

Search history

Search PN=(WO2015/065711) (Results 1)

1:

Search [SP]: cross-reference to related application[0001] this application is a continuation-in-part of u.s. ser. no. 14/066,893 filed oct. 30, 2013, incorporated herein by reference in its entirety.technical field[0002] the present invention relates to proppants used in hydraulic fracturing treatments for subterranean formations, and more particularly relates to methods for making proppants and proppants made thereby where the proppants have a coating that imparts improved strength.technical background[0003] hydraulic fracturing is a common stimulation technique used to enhance production of hydrocarbon fluids from subterranean formations. in a typical hydraulic fracturing treatment, fracturing treatment fluid containing a solid proppant material is injected into the formation at a pressure sufficiently high enough to cause the formation to fracture or cause enlargement of natural fractures in the reservoir. the fracturing fluid that contains the proppant or propping agent typically has its viscosity increased by a gelling agent such as a polymer, which may be uncrosslinked or crosslinked, and/or a viscoelastic surfactant. during a typical fracturing treatment, propping agents or proppant materials are deposited in a fracture, where they remain after the treatment is completed. after deposition, the proppant materials serve to hold the fracture open, thereby enhancing the ability of fluids to migrate from the formation to the well bore through the fracture. because fractured well productivity depends on the ability of a fracture to conduct fluids from a formation to a wellbore, fracture conductivity is an important parameter in determining the degree of success of a hydraulic fracturing treatment and the choice of proppant may be critical to the success of stimulation.[0004] one problem related to hydraulic fracturing treatments is the creation of reservoir "fines" and associated reduction in fracture conductivity. these fines may be produced when proppant materials are subjected to reservoir closure stresses within a formation fracture which cause proppant materials to be compressed together in such a way that small particles ("fines") are generated from the proppant material and/or reservoir matrix. in some cases, production of fines may be exacerbated during production/workover operations when a well is shut-in and then opened up. this phenomenon is known as "stress cycling" and is believed to result from increased differential pressure and closure stress that occurs during fluid production following a shut-in period. production of fines is undesirable because of particulate production problems, and because of reduction in reservoir permeability due to plugging of pore throats in the reservoir matrix.[0005] production of particulate solids with subterranean formation fluids is also a common problem. the source of these particulate solids may be unconsolidated material from the formation, proppant from a fracturing treatment and/or fines generated from crushed fracture proppant, as mentioned above. production of solid proppant material is commonly known as "proppant flowback." in addition to causing increased wear on downhole and surface production equipment, the presence of particulate materials in production fluids may also lead to significant expense and production downtime associated with removing these materials from wellbores and/or production equipment. accumulation of these materials in a well bore may also restrict or even prevent fluid production. in addition, loss of proppant due to proppant flowback may also reduce conductivity of a fracture pack.[0006] it will be appreciated that if proppant strength can be improved that at least two problems are addressed. first, proppants with improved strength can better hold the fracture open to facilitate the production of hydrocarbon fluids. second, stronger proppants do not disintegrate and exacerbate the production of fines. thus, it would be very desirable to discover methods to produce stronger proppants.summary[0007] in one non-limiting embodiment there may be provided a method of preparing a strengthened proppant that includes mixing together (a) a compound selected from the group consisting of an alkali metal phosphate, phosphoric acid, ammonium phosphate, ammonium di-hydrogen phosphate and combinations thereof, and (b) a binder in water to form an aqueous solution. the (b) binder is selected from the group consisting of an alkaline earth metal hydroxide, an alkaline earth metal oxide, a metal oxide, a metal hydroxide, an aluminosilicate, and combinations thereof. the method additionally includes at least partially coating a plurality of proppant cores with the aqueous solution, and then exposing the aqueous solution-coated proppant cores to a temperature to polymerize the (a) compound and (b) binder to form a coating where the coating includes, but is not necessarily restricted to, magnesium phosphate, calcium phosphate, aluminum phosphate, zirconium aluminum phosphate, zirconium phosphate, zirconium phosphonate, magnesium potassium phosphate, potassium aluminum phosphate, alkali metal transition metal phosphates, carbide materials, tungsten carbide, cements, polymer cements, polyamide-imides, polyether ether ketones (peek), and combinations thereof, to give the strengthened proppant. there are also provided the strengthened proppants produced by this method.brief description of the drawings[0008] the following descriptions should not be considered limiting in any way.[0009] fig. 1 is a schematic cross-section illustration of a coated proppant as described herein and[0010] fig. 2 is a chart of compressive strength for various proppant compositions in accordance with the methods described herein and as compared to a geopolymer aluminosilica.[0011] it will be appreciated that fig. 1 is a schematic illustration, and that it is not necessarily to scale, and that certain proportions and features may be exaggerated for clarity. for instance, the proppant shown in fig. 1 is illustrated to be perfectly spherical, whereas actual proppants are typically only approximately spherical.detailed description[0012] it has been discovered that phosphate ceramics binders and other materials may be used as coatings in order to improve the strength of proppants, including, but not necessarily limited to, brown and white sand. the resulting coated proppant material show a dramatic improvement in the strength of both the white and brown sand. in both cases, the fines flowback obtained at a 10,000 psi (69 mpa) closure stress using the api standards are lower than about 10 wt percent.[0013] more specifically, a method and composition is described to coat proppant sand to dramatically increase its strength thereby extending its usage to formation closing stresses to at least about 5000 (34 mpa), alternatively at least to about 10,000 (69 mpa) and in another non-limiting embodiment to about 12,000 psi (83 mpa), and even up to 130 mpa (18,900 psi). in one non-limiting embodiment, the compressive strength ranges from about 35 independently to about 130 mpa, alternatively from about 50 independently to about 100 mpa, and in another non-restrictive embodiment from about 60 independently to about 83 mpa. by "withstanding" closure stresses in this range is meant that the coated proppant will not be crushed or disintegrated at these closure stresses and that, if generated, the amount of fines will be less than 10 weight percent of the total amount of proppant. the term "independently" as used herein with respect to a parameter range means that any lower threshold may be combined with any upper threshold to provide a suitable, acceptable alternative range.[0014] the coated proppant is slightly lighter (less dense) than sand and its apparent density is expected to range between about 2.3 independently to about 2.63 g/cm³, alternatively from between about 2.55 independently to about 2.6 g/cm³ in another non-restrictive version from about 2 to about 2.61 g/cm³. in another non-limiting embodiment, the density of the chemically bonded phosphate ceramics (cbpcs) and other materials themselves described herein ranges from about 1.8 to 2.5 g/cm³. [0015] inorganic polymers are used as coating materials by mixing a compound selected from the group consisting of an alkali metal phosphate, a phosphoric acid, ammonium phosphate and combinations thereof and a binder solution made of an alkaline earth metal hydroxide, an alkaline earth metal oxide, a metal oxide, a metal hydroxide, an aluminosilicate, and combinations thereof, in water which results in a very strong, rigid network. the resulting coatings have an amorphous, structure. the reaction is exothermic forming a solid polymer at room temperature or mild heat causing the molecules to polycondense or polymerize. in one non-limiting embodiment, "room temperature" is defined as the temperature of the room where the reaction is conducted. the physical properties of the resultant rigid chain or net of are largely determined by the ratio of the compounds and the binders. by varying this ratio, the material may be made rigid, suitable for use as a concrete, cement, or waste encapsulating medium, or more flexible for use as an adhesive, sealant or as an impregnating resin. the coating process is similar to that of resin coated sand and is accomplished by coating heated sand in a mixer, such as a rotary mixer, with the solution including the compound and the binder when exposing the sample to a heat gun or other heat source for less than about ten minutes to trigger polymerization. the resulting proppant may or not then be put in an oven for about three hours to finish the p (Results 14)

