**CLASS 523, SYNTHETIC RESINS OR NATURAL RUBBERS -- PART OF THE CLASS 520 SERIES**

**SECTION I - CLASS DEFINITION**

This Class Definition covers the subject matter of Class 523 and of Class 524. Class 524 is a continuation of the subject matter of Class 523. Class 523, subclass 1 serves as the parent subclass to all other Class 523 subclasses and to all Class 524 subclasses.

The terms “desired” and “intentional” have been used interchangeably throughout the schedule and definitions.

A. GENERAL SUMMARY OF SUBJECT MATTER WITHIN THIS CLASS

In order for a patent claim to be proper for this class, there must be a desire or intent to produce a composition of a solid polymer or SICP and a nonreactant material (NRM); this includes the treatment of a composition to produce a desired or intentional composition. The NRM may be added to the solid polymer, to a specified intermediate condensation product (SICP), to specified polymer-forming ingredients (SPFI), or to materials specifically denoted as forming solid polymers.

A desired composition is formed when the nonreactive material is desired to be present or operative in the ultimate system under consideration. An ingredient present only as an innocuous impurity, residue, or by-product signifies a composition but not a desired composition.

Statements that a material may be left in the polymer composition or that a material is inert or inoffensive therein are not the type of statements that qualify to bring a patent into this area. There must be a deliberate attempt to incorporate these materials in some degree.

Adding materials, all of which are to be removed in a later process, is not, per se, forming a desired or intended composition. The intended inclusion of some materials, however, would be within the purview of this class even if other materials were intermittently removed.

Patentees' statements as to functions of material (e.g., catalyst, reactant, solvent, etc.) are to be taken literally and are to be followed. An exception to this rule is in those subclasses wherein specialized rules have been enumerated.

An added material which disappears completely so that the final composition prior to use is devoid of the material or of a reaction product or residue thereof is not classified as an NRM. An example of this is the use of a blowing agent to mix a composition without foaming.

When doubt is present as to whether a claimed substance is truly a composition for this area, as opposed to being a product proper for any of Classes 525-528, such doubt is to be resolved by classifying the claims in the appropriate area(s) of Classes 525-528.

In those instances wherein a claim or claims is (are) directed to alternatively forming a composition proper for this area or forming a product proper for any of Classes 525-528, classification is then proper in this Composition area with cross-referencing into the appropriate area(s) of Classes 525-528.

Coating compositions are specially included as compositions proper for this class, although the final product after application may be no more than a solid polymer on a substrate. Coating compositions are a general exception to the type of compositions that are provided in this class, in that for the most part, the added material usually stays with the polymer and can be found with it during the use of the polymer.

B. NONREACTANT MATERIAL (NRM)

For purposes of this class, a nonreactant material (NRM) has a restricted meaning and is other than the following:

1. A solid polymer.

2. Specified intermediate condensation product (SICP).

3. Specified polymer-forming ingredients (SPFI).

4. Ethylenic reactant.

5. Material disclosed to form a solid polymer either with nonspecified polymer-forming reactants or with specified polymer-forming reactants.

6. Material disclosed as chemically reacting with a solid polymer or solid specified intermediate condensation product, so as to add atoms thereto or remove atoms therefrom.

7. Material disclosed as assisting in chemical reaction, e.g., solvents, catalysts, potentiators, etc.

8. Natural rubber or modified natural rubber.

Materials in steps 3-7 above may in certain instances be regarded as nonreactants, such as when the disclosure of the patent is of a nature as to recite at least a function for the added material besides acting as a reactant or assisting in a reaction. For instance, a disclosure noting the use of a catalyst in greater than necessary quantities so that a desired residue remains after reaction to stabilize product would be proper herein.

To be considered a nonreactant material, the added material must not react with the solid polymer, natural or modified rubber, SPFI, or solid SICP. This does not mean that the nonreactant material need be totally unreactive. For instance, it can react with itself or with another material in the composition and still be considered a nonreactive material if the final product after the reaction has occurred is desired.

