WO2008US60743	20080418
WO08131173 A1	20081030	WO2008US60746	20080418
WO08131175 A1	20081030	WO2008US60748	20080418
WO08131177 A1	20081030	WO2008US60750	20080418
WO08131179 A1	20081030	WO2008US60752	20080418
WO08131180 A1	20081030	WO2008US60754	20080418
WO08131182 A1	20081030	WO2008US60757	20080418
WO08131212 A2	20081030	WO2008US60811	20080418
WO08131212 A3	20100114	WO2008US60811	20080418



Priority:
US20070925685P 20070420 US20070999839P 20071019 WO2008US60748 20080418
WO2008US60740 20080418

Probable Assignee: SHELL OIL CO

Assignee(s): (std): ABBASI FARAZ ; ANDERSON KARL GREGORY ; BASS RONALD J ; BEER GARY LEE ; BEERS GARY LEE ; BURNS DAVID ; FARMAYAN WALTER ; BRIGNAC JOSEPH P JR ; GEDDES CAM ; FONSECA ERNESTO ; DAVIDSON IAN ALEXANDER ; CLOMBURG LLOYD ANTHONY ; COSTELLO MICHAEL ; DEN BOESTERT JOHANNES LEENDERT WILLEM CORNELIS ; DEN BOESTERT JOHANNES LEENDERT ; KARANIKAS JOHN MICHAEL ; SANDBERG CHESTER LEDLIE ; NGUYEN SCOTT VINH ; KIM DONG SUB ; RYAN ROBERT CHARLES ; HARRIS CHRISTOPHER KELVIN ; HWANG H JAY ; RUDOLF RANDY ; HARVY BERT ; GILES STEVEN PAUL ; MANSURE ARTHUR J ; PIERCE ROBERT ; PIERCE DENNIS ; PRINCE WRIGHT ROBERT ; GUIMERANS ROSALVINA ; MARWEDE JOCHEN ; MUNSHI ABDUL ; GOODWIN CHARLES R ; RENKEMA DUURT ; MACDONALD DUNCAN ; SHELL OIL CO ; SHELL INT RESEARCH ; VINEGAR HAROLD J ; ZHANG ETUAN ; STANECKI JOHN ANDREW ; SIDDOWAY MARK ALAN ; TSAI KUOCHEN ; STANECKI JOHN ; SELBY BRUCE

Assignee(s): SHELL INTERNATIONAL RESEARCH MAATSCHAPPIJ B V ; SHELL INT RESEARCH MIJ BV ; SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B V ; SHELL OIL COMPANY

Inventor(s): (std): ABBASI FARAZ ; ANDERSON KARL GREGORY ; BASS RONALD J ; BEER GARY LEE ; BEERS GARY LEE ; BRIGNAC JOSEPH P JR ; BURNS DAVID ; CLOMBURG LLOYD ANTHONY ; COSTELLO MICHAEL ; DAVIDSON IAN ALEXANDER ; DEN BOESTERT JOHANNES LEENDERT ; DEN BOESTERT JOHANNES LEENDERT WILLEM CORNELIS ; FARMAYAN WALTER ; FONSECA ERNESTO ; GEDDES CAM ; GILES STEVEN PAUL ; GOODWIN CHARLES R ; GUIMERANS ROSALVINA ; HARRIS CHRISTOPHER KELVIN ; HARVY BERT ; HWANG H JAY ; KARANIKAS JOHN MICHAEL ; KIM DONG SUB ; LEDLIE SANDBERG CHESTER ; MACDONALD DUNCAN ; MANSURE ARTHUR J ; MARWEDE JOCHEN ; MUNSHI ABDUL ; NGUYEN SCOTT VINH ; PIERCE DENNIS ; PIERCE ROBERT ; PRINCE WRIGHT ROBERT ; RENKEMA DUURT ; RUDOLF RANDY ; RYAN ROBERT CHARLES ; SANDBERG CHESTER LEDLIE ; SELBY BRUCE ; SIDDOWAY MARK ALAN ; STANECKI JOHN ; STANECKI JOHN ANDREW ; SUB KIM DONG ; TSAI KUOCHEN ; VINEGAR HAROLD J ; VINH NGUYEN SCOTT ; ZHANG ETUAN