Search 2 and density (Results 7)

3:

Search 2 and (apparent density) (Results 3)

4:

Search 2 and (bulk density) (Results 2)

5:

Search SFT=(proppant and (apparent density) and sand and cover and (magnesium phosphate)) (Results 0)

6:

Search SFT=(proppant and (apparent density) and sand and cover) (Results 0)

7:

Search SFT=(proppant* and (apparent density) and sand and cover) (Results 23)

8:

Search 8 and (magnesium phosphate) (Results 1)

9:

Search 8 or aluminosilicate or (aluminum phosphate) or (aluminum zirconium) or (tungsten carbide) or polyamide* (Results 510417)

10:

Search 8 and (tungsten carbide) (Results 4)

11:

Search 11 or coated (Results 1000000)

12:

Search SFT=(proppant* and (apparent density) and sand and cover or coated and (magnesium phosphate)) (Results 2)

13:

Search SFT=(proppant* and (apparent density) and sand and cover or coated) (Results 53)

14:

Search 14 and (tungsten carbide) (Results 7)

15:

Title: PARTICLES FOR USE AS **PROPPANTS** OR IN GRAVEL PACKS, METHODS FOR MAKING AND USING THE SAME

Abstract: Source: US2006078682A Disclosed herein is a **coated** particle comprising a substrate comprising an inorganic material, wherein the inorganic material comprises silica and alumina in a silica to alumina weight ratio of about 2.2 to about 5; and wherein the inorganic material has a bulk density of less than or equal to about 1 g/cm³; and a **coating** disposed upon the substrate. Disclosed herein too is a method of treating a subterranean formation comprising injecting a fracturing fluid into the subterranean formation; wherein the fracturing fluid comprises an inorganic particle that comprises silica and alumina in a silica to alumina weight ratio of about 2.2 to about 5; and wherein the inorganic particle has a bulk density of less than or equal to about 1 g/cm³.

Classifications:

International (IPC 8-9): B05D7/00 B05D7/24 B32B27/00 B32B5/16 B32B5/66 C08F2/46 C09K17/00 C09K3/14 C09K8/56 C09K8/80 E21B33/13 (Advanced/Invention);

B05D7/00 B05D7/24 B32B27/00 B32B5/16 C08F2/46 C09K17/00 C09K3/14 C09K8/60 E21B33/13 (Core/Invention)

CPC: Y10T428/2982 Y10T428/2991 Y10T428/2993 Y10T428/2995 Y10T428/2996 Y10T428/2998 C09K3/1436 C09K8/62 C09K8/805

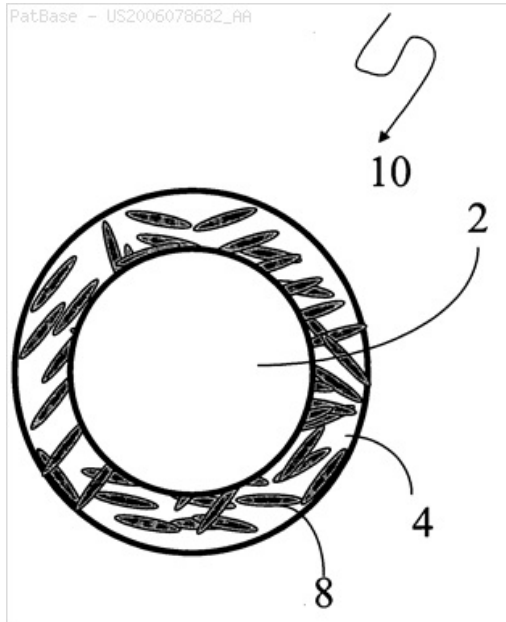
European: C09K3/14C C09K8/62 C09K8/80B

US: 166/295 427/212 427/212S 427/215 427/221 427/221S

427/372.2 427/372.200P 427/487 427/487P 428/402 428/403

428/403S 428/404 428/404S 428/405 428/406 428/407 428/407S

PatBase - US2006078682_AA



Family:

Publication number	Publication date	Application number	Application date
BRPI0515437 A	20080722	BR2005PI15437	20050920
CN101432132 A	20090513	CN200580031633	20050920
CN101432132 B	20121128	CN200580031633	20050920
EP1791691 A2	20070606	EP20050798756	20050920
EP1791691 A4	20100623	EP20050798756	20050920
NO20071536 A	20070416	NO20070001536	20070323
US2006078682 AA	20060413	US20050230693	20050920
US2009238988 AA	20090924	US20090437747	20090508
US7919183 BB	20110405	US20050230693	20050920
US8227026 BB	20120724	US20090437747	20090508
WO06034298 A2	20060330	WO2005US33711	20050920
WO06034298 A3	20090402	WO2005US33711	20050920
WO10129119 A1	20101111	WO2010US29898	20100405

Priority:

US20040611350P 20040920
WO2005US33711 20050920

US20050230693 20050920

US20090437747 20090508

Probable Assignee: HEXION INC

Assignee(s): (std): GREEN JOHN W ; HEXION SPECIALTY CHEMICALS RES ; MCDANIEL ROBERT R ; MCCRARY AVIS L ; MCCRARY AVIS LLOYD ; XU LIANG ; MOMENTIVE SPECIALTY CHEMICALS INC ; MOMENTIVE SPECIALTY CHEM INC ; HEXION SPECIALTY CHEMICALS INC

Assignee(s): HEXION SPECIALTY CHEMICALS RESEARCH BELGIUM SA ; BORDEN CHEMICAL FOUNDRY LLC ; JPMORGAN CHASE BANK NA ; HEXION INVESTMENTS INC WAS KNOWN AS BORDEN CHEMICAL INVESTMENTS INC.. ; HEXION US FINANCE CORP ; HSC CAPITAL CORP ; MOMENTIVE SPECIALTY CHCALS INC ; WILMINGTON TRUST NATIONAL ASSOCIATION ; MOMENTIVE SPECIALTY CHEMICALS INC F K A HEXION SPECIALTY CHEMICALS INC ; WILMINGTON TRUST NATIONAL ASSOCIATION COLLATERAL AGENT AS ; LAWTER INT INC ; OILFIELD TECHNOLOGY GROUP INC ; WILMINGTON TRUST CO ; JPMORGAN CHASE BANK NA COLLATERAL AGENT AS ; WILMINGTON TRUST CO COLLATERAL AGENT AS ; WILMINGTON TRUST FSB COLLATERAL AGENT AS ; HEXION SPECIALTY CHEMICALS RESEARCH BELGIUM S A ; JPMORGAN CHASE BANK NA AS COLLATERAL AGENT ; JPMORGAN CHASE BANK NA AS ADMINISTRATIVE AGENT ; JPMORGAN CHASE BANK NA ADMINISTRATIVE AGENT AS ; HEXION CI HOLDING CO CHINA LLC ; HEXION INC ; HEXION INC WAS KNOWN AS HEXION SPECIALTY CHEMICALS INC.. ; HEXION INT INC WAS KNOWN AS BORDEN CHEMICAL INTERNATIONAL INC..