For purposes of this class, the addition of a thixotropic agent to a composition is sufficient to qualify as the preparation of a desired composition.

Physical or chemical treatment of a previously formed composition without the addition of a NRM is included herein if a desired or intentional composition is thereby formed.

C. RELATIONSHIP OF THE TERMS NONREACTANT MATERIAL (NRM) AND DESIGNATED NONREACTANT MATERIAL (DNRM)

The distinction between the subclasses which recite designated nonreactant material and those that recite NRM is that:

1. Nonreactant material is when

a. a specified amount of nonreactant material is noted (e.g., 6 per cent of a filler, etc.) or

b. a relationship amount exists between the solid polymer or SICP and the NRM (e.g., two times the amount of polymer to additive, etc.) or

c. the NRM is identified in the clam by more than mere function (e.g., organic plasticizer, hydrocarbon solvent, metal filler, etc.) or

d. the NRM is identified by at least one chemical atom (e.g., sulfuric acid, water, hydrocarbon, etc.) or

e. the NRM is identified as a generic type of chemical compound (e.g., alcohol, ether, etc.)

2. Designated nonreactant material is a material wherein at least one of the chemical atoms can be deduced with certainty. Materials noted in steps 1,d and e above would be considered as DNRM's as well as would be hydrocarbon solvent in step 1,c above. For purposes of this class, organic material although inherently reciting the presence of a carbon atom is considered to be too broad. An exemplary list of materials to be regarded as DNRM's is as follows: metal hydrate, chalcogen, carboxylic acid, peroxy, peroxide, latex, alkali or alkaline earth metal, transition metal, halogen, proton donor, sulfide, drying oil, fat, fatty acid or ester, water, carbon black, etc. This list is by no means limited to the above noted examples.

The following list is not exhaustive and merely enumerates certain materials that will not be considered as DNRM's (e.g, organic compound, metal containing, inorganic compound, organometallic compound, solvent, wax, magnetic, hydrophobic, hydrophillic, antiplasticizer, plasticizer, filler, preservative, antioxidant, antiozonant, stabilizer, lubricant, fibrous additive, particulate additive, liquid, solid, gas, dispersant, emulsifier, crystalline, plastic, fluorescent, phosphorescent, luminescent, deliquescent, drier, dessicant, humectant, blue color, numerically described without providing a chemical atom, Lewis acid or base, mineral, organic solvent, co-solvent, Ziegler or Natta catalysts, alfin catalyst, free radical, amphoteric, anionic, ionic, denaturant, electrostatic, dielectric, conductor, insulator, etc.).

D. RULES CONCERNING THE USE OF DNRM IN THE SCHEDULE

For purpose of this class, certain rules as to patent placement have been adopted. These rules only pertain to the subject matter under Class 523, subclass 1, and are not to be extrapolated to other areas in the 520 series or to any other class.

The rules adopted pertain to the use of the term “DNRM”; they are as follows.

In those subclasses which recite a designated nonreactant material (DNRM) in the title, the indented subclasses merely pertain to a further elaboration of the DNRM and do not relate to any other material. An example of this is subclass 159 in Class 524 which recites nitrogen and is indented under aryl group (subclass 158) which is in turn indented under sulfur bonded

directly to three oxygen atoms DNRM (subclass 157). The proper meaning of subclass 159 is that a single nitrogen containing compound also containing at least one aryl group and at least one sulfur atom bonded to three oxygen atoms is utilized as a DNRM.

In those subclasses which recite "containing .....DNRM", the use of the word "containing" is consistent with the general use in other classes. An example of this is subclass 759 in class 524, which recites, "..... containing carboxylic acid or derivative DNRM", and is indented under subclass 755, ether compound DNRM. The proper meaning of subclass 759 is that a single DNRM compound may be present which has both ether and carboxylic acid or derivative groups, or that two separate DNRM's may be present, one of which contains an ether group and the other a carboxylic acid or derivative group.

In those subclasses which recite "with", under a specified DNRM, such use is consistent with the term as used in other classes, in that, at least two separate materials must be present, one of which is the DNRM and the other the "with" material.