Inventor(s): SCOTT VINH NGUYEN ; HAROLD J VINEGAR ; DONG SUB KIM ; CHESTER LEDLIE SANDBERG

Agent(s): SPRUSON AND FERGUSON; NORTON ROSE FULBRIGHT CANADA LLP SENCRL SRL; CHRISTENSEN DEL S

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

Title: USE OF TENSIDE MIXTURES FOR TERTIARY OIL PRODUCTION

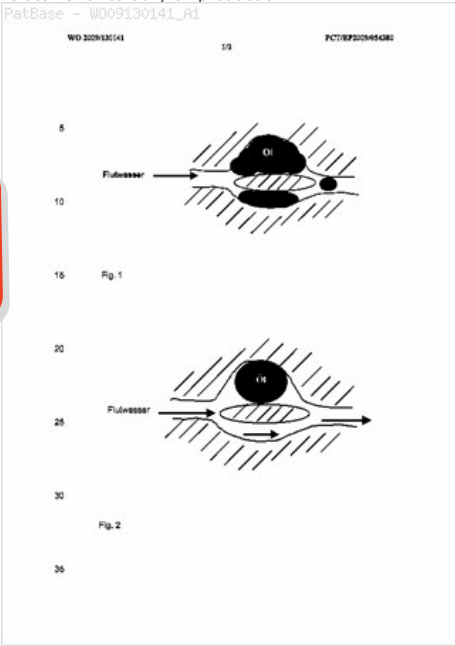
Abstract: The invention relates to the use of a tenside mixture comprising at least one tenside having a hydrocarbon radical made of 12 to 30 C atoms and at least one cotenside having a branched hydrocarbon radical made of 6 to 11 C atoms for tertiary oil production.

Classifications:

International (IPC 8-9): B01F17/00 C09K8/584 (Advanced/Invention);
B01F17/00 C09K8/58 (Core/Invention)

CPC: B01F17/0092 C09K8/584

European: B01F17/00Z2 C09K8/584



Family:

Publication number	Publication date	Application number	Application date
DK2268764 T3	20140610	DK20090734065T	20090414
EP2268764 A1	20110105	EP20090734065	20090414
EP2268764 B1	20140312	EP20090734065	20090414
WO09130141 A1	20091029	WO2009EP54380	20090414

Priority:

EP20080154862 20080421 WO2009EP54380 20090414 EP20090734065 20090414

Probable Assignee: BASF SE

Assignee(s): (std): BASF SE ; BITTNER CHRISTIAN ; GUZMANN MARCUS ; OETTER GUENTER ; STEINBRENNER ULRICH

Inventor(s): (std): STEINBRENNER ULRICH ; OETTER GUENTER ; GUZMANN MARCUS ; BITTNER CHRISTIAN

Agent(s): BASF SE

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

Title: ENHANCED OIL RECOVERY USING SULFONATE MIXTURES

Abstract: Source: US2010048432A A surfactant blend of a low molecular weight surfactant and a high molecular weight surfactant to be used in an aqueous flooding. The surfactant blend may be neutralized with an alkali or alkaline agent. The surfactant blend may be mixed with a polymer. Surfactant blends of the present invention increase oil recoveries from oil reservoirs.

