

**CLASS 507, EARTH BORING, WELL TREATING,
AND OIL FIELD CHEMISTRY****SECTION I - CLASS DEFINITION**

Compositions of matter for use in earth boring, well treating, or preventing contaminant deposits in petroleum oil conduits having or not having structure, physical form, or heterogeneous arrangement of components.

Processes of making, or processes peculiar to making such compositions and for which there is no provision elsewhere.

Mere methods of use of said compositions or of a compound in earth boring, well treating, or in preventing contaminant deposits in petroleum oil conduits.

- (1) Note. In this class, each composition and the processes that are peculiar to making the same are classified based on the whole composition and its complete or primary function or quality, and such processes are classified with the corresponding composition.

**SECTION II - LINES WITH OTHER CLASSES
AND WITHIN THIS CLASS**

Class 507 is to be considered an integral part of Class 252 (after subclass 611) and follows the schedule hierarchy, retaining all pertinent definitions and class lines of Class 252.

The rules for determining Class placement of the Original Reference (OR) for claimed chemical compositions are set forth in the Class Definition of Class 252 in the section **LINES WITH OTHER CLASSES AND WITHIN THIS CLASS**, subsection **COMPOSITION CLASS SUPERIORITY**, which includes a hierarchical **ORDER OF SUPERIORITY FOR COMPOSITION CLASSES**.

**SECTION III - REFERENCES TO OTHER
CLASSES****SEE OR SEARCH CLASS:**

- 106, Compositions: Coating or Plastic, for compositions thereof or materials or ingredients used in the making of coating or plastic compositions which are not elsewhere classified (e.g., cement, etc.).

- 127, Sugar, Starch and Carbohydrates, for processes for refining and manufacturing sugar, starch, and other carbohydrates.
- 134, Cleaning and Liquid Contact With Solids, for washing or cleaning processes which include the use of detergents for contacting liquids with solids.
- 137, Fluid Handling, for miscellaneous processes of handling materials in flow lines.
- 166, Wells, for processes of treating or operating a well.
- 175, Boring or Penetrating the Earth, for processes of drilling wells. See Notes under the definition for Class 507, subclass 100.
- 184, Lubrication, for lubricating processes.
- 208, Mineral Oils: Processes and Products.
- 210, Liquid Purification or Separation, for conditioning well fluids above ground.
- 260, Chemistry of Carbon Compounds.
- 366, Agitating, for processes of mixing materials by agitation. Manipulative mixing processes for compounding a composition from a plurality of ingredients are properly classified in Class 366 only if the ingredients are not sufficiently identified to form a basis for classification in Class 507 or other appropriate composition classes.
- 405, Hydraulic and Earth Engineering, subclass 258.1 for a method of earth treatment or control.
- 420, Alloys or Metallic Compositions.
- 422, Process Disinfecting, Deodorizing, Preserving or Sterilizing, and Chemical Apparatus, for processes of corrosion inhibition nonspecific to earth boring.
- 423, Chemistry of Inorganic Compounds, for compounds and nonmetallic elements, including processes for their manufacture.
- 427, Coating Processes, for coating processes, in general.
- 428, Stock Material or Miscellaneous Articles.
- 435, Chemistry: Molecular Biology and Microbiology, for processes of making chemical compounds which include fermentation or ferments or other compositions for use in such processes or processes of making them, also for compositions comprising enzymes or microorganisms which are not specific to earth boring.
- 516, Colloid Systems and Wetting Agents; Subcombinations Thereof; Processes of Making, Stabilizing, Breaking, or Inhibiting, appropriate subclasses for subject matter relating to: colloid systems (such as sols*, emulsions, dispersions, foams, aerosols, smokes, gels, or pastes) or wetting agents (such as leveling, penetrat-

- ing, or spreading); subcombination compositions of colloid systems containing at least an agent specialized and designed for or peculiar to use in making or stabilizing colloid systems; compositions and subcombination compositions specialized and designed for or peculiar to use in breaking (resolving) or inhibiting colloid systems; processes of making the compositions or systems of the class; processes of breaking (resolving) or inhibiting colloid systems; in each instance, when generically claimed or when there is no hierarchically superior provision in the USPC for the specifically claimed art, i.e., having no specific claim to earth boring.
- 520, Synthetic Resins or Natural Rubbers, for resins and rubbers, per se, and for resin containing compositions, the use or utility of which is not specifically provided for elsewhere.

SUBCLASSES

90 PREVENTING CONTAMINANT DEPOSITS IN PETROLEUM OIL CONDUITS:

This subclass is indented under the class definition. Composition specialized and designed for addition to petroleum oils during transportation through conduits to prevent fouling or clogging of the conduits due to components of the petroleum oils precipitating out during the transportation, or method of preparation, or mere method of use of said composition or a compound for the purposes mentioned above.

- (1) Note. This subclass also includes those processes of treating the oils during transportation with nonmineral oil additives which are distinguished by the composition employed and do not include any significant manipulative steps. The broad steps of introducing the additives and using pressure or other means recited by name only to continue conveyance of the oil through the conduit will not take the patent out of the scope of this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 901, and 902-910, for Art Collections pertaining to subclasses 90-145.

SEE OR SEARCH CLASS:

- 44, Fuel and Related Compositions, appropriate subclasses for processes of treating fuel oils to prevent corrosion of pipelines used to transport such fuel oils.
- 137, Fluid Handling, subclass 13 for miscellaneous processes of handling materials in flow lines wherein flow of the fluent material is facilitated by the addition of material which affects the flow characteristics of the fluent material or by the application of heat or other forms of energy.
- 208, Mineral Oils: Processes and Products, subclass 47 for processes of preventing corrosion of the equipment during chemical conversion of mineral oils, subclasses 177+ for processes of preventing corrosion of equipment by refining the mineral oil to remove impurities which may cause such corrosion, and subclass 370 for miscellaneous treatments of mineral oils during transportation through conduits.
- 252, Compositions, subclasses 387+ for an anti-corrosion composition of general utility.
- 508, Solid Antifriction Devices, Materials Therefor, Lubricant and Separant Compositions for Moving Solid Surfaces, and Miscellaneous Mineral Oil Compositions, subclasses 110+, for mineral lubricating oil compositions which contain additives for preventing corrosion of the pipe lines during transportation of the oil.
- 516, Colloid Systems and Wetting Agents; Subcombinations Thereof; Processes of Making, Stabilizing, Breaking, or Inhibiting, subclasses 31+ for colloid systems of colloid-sized solid or semi-solid phase dispersed in primarily organic continuous liquid phase, subclasses 38+ for colloid systems of colloid-sized bituminous, coal, or Carbon phase dispersed in aqueous continuous liquid phase, subclasses 77+ for colloid systems of colloid-sized solid phase dispersed in aqueous continuous liquid phase; or agents for such systems or making or stabilizing

(including preventing settling, suspending agents, antiflocculants) such systems or agents; in each instance, when generically claimed or when there is no hierarchically superior provision in the USPC for the specifically claimed art.

100 EARTH BORING:

This subclass is indented under the class definition. Earth boring composition which is (a) a liquid, gas, or fluid solid composition or compositional additive therefor which is specialized and designed for use in earth boring while drilling is in progress, e.g., a well drilling mud; (b) process of preparing said composition; or (c) mere method of use of said composition or a compound for the purpose of (a) above.

- (1) Note. An earth boring additive consisting of a single compound is classified in one of the compound classes (e.g., Classes 260, 423, etc.).
- (2) Note. Examples of compositional additives included in this and the indented subclasses: filter/water loss reducing agents, lost circulation controlling agents, packer fluids, corrosion inhibitors, gas hydrate inhibitors, lubricant additives for prevention of stuck pipe, other agents disclosed as useful in the physical or chemical control of the well fluid or borehole environment while drilling.
- (3) Note. Methods of use included in this and the indented subclasses are those whose operative steps are limited to: (a) preparative steps of the fluid or additive prior to or concurrent with injection into the wellbore, (b) mere circulation or injection of a compound or composition while drilling, or (c) mere mixing of a compound or composition with a circulating fluid.

The mere circulation of a drilling fluid encompasses the pumping of said fluid into and out of the wellbore and returning said fluid back into the well. The recitation of a universal practice, such as the mere removal of cuttings from the fluid,

does not take a method claim out of this subclass.

Required characteristics of the borehole environment will not take a method claim out of this subclass, e.g., temperature, presence of specific materials, or conditions of the earthen formation.

- (4) Note. Where a component is generically presented in inconsistent or functional terms (e.g., surfactant, fluid loss control agent, etc.) in some of the claims, any material(s) later specified as encompassed within the scope of said terms will limit said terms for classification purposes. For example, if claim 1 calls for a surfactant and claim 2 specifies the surfactant as being a PEG ether, and there are no other claims specifying the surfactant differently, then the original claim is classified in subclass 136 and the general rules of cross-referencing still follow.
- (5) Note. The following rule applies to subclasses 101-139. Traditional rules of classification require no mandatory cross-references beyond the lowest controlling claim covered by this schedule. It is strongly recommended that documents be cross-referenced according to all appropriate subclasses, mandatory or not, based on all discrete organic components of the claimed composition. For example, a composition comprising hydroxyethylcellulose, a higher fatty acid, and lignite is classified in subclass 107 as the original and additional cross-references in subclasses 114 and 138 are highly recommended.
- (6) Note. When both ions of a salt are organic, each ion is classifiable as a separate component. This is based on the fact that when in solution the two ions of a salt separate into two distinct components, each one having a distinct function. For example in this schedule, fatty acid salts of imidazoline are classified first on the nitrogen-containing imidazoline cation and second on the fatty acid anion. However, if a salt is presented that contains an organic ion with an organic

counterion alternatively with an inorganic counterion and the organic counterion is not controlling for classification purposes, then only the former organic ion will be classified.

- (7) Note. Lost circulation agents are included herein which may or may not be used while drilling is in progress. There is sufficient confusion over the difference between lost circulation and fluid loss to warrant the above exception.
- (8) Note. Patents are classified in this and the indented subclasses based on the materials introduced into the wellbore.