Inventor(s): (std): MCCRARY AVIS L ; MCCRARY AVIS LLOYD ; MCCRARY AVIS LLOYD ; MCCRARY AVIS LLOYD ; GREEN JOHN W ; MCDANIEL ROBERT R ; XU LIANG

Inventor(s): AVIS LLOYD MCCRARY ; ROBERT R MCDANIEL ; MCCRARY AVIS ; MCDANIEL ROBERT

Agent(s): RESOLUTION PERFORMANCE PRODUCTS LLC, ATTN: LISA JONES; RESOLUTION PERFORMANCE PRODUCTS LLC ATTN LISA JONES; HEXION SPECIALTY CHEMICALS INC; JONES LISA KIMES

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 YU ZA ZM ZW

Title: METHODS AND COMPOSITIONS FOR DETERMINATION OF FRACTURE GEOMETRY IN SUBTERRANEAN FORMATIONS

Abstract: Source: US2007034373A Disclosed herein is a method comprising disposing in a formation fracture, a **proppant** and/or a fracturing fluid that comprises a radiation susceptible material that comprises indium and/or vanadium; irradiating the radiation susceptible material with neutrons; measuring gamma-radiation emitted from the radiation susceptible material in a single pass; wherein the single pass does not involve measuring of background radiation from previous or subsequent logging passes; and determining formation fracture height from the measured gamma-radiation.

Classifications:

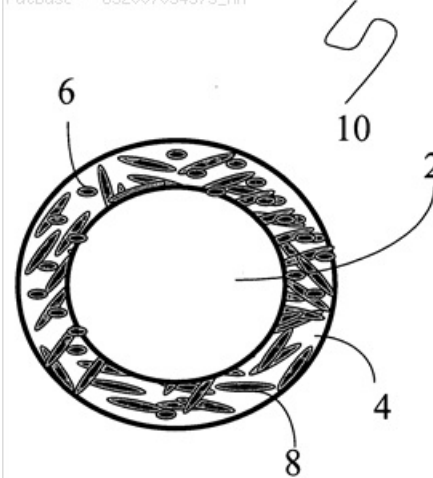
International (IPC 8-9): C09K8/80 C09K8/92 C23F11/18 E21B43/00 E21B43/26 E21B43/267 E21B47/00 E21B47/04 E21B47/08 E21B47/085 E21B47/10 E21B47/11 E21B49/00 G01T1/00 G01V15/00 G01V5/00 G01V5/04 G01V5/10 G06F17/10 G06F17/40 G06F19/00 (Advanced/Invention); G01V5/10 (Advanced/Non-invention); C09K8/60 E21B43/00 E21B43/25 E21B47/00 E21B49/00 (Core/Invention)

CPC: C09K8/805 E21B43/267 Y10T428/2991 E21B43/26 E21B47/1015 E21B47/044 G01V5/101

European: C09K8/80B E21B43/26 E21B43/267 E21B47/10G

US: 1/1 166/247 166/250.01 166/250.100P 166/280.1 166/280.100P 166/280.2 166/280.200S 175/40 175/41 175/50 250/253 250/256 250/256S 250/259 250/259S 250/260 250/269.6 378/86 428/403 428/403S 507/203 507/203S 507/219 507/219S 507/220 507/220P 507/220S 507/224 507/224P 507/224S 507/264 507/264S 507/269 507/269S 507/270 507/270S 507/271 507/271S 507/924 507/924S 702/1 702/11 702/127 702/187 702/189 702/6 702/8 703/2 703/2P 73/152.01 73/152.02 73/152.14 73/152.140S 73/152.15 73/865.8

PatBase - US2007034373_AA



Family:

Publication number	Publication date	Application number	Application date
AU2006278239 AA	20070215	AU20060278239	20060809
AU2006278239 BB	20120202	AU20060278239	20060809
AU2009314273 AA	20100520	AU20090314273	20091106
AU2009314273 BB	20130801	AU20090314273	20091106
AU2011244961 AA	20120524	AU20110244961	20111104
AU2013206713 AA	20130725	AU20130206713	20130705
AU2013206713 BB	20150813	AU20130206713	20130705
BRPI0615152 A2	20130101	BR2006PI15152	20060809
BRPI0921754 A2	20160105	BR2009PI21754	20091106
BRPI1106568 A2	20131224	BR2011PI06568	20111107
CA2618128 AA	20080207	CA20062618128	20060809
CA2618128 C	20121009	CA20062618128	20060809
CA2738824 AA	20110505	CA20092738824	20091106
CA2738824 C	20160105	CA20092738824	20091106
CA2747034 AA	20070215	CA20062747034	20060809
CA2756229 AA	20120508	CA20112756229	20111025
CN101238270 A	20080806	CN200680029093	20060809
CN101238270 B	20130501	CN200680029093	20060809
CN102209834 A	201111005	CN200980144574	20091106
CN102209834 B	20141210	CN200980144574	20091106
CN102587895 A	20120718	CN201110463168	20111107
EG25641 A	20120419	EG20080010082	20080116
EG26782 A	20140907	EG20110050698	20110504
EP1913234 A2	20080423	EP20060824811	20060809
EP1913234 A4	20150401	EP20060824811	20060809
EP2352901 A1	20110810	EP20090826589	20091106
EP2352901 A4	20170531	EP20090826589	20091106
EP2455581 A2	20120523	EP20110075239	20111031
EP2455581 A3	20150218	EP20110075239	20111031
MX2008001674 A1	20080407	MX20080001674	20060809
MX2011004722 A1	20110901	MX20110004722	20091106
MX2011011612 A1	20120515	MX20110011612	20111101
NO20080656 A	20080417	NO20080000656	20080206
RU2008108807 A	20090920	RU20080108807	20060809
RU2011123779 A	20121220	RU20110123779	20091106
RU2011145041 A	20130520	RU20110145041	20111107
RU2412225 C2	20110220	RU20080108807	20060809
RU2483210 C2	20130527	RU20110123779	20091106
RU2491421 C2	20130827	RU20110145041	20111107
US2007034373 AA	20070215	US20060501575	20060809
US2009090505 AA	20090409	US20080268856	20081111
US2010234249 AA	20100916	US20100789094	20100527
US2011257948 AA	20111020	US20110093296	20110425
US2011272146 AA	20111110	US20100941597	20101108
US2012031613 AA	20120209	US20110274056	20111014
US2012135894 AA	20120531	US20120364848	20120202
US7726397 BB	20100601	US20060501575	20060809

US7933718 BB	20110426	US20080268856	20081111
US8129318 BB	20120306	US20100789094	20100527
US8392120 BB	20130305	US20110093296	20110425
US9243491 BB	20160126	US20120364848	20120202
WO07019585 A2	20070215	WO2006US31573	20060809
WO07019585 A3	20071108	WO2006US31573	20060809
WO10056605 A1	20100520	WO2009US63566	20091106

Priority:

AU20090314273	20091106	AU20130206713	20130705	CA20062618128	20060809
US20050706791P	20050809	CA20112756229	20111025	CA20062747034	20060809
US20080268856	20081111	US20100789094	20100527	US20100941597	20101108
US20060501575	20060809	US20110274056	20111014	US20120364848	20120202
US20110093296	20110425	US20090268856	20091111	WO2009US63566	20091106
WO2006US31573	20060809				

Probable Assignee: HEXION INC

Assignee(s): (std): GARDNER ROBIN P ; GARDNER ROBIN PIERCE ; GREEN JOHN W ; HEXION INC ; HEXION SPECIALTY CHEMICALS INC ; HEXION SPECIALTY CHEMICALS RES ; HEXION SPECIALTY CHEMICALS INC ; HEXION SPECIALTY CHEMICALS IN ; SMITH MICHAEL ; MCDANIEL ROBERT R ; MCCARTHY SCOTT M ; PEEPLES CODY RYAN ; PEEPLES CODY R ; HEXION RES BELGIUM SA ; MOMENTIVE SPECIALTY CHEMICALS INC ; MOMENTIVE SPECIALTY CHEMICALS RES BELGIUM S A ; MCCRARY AVIS LLOYD ; KHEKSION SPESHELTI KEMIKALS INK ; MOMENTIVE SPECIALTY CHEM INC ; MOMENTIVE SPECIALTY CHEMICALS RES BELGIUM SA ; MOMENTIVE SPECIALTY CHEMICALS RES BELGIUM ; MOUMENTIV SPESHELTI KEMIKALS INK