E. GENERAL RULES AS TO PATENT PLACEMENT

1. In those situations wherein a material reacts with another material to give an in situ product, original classification is as follows: If the materials reacted occur higher in the subclass array than the material which is the result of the reaction, then classification is proper on the basis of the original reactants. It would be desirable in either event to cross-reference the reactant or product produced.

2. A combination of treating a polymer composition containing a NRM that is prepared by an in situ preparation with another nonreactant material places the document in the area provided for an admixing a preformed solid polymer with a NRM.

3. Carbon (in any of its allotropic forms), titanium dioxide, silica, glass, sand, quartz, water, benzene, xylene, or toluene will be regarded in the absence of any disclosure to the contrary as being nonreactive with a solid polymer, SICP, or SPFI.

4. An ingredient having a defined function as a solvent, dispersing medium, or flux will be regarded in the absence of disclosure to the contrary as being nonreactant when added to a preformed solid polymer or performed SICP and as forming a desired composition therewith.

5. An ingredient having a defined function as a solvent, dispersing medium, or flux will be regarded in the absence of disclosure to the contrary as not forming a desired composition with a solid polymer when such materials are added to a SPFI system. There must be an expressed intent to incorporate these materials with the solid polymer when the polymer is subsequently formed.

6. Addition of a material during polymer formation and in which the disclosure is silent as to reaction or nonreaction (other than SPFI, catalyst, curing agent) will be regarded as a reactant.

7. Components of a solid polymer-forming system which are not, per se, the type that qualify as solid polymer-forming ingredients (SPFI) are not considered NRM's.

8. Ingredients which are not the necessary solid polymer-forming ingredients (SPFI) but which are disclosed as reacting with specified polymer-forming ingredient system are not considered NRM's.

9. In the absence of disclosure to the contrary, an ingredient having a defined utility as a plasticizer, filler, dye, pigment, or preservative (other than a solid polymer, SPFI, or SICP) will be regarded as being nonreactive (with the solid polymer, SPFI, or SICP).

10. In the absence of disclosure to the contrary, a peroxy compound, an ethylenic compound, or sulfur when added to a solid polymer will be regarded as reactants.

11. Reacting a material with a filler, modifier, etc., is presumed to alter the chemical nature of the filler, modifier, etc., and thereby produce a new and different chemical entity. However, surface modification when specially designated as such, or coating or impregnating a material such as a filler, is presumed as forming a composition of the filler, modifier, etc., and the coating or impregnating agent or as a composition of the substrate material and the surface modified chemical entity.

12. A coupling or bridging agent is presumed to act as a chemical reactant between the polymer and additive and, if technically viewed, no composition would result therefrom. For purposes of this class, however, the use of a coupling or bridging agent between a polymer and an additive is viewed as a surface phenomenon and therefore a composition does in fact result between (a) the polymer which is chemically linked to the coupling

or bridging agent, and (b) the additive. Classification on the basis of the additive is therefore proper.

F. EXAMPLES OF PATENT PLACEMENT WITHIN THIS CLASS AND CLASS 524

Patent claims:

1. Polyethylene admixed with 2 per cent of a stabilizer. Original classification is with the polymer in Class 524, subclass 585. This patent initially is proper for Class 524, subclass 1; however, it does not meet the limitations of Class 524, subclass 80, since 2 per cent is not sufficient to be considered DNRM.

2. Polyethylene admixed with 2 per cent of a stabilizer and a hydrocarbon solvent. Same result as in (A) above, since 2 per cent of a stabilizer is not considered sufficient to be DNRM and hydrocarbon has been specifically excluded from class 524, subclass 80.

3. Polyethylene admixed with 2 per cent carbon black and water. Same result as in (A) above; both carbon black and water have been specifically excluded as DNRM's in class 524, subclass 80.

4. Polyethylene admixed with a halogenating agent and with a phosphorus stabilizer for the halogenated polyethylene. Since a halogenating agent cannot be considered a NRM, classification is solely on the basis of the phosphorus stabilizer.