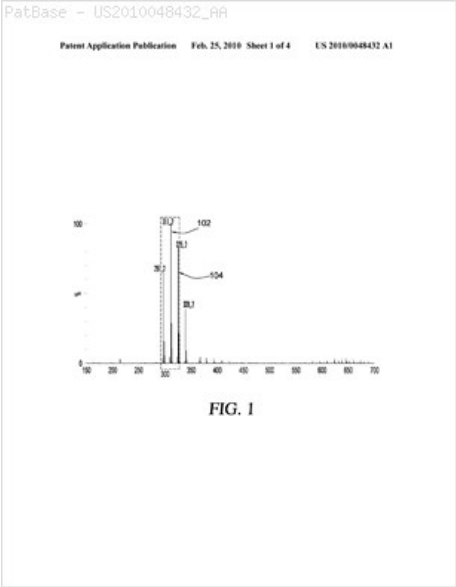
Classifications:

International (IPC 8-9): B01F17/02 B01F17/12 C09K8/584 C09K8/588 C09K8/60 C09K8/68 E21B43/20 (Advanced/Invention); C09K8/58 C09K8/60 (Core/Invention)

CPC: C09K8/584

European: C09K8/584

US: 507/200 507/224 507/225 507/259 507/261 507/266



Family:

Publication number	Publication date	Application number	Application date
CA2732878 AA	20100225	CA20092732878	20090807
CN102131890 A	20110720	CN200980132727	20090807
EP2337826 A1	20110629	EP20090791257	20090807
RU2011110759 A	20120927	RU20110110759	20090807
US2010048432 AA	20100225	US20090454956	20090526
WO10021858 A1	20100225	WO2009US53070	20090807

Priority:

US20080091175P 20080822 US20090454956 20090526 WO2009US53070 20090807

Probable Assignee: CHEMTURA CORP

Assignee(s): (std): CHEMTURA CORP ; STONE NAUREEN ; MA QINGGAO ; IRWIN CHARLES F ; IRWIN CHARLES ; COSTELLO MICHAEL T

Assignee(s): CITIBANK NA ; BANK OF AMERICA NA ; BIOLAB CO STORE LLC ; BIOLAB FRANCHISE CO LLC ; BIOLAB INC ; BIOLAB TEXTILES ADDITIVES LLC ; CNK CHEMICAL REALTY CORP ; A AND M CLEANING PRODUCTS LLC ; AQUA CLEAR IND LLC ; ASCK INC ; ASEPSIS INC ; BANK OF AMERICA N A ; CROMPTON COLORS INC ; CROMPTON HOLDING CORP ; CROMPTON MONOCHEM INC ; GLCC LAUREL LLC ; GREAT LAKES CHEMICAL CORP ; GREAT LAKES CHEMICAL GLOBAL INC ; GT SEED TREATMENT INC ; HOMECARE LABS INC ; ISCI INC ; KEM MFG CORP ; LAUREL IND HOLDINGS INC ; MONOCHEM INC ; NAUGATUCK TREATMENT CO ; RECREATIONAL WATER PRODUCTS INC ; UNIROYAL CHEMICAL CO DELAWARE LTD ; UNIROYAL CHEMICAL CO (DELAWARE) LTD ; WEBER CITY ROAD LLC ; WRL OF INDIANA INC

Inventor(s): (std): COSTELLO MICHAEL T ; IRWIN CHARLES ; IRWIN CHARLES F ; MA QINGGAO ; STONE NAUREEN ; QINGGAO MA ; NAUREEN STONE ; CHARLES IRWIN

Agent(s): GOWLING LAFLEUR HENDERSON LLP; SERRAVALLE MARCO; JAIMES SHER CHEMTURA CORP; SHER JAIMES

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

Title: HYDROPHOBICALLY ASSOCIATING COPOLYMERS

Abstract: Source: US2010331510A Water-soluble, hydrophobically associating copolymers which comprise new types of hydrophobically associating monomers. The monomers comprise an ethylenically unsaturated group and a polyether group with block structure comprising a hydrophilic polyalkylene oxide block which consists essentially of ethylene oxide groups, and a terminal, hydrophobic polyalkylene oxide block which consists of alkylene oxides with at least 4, preferably at least 5 carbon atoms.