SEE OR SEARCH CLASS:

- 166, Wells, subclasses 244.1+, for well processes involving more manipulative detail than in (3) Note, above.
- 175, Boring or Penetrating the Earth, for processes involving a positive recitation of boring or cutting the earth and the (3) Note, above; subclass 42 for processes of testing, measuring, etc., by release of an indicating agent in the drilling fluid; subclass 53 for processes of enlarging an existing borehole; subclass 54 for processes of fluid circulation entirely below ground; subclasses 58+ for processes comprising earth sampling steps; subclasses 61+ for directional drilling processes; subclass 64 for processes comprising a chemical reaction in situ; subclasses 65+ for processes of boring with fluid involving more than the conventional use of fluid; subclass 66 for processes of treating spent or used fluid which has been returned to the earth surface from the borehole; subclass 67 for processes involving fluid erosion; subclass 68 for processes of treating a gaseous drilling fluid to prevent agglomerating or werving by liquid naturally on the borehole; subclass 69 for processes comprising the use of liquid and gaseous materials; subclass 70 for processes comprising drilling with two or more liquids which remain separated in the borehole; subclass 71 for processes of drilling with a gaseous fluid;

subclass 72 for processes to prevent circulation losses.

- 260, Chemistry, Carbon Compounds, for preparative methods of organic carbon compounds devoid of a method of use step in earth boring.
- 423, Chemistry, Inorganic, for preparative methods of inorganic compounds devoid of a method of use step in earth boring.
- 508, Solid Antifriction Devices, Materials Therefor, Lubricant and Separant Compositions for Moving Solid Surfaces, and Miscellaneous Mineral Oil Compositions, particularly subclasses 110+, for lubricants in general.
- 516, Colloid Systems and Wetting Agents; Subcombinations Thereof; Processes of Making, Stabilizing, Breaking, or Inhibiting, appropriate subclasses for subject matter relating to: colloid systems (such as sols*, emulsions, dispersions, foams, aerosols, smokes, gels, or pastes) or wetting agents (such as leveling, penetrating, or spreading); subcombination compositions of colloid systems containing at least an agent specialized and designed for or peculiar to use in making or stabilizing colloid systems; compositions and subcombination compositions specialized and designed for or peculiar to use in breaking (resolving) or inhibiting colloid systems; processes of making the compositions or systems of the class; processes of breaking (resolving) or inhibiting colloid systems; in each instance, when generically claimed or when there is no hierarchically superior provision in the USPC for the specifically claimed art.

101 Contains enzyme or living microorganism:
This subclass is indented under subclass 100. Composition comprising an enzyme or a microorganism which is living when injected into the wellbore.

- (1) Note. Cross-referencing within Class 507 according to all remaining organic components of the composition is strongly recommended.

SEE OR SEARCH CLASS:

- 166, Wells, subclass 246 for processes involving the use of a microorganism.
- 435, Chemistry: Molecular Biology and Microbiology, subclasses 183+ for enzyme containing compositions and subclasses 243+ for microorganism containing compositions nonspecific to earth boring.

102 Contains intended gaseous phase at entry into wellbore:

This subclass is indented under subclass 100. Compositions which have an intentional gaseous phase present as they are initially placed in the wellbore.

- (1) Note. Drilling fluids comprising the unintended presence of a gas, especially when such presence is avoided, are classified according to the other composition components.
- (2) Note. A claimed composition with the intended creation of a gas inside the wellbore by in situ reaction is classified according to the components present at entry into the wellbore.

SEE OR SEARCH CLASS:

- 166, Wells, subclass 270 and 270.2 for injecting gaseous gel and surfactant; subclass 300 for well processes including the creation of a gas inside the wellbore by in situ reaction; and subclasses 401+ for injecting a gas or gas mixture.
- 175, Boring or Penetrating the Earth, subclass 69 for processes comprising the use of liquid and gaseous materials and subclass 71 for processes of drilling with a gaseous fluid.

103 Contains organic component:

This subclass is indented under subclass 100. Composition including an organic component which is one having carbon therein and which is further characterized by the presence in the molecule of (a) two carbon atoms bonded together, (b) one atom of carbon bonded to at least one atom of hydrogen or halogen, or (c) one atom of carbon bonded to at least one atom of nitrogen by a single or double bond, with the

proviso that hydrocyanic acid, cyanogen, isocyanic acid, cyanamide, cyanogen halides, isothiocyanic acid, metal carbides, and graphite are excluded from being organic compounds.

- (1) Note. Components or compositions thereof reciting heavy distillation products (i.e., bottoms or pitch) of an originally specified material are classified according to said original material unless said products are otherwise identified.
- (2) Note. Examples of components included in this subclass which are not provided for below are: petrolatum, paraffin, non-fatty waxes, rubber, organometallic complexes, and other compounds devoid of provided for functional groups, such as lower fatty (i.e., those having less than 7 carbons) organic acids, etc.
- (3) Note. When a generic oil (e.g., mineral oil, fuel oil, etc.) is disclosed as part of a composition, the composition is classified according to the other components.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 910, for a composition with an oil continuous phase containing no aqueous phase.

104 Organic component is cellular or fibrous material derived from plant or animal source (e.g., wood, nutshell, paper, leather, cotton, etc.):

This subclass is indented under subclass 103. Composition which contains a cellular or fibrous material derived from a plant or animal source, such as wood, nutshell, seed, cotton, paper, leather, hair, etc.

- (1) Note. Cellular material includes naturally occurring material which still retains a certain amount of the original tissue structure of the plant or animal.
- (2) Note. Grinding, pulverizing, and comminuting does not result in the loss of original tissue structure of such material, whereas extracting generally results in the loss of original tissue structure in at least one of the products (i.e., the product being extracted). In an extraction,

however, some original tissue structure may not be destroyed, i.e., the material from which a product is being extracted may retain structure.

- (3) Note. Fossilized materials are not included in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 101, for earth boring compositions comprising enzymes or living microorganisms.
 107, for fossilized humates.
 112+, for cellulose or derivatives thereof, which in the absence of information to the contrary, is presumed devoid of cell structure.
 131+, for proteins containing no phosphorous, which in the absence of information to the contrary, is presumed devoid of cell structure.

105 Organic component contains fluorine bonded directly to carbon:

This subclass is indented under subclass 103. Composition containing a component having a direct carbon to fluorine bond.

106 Organic component is lignin or humate or derivative thereof (e.g., tannin, quebracho extract, etc.):

This subclass is indented under subclass 103. Composition which is a lignin or humate component comprising humic or polyphenolic containing substances or derivatives thereof (e.g., tannins, lignins, quebracho extract, pulp liquor, etc.).

- (1) Note. Included in this subclass is a graft copolymer comprising a humate component grafted onto a polymer or resin.

107 Humate component is fossilized (e.g., lignite, leonardite, brown coal, etc.):

This subclass is indented under subclass 106. Composition wherein the humate component is fossilized (e.g., lignite, leonardite, brown coal, ASTM Type IV coal, etc.).

- (1) Note. Included in this subclass is a fossilized humate component grafted onto a polymer or resin.

108 Lignin or humate component contains sulfur or is reacted with substance containing sulfur (e.g., lignosulfonate, etc.):

This subclass is indented under subclass 107. Composition wherein the lignin or humate component contains sulfur or has been reacted with a substance containing sulfur (e.g., lignosulf(on)ate, sulfoalkylated humates, such as sulfomethylated quebracho, sulfite liquor, etc.).

- (1) Note. Included in this subclass is a humate component containing sulfur or reacted with sulfur which is also grafted onto a polymer or resin.
 (2) Note. The final component need not contain sulfur.

109 Includes metal compound other than an alkali or alkaline earth metal compound (e.g., Al, Cr, Fe, Mn, Cu, etc.):

This subclass is indented under subclass 108. Composition wherein said composition contains a metal compound other than an alkali or alkaline earth metal compound.

- (1) Note. Alkali or alkaline earth metals include Li, Na, K, Rb, Cs, Fr, Be, Mg, Ca, Sr, Ba, and Ra.
 (2) Note. Included within this subclass are compositions which contain: (i) a lignin or humate component containing sulfur or reacted with a substance containing sulfur, and (ii) a metal other than alkali or alkaline earth metal, regardless of whether the two components (i and ii) are part of the same compound.

110 Organic component is carbohydrate or derivative thereof (e.g., sugar or gum, such as galactomannan, xanthan, etc.) or carboxylic acid ester of an alcohol which has five or more hydroxy groups bonded directly to carbons:

This subclass is indented under subclass 103. Composition comprising a compound containing an organic component which is a carbohydrate or derivative thereof or a carboxylic acid ester of an alcohol which has five or more hydroxy groups bonded directly to carbons (e.g., sorbitan alkylate, etc.).