5. Polyethylene admixed with stabilizer composition consisting of an organophosphorus additive and an organotin compound. Since both additives qualify as DNRM's, in that, a chemical atom is known in each of the additives, original classification in the phosphorus subclass would be proper in Class 524, subclass 115 rather than in the tin subclass (subclass 178) which is lower in the schedule array.

6. Polyetheylene admixed with a stabilizer compound consisting of an organic compound and an organotin compound. Disclosure notes that an organophosphorus compound can be one of the organic compounds. Since the claim is not limited to any organic compound and an organic compound is not a DNRM under Class 524, subclass 80, original classification is proper with the organotin compound in Class 524, subclass 178. The sole criterion to be evaluated is whether the material added is a DNRM. Only those materials which are DNRM's are to be evaluated for classification purposes.

7. Polyethylene admixed with a combination of an organophosphorus stabilizer and an organotin stabilizer. Disclosure is limited to polymerizing ethylene in the presence of the phosphorus stabilizer and after solid polymer formation, admixing the organotin stabilizer therewith. Classification is on the basis of the organotin stabilizer for the reason that admixing with a performed solid polymer or SICP is superior in the classification array to in situ polymer formation. No weight can be given for original classification purposes in class 524, subclass 1, to the fact that the organophosphorus was added during the solid polymer formation state. A cross-reference to class 524, subclass 706, may be appropriate to cover the subject matter relating to the adding of the phosphorus material.

8. Natural rubber, per se, or modifed forms thereof or mixtures of natural rubber wherein there is no polymer proper for Class 520, subclass 1, are to be found in Class 524, subclass 575.5. When, however, a final polymer is proper for Class 520, subclass 1, then a natural rubber or modified form thereof in a composition therewith is to be considered as if it were derived from a monomer containing two ethylenic groups, i.e., polyisoprene. The following are examples drawn to the patent placement of natural rubber in this class.

a. Natural rubber + glass + polybutadiene - - -> is to be found in Class 524, subclass 526. This composition is considered as a mixture of two polymers derived from ethlenic reactants only.

b. Natural rubber reacted with styrene - - -> modified natural rubber to which glass is added. This composition is to be found in Class 524, subclass 534. The reaction of natural rubber and an ethylenic reactant is considered to be a product proper for Class 520, subclass 1.

c. Natural rubber + glass is to be found in Class 524, subclass 575.5.

G. SCHEDULE OUTLINE OF CLASS 523 AND CLASS 524

The schedules (for Class 523 and Class 524) are divided into a number of parts, each of which is distinct and provides for different types of subject matter. In the class definition of this class, the SEARCH THIS CLASS, SUBCLASS notes and those SEARCH CLASS notes relating to Class 524 are a breakdown on the major areas and indicate the type of subject matter provided therein.

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

Rules for determining whether a desired or intentionally formed composition or a process of preparing a desired or intentionally formed composition is proper subject matter for Class 523, subclass 1 or is proper subject matter for Classes 525, 526, 527, or 528:

Class 523, subclass 1 provides basically for two types of subject matter:

A. Admixing a preformed solid polymer or SICP with a nonreactant material.

B. Admixing a nonreactant material with a reactant and then polymerizing said reactant so as to form a polymer proper for Class 520, subclass 1 in the presence of the nonreactant material; so-called in situ system.

Included Under (A) Above As To Process Is:

1. Mixing a nonreactant material with a solid polymer or SICP to produce a desired composition when:

a. a specified amount of nonreactant material is noted (e.g., 2 per cent of an emulsifier, etc.) or

b. a relationship amount exists between the solid polymer or SICP and the NRM (e.g., two times the amount of polymer to additive, etc.) or

c. adding nonreactant material which is identified in the claims by more than mere function (e.g., organic plasticizer, hydrocarbon solvent, metal filler, etc.) or

d. adding nonreactant material which is identified by at least one chemical atom (e.g., sulfuric acid, water, hydrocarbon, etc.) or

e. adding nonreactant material which is identified as a generic type of chemical compound (e.g., alcohol, ether, etc.) or

f. the nonreactant material is mixed with the SICP or solid polymer and the process of brining the two materials together is more than a mere statement of mixing or blending, or

g. two or more process steps are claimed, e.g., polymerizing followed by blending, mixing two polymers followed by adding or cooling, etc.