Assignee(s): MOMENTIVE SPECIALTY CHEMICALS INC F K A HEXION SPECIALTY CHEMICALS INC ; MOMENTIVE SPECIALTY CHEMICALS RESEARCH BELGIUM SA ; BORDEN CHEMICAL FOUNDRY LLC ; MOMENTIVE SPECIALTY CHEMICALS RESEARCH BELGIUM ; LAWTER INT INC ; OILFIELD TECHNOLOGY GROUP INC ; WILMINGTON TRUST FSB AS COLLATERAL AGENT ; WILMINGTON TRUST FSB COLLATERAL AGENT AS ; WILMINGTON TRUST NATIONAL ASSOCIATION (AS SUCCESSO ; WILMINGTON TRUST NATIONAL ASSOCIATION ; WILMINGTON TRUST NATIONAL ASSOCIATION AS SUCCESSOR ; WILMINGTON TRUST NATIONAL ASSOCIATION (AS SUCCESSOR BY MERGER TO WILMINGTON TRUST FSB) COLLATERAL AGENT AS ; WILMINGTON TRUST NATIONAL ASSOCIATION AS SUCCESSOR BY MERGER TO WILMINGTON TRUST FSB COLLATERAL AGENT AS ; WILMINGTON TRUST NATIONAL ASSOCIATION COLLATERAL AGENT AS ; MOMENTIVE SPECIALTY CHCALS INC ; JPMORGAN CHASE BANK NA APPLICABLE FIRST LIEN REPRESENTATIVE AS ; MOMENTIVE SPECIALTY CHEMICALS RESEARCH BELGIUM S A ; HEXION RESEARCH BELGIUM SA ; JPMORGAN CHASE BANK NA ADMINISTRATIVE AGENT AS ; WILMINGTON TRUST CO COLLATERAL AGENT AS ; JPMORGAN CHASE BANK NA APPLICABLE FIRST LIEN REPRES ; JPMORGAN CHASE BANK NA AS ADMINISTRATIVE AGENT ; WILMINGTON TRUST CO ; JPMORGAN CHASE BANK NA ; HEXION INT INC WAS KNOWN AS BORDEN CHEMICAL INTERNATIONAL INC.. ; HEXION INVESTMENTS INC WAS KNOWN AS BORDEN CHEMICAL INVESTMENTS INC.. ; HEXION US FINANCE CORP ; HSC CAPITAL CORP ; HEXION INC WAS KNOWN AS MOMENTIVE SPECIALTY CHEMICALS INC.. ; HEXION SPECIALTY CHEMICALS RESEARCH BELGIUM SA ; HEXION SPECIALTY CHEMICALS RESEARCH BELGIUM S A ; HEXION INC WAS KNOWN AS HEXION SPECIALTY CHEMICALS INC.. ; HEXION CI HOLDING CO CHINA LLC

Inventor(s): (std): MAKDEHNIEL ROBERT R ; MAKKARTI SKOTT M ; MCCARTHY SCOTT M ; MCDANIEL ROBERT R ; SMIT MAJKL ; SMITH MICHAEL ; GARDNER ROBIN P ; PIPLS KOUDI R ; PEEPLES CODY RYAN ; MCCRARY AVIS LLOYD ; MC DANIEL ROBERT R ; MC CRARY AVIS LLOYD ; MAKKREHRI EHVIS LLOJD ; GRIN DZHON U ; GREEN JOHN W ; GARDNER ROBIN PIERCE ; PEEPLES CODY R ; MICHAEL SMITH

Inventor(s): JOHN W GREEN ; CODY R PEEPLES ; AVIS LLOYD MCCRARY ; ROBIN PGARDNER ; ROBIN P GARDNER ; ROBERT RMCDANIEL ; ROBERT R MCDANIEL ; SCOTT M MCCARTHY ; MCDANIEL ROBERT ; MCCARTHY SCOTT

Agent(s): WATERMARK PATENT AND TRADE MARKS ATTORNEYS; WATERMARK INTELLECTUAL PROPERTY PTY LTD; OGILVY RENAULT LLP SENCRL SRL; NORTON ROSE CANADA SENCRL SRL LLP; NORTON ROSE FULBRIGHT CANADA LLP SENCRL SRL; NORTON ROSE OR SENCRL SRL LLP; STRAATEN JAN ANTHONY VAN D; RESOLUTION PERFORMANCE PRODUCTS LLC, ATTN: LISA JONES; RESOLUTION PERFORMANCE PRODUCTS LLC ATTN LISA JONES; HEXION SPECIALTY CHEMICALS INC; JONES LISA KIMES

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: LOW TEMPERATURE **COATED** PARTICLES FOR USE AS **PROPPANTS** OR IN GRAVEL PACKS, METHODS FOR MAKING AND USING THE SAME

Abstract: Source: US2008230223A Disclosed herein are free flowing **coated** particles and low temperature methods of making same. Each particle has a curable **coating** disposed upon a substrate. The substrate is a particulate substrate including an inorganic material, a particulate substrate including an organic material, a composite substantially homogeneous formed particle including a first portion of an at least partly cured binder and filler particles, or a hybrid particle having an inorganic particle as a core and a composite **coating** including at least partially cured resin and filler. The curable **coating** includes a continuous phase including resole resin and reactive powder particles embedded or adhered to the continuous phase. The reactive powder particles typically include resole resin, novolak resin, polyester, acrylic and/or urethane. A method including applying a **coating** including the continuous phase including resole resin and reactive or non-reactive powder particles embedded or adhered to the continuous phase.

Classifications:

International (IPC 8-9): B01J2/30 B05D7/00 B22C1/22 B32B27/00 B32B5/16 C08K9/08 C09D5/03 C09D7/12 C09K8/52 C09K8/56 C09K8/58 C09K8/80 E21B37/08 E21B43/00 E21B43/04 E21B43/22 E21B43/247 E21B43/26 E21B43/267 (Advanced/Invention); B32B19/00 C08K9/08 C09D161/12 E21B43/267 (Advanced/Non-invention); B05D7/00 B32B5/16 C09K8/56 C09K8/58 E21B43/02 E21B43/16 E21B43/25 (Core/Invention)

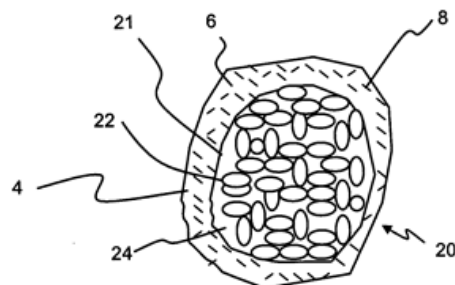
International (IPC 1-7): B32B5/16 C09K7/00

CPC: Y10T428/2998 C08K9/08 C09D5/03 B32B5/16 Y10T428/2438 Y10T428/24405 C09D7/62 C09K8/805

European: C09D5/03 C09D7/12D2B C09K8/80B M08K9/08

US: 1/1 166/272.2 166/272.200P 166/278 166/278S 166/280.2 166/281 166/288 166/308.1 166/308.100S 166/308.3 427/214 427/214S 427/221 428/407 428/407S 507/219 507/219S 507/220 507/220S 507/224 507/224S 523/131 523/131S

PatBase - US2008230223_AA



Family:

Publication number	Publication date	Application number	Application date
AR067247 AA	20091007	AR2008P101197	20080325
AR078771 AA	20111130	AR2010P103920	20101025
CA2680930 AA	20090915	CA20082680930	20080226
CA2680930 C	20160405	CA20082680930	20080226
CA2718659 AA	20110426	CA20102718659	20101025
CA2718659 C	20160412	CA20102718659	20101025
CN101641211 A	20100203	CN200880009221	20080226
CN101641211 B	20141112	CN200880009221	20080226
CN102167969 A	20110831	CN201010624985	20101026
EP2132032 A1	20091216	EP20080726099	20080226
EP2132032 A4	20150415	EP20080726099	20080226
MX2009009664 A1	20090922	MX2009009664	20080226
MX2010011368 A1	20110425	MX20100011368	20101015
MX336826 B	20160203	MX20100011368	20101015
RU2009138924 A	20110427	RU20090138924	20080226
RU2010143561 A	20120427	RU20100143561	20101025
RU2441051 C2	20120127	RU20090138924	20080226
SA2587 B1	20110213	SA20080290147	20080319
US2008230223 AA	20080925	US20070726573	20070322
US2010065271 AA	20100318	US20090605990	20091026
US7624802 BB	20091201	US20070726573	20070322
US9096790 BB	20150804	US20090605990	20091026
WO08115338 A1	20080925	WO2008US02516	20080226
WO08115338 C2	20081113	WO2008US02516	20080226

Priority:

CA20102718659 20101025 US20070726573 20070322 US20090605990 20091026
WO2008US02516 20080226

Probable Assignee: HEXION INC

Assignee(s): (std): HEXION SPECIALTY CHEMICALS RES ; HEXION SPECIALTY CHEMICALS INC ; BARAJAS MICHAEL ANTHONY ; GREEN JOHN W ; MCCRARY AVIS LLOYD ; MCDANIEL ROBERT RAY ; KHEKSION SPESHELTI KEMIKALS INK ; MOMENTIVE SPECIALTY CHEM INC ; HEXION INC

Assignee(s): HEXION SPECIALTY CHEMICALS RESEARCH BELGIUM S A ; WILMINGTON TRUST NATIONAL ASSOCIATION COLLATERAL AGENT AS ; LAWTER INT INC ; OILFIELD TECHNOLOGY GROUP INC ; MOMENTIVE SPECIALTY CHCALS INC ; WILMINGTON TRUST NATIONAL ASSOCIATION ; MOMENTIVE SPECIALTY CHEMICALS INC F K A HEXION SPECIALTY CHEMICALS INC ; JPMORGAN CHASE BANK NA ADMINISTRATIVE AGENT AS ; WILMINGTON TRUST FSB COLLATERAL AGENT AS ; MOMENTIVE SPECIALTY CHEMICALS INC ; HEXION CI HOLDING CO CHINA LLC ; BORDEN CHEMICAL FOUNDRY LLC ; FREESCALE SEMICONDUCTOR INC ; HEXION SPECIALTY CHEMICALS INC US ; JPMORGAN CHASE BANK NA ; HEXION SPECIALTY CHEMICALS RESEARCH BELGIUM SA ; HEXION INC WAS KNOWN AS HEXION SPECIALTY CHEMICALS INC.. ; HEXION INT INC WAS KNOWN AS BORDEN CHEMICAL INTERNATIONAL INC.. ; HEXION INVESTMENTS INC WAS KNOWN AS BORDEN CHEMICAL INVESTMENTS INC.. ; HEXION US FINANCE CORP ; HSC CAPITAL CORP

Inventor(s): (std): BARADZHAS MAJKL EHNTONI ; BARAJAS MICHAEL ANTHONY ; LLOYD MCCRARY AVIS ; MAKDEHNIEL ROBERT REHJ ; MAKKREHRI EHVIS LLOJD ; MCCRARY AVIS LLOYD ; MCDANIEL ROBERT RAY ; ANTHONY BARAJAS MICHAEL ; RAY MCDANIEL ROBERT ; GREEN JOHN W

Inventor(s): ROBERT RAY MCDANIEL ; JOHN W GREEN ; AVIS LLOYD MCCRARY ; MICHAEL ANTHONY BARAJAS

Agent(s): NORTON ROSE FULBRIGHT CANADA LLP SENCRL SRL; OGILVY RENAULT LLP SENCRL SRL; VAN DER STRAATEN JAN ANTHONY; HEXION SPECIALTY CHEMICALS INC; JONES LISA KIMES

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 SV SY
SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: POLYSILOCARB MATERIALS AND METHODS

Abstract: Source: US2014274658A Silicon (Si) based materials and methods of making those materials. More specifically, methods and materials having silicon, oxygen and carbon that form filled and unfilled plastic materials and filled and unfilled ceramics.

Classifications:

International (IPC 8-9): A61K8/25 A61K8/89 A61Q3/02 B01D39/20 B01D53/22 B01D67/00 B01D71/04 B01J2/02 B01J2/04 B01J2/06 B24D3/00 B24D3/28 B28B11/16 B28B11/24 B28B3/26 C01B31/18 C01B31/20 C01B31/30 C01B31/36 C01B32/40 C01B32/956 C01B32/977 C01B33/021 C01B33/037 C01B33/113 C04B33/135 C04B35/14 C04B35/515 C04B35/52 C04B35/524 C04B35/56 C04B35/565 C04B35/571 C04B35/589 C04B35/626 C04B35/63 C04B35/64 C04B35/65 C04B35/80 C08G77/00 C08G77/12 C08G77/20 C08G77/50 C08G85/00 C08J3/24 C08J5/00 C08K3/00 C08K3/34 C08K5/5425 C08K7/02 C08L25/00 C08L83/04 C08L83/14 C09B69/10 C09C1/28 C09D101/18 C09D101/28 C09D105/00 C09D107/02 C09D11/00 C09D11/037 C09D11/14 C09D133/14 C09D163/00 C09D175/16 C09D183/04 C09D201/00 C09D5/18 C09D5/29 C09D5/32 C09D7/12 C09J1/00 C09J119/00 C09J183/04 C09K21/02 C09K21/14 C09K8/588 C09K8/66 C09K8/80 C23C16/32 C30B23/00 C30B23/02 C30B25/02 C30B29/06 C30B29/36 E21B10/46 E21B15/00 E21B17/00 E21B17/01 E21B33/06 E21B33/12 E21B43/01 E21B43/10 E21B43/12 E21B43/26 E21B43/267 F41H5/02 H01L21/02 H01L29/16 H01L29/66 (Advanced/Invention); C01B33/113 C08G77/00 C08G77/12 (Advanced/Non-invention)