- (1) Note. Carbohydrate denotes a compound with the empirical formula $C_x(H_2O)_y$, wherein x is 5 or more and y is 5 or more, or derivative thereof (e.g., isolated gums, (poly)saccharides, sugars, etc.).
- (2) Note. Included in this subclass is a carbohydrate or derivative which is grafted onto a polymer or resin.
- 111 Carbohydrate is starch or derivative thereof:**
This subclass is indented under subclass 110. Composition wherein said carbohydrate is starch or a derivative thereof such as modified starch.
- 112 Carbohydrate is cellulose or derivative thereof:**
This subclass is indented under subclass 110. Composition wherein said carbohydrate is cellulose or a derivative thereof.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
104, for fibrous cellulose in which the fibrous character has been retained from an original plant or animal source (e.g., paper, cotton, etc.).
- 113 Carboxyalkylcellulose (e.g., CMC, CMHEC, etc.):**
This subclass is indented under subclass 112. Composition wherein said cellulose derivative is a carboxyalkylcellulose (e.g., carboxymethylcellulose (CMC), etc.).
- (1) Note. Also included in this subclass is a carboxyalkylcellulose which has been further derivatized (e.g., hydroxyethylcarboxymethylcellulose (CMHEC), etc.).
- 114 Hydroxyalkylcellulose (e.g., HEC, etc.):**
This subclass is indented under subclass 112. Composition wherein said cellulose derivative is a hydroxyalkyl ether cellulose (e.g., hydroxyethylcellulose (HEC), etc.).
- 115 Carbohydrate is hydroxyalkyl ether derivative (e.g., HPG, etc.):**
This subclass is indented under subclass 110. Composition wherein said carbohydrate derivative is a hydroxyalkyl ether carbohydrate (e.g., hydroxypropylguar (HPG), etc.).
- SEE OR SEARCH THIS CLASS, SUBCLASS:
114, for hydroxyalkylcellulose.
- 116 Ester is higher fatty or carboxylic acid ester (e.g., sorbitan oleate, etc.):**
This subclass is indented under subclass 110. Composition wherein said ester is a higher fatty or carboxylic acid ester of an alcohol having five or more hydroxy groups bonded directly to carbons.
- (1) Note. A higher fatty acid denotes a monocarboxylic acid containing an unbroken chain of at least seven carbon atoms bonded to a carboxyl group.
- 117 Organic component is solid synthetic resin:**
This subclass is indented under subclass 103. Composition wherein the organic component is a solid synthetic resin.
- (1) Note. A solid synthetic resin for the purpose of this class is a polymer which is described as a solid as such or described in one of the following terms: (1) coagulated (2) elastic (3) elastomeric (4) friable (5) meltable (6) molten (7) powder (8) rubber (9) thermoplastic. A wax is not considered to be a solid even if defined by one or more of the above terms.
- (2) Note. In this area, the classification is dependent on the first appearing monomer which is either part of the polymeric backbone or has been reacted subsequent to polymerization, such as a graft or block copolymer.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
106+, for humate, lignin, lignite, or lignosulfonate graft copolymers.
112+, for carbohydrate or gum graft copolymers.

- 136, for polyalkoxylates (e.g., polyalkoxylated alkylphenol, etc.) or PEGtype polymers.
- 118 Resin is polymer derived from ethylenic monomers only (e.g., maleic, itaconic, etc.):**
This subclass is indented under subclass 117. Composition containing a resin which is a polymer derived from ethylenically unsaturated monomers only.
- (1) Note. Crosslinking an ethylenic polymer with a nonethylenic crosslinking agent will not take the polymer out of this subclass.
- (2) Note. The ethylenically unsaturated monomer requires the presence of two aliphatic carbon atoms bonded together by a double or triple bond. See Class 526, subclass 72, for a detailed discussion of polymers from only ethylenic monomers.
- 119 Polymer derived from acrylic acid monomer or derivative:**
This subclass is indented under subclass 118. Composition containing a polymer derived from at least one acrylic acid monomer or derivative, (e.g., from $\text{CH}_2=\text{C}(\text{R})-\text{X}$, wherein X is carbonyl, etc., and R is H or alkyl).
- (1) Note. Included in this subclass are methacrylate polymers, etc.
- 120 Nitrogen is attached directly or indirectly to the acrylic acid monomer or derivative by nonionic bonding (e.g., acrylamide, acrylonitrile, etc.):**
This subclass is indented under subclass 119. Composition, wherein nitrogen is attached to the acrylic moiety through direct or indirect nonionic bonding.
- (1) Note. A composition with nitrogen as part of a mere counterion to an ethylenic moiety is not a basis for including such a composition in this subclass. For example, ammonium polyacrylates are included in subclass 119.
- 121 Sulfur is attached directly or indirectly to the acrylic acid monomer or derivative by nonionic bonding (e.g., acrylamidoalkane sulfonates, etc.):**
This subclass is indented under subclass 120. Composition wherein both nitrogen and sulfur are attached to the acrylic moiety through direct or indirect nonionic bonding, (e.g., acrylamidoalkylsulfonates, etc.).
- (1) Note. A composition with nitrogen and/or sulfur as part of a mere counterion to an ethylenic moiety is not a basis for including such a composition in this subclass. For example, poly (N,N,N-trialkyl-aminoalkylacrylate) sulfate salt is included in subclass 120.
- 122 Sulfur is attached directly or indirectly to the ethylenic monomer by nonionic bonding:**
This subclass is indented under subclass 118. Composition, wherein said polymer contains sulfur attached to an ethylenic moiety directly or indirectly by nonionic bonding.
- (1) Note. A composition with sulfur as part of a mere counterion to an ethylenic moiety is not a basis for including such a composition in this subclass. For example, a poly(vinylpyridinium) sulfate is included in subclass 123.
- 123 Hetero nitrogen ring is attached directly or indirectly to the ethylenic monomer by nonionic bonding:**
This subclass is indented under subclass 118. Composition wherein said polymer contains a nitrogen containing hetero ring which is attached to an ethylenic moiety directly or indirectly by nonionic bonding.
- (1) Note. A hetero ring as part of a mere counterion to an ethylenic moiety is not a basis for including such a composition in this subclass. For example, a pyridinium poly(vinyl sulfate) is classified in subclass 122. An additional cross reference in subclass 130 is highly recommended (see subclass 100, (5) Note).
- (2) Note. The term "hetero ring" denotes a ring having carbon and at least one atom from the group consisting of nitrogen, oxygen, sulfur, selenium, and tellurium as ring members and contains no other

element as a ring member. As the term relates to this subclass, nitrogen must be one of the hetero atoms in the ring.

124 Polymer contains vinyl alcohol unit:

This subclass is indented under subclass 118. Composition wherein said polymer comprises at least one vinyl alcohol unit.

- (1) Note. In the absence of information to the contrary, a hydrolysis product of polyvinyl acetate is polyvinyl alcohol and is provided for herein.

125 Carbocyclic ring is attached directly or indirectly to the ethylenic monomer by nonionic bonding (e.g., styrene, vinyl toluene, etc.):

This subclass is indented under subclass 118. Composition wherein said polymer contains a carbocyclic ring which is attached to an ethylenic moiety directly or indirectly by nonionic bonding.

- (1) Note. A composition with a carbocyclic ring as part of a mere counterion to an ethylenic moiety is not a basis for including such a composition in this subclass. For example, a tetraphenylammonium poly(vinyl phosphonate) is classified in subclass 118. An additional crossreference in subclass 129 is highly recommended (see subclass 100, (5) Note).

126 Organic component is asphalt or a component or derivative thereof:

This subclass is indented under subclass 103. Composition wherein said organic component is asphalt or a component or derivative thereof.

- (1) Note. This subclass provides for GILSONITE (a tradename for an asphaltite), manjak, bitumen, brown asphalt, asphaltenes, maltenes, macadem, etc.

127 Organic component contains silicon attached directly or indirectly to carbon by nonionic bonding:

This subclass is indented under subclass 103. Composition wherein silicon is attached to organic carbon directly or indirectly by nonionic bonding.

- (1) Note. Included in this subclass are silicons, siloxanes, organosilanes, alkylsilicates, etc.

- (2) Note. A composition with silicon as part of a mere counterion to an ionic compound is not a basis for including such a composition in this subclass. For example, a quaternary ammonium silicate is included in subclass 129.

128 Organic component contains phosphorous attached directly or indirectly to carbon by nonionic bonding:

This subclass is indented under subclass 103. Composition wherein phosphorous is attached to carbon directly or indirectly by nonionic bonding.

- (1) Note. Included herein are alkyl phosphates, phosphonates, phosphatides (e.g., lecithin), etc.

- (2) Note. A composition with phosphorous as part of a mere counterion to an ionic compound is not a basis for including such a composition in this subclass. For example, a quaternary ammonium phosphate is included in subclass 129.

129 Organic component contains nitrogen attached directly or indirectly to carbon by nonionic bonding:

This subclass is indented under subclass 103. Composition wherein nitrogen is attached to carbon directly or indirectly by nonionic bonding.

- (1) Note. A composition with nitrogen as part of a mere counterion to an ionic compound is not a basis for including such a composition in this subclass. For example, an ammonium alkylsulfonate is included in subclass 135; however, if the ammonium cation is a quaternary alkylammonium, then placement is in subclass 129. An additional crossreference in subclass 135 is highly recommended (see subclass 100, (5) Note).

SEE OR SEARCH THIS CLASS, SUBCLASS:

140+, for cyanate and isocyanate salts.

- 130 Nitrogen is part of a hetero ring:**
This subclass is indented under subclass 129. Composition wherein said component contains nitrogen as part of a hetero ring (e.g., methylene blue, imidazoline, pyridine, piperidine, etc.).
- (1) Note. The term "hetero ring" denotes a ring having carbon and at least one atom from the group consisting of nitrogen, oxygen, sulfur, selenium, and tellurium as ring members and contains no other element as a ring member. For the purposes of this subclass, the hetero ring requires the presence of nitrogen.
- 131 Oxygen is attached directly or indirectly to carbon by nonionic bonding:**
This subclass is indented under subclass 129. Composition wherein the organic component contains nitrogen and oxygen, both of which are attached to carbon directly or indirectly by nonionic bonding (e.g., alkanolamines, amino acids, EDTA, etc.).
- (1) Note. Nitrogen and/or oxygen as part of a mere counterion to an ionic compound does not bring the composition into this subclass (for example, an alkylmagnesium nitrate is classified in subclass 103, above).
- (2) Note. Solid inorganic oxides treated with a nitrogen containing organic compound are not covalently linked unless there is disclosure to the contrary and are classified in subclass 129.
- 132 Organic component contains a nitrogen attached directly to oxygen by nonionic bonding (e.g., nitroaromatic, amineoxide, etc.):**
This subclass is indented under subclass 131. Composition wherein the organic component contains a direct nitrogen to oxygen nonionic bond, (e.g., trimethylamine oxide, nitroaromatics, nitrosoaromatics, etc.).
- (1) Note. Nitrogen and/or oxygen as part of a mere counterion to an ionic compound is not a basis for including a composition in this subclass (for example, an alkyl-
- magnesium nitrate is classifiable in subclass 103, above).
- 133 Organic component contains an ether linkage:**
This subclass is indented under subclass 131. Composition wherein the organic component contains an ether linkage; i.e., two carbons directly bonded to the same oxygen atom (e.g., polyoxyalkyleneamines, etc.).
- 134 Organic component contains sulfur attached directly or indirectly to carbon by nonionic bonding:**
This subclass is indented under subclass 103. Composition wherein the organic component contains sulfur directly or indirectly attached to carbon by nonionic bonding (e.g., sulfates, etc.).
- (1) Note. Sulfur as part of a counterion to an ionic compound is not a basis for including a composition in this subclass (for example, a quaternary alkylarsonium sulfate is classifiable in subclass 103).
- (2) Note. An organic material which has been sulfurized without identification of a direct carbon-sulfur bond is classifiable herein, whereas an organic material which has been sulfonated is sufficient identification of a carbon-sulfur bond to allow placement of such a component in subclass 135.
- 135 Organic component contains a sulfur attached directly to carbon by nonionic bonding (e.g., sulfonate, etc.):**
This subclass is indented under subclass 134. Composition wherein the organic component contains a sulfur which is attached to a carbon directly by nonionic bonding (e.g., sulfonates, thiols, mercaptans, thioethers, etc.).
- 136 Organic component contains ether linkage (e.g., PEG ether, etc.):**
This subclass is indented under subclass 103. Composition wherein the organic component contains an ether linkage to organic carbon (e.g., cyclic ethers, such as pyrans, furans, crown ethers, etc.; linear ethers; and polyethers, such as polyalkoxylated alkylphenols, polyalkylene glycols, etc.).