Classifications:

International (IPC 8-9): C04B16/04 C04B24/26 C04B24/38 C08F16/18 C08F216/12 C08F22/02 C08F220/00 C08F220/26 C08F220/56 C08F220/58 C08F220/60 C08F228/02 C08F230/02 C08F28/02 C08F30/02 C09K8/588 E21B43/16 (Advanced/Invention); C04B103/00 (Advanced/Non-invention)

CPC: E21B43/16 C08F220/26 C08F220/56 C08F228/02 C08F230/02 C08F220/58 C04B16/04 C08F220/60 C08F2220/585 C04B2103/0052 C04B2103/0053 C09K8/588

European: C08F220/26 C08F220/56 C08F228/02 C08F230/02

US: 166/305.1 507/222 507/224 507/225 507/226 507/227 524/3 524/556 526/274 526/274P 526/274S 526/275 526/276 526/277 526/281 526/287 526/287S 526/307.5 526/307.500S 526/317.1 526/318.5 526/318.500S 526/320 526/320S 526/333 526/333S

Family:

Publication number	Publication date	Application number	Application date
US2010331510 AA	20101230	US20100783877	20100520
US2013105165 AA	20130502	US20120680528	20121119
US2014316035 AA	20141023	US20140323324	20140703
US8362180 BB	20130129	US20100783877	20100520
US8783356 BB	20140722	US20120680528	20121119
US9163103 BB	20151020	US20140323324	20140703

Priority:

US20090179743P 20090520 US20100783877 20100520 US20120680528 20121119
US20140323324 20140703

Probable Assignee: BASF SE

Assignee(s): (std): BASF SE ; FOGEL YULIA ; FRIEDRICH STEFAN ; GAEBERLEIN PETER ; ORLEANS ANDREA ; REICHENBACH KLINKE ROLAND ; ROESCH MARKUS ; GUZMANN MARCUS ; LANGLOTZ BJOERN ; PFEUFFER THOMAS ; OSTROWSKI THOMAS ; LEYRER REINHOLD J ; LANGLOTZ BJORN ; ROESCH MARCUS ; SCHUHBECK MANFRED ; SCHMIDT KATI

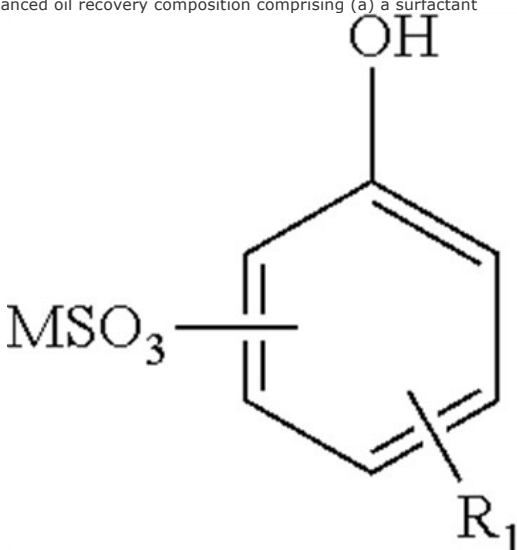
Inventor(s): (std): FOGEL YULIA ; FRIEDRICH STEFAN ; GAEBERLEIN PETER ; GUZMANN MARCUS ; LANGLOTZ BJOERN ; LANGLOTZ BJORN ; ORLEANS ANDREA ; OSTROWSKI THOMAS ; REICHENBACH KLINKE ROLAND ; ROESCH MARCUS ; ROESCH MARKUS ; SCHMIDT KATI ; SCHUHBECK MANFRED ; PFEUFFER THOMAS ; LEYRER REINHOLD J

Agent(s): CONNOLLY BOVE LODGE AND HUTZ LLP; DRINKER BIDDLE AND REATH LLP



Title: ENHANCED OIL RECOVERY SURFACTANT COMPOSITION AND METHOD OF MAKING THE SAME

Abstract: Source: US2011046024A The present invention is directed to an enhanced oil recovery composition comprising (a) a surfactant



comprising an alkylated hydroxyaromatic sulfonate having the general formula:
wherein R₁ is an alkyl group containing from about 8 to 40 carbon atoms and having from about 20 percent to about 50 percent methyl branching, and M is a mono-valent cation; (b) a solvent; (c) a passivator; and (d) a polymer.