Included Under (B) Above As To Process Is:

1. Polymerizing in the presence of a nonreactant material to produce a desired composition when:

a. a specified amount of nonreactant material is noted, e.g., 4 per cent of a NRM, etc., or

b. a relationship amount exists between the reactants and the NRM, or

c. the nonreactant material is identified in the claim by more than mere function, e.g, organic plasticizer, metal filler, etc., or

d. the NRM is identified by at least one chemical atom (e.g., halogen, water, etc.) or

e. A step of polymerizing in the presence of a nonreactant material recites some process parameter.

Class 520 provides for compositions which are prepared utilizing nonreactant materials enumerated above in steps A, 1, a-e, and B, 1, a-d.

Products (e.g., products by process, etc.) which are the result of processes involving nonreactant materials which do not fit under the type of nonreactant materials required in steps A, 1, a-e and B, 1, a-d are classified below in Classes 525, 526, 527, and 528.

Under the guidelines enumerated above, it is quite possible for a process of preparing a composition to be classified in Class 523, subclass 1 while the composition produced is classified in another class under the 520 series.

In those situations where a material is added during polymerization and is a nonreactant, such patent will not be placed in this class but rather in Classes 525, 526, 527, or 528 unless a recitation is made in the disclosure that a composition is in fact obtained and is desired.

The difference between Class 524, subclasses 1+ and Class 524, subclasses 700+ is the time of addition. If a nonreactant material intended to be in the final product is added subsequent to polymerization, classification in this area is proper; if it is added during polymer formation, it is proper in class 524, subclasses 700+.

If a patent claims a composition of a polymer and NRM, it will be necessary to scrutinize the disclosure of the document to ascertain the time when the NRM was added, since classification is primarily based on the process of preparing the intended composition. Disclosures

which are generic to adding to a preformed polymer or to forming a polymer in situ in the presence of a NRM should be placed in this area as an original in Class 524, subclasses 1+ and cross-referenced into Class 524, subclasses 700+.

In Class 524, subclasses 268, 273, 278, and 279 are noted as containing a particular chemical atom. Classification in these subclasses is not only on the monomer utilized in preparing the polymer but also on any subsequent treatment to incorporate the desired chemical atom therein.

## SECTION III - SUBCLASS REFERENCES TO THE CURRENT CLASS

SEE OR SEARCH THIS CLASS, SUBCLASS:

1, (generic subclass)

100, through 181, (utility area) for certain designated utilities. This area has no generic subclass, and utilities which are not enumerated are classified in the subclasses below on some other basis. In order for a patent to be classified herein as an original, there must be a claim to the noted utility or the total disclosure in the patent must be directed to the provided for utility. this area provides for the composition or for methods of preparing or treating the composition. The utility in the claim need not be limited to the provided utility as in a claim wherein two or more functions are ascribed to a composition. This area does not differentiate (except where specifically enumerated) between compositions as a result of admixing with a solid polymer or a composition as a result of in situ preparation of a desired composition. Patents where the disclosure specifically states the essentiality of a combination of multiple ingredients for the claimed utility to be effective, yet where the claims are limited to a subcombination of said ingredients (a polymer or SICP plus a nonreactant material) would be classified in subclasses 100-181 provided that the desired utility is claimed or solely disclosed.

200, through 223, (physical characteristics area) for certain physical characteristics of the nonreactant material or of certain materials which are in admixture with the nonreactant material. The scope of the subclasses varies to designate what is the physical characteristic necessary and what part of the total composition must possess this characteristic. This area has no generic subclass, and physical characteristics which are not specifically enumerated in the schedule are classified below on some other basis. This area provides for the composition and also for the process of preparing same. This area does not differentiate (except where specifically enumerated) between a composition as a result of admixing with a solid polymer or a composition as a result of in situ preparation of a desired composition.