137 Organic component contains a carbocyclic

This subclass is indented under subclass 103. group (e.g., cyclic alkyl, aromatic, tall oil, etc.): Composition wherein the organic component contains at least one identified ring of carbon atoms (e.g., cyclic alkyls, aromatics, tall oils, such as abietic acid containing compositions, etc.).

138 Organic component is a fat, fatty alcohol, fatty oil, ester-type wax, fatty still residue, or higher fatty acid or salt thereof:

This subclass is indented under subclass 103. Composition wherein the organic component is a fat, fatty alcohol, fatty oil, ester-type wax, fatty still residue, or higher fatty acid, including salts thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 116, for carbohydrate esters of fatty acids.
- 137, for tall oil, rosin, rosin acids, resin acids, abietic acids, and other organic components containing carbocyclic groups.

GLOSSARY

ESTER-TYPE WAXES

Means waxes which are essentially esters in chemical structure, e.g., beeswax, montan wax, carnauba wax, spermaceti, etc.

FATS, FATTY OILS

Means the glycerides of higher fatty acids, including naturally occurring mixtures thereof present in a single oil or fat.

FATTY STILL RESIDUES

By this term it is intended to include the bottoms, tars, or pitches resulting from distillation of fats, oils, and waxes.

FATTY ALCOHOL

Means an alcohol containing an unbroken chain of at least 7 carbon atoms bonded to a hydroxy group.

HIGHER FATTY ACID

Means a monocarboxylic acid containing an unbroken chain of at least 7 carbon atoms bonded to a carboxyl group, e.g., lauric, palmitic, stearic, oleic, ricinoleic, linoleic, and behenic, etc. Where there are several unbroken chains of carbon atoms bonded to the carboxyl group, one of the chains must contain at least 7 carbon atoms.

139 Organic component contains an alcohol group:

This subclass is indented under subclass 103. Composition wherein the organic component contains an alcohol linkage to organic carbon.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 131, for alkanolamines and other nitrogen containing alcohols.
- 138, for fatty alcohols.

140 Contains inorganic component other than water or clay:

This subclass is indented under subclass 100. Compositions containing an inorganic component other than water or clay.

- (1) Note. The term "clay" encompasses the following: fuller's earth, bentonite, montmorillonite, attapulgite, palygorskite, halloysite, illite, kaolinite, hectorite, sepiolite, etc.
- (2) Note. The compositions proper for this and the indented subclasses may contain water or clay, but they must also contain an inorganic component in addition to the water or clay.
- (3) Note. For the purposes of this and the indented subclasses, the term "water" does not include seawater brine.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 145, for a composition containing normal seawater brine without the addition of any of the components proper for subclasses 100 through 144.

141 Inorganic component contains soluble potassium salt:

This subclass is indented under subclass 140. Composition wherein the inorganic component contains a potassium ion which is soluble in the boring medium.

- (1) Note. The composition of this subclass must contain potassium ion other than as a mere component in a normal seawater brine.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 145, for a composition containing normal seawater brine without the addition of any of the components proper for subclasses 100 through 144.

142 Inorganic component contains phosphorous:

This subclass is indented under subclass 140. Composition wherein the inorganic component contains phosphorous.

- (1) Note. The composition of this subclass must contain phosphorous other than as a mere component of a normal seawater brine.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 145, for a composition containing normal seawater brine without the addition of any of the components proper for subclasses 100 through 144.

143 Inorganic component is elemental metal or alloy:

This subclass is indented under subclass 140. Composition wherein the inorganic component is an elemental metal or alloy.

- (1) Note. A metal is defined as a material having a continuous phase of any element of the periodic table except hydrogen, noble gas, a halogen, a chalcogen (oxygen, sulfur, selenium, tellurium), nitrogen, phosphorous, carbon, and boron.
- (2) Note. An alloy is defined as a mixture of two or more metallic elements.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 145, for a composition containing normal seawater brine without the addition of any of the components proper for subclasses 100 through 144.

144 Inorganic component is asbestos:

This subclass is indented under subclass 140. Composition wherein the inorganic component is asbestos.

- (1) Note. Asbestos is a fibrous magnesium and/or iron silicate containing calcium. The term encompasses amanthus, earth or stone flax, chrysotile, anthophyllite, amosite, actinolite, tremolite, and crocidolite in the serpentine or amphibole forms.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 145, for a composition containing normal seawater brine without the addition of any of the components proper for subclasses 100 through 144.

145 Inorganic component is soluble in boring medium:

This subclass is indented under subclass 140. Composition wherein the inorganic component is soluble in the boring medium.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 901, and 902-910, for Art Collections pertaining to subclasses 90-145.

200 WELL TREATING:

This subclass is indented under the class definition. Well treating compositions which are (a) liquid, gas, or fluid solid (e.g., powder, etc.) compositions or compositional additives therefor and which are specialized and designed for use in well treating; (b) processes of preparing such compositions; or (c) mere methods of use of said compositions or of a compound for the purpose of (a) above.

- (1) Note. This subclass and those indented hereunder also include those processes of treating wells which are distinguished primarily by the compositions employed

and do not include any significant manipulative step. The inclusion of the broad steps of introducing the composition into a well, producing the well, or the broad removal of the spent material from the well in a conventional manner will not take a patent out of this or the indented subclasses. See the SEARCH CLASS reference to Class 507 which is found in Class 166, subclass 244.1, for further discussion of significant manipulative steps.

- (2) Note. Compositions employed for consolidating a formation in a well or for cementing a well are in Class 106, Compositions: Coating or Plastic; Class 523, Synthetic Resins or Natural Rubbers; and Class 524, Synthetic Resins or Natural Rubbers.
- (3) Note. Compositions which are designed to be used to enhance the permeability of producing formations by producing flow channels (e.g., fracturing, removal or prevention of deposits, acidizing, water flooding, treatment with surfactant, anti-corrosion, etc.) are classified in this and the indented subclasses.
- (4) Note. A well treating additive consisting of a single compound is classified in one of the compound classes (e.g., Classes 260, 423, etc.).
- (5) Note. Required characteristics of the borehole environment will not take a method claim out of this or the indented subclasses (e.g., temperature, presence of specific materials, or conditions of the earthen formation).
- (6) Note. Where a component is generically presented in inconsistent or functional terms (e.g., surfactant, fluid loss control agent, etc.) in some of the claims, any material(s) later specified as encompassed within the scope of said terms will limit said terms for classification purposes. For example, if claim 1 calls for a surfactant and claim 2 specifies the surfactant as being a PEG ether, and there are no other claims specifying the

surfactant differently, then the original claim is classified in subclasses 261+.

- (7) Note. The following rule applies to subclasses 203 through 268. It is strongly recommended that documents be cross-referenced according to all appropriate subclasses, mandatory or not, based on all discrete organic components of the claimed composition. For example, a composition comprising hydroxyethylcellulose, a higher fatty acid, and lignite is classified in subclass 206 as the original and additional cross-references in subclasses 216 and 265 are highly recommended.
- (8) Note. When both ions of a salt are organic, each ion is classifiable as a separate component. This is based on the fact that when in solution the two ions of a salt separate into two distinct components, each one having a distinct function. For example, in this schedule, fatty acid salts of imidazoline are classified first on the nitrogen-containing imidazolium cation and second on the fatty acid anion. However, if a salt is presented that contains an organic ion with an organic counterion alternatively with an inorganic counterion, and the organic counterion is not controlling for classification purposes, then classification will be based only on the former organic ion.
- (9) Note. Chelated, complexed, and coordinated organic moieties with metal are considered to have some nonionic character in the bond between the metal and the organic moiety (i.e., there is usually some amount of electron sharing or donating). As such, these chelated, complexed, and coordinated metals are classified as if the metal is part of the compound.
- (10) Note. It is very strongly recommended that all compositions having an intended utility which is specified in the cross-reference art collection (i.e., 901 through 907 and 920 through 940) be cross-referenced into these subclasses.