Classifications:
International (IPC 8-9): C09K8/584 C09K8/588 C09K8/60 C11B9/02 C11D1/22 E21B43/22 (Advanced/Invention); C11D1/22 E21B43/22 (Core/Non-invention)
CPC: C09K8/584 C09K8/588
European: C09K8/584 C09K8/588
US: 507/213 507/213P 507/219 507/219S 507/225 507/225S



Family:

Publication number	Publication date	Application number	Application date
CA2770200 AA	20110224	CA20102770200	20100820
CA2770200 AA	20120203	CA20102770200	20100820
CN102482566 A	20120530	CN201080036702	20100820
CN102482566 B	20131113	CN201080036702	20100820
EP2467443 A2	20120627	EP20100810647	20100820
EP2467443 A4	20130821	EP20100810647	20100820
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US2011046024 AA	20110224	US20100859367	20100819
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WO11022622 A3	20110616	WO2010US46124	20100820

Priority:
US20090274104P 20090820 US20100859367 20100819 WO2010US46124 20100820

Probable Assignee: CHEVRON ORONITE CO LLC

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Assignee(s): CHEVRON ORONITE CO LLC ; CHEVRON ORONITE COMPANY LLC

Inventor(s): (std): BAY CAMPBELL CURTIS ; CAMPBELL CURTIS BAY ; FAN SUEN YAT ; SUEN YAT FAN

Agent(s): SIM AND MCBURNEY; AIRD AND BERLIS IP PARTNERSHIP LTD; NASH DAVID ALLAN; ASAMURA PATENT OFFICE PC; CHEVRON CORP; JOSETTA I; JONES JOSETTA I ET AL

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

Title: SURFACTANT-LESS ALKALINE-POLYMER FORMULATIONS FOR RECOVERING REACTIVE CRUDE OIL

Abstract: Source: US2011290482A Compositions and methods for oil recovery using a surfactant-less alkaline-polymer system in hard water or hard brine is described in the instant invention. The formulation further includes a chelating agent, an alkaline agent (which can be the same as the chelating agent), and a co-solvent. The formulations as disclosed herein are capable of forming a surfactant in-situ resulting in Winsor Type III micro-emulsions of low interfacial tension.

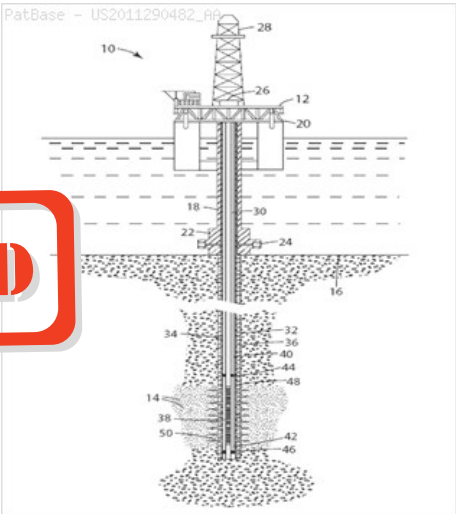
Classifications:

International (IPC 8-9): C09K8/58 C09K8/588 C09K8/68 E21B43/16 E21B43/22 (Advanced/Invention); C09K8/58 (Core/Invention)

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European: C09K8/588

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Family:

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AR081549 AA	20121003	AR2011P101776	20110524
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WO11150060 A2	20111201	WO2011US37903	20110525
WO11150060 A3	20120419	WO2011US37903	20110525

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US20100347850P 20100525 US20110115433 20110525 WO2011US37903 20110525

Probable Assignee: UNIV TEXAS

Assignee(s): (std): POPE GARY A ; UNIV TEXAS ; WEERASOORIYA UPALI P

Assignee(s): BOARD OF REGENTS THE UNIVERSITY OF TEXAS SYSTEM ; BOARD OF REGENTS UNIV OF TEXAS SYSTEM

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