CPC: C09K2208/00 E21B43/01 C04B35/6269 C04B2235/3463 C04B2235/5481 C04B2235/94 B01D53/228 B01D67/0067 B01D71/04 B01D2323/12 B01D2323/06 B01D2323/21 B01D2325/02 C04B2235/6586 B01D39/20 C09K8/66 C08K3/0033 C09D133/14 C09D163/00 C09D101/28 C09D101/18 C09D105/00 C09D11/00 A61K8/25 A61Q3/02 C09J119/006 C09D11/037 A61K2800/412 A61K2800/43 C09D183/04 C04B2235/408 C04B2235/5296 C04B2235/6567 B01D69/141 B01D71/024 Y10T428/131 B01D2256/16 C01B3/503 C04B35/589 C04B2235/5248 C04B2235/616 E21B17/00 E21B17/01 E21B17/085 E21B33/1208 C04B38/0022 C04B35/6264 C04B2235/40 E21B10/46 E21B43/10 E21B33/12 E21B15/00 E21B43/121 E21B33/06 C08J2383/07 B24D3/28 C01P2004/51 C01P2004/62 C09C1/0081 C08J5/00 E21B43/26 E21B43/267 C09K8/588 C01B31/301 C23C16/325 C01P2002/30 C01P2006/32 C30B23/00 C30B23/025 C30B29/36 C30B29/06 H01L29/1608 H01L29/66068 H01L29/66893 H01L21/02381 H01L21/0262 F41H5/0414 C04B37/005 C04B37/045 C04B2235/721 C04B2235/95 C04B2235/9607 C04B2237/083 C04B2237/365 C04B2237/385 C01B33/113 B01J2/04 C08L83/00 B01J2/003 B01J2/06 C04B2235/727 C04B2235/785 C04B2235/76 C04B2235/766 C04B2235/767 C04B2235/9684 H01L21/02378 H01L21/02529 B01J2/18 C04B35/63 C04B2235/6021 C04B33/1352 C04B2235/3217 C04B2235/5445 Y02P40/69 C04B2235/72 C08G77/20 C08G77/80 B28B3/26 B28B11/16 B26D1/28 B26D7/26 B29B9/065 C04B35/565 C04B35/62695 H01L21/02167 H01L21/324 C01P2006/80 C04B2235/383 C04B2235/3834 C09C1/28 C09D5/32 C09D5/18 C09D175/16 C09K21/02 C09D5/29 C09D107/02 C01P2006/62 C01P2006/64 C01P2004/61 C01P2006/19 Y02P40/63 C04B35/5603 C04B35/571 C04B35/806 C08G77/12 C08G77/50 C08L83/04 C30B25/02 C01B32/956 C01B31/36 C01B32/907 C01B31/18 C01B31/20 C08G18/6225 H01L29/745 A61K8/891 C01P2006/10 C08K3/34 C09D11/033 C09D11/108 C04B2235/3895 C23C16/401 C08J3/24 B24D3/04 B24D3/14 C04B2235/427 C09K8/805 C08K3/013 C09D7/61 C09D7/68 C09D7/69 C08K5/56 C04B2235/3418 C04B2235/3826 C04B2235/5436 C04B35/56 C04B2235/44 C04B2235/48 C04B2235/483 C04B2235/528 C04B2235/5427 C04B2235/6581 C04B2235/77 C04B2235/96 C08K3/14 C09K8/80 C09D11/14

US: 106/197.01 106/203.3 106/217.7 106/285 106/287.13 106/31.68 106/31.69 106/475 106/491 106/504 166/105 166/179 166/208 166/242.1 166/243 166/280.2 166/335 166/367 166/381 166/75.11 175/425 252/601 264/13 264/638 29/557 423/325 423/345 424/61 427/397.7 428/34.4 428/367 428/402 501/154 501/87 501/90 507/117 507/129 507/269 51/298 524/14 524/315 524/361 524/365 524/423 524/442 524/443 524/570 524/577 524/588 524/612 524/79 525/474 525/478 525/50 525/55 528/31 528/32 95/55 96/4

Family:

Publication number	Publication date	Application number	Application date
AP201508964 A0	20151231	AP20150008964	20140703
AU2014285028 AA	20150108	AU20140285028	20140703
BR112015027706 A2	20170829	BR20151127706	20140502
BR112015033016 A2	20170725	BR20151133016	20140703
CA2910822 AA	20151030	CA20142910822	20140502
CA2917146 AA	20151230	CA20142917146	20140703
CA2940675 AA	20160824	CA20152940675	20150228
CA2940678 AA	20160824	CA20152940678	20150228
CA2962602 AA	20170324	CA20152962602	20150924
CN105452190 A	20160330	CN201480038012	20140502
CN105745299 A	20160706	CN201480048718	20140703
CN106232748 A	20161214	CN201580021474	20150228
CN106459665 A	20170222	CN201580023018	20150228
CN107001152 A	20170801	CN201580063973	20150924
CN107108234 A	20170829	CN201580063896	20150924
CN107530662 A	20180102	CN201680017333	20160121
EP2991949 A2	20160309	EP20140791407	20140502
EP2991949 A4	20170719	EP20140791407	20140502
EP3017015 A1	20160511	EP20140820225	20140703
EP3017015 A4	20170705	EP20140820225	20140703
EP3057678 A1	20160824	EP20140853707	20141014
EP3057678 A4	20170712	EP20140853707	20141014
EP3110895 A1	20170104	EP20150755755	20150228

PatBase - US2014274658_AA

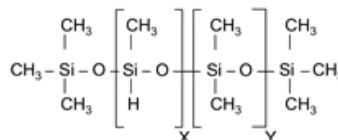


FIG. 1

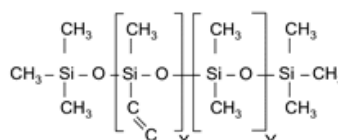


FIG. 2

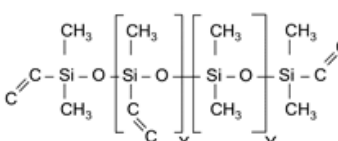


FIG. 3

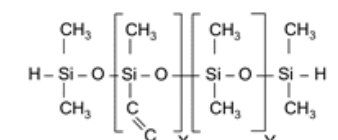


FIG. 4

EP3110896 A1	20170104	EP20150755897	20150228
EP3110896 A4	20180103	EP20150755897	20150228
EP3197845 A2	20170802	EP20150844428	20150924
EP3197847 A2	20170802	EP20150843769	20150924
EP3247488 A1	20171129	EP20160740729	20160121
IN201617000534 A	20160708	IN201617000534	20160106
IN201617031547 A	20170106	IN201617031547	20160915
JP2017537052 T2	20171214	JP20170536220T	20150924
KR20170073606 A	20170628	KR20177011175	20150924
MX2015015294 A1	20160628	MX20150015294	20140502
MX2016000097 A1	20160718	MX20160000097	20140703
RU2016103368 A	20170810	RU20160103368	20140703
SG11201600012Q A1	20160226	SG20161100012	20140703
US2014274658 AA	20140918	US20140268150	20140502
US2014318799 AA	20141030	US20140324050	20140703
US2014323364 AA	20141030	US20140324038	20140703
US2014326453 AA	20141106	US20140324056	20140703
US2014343220 AA	20141120	US20140212896	20140314
US2015027306 AA	20150129	US20140514257	20141014
US2015175750 AA	20150625	US20150634814	20150228
US2015252166 AA	20150910	US20150634828	20150228
US2015252170 AA	20150910	US20150634819	20150228
US2015252171 AA	20150910	US20150634822	20150228
US2016046529 AA	20160218	US20150664538	20150320
US2016152889 AA	20160602	US20150789722	20150701
US2016207780 AA	20160721	US20150864196	20150924
US2016207781 AA	20160721	US20150864642	20150924
US2016207782 AA	20160721	US20150864125	20150924
US2016207783 AA	20160721	US20150864162	20150924
US2016207836 AA	20160721	US20150864498	20150924
US2016208412 AA	20160721	US20150864539	20150924
US2016280607 AA	20160929	US20160002773	20160121
US2017050337 AA	20170223	US20160210590	20160714
US2017183514 AA	20170629	US20160348112	20161110
US2017204532 AA	20170720	US20160275055	20160923
US2017253720 AA	20170907	US20160299373	20161020
US2017368668 AA	20171228	US20170454846	20170309
US9481781 BB	20161101	US20150634822	20150228
US9499677 BB	20161122	US20150634828	20150228
US9657409 BB	20170523	US20150864539	20150924
US9815943 BB	20171114	US20140268150	20140502
US9815952 BB	20171114	US20140212896	20140314
US9828542 BB	20171128	US20140324056	20140703
WO14179662 A2	20141106	WO2014US36522	20140502
WO14179662 A3	20141231	WO2014US36522	20140502
WO15003175 A1	20150108	WO2014US45494	20140703
WO15009464 A1	20150122	WO2014US45497	20140703
WO15009465 A1	20150122	WO2014US45500	20140703
WO15057718 A1	20150423	WO2014US60500	20141014
WO15131167 A1	20150903	WO2015US18210	20150228
WO15131168 A1	20150903	WO2015US18211	20150228
WO15143390 A2	20150924	WO2015US21861	20150320
WO15143390 A3	20151217	WO2015US21861	20150320
WO16049344 A2	20160331	WO2015US51997	20150924
WO16049344 A3	20160519	WO2015US51997	20150924
WO16049362 A2	20160331	WO2015US52038	20150924
WO16049362 A3	20160616	WO2015US52038	20150924
WO16118704 A1	20160728	WO2016US14245	20160121