- (11) Note. If the only disclosed utility of the composition claimed is to a process classifiable in Class 166, a cross-reference to Class 166 is strongly recommended.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- 100+, for earth boring compositions and processes which involve no more than the mere use of such compositions. Included in these compositions are lost circulation compositions.
- 901, and 902-907, and 920-940, for Art Collections pertaining to subclasses 200-277.
- SEE OR SEARCH CLASS:
- 106, Compositions: Coating or Plastic, subclasses 638+ for a coating or plastic composition containing an inorganic settable ingredient which is not a synthetic resin or natural rubber.
- 166, Wells, subclasses 244.1+ for significantly claimed steps of well treating or operating.
- 260, Chemistry of Carbon Compounds, for organic compounds, per se, and for preparative methods of organic compounds devoid of a method-of-use step pertaining to well treating.
- 423, Chemistry of Inorganic Compounds, for preparative methods of inorganic compounds devoid of a method-of-use step pertaining to well treating.
- 516, Colloid Systems and Wetting Agents; Subcombinations Thereof; Processes of Making, Stabilizing, Breaking, or Inhibiting, appropriate subclasses for subject matter relating to: colloid systems (such as sols*, emulsions, dispersions, foams, aerosols, smokes, gels, or pastes) or wetting agents (such as leveling, penetrating, or spreading); subcombination compositions of colloid systems containing at least an agent specialized and designed for or peculiar to use in making or stabilizing colloid systems; compositions and subcombination compositions specialized and designed for or peculiar to use in breaking (resolving) or inhibiting colloid systems; processes of making the compositions or systems of the class; processes of breaking (resolving) or inhibiting colloid systems; in each instance, when generically claimed or when there is no hierarchically superior provision in the USPC for the specifically claimed art.
- 523, Synthetic Resins or Natural Rubbers, subclasses 130+ for a composition having utility in consolidating a formation in a well or in cementing a well or to processes of preparing said composition.
- 524, Synthetic Resins or Natural Rubbers, subclasses 2+ for a water settable inorganic composition containing a synthetic resin or natural rubber.
- 201 Contains enzyme or living micro-organism:**
This subclass is indented under subclass 200. Compositions containing an enzyme or a micro-organism which is living when placed in the well.
- SEE OR SEARCH CLASS:
- 166, Wells, subclass 246 for well processes proper for Class 166 according to the Class 166 main class definitions involving the use of a micro-organism.
- 435, Chemistry: Molecular Biology and Microbiology, subclasses 183+ for enzyme containing compositions and subclasses 243+ for compositions containing micro-organisms which are nonspecific to well treating and subclasses 262+ for compositions containing enzymes or micro-organisms used to destroy hazardous or toxic waste; liberate, separate, or purify a preexisting compound or composition; or to clean objects or textiles.
- 202 Contains intended gaseous phase at entry into wellbore:**
This subclass is indented under subclass 200. Compositions which have an intentional gaseous phase present as they are initially placed in the wellbore.
- (1) Note. Well treating fluids comprising the unintended presence of a gas, especially when such presence is avoided, are clas-

sified according to the other composition components.

- (2) Note. A claimed well treating composition with the intended creation of a gas inside the wellbore by in situ reaction is classified according to the components present at entry into the wellbore.
- (3) Note. A well treating composition described as being saturated with a gas is not a sufficient indication of a discrete gaseous phase being present. Compositions saturated with a gas are placed elsewhere in this schedule based on the other composition components.

SEE OR SEARCH CLASS:

166, Wells, subclass 270 and 270.2 for injecting gaseous gel and surfactant; subclass 300 for well processes including the creation of a gas inside the wellbore by in situ reaction; and subclasses 401+ for injecting a gas or gas mixture.

203 Contains organic component:

This subclass is indented under subclass 200. Compositions including a component having carbon therein and which is further characterized by the presence in the molecule of (a) two carbon atoms bonded together or (b) one atom of carbon bonded to at least one atom of hydrogen or halogen or (c) one atom of carbon bonded to at least one atom of nitrogen by a single or double bond, with the proviso that hydrocyanic acid, cyanogen, isocyanic acid, cyanamide, cyanogen halides, isothiocyanic acid, metal carbides, and graphite are excluded from being organic compounds.

- (1) Note. Components or compositions thereof reciting heavy distillation products (i.e., bottoms or pitch) of an originally specified material are classified according to said original material unless said products are otherwise identified.
- (2) Note. Examples of components included in this subclass which are not provided for below are petrolatum, paraffin, rubber, organometallic complexes, and other compounds devoid of provided-for functional groups.

(3) Note. When a generic oil (e.g., mineral oil, fuel oil, etc.) is disclosed as part of a composition, the composition is classified according to the other components.

(4) Note. Chelated, complexed, and coordinated organic moieties with metal are considered to have some nonionic character in the bond between the metal and the organic moiety (i.e., there is usually some amount of electron sharing or donating). As such, these chelated, complexed, and coordinated metals are classified as if the metal is part of the compound.

204 Organic component is cellular or fibrous material derived from plant or animal source (e.g., wood, nutshell, paper, leather, cotton, etc.):

This subclass is indented under subclass 203. Compositions which contain a cellular or fibrous material derived from a plant or animal source such as wood, nutshell, seed, cotton, paper, leather, hair, etc.

(1) Note. Cellular material includes naturally occurring material which still retains a certain amount of the original tissue structure of the plant or animal.

(2) Note. Grinding, pulverizing, and comminuting does not result in the loss of original tissue structure of such material, whereas extracting generally results in the loss of original tissue structure in at least one of the products (e.g., the product being extracted). In an extraction, however, some original tissue structure may not be destroyed (i.e., the material from which a product is being extracted may retain structure).

(3) Note. Fossilized materials are not included in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

201, for well treating compositions containing enzymes or living microorganisms.

206, for fossilized humates.

- 214+, for cellulose or derivatives thereof, which, in the absence of information to the contrary, are presumed devoid of cell structure.
- 244, for proteins containing no phosphorous, which, in the absence of information to the contrary, are presumed devoid of cell structure.
- 205 Organic component contains fluorine bonded directly to carbon:**
This subclass is indented under subclass 203. Compositions containing a component having a direct carbon to fluorine bond.
- 206 Organic component is lignin or humate or derivative thereof (e.g., tannin, quebracho extract, etc.):**
This subclass is indented under subclass 203. Compositions which contain a lignin or a humate component comprising humic or polyphenolic containing substances or derivatives thereof (e.g., lignite, leonardite, tannins, lignins, quebracho extract, pulp liquor, brown coal, etc.).
- (1) Note. Included in this subclass is a graft copolymer comprising a lignin or humate component grafted onto a polymer or resin.
- 207 Lignin or humate component contains sulfur or is reacted with substance containing sulfur (e.g., lignosulfonate, etc.):**
This subclass is indented under subclass 206. Compositions wherein the humate or lignin component contains sulfur or has been reacted with a substance containing sulfur (e.g., lignosulfonate, lignosulfate, sulfoalkylated humates such as sulfomethylated quebracho, sulfite liquor, etc.).
- (1) Note. Included in this subclass is a lignin or humate component containing sulfur or reacted with sulfur which is also grafted onto a polymer or resin.
- (2) Note. The final component need not contain sulfur.
- 208 Includes metal compound other than an alkali or alkaline earth metal compound (e.g., Al, Cr, Fe, Mn, Cu, etc.):**
This subclass is indented under subclass 207. Compositions which contain a metal compound where the metal is other than an alkali or alkaline earth metal (e.g., Al, Cr, Fe, Mn, Cu, etc.).
- (1) Note. Alkali or alkaline earth metals include Li, Na, K, Rb, Cs, Fr, Be, Mg, Ca, Sr, Ba, and Ra.
- (2) Note. Included within this subclass are compositions which contain: (i) a lignin or humate component containing sulfur or reacted with a substance containing sulfur, and (ii) a metal other than alkali or alkaline earth metal, regardless of whether the two components (i and ii) are part of the same compound.
- 209 Organic component is carbohydrate or derivative thereof (e.g., sugar or gum, such as galactomannan, etc.) or carboxylic acid ester of an alcohol which has five or more hydroxy groups bonded directly to carbons:**
This subclass is indented under subclass 203. Compositions containing an organic component which is a carbohydrate or derivative thereof or a carboxylic acid ester of an alcohol which has five or more hydroxy groups bonded directly to carbons (e.g., sorbitan alkylate, etc.).
- (1) Note. Carbohydrates are compounds which are saccharides whose monomeric units are polyhydroxy monoaldehydes or polyhydroxy monoketones having the empirical formula $C_n(H_2O)_n$ (wherein n is five or six) or the corresponding cyclic hemiacetals thereof, or the reaction derivatives thereof in which the carbon skeleton and the carbonyl function or hemiacetal function of the saccharide unit are not destroyed.
- 210 Carbohydrate has been grafted onto solid synthetic resin:**
This subclass is indented under subclass 209. Compositions wherein the carbohydrate has been grafted onto a solid synthetic resin.

- 211 Carbohydrate is polysaccharide:**
This subclass is indented under subclass 209. Compositions wherein the carbohydrate is a polysaccharide.
- (1) Note. For the purposes of this and the indented subclasses, a polysaccharide is a saccharide with two or more sugar moieties covalently bonded to each other.
- 212 Polysaccharide is starch or derivative thereof:**
This subclass is indented under subclass 211. Compositions wherein the polysaccharide is starch or a derivative thereof such as modified starch or cationic starch.
- 213 Polysaccharide is a xanthan (e.g., scleroglucans, etc.):**
This subclass is indented under subclass 211. Compositions wherein the polysaccharide is a xanthan such as scleroglucan, etc.
- (1) Note. Xanthans are polysaccharide gums composed of D-glucosyl, D-mannosyl, and D-glucosyluronic acid residues and differing proportions of O-acetyl and pyruvic acid acetal. The primary structure consists of a cellulose backbone with trisaccharide side chains, with the repeating unit being a pentasaccharide.
- 214 Polysaccharide is cellulose or derivative thereof:**
This subclass is indented under subclass 211. Compositions wherein the polysaccharide is cellulose or a derivative thereof.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
204, for fibrous cellulose in which the fibrous character has been retained from an original plant or animal source (e.g., paper, cotton, etc.).
- 215 Carboxyalkylcellulose (e.g., CMC, CMHEC, etc.):**
This subclass is indented under subclass 214. Compositions wherein the cellulose derivative is a carboxyalkylcellulose (e.g., carboxymethylcellulose (CMC), etc.).
- (1) Note. Also included in this subclass is a carboxyalkylcellulose which has been further derivatized (e.g., hydroxyethylcarboxymethylcellulose (CMHEC), etc.).
- 216 Hydroxyalkylcellulose (e.g., HEC, etc.):**
This subclass is indented under subclass 214. Compositions wherein said cellulose derivative is a hydroxyalkylcellulose (e.g., hydroxyethylcellulose (HEC), etc.).
- 217 Polysaccharide is hydroxyalkyl ether derivative (e.g., HPG, etc.):**
This subclass is indented under subclass 211. Compositions wherein the polysaccharide is a hydroxyalkyl ether carbohydrate derivative (e.g., hydroxypropylguar (HPG), etc.).
- SEE OR SEARCH THIS CLASS, SUBCLASS:
216, for hydroxyalkylcellulose.
- 218 Ester is higher fatty or carboxylic acid ester (e.g., sorbitan oleate, etc.):**
This subclass is indented under subclass 209. Compositions wherein the ester is a higher fatty or carboxylic acid ester of an alcohol having five or more hydroxy groups bonded directly to carbons.
- (1) Note. A higher fatty acid denotes a monocarboxylic acid containing an unbroken chain of at least seven carbon atoms bonded to a carboxyl group.
- 219 Organic component is solid synthetic resin:**
This subclass is indented under subclass 203. Compositions wherein the organic component is a solid synthetic resin.
- (1) Note. A solid synthetic resin is a polymer which is described as a solid or is described in one of the following terms: (a) coagulated; (b) elastic; (c) elastomeric; (d) friable; (e) meltable; (f) molten; (g) powder; (h) rubber; (i) thermoplastic. A wax is not considered to be a solid even if defined by one or more of the above terms.
- (2) Note. In this area, the classification is dependent on a monomer which is either

part of the polymeric backbone or has been reacted subsequent to polymerization, such as a graft or block copolymer, and appears first in the instant schedule. A monomer is a material which occurs in a polymer as a repeating unit.