300, through 353, (manipulative processes area) for certain designated processes of preparing or treating a composition. This area does not provide for products, e.g., product by process claims, etc. This area has no generic process subclass and therefore processes not covered under the ambit of the provided subclasses are classified below on some other basis. This area does not differentiate (except where specifically enumerated) between a composition which is a result of admixing with a solid polymer or a composition as a result of in situ preparation of a desired composition. For processes falling under subclasses 300 to 353, the process steps which are the basis for classification must relate to treating or forming the desired composition. Preliminary process steps, relating to ingredients which are not themselves intentional compositions for purposes of Class 523, subclass 1, are not controlling for purposes of classification and such processes are classified below on some other basis.

375, (radioactive or inert gas compound area) special subclass for radioactive additives or for inert gas compounds. This area provides for compositions as well as processes of preparing or treating. This area is generic to any composition (i.e., in situ or admixing).

400, through 468, (epoxy area) for admixing a NRM with a material containing more than one epoxy group per mole. These subclasses provide for compositions as well as processes of preparing or treating same. This area does not differentiate between solid or nonsolid polymers derived from epoxy-containing materials or the treatment of solid or nonsolid polymers to produce an epoxy-containing material.

500, through 527, (polyester and unsaturated reactant area) for preparing a composition of a nonreactant material and a polyester together with an unsaturated reactant. This area is analogous to the area above (epoxy) in that solid or liquid polyesters have not been separated and are treated identically. This area, as the area above

provides for compositions, processes of preparing or treating.

## SECTION IV - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

524, Synthetic Resins or Natural Rubbers, subclass 1, generic subclass for admixing a preformed solid polymer or a preformed SICP with a nonreactant material) provides for processes of preparing a composition, for the composition prepared, or for processes of chemically treating a composition or the chemically treated compositions thereof. Each of the following subclasses, unless otherwise indicated, provides for compositions as well as processes. subclasses

(a) 2 through 79, for certain special concepts, e.g., protein or biologically active polypeptide additive, carbohydrate, or derivative additive, etc.

(b) 80 through 456, for admixing a designated nonreactant material with a solid polymer or SICP. These subclasses also exclude certain materials which could be considered "designated" since a chemical atom is noted. The materials excluded are limited to those enumerated as follows: (a) $TiO_{2:}$ __ in any form, (b) Carbon - in any form (e.g., carbon black, lamp black, graphite, etc.) (c) Halogenated hydrocarbon, (d) Hydrocarbon, (e) Silica - in any form (e.g., $SiO_2$, glass, quartz, sand, novaculite, etc.), and (f) Water - in any of its physical forms.

(c) 457 through 461, for a special area which provides for polymerizing in the presence of a preformed SICP or solid polymer and in the presence of a nonreactant material so as to form an aqueous dispersion, latex, suspension, or emulsion.

(d) 462 through 473, for a special area which provides for certain halogenated hydrocarbons which have been excluded by subclasses 80-456 as nonreactant materials.

(e) 474 through 491, for a special area which provides for certain hydrocarbons which have been excluded by subclasses 80-456 as nonreactant materials.

(f) 492 through 494, for a special area which provides for certain silicon materials as nonreactants which have been excluded by subclasses 80-456.

(g) 495 and 496, for a special area which provides for carbon as a nonreactant material when certain specific numerical limitations are claimed. Carbon as a nonreactant material has been excluded by subclasses 80-456.

(h) 497, for a special area which provides for $TiO_2$ as a nonreactant additive when certain specific numerical limitations are claimed. $TiO_2$ as a nonreactant material has been excluded by subclasses 80-456.

(i) 498 612, for solid polymers or SICP admixed with nonreactant materials. Since certain common species (e.g., $SiO_2$, glass, water, etc.) have been excluded from subclasses 80-456 above and since those same subclasses above also exclude an amount of material as being a DNRM, per se, those materials in combination with a polymer or SICP are provided for in this area. This area also provides for processes of preparing its own compositions or for processes of treating compositions proper for this area. Patents in this area are placed on the basis of the reactants originally present in preparing the solid polymer or SICP, e.g., mixing chlorinated polyethylene with carbon black is classified with ethylene, etc.