Priority:

US20130788632P	20130315	US20130818906P	20130502	US20130818981P	20130503
US20130843014P	20130704	US20130890808P	20131014	US20140021002P	20140703
US20140268150	20140502	US20140212896	20140314	US20140324038	20140703
US20140324050	20140703	US20140324056	20140703	US20140055397P	20140925
US20140055461P	20140925	US20140055497P	20140925	US20140946598P	20140228
US20140514257	20141014	US20150634814	20150228	US20150106094P	20150121
US20150634828	20150228	US20150634822	20150228	US20150634819	20150228
US20140968774P	20140321	US20150664538	20150320	US20150789722	20150701
US20150112025P	20150204	US20150864196	20150924	US20150864125	20150924
US20150864162	20150924	US20150193046P	20150715	US20150232355P	20150924
WO2014US36522	20140502	WO2014US45494	20140703	US20150864498	20150924
US20150864642	20150924	US20150864539	20150924	WO2014US60500	20141014
WO2015US18210	20150228	WO2015US18211	20150228	US20160002773	20160121
US20160210590	20160714	US20160279543P	20160115	WO2015US51997	20150924
US20160348112	20161110	US20160275055	20160923	WO2015US52038	20150924
US20160299373	20161020	WO2016US14245	20160121	US20170454846	20170309
US20160306460P	20160310				

Probable Assignee: MELIOR INNOVATIONS INC

Assignee(s): (std): BRICCO BRUCE A ; DUKES DOUGLAS ; KEITH GEORGE ; HOPKINS ANDREW ; ELY JOHN ; DYK THOMAS ; HOPKINS ANDREW R ; DUKES DOUGLAS M ; DIWANJI ASHISH P ; MUELLER MICHAEL ; LAND MARK ; SHERWOOD WALTER ; MELIOR TECHNOLOGY INC ; WILDING JR OLIVER ; MELIOR INNOVATIONS INC ; MOELLER TIMOTHY ; LAND MARK S ; SHERWOOD WALTER J ; MOELLER TIM C ; MUELLER MICHAEL J ; MOLNAR MICHAEL ; MOELLER TIMOTHY C ; MELIOR TECH INC ; BENAC BRIAN ; BENAC BRIAN L

Assignee(s): BRICCO BRICCO A ; SANDGREN GLENN ; LETTUCE BOX INC ; WILDING OLIVER

Inventor(s): (std): BRICCO BRICCO A ; BRICCO BRUCE A ; DIWANJI ASHISH ; DIWANJI ASHISH P ; DUKES DOUGLAS ;

DUKES DOUGLAS L ; DUKES DOUGLAS M ; DYK THOMAS ; ELY JOHN ; HOPKINGS ANDREW ; HOPKINS
ADREW R ; HOPKINS ANDREW ; HOPKINS ANDREW P ; HOPKINS ANDREW R ; KEITH GEORGE ; LAND
MARK ; LAND MARK S ; RINZLER CHARLES C ; SANDGREN GLEN ; SANDGREN GLENN ; SHERWOOD
WALTER ; SHERWOOD WALTER J ; TAN YI ; MOELLER TIM C ; MOELLER TIMOTHY ; MOELLER TIMOTHY C
; MOLNAR MICHAEL ; MUELLER MICHAEL ; MUELLER MICHAEL J ; BENAC BRIAN ; BENAC BRIAN L ;
WILDING JR OLIVER ; WILDING OLIVER

Inventor(s): BRIAN BENAC ; OLIVER WILDING ; THOMAS DYK ; TIMOTHY MOELLER ; WALTER SHERWOOD ; MARK
LAND ; MICHAEL MUELLER ; JOHN ELY ; GEORGE KEITH ; DOUGLAS DUKES ; ANDREW HOPKINS

Agent(s): SPRUSON AND FERGUSON; CASSAN MACLEAN; CASSAN MACLEAN IP AGENCY INC; BUNGARTZ
CHRISTOPHERSEN PARTNERSCHAFT MBB PATENTANWALTE; BUNGARTZ CHRISTOPHERSEN
PARTNERSCHAFT MBB PATENTANWALTE; ITOH SHIGERU; STEPTOE AND JOHNSON LLP; GLEN P;
BELVIS GLEN P ET AL

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

Title: PROPPANTS WITH IMPROVED STRENGTH

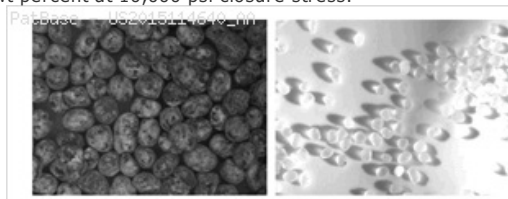
Abstract: Source: US2015114640A Cements, such as alkali activated aluminosilicate, may be used as coatings on proppants, such as brown sand and white sand, to improve the strength thereof. The resulting coated proppants show increased strength as well as produced fines of lower than about 10 wt percent at 10,000 psi closure stress.

Classifications:

International (IPC 8-9): B05D3/02 C09K8/46 C09K8/60 C09K8/80 E21B43/267 (Advanced/Invention)

CPC: C09K8/805 C09K8/62 C09K2208/08 C09K2208/10 B05D3/0218 B05D3/0254 E21B43/267

US: 166/280.2 427/212 427/215 427/314 507/204 507/219 507/269 507/271 507/274



Family:

Publication number	Publication date	Application number	Application date
AU2014342806 AA	20150507	AU20140342806	20141015
BR112016009335 A2	20170801	BR20161109335	20141015
CA2927216 AA	20160412	CA20142927216	20141015
CN105683331 A	20160615	CN201480059577	20141015
CO16110204 A2	20161031	CO20160110204	20160429
EP3063246 A1	20160907	EP20140859137	20141015
EP3063246 A4	20170531	EP20140859137	20141015
IN201617012656 A	20160831	IN201617012656	20160411
MX2016005031 A1	20160719	MX20160005031	20141015
RU2016120930 A	20171201	RU20160120930	20141015
US2015114640 AA	20150430	US20130066893	20131030
US2017073576 AA	20170316	US20160360696	20161123
WO15065711 A1	20150507	WO2014US60671	20141015

Priority:

US20130066893 20131030 US20160360696 20161123 WO2014US60671 20141015

Probable Assignee: BAKER HUGHES INC

Assignee(s): (std): BAKER HUGHES ; BAKER HUGHES INC

Assignee(s): BAKER HUGHES INCORPORATION ; BESTAOU SPURR NAIMA ; QU QI ; STEPHENSON CHRISTOPHER J

Inventor(s): (std): QU QI ; STEPHENSON CHRISTOPHER J ; BESTAOU SPURR NAIMA

Inventor(s): CHRISTOPHER J STEPHENSON ; NAIMA BESTAOU SPURR ; QI QU

Agent(s): FREEHILLS PATENT ATTORNEYS; FPA PATENT ATTORNEYS PTY LTD; SIM AND MCBURNEY; CAROLINA MERCEDES DAZA MONTALVO; VON FUENER NICOLAI; CHANDLER KIMBERLY L

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

Title: DRILLING FLUIDS WITH LEAKOFF CONTROL AND DRILL CUTTINGS REMOVAL SWEEPS

Abstract: Source: US2016289530A A method of drilling a wellbore in a subterranean formation comprises circulating a water-based or oil-based drilling fluid in the subterranean formation; the water-based or oil-based drilling fluid comprising a carrier, and a superabsorbent polymer present in an amount effective to reduce fluid leakoff during the drilling operation, the superabsorbent polymer comprising crosslinks formed before the superabsorbent polymer is combined with the carrier.