SEE OR SEARCH THIS CLASS, SUBCLASS:

206+, for humate, lignin, lignite, or lignosulfonate graft copolymers.

209+, for carbohydrate or gum graft copolymers.

261, for polyalkoxylates (e.g., polyalkoxylated alkylphenol, etc.) or PEG-type polymers which are not resins.

220 Resin is polymer derived from phenolic and aldehydic monomers:

This subclass is indented under subclass 219. Compositions wherein the resin is a polymer derived from phenolic and aldehydic monomers.

221 Resin is polymer derived from ethylenic monomers only (e.g., maleic, itaconic, etc.):

This subclass is indented under subclass 219. Compositions wherein the resin is a polymer derived from ethylenically unsaturated monomers only.

(1) Note. The ethylenically unsaturated monomer requires the presence of two aliphatic carbon atoms bonded together by a double or triple bond. See Class 526, subclass 72, for a detailed discussion of polymers from only ethylenic monomers.

(2) Note. Cross-linking an ethylenic polymer with a nonethylenic cross-linking agent will not take the polymer out of this subclass.

222 Polymer derived from monomer having quaternary ammonium group:

This subclass is indented under subclass 221. Compositions wherein the polymer has been derived from an ethylenic monomer containing a quaternary ammonium group and where the ammonium nitrogen is attached to the ethylenic monomer by direct or indirect nonionic bonding.

(1) Note. A quaternary ammonium moiety which contains no nonionic bond to the polymer is classified primarily according to functional groups which are covalently bound to the polymer. A cross-reference to subclass 240 is strongly recommended.

223 Nitrogen of the quaternary ammonium group is a member of a hetero ring:

This subclass is indented under subclass 222. Compositions wherein the nitrogen is a member of a hetero ring.

224 Polymer derived from acrylic acid monomer or derivative:

This subclass is indented under subclass 221. Compositions containing a polymer derived from at least one acrylic acid monomer or derivative (e.g., from $\text{CH}_2=\text{C}(\text{R})-\text{X}$, wherein X is carbonyl, etc., and R is H or alkyl, etc.).

(1) Note. Included in this subclass are methacrylate polymers, etc.

225 Nitrogen is attached directly or indirectly to the acrylic acid monomer or derivative by nonionic bonding (e.g., acrylamide, acrylonitrile, etc.):

This subclass is indented under subclass 224. Compositions wherein nitrogen is attached to the acrylic moiety through direct or indirect nonionic bonding.

(1) Note. A composition with nitrogen as part of a mere counterion to an ethylenic moiety is not a basis for including such a composition in this subclass. For example, ammonium polyacrylates are included in subclass 224.

226 Sulfur is attached directly or indirectly to the acrylic acid monomer or derivative by nonionic bonding (e.g., acrylamidoalkane sulfonates, etc.):

This subclass is indented under subclass 225. Compositions wherein both nitrogen and sulfur are attached to the acrylic moiety through direct or indirect nonionic bonding (e.g., acrylamidoalkylsulfonates, etc.).

(1) Note. A composition with nitrogen or sulfur as part of a mere counterion to an

ethylenic moiety is not a basis for including such a composition in this subclass. For example, poly (N,N,N-trialkylaminoalkylacrylate sulfate salt is included in subclass 225.

227 Sulfur is attached directly or indirectly to the ethylenic monomer by nonionic bonding:

This subclass is indented under subclass 221. Compositions wherein the polymer contains sulfur attached to an ethylenic moiety directly or indirectly by nonionic bonding.

- (1) Note. A composition with sulfur as part of a mere counterion to an ethylenic moiety is not a basis for including such a composition in this subclass. For example, a poly(vinylphosphonium) sulfate is included in subclass 221.

228 Monomer contains benzene ring and sulfonate group:

This subclass is indented under subclass 227. Compositions wherein the monomer contains a benzene ring and a sulfonate group.

229 Hetero nitrogen ring is attached directly or indirectly to the ethylenic monomer by nonionic bonding:

This subclass is indented under subclass 221. Compositions wherein the polymer contains a nitrogen containing hetero ring which is attached to an ethylenic moiety directly or indirectly by nonionic bonding.

- (1) Note. A hetero ring as part of a mere counterion to an ethylenic moiety is not a basis for including such a composition in this subclass. For example, a pyridinium poly(vinyl sulfate) is classified in subclass 227. An additional cross-reference in subclass 240 in accordance with the (8) Note under subclass 200 is highly recommended.
- (2) Note. The term "hetero ring" denotes a ring having carbon and at least one atom from the group consisting of nitrogen, oxygen, sulfur, selenium, and tellurium as ring members; and contains no other element as a ring member. As the term relates to this subclass, nitrogen must be one of the hetero atoms in the ring.

SEE OR SEARCH THIS CLASS, SUBCLASS:

242, for organic N-heterocyclic cations to polymeric anions.

230 Polymer contains vinyl alcohol unit:

This subclass is indented under subclass 221. Compositions wherein the polymer contains a vinyl alcohol unit.

- (1) Note. In the absence of information to the contrary, a hydrolysis product of polyvinyl acetate is polyvinyl alcohol and is provided for herein.

231 Carbocyclic ring is attached directly or indirectly to the ethylenic monomer by nonionic bonding (e.g., styrene, vinyl toluene, etc.):

This subclass is indented under subclass 221. Compositions wherein the polymer contains a carbocyclic ring which is attached to an ethylenic moiety directly or indirectly by nonionic bonding.

- (1) Note. A composition with a carbocyclic ring as part of a mere counterion to an ethylenic moiety is not a basis for including such a composition in this subclass. For example, a tetraphenylammonium poly(vinyl phosphonate) is classified in subclass 221. An additional cross-reference in subclass 240 in accordance with the (8) Note under subclass 200 is highly recommended.

232 Organic component is asphalt or a component or derivative thereof:

This subclass is indented under subclass 203. Compositions wherein the organic component is asphalt or is a component or derivative of the asphalt.

- (1) Note. This subclass provides for Gilsonite® which is a trade name for an asphaltite, manjak, bitumen, brown asphalt, asphaltenes, maltenes, macadam, etc.

- 233 Organic component contains silicon attached directly or indirectly to carbon by nonionic bonding:**
This subclass is indented under subclass 203. Compositions wherein silicon is attached to organic carbon directly or indirectly by nonionic bonding.
- (1) Note. A composition with silicon as part of a mere counterion to an ionic compound is not a basis for including such a composition in this subclass. For example, a quaternary ammonium silicate is included in subclass 240.
- 234 Organic component contains a direct carbon to silicon bond:**
This subclass is indented under subclass 233. Compositions containing silicon directly bonded to carbon.
- (1) Note. Included in this subclass are silicones, siloxanes, organosilanes, etc.
- 235 Organic component contains phosphorous attached directly or indirectly to carbon by nonionic bonding:**
This subclass is indented under subclass 203. Compositions wherein phosphorous is attached to carbon directly or indirectly by nonionic bonding.
- (1) Note. A composition with phosphorous as part of a mere counterion to an ionic compound is not a basis for including such a composition in this subclass. For example, a quaternary ammonium phosphate is included in subclass 240.
- 236 Organic component contains nitrogen attached directly or indirectly to carbon by nonionic bonding:**
This subclass is indented under subclass 235. Compositions wherein nitrogen and phosphorous are attached to carbon directly or indirectly by nonionic bonding.
- (1) Note. Included herein are phosphatides (e.g., lecithin), phosphoramides, etc.
- 237 Organic component contains a direct carbon to phosphorous nonionic bond (e.g., phosphonate, etc.):**
This subclass is indented under subclass 235. Compositions wherein the organic component contains a direct nonionic carbon to phosphorous bond.
- 238 Organic component is a phosphate ester:**
This subclass is indented under subclass 235. Compositions wherein the organic component is a phosphate ester.
- 239 Organic component contains nitrogen attached directly or indirectly to carbon by nonionic bonding:**
This subclass is indented under subclass 203. Compositions wherein nitrogen is attached to carbon directly or indirectly by nonionic bonding.
- (1) Note. A composition with nitrogen as part of a mere counterion to an ionic compound is not a basis for including such a composition in this subclass. For example, an ammonium alkylsulfonate is included in subclass 259; however, if the ammonium cation is a quaternary alkylammonium, then placement is in subclass 240. An additional cross-reference in subclass 259 in accordance with the (8) Note under subclass 200 is highly recommended.
- 240 Organic component is quaternary ammonium salt:**
This subclass is indented under subclass 239. Compositions wherein the organic component is a quaternary ammonium salt.
- 241 Organic component contains plural carboxylic acid, ester, or salt groups attached directly or indirectly to nitrogen by nonionic bonding:**
This subclass is indented under subclass 239. Compositions wherein the organic component contains plural carboxylic acid groups, carboxylic acid ester groups, or carboxylic acid salt groups which are attached to nitrogen directly or indirectly by nonionic bonding.