Classifications:

International (IPC 8-9): C08J11/06 C09K8/02 C09K8/035 C09K8/04 C09K8/12 C09K8/34 C09K8/50 C09K8/52 C09K8/575 C09K8/62 C09K8/64 C09K8/68 C09K8/70 C09K8/76 C09K8/80 E21B21/00 E21B33/134 E21B33/138 E21B37/00 E21B37/06 E21B43/04 E21B43/26 E21B43/267 (Advanced/Invention)

CPC: C09K8/12 E21B21/003 E21B21/00 C09K8/035 C09K8/34 C09K8/62 C09K8/80 C09K8/703 C09K8/706 E21B43/267 E21B43/26 C09K2208/26 C09K8/76 E21B33/138 C09K8/685 C09K8/5756 E21B43/04 C09K8/70 E21B37/06 E21B33/134 C09K8/52 C09K8/68

US: 166/276 166/280.2 166/305.1 166/308.1 166/308.2 175/65

Family:

Publication number	Publication date	Application number	Application date
AU2016243602 AA	20161006	AU20160243602	20160330
CA2980919 AA	20170925	CA20162980919	20160330
CA2980981 AA	20170925	CA20162980981	20160330
CA2980988 AA	20170925	CA20162980988	20160330
CN107429561 A	20171201	CN201680016010	20160330
CN107429562 A	20171201	CN201680018059	20160330
CO20170010719 A2	20180116	CO20170010719	20171020
EP3277774 A1	20180207	EP20160774048	20160330
EP3277775 A1	20180207	EP20160774051	20160330
EP3277776 A1	20180207	EP20160774070	20160330
IN201717036953 A	20171215	IN201717036953	20171017
IN201717036954 A	20171215	IN201717036954	20171017
IN201717036955 A	20171215	IN201717036955	20171017
NO20171664 A	20171019	NO20170001664	20171019
NO20171666 A	20171019	NO20170001666	20171019
NO20171681 A	20171020	NO20170001681	20171020
US2016289530 AA	20161006	US20160083334	20160329
US2016289541 AA	20161006	US20160084598	20160330
US2016289542 AA	20161006	US20160084795	20160330
US2016289547 AA	20161006	US20160084567	20160330
US2016289549 AA	20161006	US20160084833	20160330
US2016290104 AA	20161006	US20160084539	20160330
WO16160897 A1	20161006	WO2016US24859	20160330
WO16160899 A1	20161006	WO2016US24861	20160330
WO16160902 A1	20161006	WO2016US24864	20160330
WO16160904 A1	20161006	WO2016US24868	20160330
WO16160927 A1	20161006	WO2016US24925	20160330
WO16160928 A2	20161006	WO2016US24926	20160330
WO16160928 A3	20161117	WO2016US24926	20160330

Priority:

US20150140105P	20150330	US20160083334	20160329	US20160084598	20160330
US20160084795	20160330	US20160084567	20160330	US20160084539	20160330
US20160084833	20160330	WO2016US24868	20160330	WO2016US24925	20160330
WO2016US24861	20160330				

Probable Assignee: BAKER HUGHES INC

Assignee(s): (std): BAKER HUGHES A GE CO LLC ; BAKER HUGHES INC ; BRANNON HAROLD DEAN ; CARMAN PAUL S ; GUPTA D V SATYANARAYANA ; NELSON SCOTT GREGORY ; STARKS II THOMAS RAY ; HUDSON HAROLD G ; LI LEIMING ; NELSON SCOTT G ; SUN HONG ; WANG XIAOLAN ; QU QI ; ZHOU JIA

Assignee(s): STARKS THOMAS RAY II ; GUPTA DV SATYANARAYANA

Inventor(s): (std): BRANNON HAROLD DEAN ; CARMAN PAUL S ; LI LEIMING ; NELSON SCOTT G ; NELSON SCOTT GREGORY ; QU QI ; STARKS II THOMAS RAY ; SUN HONG ; WANG XIAOLAN ; ZHOU JIA ; STARKS THOMAS RAY II ; GUPTA D V SATYANARAYANA ; HUDSON HAROLD G

Inventor(s): JIA ZHOU ; LEIMING LI ; SCOTT G NELSON ; GUPTA DV SATYANARAYANA ; HONG SUN

Agent(s): PATENT ATTORNEY SERVICES; FPA PATENT ATTORNEYS PTY LTD; SIM AND MCBURNEY; ELAN IP INC; CAROLINA MERCEDES DAZA MONTALVO; LAMBACHER MICHAEL

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

Title: PROPPANT BEAD FORMING METHODS

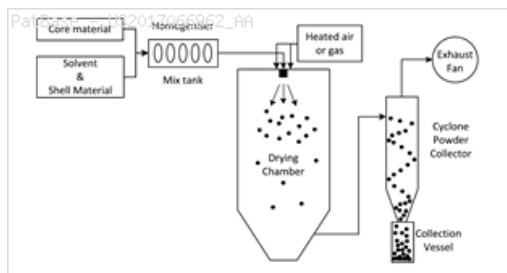
Abstract: Source: US2017066962A The disclosure herein includes methods of preparing ceramic beads, useful as proppant materials, by mixing ceramic precursors, such as slag, fly ash, or aluminum dross, forming bead precursors from the mixture, and heating the bead precursors to drive a chemical reaction between the ceramic precursors to form the ceramic beads. The resultant ceramic beads may be generally spherical particles that are characterized by diameters of about 0.1 to 2 mm, a diametral strength of at least about 100 MPa, and a specific gravity of about 1.0 to 3.0. A coating process may optionally be used to increase a diametral strength of a proppant material. A sieving process may optionally be used to obtain a smaller range of sizes of proppant materials.

Classifications:

International (IPC 8-9): B01J2/00 B01J2/04 B28B11/24 C09K8/80 (Advanced/Invention)

CPC: C09K8/80 C09K8/805 B01J2/04 C04B33/1352 C04B33/138 C04B35/587 C04B35/597 C04B35/62204 C04B35/62655 C04B2235/3208 C04B2235/528 C04B2235/5427 C04B2235/6562 C04B2235/6565 C04B2235/77 C04B2235/94 C04B2235/96 Y02P40/69

US: 264/434



Family:

Publication number	Publication date	Application number	Application date
US2017066962 AA	20170309	US20160261764	20160909

Priority:

US20140993187P 20140514 US20150216223P 20150909 US20160261764 20160909
US20150220027P 20150917 US20150712888 20150514

Probable Assignee: CALIFORNIA INST OF TECHN

Assignee(s): (std): CALIFORNIA INST OF TECHN ; STATOIL GULF SERVICES LLC

Assignee(s): CALIFORNIA INST OF TECHNOLOGY ; NASA

Inventor(s): (std): BUX SABAH K ; CHI SU C ; FIRDOSY SAMAD A ; FLEURIAL JEAN PIERRE ; HOMER MARGIE L ; KINDLER ANDREW ; KULKARNI PANDURANG ; MCENERNEY BRYAN W ; RAVI VILUPANUR A ; SUNDARARAJAN DESIKAN ; YEN SHIAO PIN S