242 Nitrogen is part of a hetero ring:

This subclass is indented under subclass 239. Compositions wherein said component contains nitrogen as part of a hetero ring (e.g., methylene blue, pyridine, piperidine, etc.).

- (1) Note. The term "hetero ring" denotes a ring having carbon and at least one atom from the group consisting of nitrogen, oxygen, sulfur, selenium, and tellurium as ring members; and it contains no other element as a ring member. For the purposes of this subclass, the hetero ring requires the presence of nitrogen.

243 Plural heteroatoms in the ring:

This subclass is indented under subclass 242. Compositions wherein there are two or more heteroatoms in the hetero ring (e.g., imidazoline, etc.).

- (1) Note. The ring heteroatoms are selected from nitrogen, oxygen, sulfur, selenium, and tellurium. For the purposes of this subclass, at least one of the heteroatoms must be nitrogen.

244 Oxygen is attached directly or indirectly to carbon by nonionic bonding:

This subclass is indented under subclass 239. Compositions wherein the organic component contains nitrogen and oxygen both of which are attached to carbon directly or indirectly by nonionic bonding (e.g., alkanolamines, amino acids, ureas, amides, etc.).

- (1) Note. Nitrogen or oxygen as part of a mere counterion to an ionic compound does not bring the composition into this subclass. (For example, an alkylmagnesium nitrate is classified in subclass 203 above.)
- (2) Note. Solid inorganic oxides treated with a nitrogen containing organic compound are not nonionically bonded unless there is disclosure to the contrary and are classified in subclasses 239+.

SEE OR SEARCH THIS CLASS, SUBCLASS:

269+, for cyanate salts.

245 Organic component contains a nitrogen attached directly to oxygen by nonionic bonding (e.g., nitroaromatic, amineoxide, etc.):

This subclass is indented under subclass 244. Compositions wherein the organic component contains a direct nitrogen to oxygen nonionic bond (e.g., trimethylamine oxide, nitroaromatics, nitrosoaromatics, etc.).

- (1) Note. Nitrogen and/or oxygen as part of a mere counterion to an ionic compound is not a basis for including a composition in this subclass. (For example, an alkylmagnesium nitrate is classifiable in subclass 203 above.)

SEE OR SEARCH THIS CLASS, SUBCLASS:

269+, for isocyanate salts.

246 Organic component contains an ether linkage:

This subclass is indented under subclass 244. Compositions wherein the organic component contains an ether linkage; i.e., two carbons directly bonded to the same oxygen atom (e.g., polyoxyalkyleneamines, etc.).

247 Sulfur is attached directly or indirectly to carbon by nonionic bonding:

This subclass is indented under subclass 239. Compositions wherein the organic component contains sulfur which is attached to carbon directly or indirectly by nonionic bonding (e.g., thioureas, etc.).

248 Organic component consists only of carbon, hydrogen, and nitrogen:

This subclass is indented under subclass 239. Compositions wherein the organic component includes only carbon, hydrogen, and nitrogen.

249 Organic component contains carbon double or triple bonded to nitrogen (e.g., cyano, nitrilo, etc.):

This subclass is indented under subclass 248. Compositions wherein the nitrogen atom is double or triple bonded to carbon (e.g., a cyano or nitrilo compound, etc.).

- 250 Organic component is acyclic:**
This subclass is indented under subclass 248. Compositions wherein the organic component does not contain a ring structure.
- 251 Organic component contains plural nitrogen atoms attached directly or indirectly to carbon by nonionic bonding:**
This subclass is indented under subclass 250. Compositions wherein the organic component contains two or more nitrogens (e.g., polyamines, etc.).
- SEE OR SEARCH THIS CLASS, SUBCLASS:
246, for polyamines having an ether linkage.
- 252 Organic component contains sulfur attached directly or indirectly to carbon by nonionic bonding:**
This subclass is indented under subclass 203. Compositions wherein the organic component contains sulfur attached to carbon directly or indirectly by nonionic bonding.
- (1) Note. Sulfur as part of an inorganic counterion to an ionic compound is not a basis for including a composition in this subclass. (For example, a quaternary alkylarsonium sulfate is classifiable in subclass 203.)
- 253 Organic component contains ether linkage (i.e., C-O-C):**
This subclass is indented under subclass 252. Compositions wherein the organic component contains two carbons directly bonded to the same oxygen (i.e., C-O-C).
- (1) Note. An ether is an organic compound having the general structure C-O-C wherein the carbon bonded to the oxygen atom cannot be double bonded to oxygen, sulfur, selenium, or tellurium or triple bonded to nitrogen.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
257, for thioethers containing no oxygen ether linkage.
- 254 The sulfur is part of a sulfate group:**
This subclass is indented under subclass 253. Compositions wherein the sulfur in the organic component is part of a sulfate group.
- (1) Note. The presence of an inorganic anion sulfate group is not a basis for placement in this subclass. See the (1) Note in subclass 252.
- 255 The sulfur is part of a sulfonate group:**
This subclass is indented under subclass 253. Compositions wherein the sulfur in the organic component is part of a sulfonate group.
- 256 Organic component contains a sulfur attached directly to carbon by nonionic bonding:**
This subclass is indented under subclass 252. Compositions wherein the organic component contains a sulfur which is attached to a carbon directly by nonionic bonding.
- 257 Plural alkyls attached directly to the same sulfur atom or to a chain of sulfur atoms by nonionic bonding:**
This subclass is indented under subclass 256. Compositions wherein two or more alkyls are nonionically bonded directly to the same sulfur atom or to a chain of sulfur atoms (e.g., thioethers, dialkyl polysulfides, etc.).
- 258 Alkyl and hydrogen attached directly to the same sulfur atom or to a chain of sulfur atoms by nonionic bonding:**
This subclass is indented under subclass 256. Compositions wherein an alkyl and a hydrogen are nonionically bonded directly to the same sulfur atom or to a chain of sulfur atoms (e.g., thiols, mercaptans, etc.).
- 259 The sulfur is part of a sulfonate group:**
This subclass is indented under subclass 256. Compositions wherein the sulfur is part of a sulfonate group.
- 260 Organic component is polycarboxylic acid, ester, or salt thereof:**
This subclass is indented under subclass 203. Compositions wherein the organic component is a polycarboxylic acid, a polycarboxylic acid ester, or a salt thereof.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
241, for EDTA, NTA, and other polycarboxyl compounds containing nitrogen.
- 261 Organic component contains ether linkage (e.g., PEG ether, etc.):**
This subclass is indented under subclass 203. Compositions wherein the organic component contains two carbons bonded directly to the same oxygen (e.g., cyclic ethers such as pyrans, furans, crown ethers, etc.; linear ethers; and polyethers such as polyalkoxylated alkylphenols, polyalkylene glycols, etc.).
- 262 Organic component contains a carbocyclic group:**
This subclass is indented under subclass 261. Compositions wherein the organic component contains at least one homocyclic carbon ring which may be aliphatic or aromatic.
- 263 Organic component contains a carbocyclic group (e.g., cycloaliphatic, aromatic ring, tall oil, etc.):**
This subclass is indented under subclass 203. Compositions wherein the organic component contains at least one ring of carbon atoms (e.g., cycloaliphatics and aromatic rings, tall oils such as abietic-acid-containing compositions, etc.).
- 264 Organic component is a phenol:**
This subclass is indented under subclass 263. Compositions wherein the organic component contains a hydroxy group bonded directly to a benzene ring which benzene ring may be substituted or unsubstituted and may be part of a polycyclic ring system.
- (1) Note. Included in this subclass are catechol, resorcinol, etc.
- 265 Organic component is a fat, fatty alcohol, fatty oil, ester-type wax, fatty still residue, or higher fatty acid or salt thereof:**
This subclass is indented under subclass 203. Compositions wherein the organic component is a fat, fatty alcohol, fatty oil, ester-type wax, fatty still residue, or higher fatty acid, including salts thereof.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
218, for carbohydrate esters of fatty acids.
263, for tall oil, rosin, rosin acids, resin acids, abietic acids, and other organic components containing carbocyclic groups.
- GLOSSARY
- ESTER-TYPE WAXES**
Waxes which are essentially esters in chemical structure (e.g., beeswax, montan wax, carnauba wax, spermaceti, etc.).
- FATTY STILL RESIDUES**
Intended to include the bottoms, tars, or pitches resulting from distillation of fats, oils, and waxes.
- FATS AND FATTY OILS**
The glycerides of higher fatty acids, including naturally occurring mixtures thereof present in a single oil or fat.
- FATTY ALCOHOL**
An alcohol containing an unbroken chain of at least seven carbon atoms bonded to a hydroxy group.
- HIGHER FATTY ACID**
A monocarboxylic acid containing an unbroken chain of at least seven carbon atoms bonded to a carboxyl group (e.g., lauric, palmitic, stearic, oleic, ricinoleic, linoleic, and behenic, etc.). Where there are several unbroken chains of carbon atoms bonded to the carboxyl group, one of the chains must contain at least seven carbon atoms.
- 266 Organic component contains an alcohol group:**
This subclass is indented under subclass 203. Compositions wherein the organic component contains a hydroxy group directly bonded to carbon.
- (1) Note. An alcohol is an organic compound having the general structure -C-OH wherein the carbon atom bound to the oxygen atom of the hydroxyl group cannot be double bonded to oxygen, sul-

fur, selenium, or tellurium, or triple bonded to nitrogen.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

244, for alkanolamines and other nitrogen-containing alcohols.

265, for fatty alcohols.

267 Organic component contains carboxylic acid, ester, or salt thereof:

This subclass is indented under subclass 203. Compositions wherein the organic component contains a carboxylic acid, a carboxylic acid ester, or a carboxylic acid salt.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

241, for nitrogen-containing polycarboxylic acids (e.g., EDTA, etc.).

260, for polycarboxylic acids (e.g., malonic acid, maleic acid, etc.).

265, for carboxylic acids with a chain of seven or more carbon atoms (e.g., fatty acids, etc.)

266, for hydroxy-containing carboxylic acids (e.g., lactic acid, etc.).

268 Organic component contains a carbonyl group (e.g., aldehyde, ketone, etc.):

This subclass is indented under subclass 203. Compositions wherein the organic component contains an oxygen double bonded to carbon.

269 Contains inorganic component other than water or clay:

This subclass is indented under subclass 200. Compositions containing an inorganic component which is neither water nor clay.

(1) Note. The compositions proper for this and the indented subclasses may contain water or clay, but they must also contain an inorganic component in addition to the water or clay.

(2) Note. For the purposes of this and the indented subclasses, the term "water" does not include seawater brine.

(3) Note. The term "clay" encompasses the following: fuller's earth, bentonite, montmorillonite, attapulgite, palygors-

kite, halloysite, illite, kaolinite, hectorite, sepiolite, etc.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

277, for a composition containing normal seawater brine without the addition of any of the components proper for subclasses 201 through 276 in this class.

270 Inorganic component is elemental metal or alloy:

This subclass is indented under subclass 269. Compositions wherein the inorganic component is an elemental metal or an alloy.

(1) Note. An alloy is a mixture of two or more metallic elements.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

277, for a composition containing normal seawater brine without the addition of any of the components proper for subclasses 201 through 276 in this class.

271 Inorganic component contains Ti, Zr, V, Cr, Mn, Fe, or Ni:

This subclass is indented under subclass 269. Compositions wherein the inorganic component has titanium (Ti), zirconium (Zr), vanadium (V), chromium (Cr), manganese (Mn), iron (Fe), or nickel (Ni).

SEE OR SEARCH THIS CLASS, SUB-CLASS:

277, for a composition containing normal seawater brine without the addition of any of the components proper for subclasses 201 through 276 in this class.

272 Inorganic component contains copper or zinc:

This subclass is indented under subclass 269. Compositions wherein the inorganic component has copper or zinc.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

277, for a composition containing normal seawater brine without the addition of any of the components proper for subclasses 201 through 276 in this class.

- 273 **Inorganic component contains boron:**
This subclass is indented under subclass 269. Compositions wherein the inorganic component has boron.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
277, for a composition containing normal seawater brine without the addition of any of the components proper for subclasses 201 through 276 in this class.
- 274 **Inorganic component contains phosphorous:**
This subclass is indented under subclass 269. Composition wherein the inorganic component has phosphorous.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
277, for a composition containing normal seawater brine without the addition of any of the components proper for subclasses 201 through 276 in this class.
- 275 **Inorganic component contains arsenic or antimony:**
This subclass is indented under subclass 269. Compositions wherein the inorganic component has arsenic or antimony.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
277, for a composition containing normal seawater brine without the addition of any of the components proper for subclasses 201 through 276 in this class.
- 276 **Inorganic component contains potassium:**
This subclass is indented under subclass 269. Compositions wherein the inorganic component has potassium.
- (1) Note. The composition of this subclass must contain potassium other than as a mere natural component in a normal seawater brine.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
277, for a composition containing normal seawater brine without the addition of
- any of the components proper for subclasses 201 through 276 in this class.
- 277 **Inorganic component is soluble in the well treating medium:**
This subclass is indented under subclass 269. Compositions wherein the inorganic component is soluble in the well treating medium.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
901, and 902-907, and 920-940, for Art Collections pertaining to subclasses 200- 277.
- CROSS-REFERENCE ART COLLECTIONS
- CROSS-REFERENCE ART COLLECTIONS 901 - 907 RELATE TO SUBCLASSES 90 - 277. CROSS-REFERENCE ART COLLECTION 910 RELATES TO SUBCLASSES 100 - 145. CROSS-REFERENCE ART COLLECTIONS 920 - 940 RELATE TO SUBCLASSES 200 - 277.
- 901 **ORGANICALLY MODIFIED INORGANIC SOLID:**
Subject matter wherein the composition contains an organically modified inorganic solid.
- 902 **CONTROLLED RELEASE AGENT:**
Subject matter wherein the composition contains a controlled release agent.
- (1) Note. Said agent is a component in a form such as stick, capsule, or solid matrix, etc., for release in a delayed, sustained, or otherwise controlled manner.
- 903 **CROSSLINKED RESIN OR POLYMER:**
Subject matter wherein the composition contains a crosslinked resin or polymeric material.
- (1) Note. Material may be crosslinked before injection into a borehole or may include agents for intentional crosslinking within the borehole.
- 904 **PROCESS OF MAKING FLUIDS OR ADDITIVES THEREFOR:**
Subject matter which includes a process of making well fluids or additives therefor.
- (1) Note. The mere mixing of components is excluded; however, a critical manner of

mixing or order of adding components is included. See this class, subclass 901, for a method of organic modification of an inorganic solid. Excluded from this art collection is the synthesis of a single organic compound wherein said compound is isolated and identified.

905 NONTOXIC COMPOSITION:

Subject matter wherein the composition is intentionally nontoxic.

- (1) Note. Intended for this collection is subject matter wherein there is a disclosure of a relative lack of toxicity of the whole composition to any living organism in comparison with art accepted alternatives.

906 SOLID INORGANIC ADDITIVE IN DEFINED PHYSICAL FORM:

Subject matter wherein the composition contains a solid inorganic additive in a defined physical form.

- (1) Note. The degree of fineness, per se, (e.g., a size or diameter measurement) is insufficient to define physical form.
- (2) Note. Said solid additive usually is in a defined form for functional purposes. Forms such as spheres, cones, disks, rods, etc., are included.

907 INDICATING MEANS (E.G., DYE, FLUORESCING AGENT, ETC.):

Subject matter wherein the composition contains an intentionally included indicating means, e.g., dye, fluorescing agent, etc.

- (1) Note. These indicating means are included to indicate the condition of the fluid, e.g., contamination, rheology, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:

129+, for dyes having an organic nitrogen. For example, methylene blue has an N-heterocycle and is placed in subclass 130.

910 EARTH BORING FLUID DEVOID OF DISCRETE AQUEOUS PHASE:

Subject matter wherein the earth boring fluid is devoid of a discrete aqueous phase.

- (1) Note. In the absence of disclosure to the contrary, oil-based drilling fluids with less than 10 percent water have no discrete aqueous phase.

920 BIOCIDAL:

Subject matter wherein the well treating composition is intended to be biocidal.

921 SPECIFIED BREAKER COMPONENT FOR EMULSION OR GEL:

Subject matter wherein the well treating composition is intended to break an emulsion or gel or to uncrosslink a polymer.

922 FRACTURE FLUID:

Subject matter wherein the well treating composition is intended to be injected under sufficient pressure to create fractures or fissures in the well walls.

923 Fracture acidizing:

Subject matter under art collection 922 wherein the fracturing operation is conducted in the presence of an acidic fracture fluid which is intended to hydrolyze downhole.

924 With specified propping feature:

Subject matter under art collection 922 wherein the fracture fluid contains a specified propping feature which is usually a solid which holds the fissures or crevices open after the fracturing operation.

925 COMPLETION OR WORKOVER FLUID:

Subject matter wherein the well treating composition is intended to be used in a generically disclosed workover or completion operation.

- (1) Note. A well completion fluid is one generally used in accessing formations which are thought to contain the desired material (i.e., oil) and they allow for the influx of said desired material into the wellbore.

- (2) Note. A narrowly suggested workover application (i.e., fracturing, enhanced oil

recovery, acidizing, etc.) is not intended for this subclass.

926 PACKER FLUID:

Subject matter wherein the well treating composition is intended to be applied to the well walls to maintain stability of the well, yet will also permit fluids to pass through said walls.

927 WELL CLEANING FLUID:

Subject matter wherein the well treating composition is intended to remove deposits which accumulate in a well during use or which prevent or diminish the accumulation of deposits which would otherwise occur during the use of a well.

- (1) Note. Well cleaning indicates removal of a contaminant from the well or prevention of deposit of such contaminant in the well.

928 Spacing slug or preflush fluid:

Subject matter under art collection 927 wherein the well cleaning fluid is (i) a slug of fluid intended to separate a previous fluid from a following fluid, sometimes because of the incompatibility of the two fluids, or (ii) a fluid intended to remove a filter cake which is no longer desired.

929 Cleaning organic contaminant:

Subject matter under art collection 927 wherein the well cleaning fluid is for cleaning an organic component from the well.

930 Organic contaminant is asphaltic:

Subject matter under art collection 929 wherein the well cleaning fluid is for cleaning an asphaltic residue from the well.

931 Organic contaminant is paraffinic:

Subject matter under art collection 929 wherein the well cleaning fluid is for cleaning a paraffinic residue from the well.

932 Cleaning sulfur deposits:

Subject matter under art collection 927 wherein the well cleaning fluid is for cleaning a sulfur deposit from the well.

933 ACIDIZING OR FORMATION DESTROYING:

Subject matter wherein the well treating composition is intended to treat the geological formation of the well with acid or to destroy or dissolve the geological formation by chemical reaction.

934 With inhibitor:

Subject matter under art collection 933 wherein the acidizing or formation destroying composition includes a material added specifically to inhibit undesirable activity caused by the acid (e.g., corrosion, etc.).

935 ENHANCED OIL RECOVERY:

Subject matter wherein the well treating composition is directly or indirectly useful in obtaining oil from an oil bearing formation after primary recovery is complete (i.e., after the oil ceases to enter the well on its own).

936 Flooding the formation:

Subject matter under art collection 935 wherein the well treating composition is intended to be injected into an oil bearing formation from one well in order to force the oil into at least one other well.

937 With emulsion:

Subject matter under art collection 936 wherein the flooding composition is an emulsion intended to be injected into an oil bearing formation in order to enhance oil recovery.

938 With microemulsion:

Subject matter under art collection 937 wherein the emulsion is a microemulsion.

- (1) Note. A microemulsion has particles from 0.01 to 0.20 micrometers (10 to 200nm) in size. Furthermore, a disclosure of micellar dispersion or transparent emulsion is synonymous with microemulsion for the purposes of this subclass.

939 CORROSION INHIBITOR:

Subject matter wherein the well treating composition prevents or decreases corrosion in the well.

940 FREEING STUCK OBJECT FROM WELLBORE:

Subject matter wherein the well treating composition is intended to aid in the removal of an object which has become jammed or stuck in the wellbore (e.g., part of drill string, etc.).

END