(j) 650, for adding an inorganic water settable material to a solid polymer-forming system. The water settable ingredient may be a reactant or nonreactant. This subclass provides for compositions as well as processes of preparing or treating.

(k) 700 848, for adding an NRM to a solid polymer-forming system; so-called in-situ compositions. These subclasses provide for processes for preparing a composition, for the composition prepared, or for processes of chemically treating a composition or the chemically treated compositions thereof. Each of the subclasses indicated provides for compositions as well as processes. The following is a more detailed description of subclasses 700-848. Subclasses 700 through

796 provide for polymerizing in the presence of a designated nonreactant material. This area, however, excludes certain materials which could be considered "designated" since a chemical atom is recited (i.e., carbon, $TiO_2$, water, hydrocarbon, $SiO_2$, ass). Subclasses 797 through 799 provide for polymerizing in the presence of a NRM, carbon, $TiO_2$, water, hydrocarbon, $SiO_2$, or glass when the chemical reactants forming the solid polymer are protein or biologically active polypeptide, natural resins, lignin, or tannin. Subclasses 800 through 846 are subclasses for adding water to a polymer-forming system and forming a polymer composition therewith. Classification in this area is primarily on the monomer system utilized. Subclasses 847 and 848 are subclasses drawn to processes of polymerizing in the presence of certain hydrocarbons, or in the presence of carbon, $TiO_2$, glass, or $SiO_2$, which is described by specific numerical limitations.

(l) 849 through 881, for polymerizing a monomer system in the presence of a NRM or in the presence of carbon, $TiO_2$, glass, or $SiO_2$. (Classification in this area is primarily on the monomer system utilized.)

(m) 900 through 924, for cross-reference art collections pertaining to subject matter in Class 523, subclass 1.

525, Synthetic Resins or Natural Rubbers, appropriate subclasses, for a mixture of a synthetic resin appropriate under Class 520, subclass 1, and a natural rubber (i.e., polyisoprene), and for patents in which a dispersing medium of flux is polymerizable or resinifiable to produce the same synthetic resin as that dispersed, or for a synthetic resin disclosed as a filler, dye, pigment, or preservative in another synthetic resin.

526, 527, and 528, Synthetic Resins or Natural Rubbers, appropriate subclasses, for a composition of a polymer proper for those classes admixed with a broadly claimed nonreactant material not identifiable by a chemical atom or amount; or for a process of preparing a composition wherein the nonreactant material is not identifiable by a chemical atom or amount and wherein the process of forming the composition recites no process condition other than mere polymerizing. See subclasses 480+ of Class 528 for processes of treating a polymer not involving a chemical modification of the polymer, by the addition of a material thereto, and for chemically modifying material other than the polymer. Subclasses 480+ also provide for processes of admixing with a broadly claimed nonreactant material.

588, Hazardous or Toxic Waste Destruction or Containment, subclass 255 for a polymer composition containing hazardous or toxic waste used to contain the waste and prevent its release into the environment.

## SECTION V - GLOSSARY

For purposes of this class, the abbreviations in this Glossary have been used in the schedule and definitions.

DNRM

Designated nonreactant material (as discussed in this class definition)

NRM

Nonreactant material (as discussed in this class definition)

SICP

Specified intermediate condensation product (consistent with Class 520 Glossary)

SP

Solid polymer (consistent with Class 520 class definition)

SPFI

Specified polymer-forming ingredients (consistent with Class 520 Glossary)

SUBCLASSES

**1 PROCESSES OF PREPARING A DESIRED OR INTENTIONAL COMPOSITION OF AT LEAST ONE NONREACTANT MATERIAL AND AT LEAST ONE SOLID POLYMER OR SPECIFIED**

**INTERMEDIATE CONDENSATION PRODUCT, OR PRODUCT THEREOF:**
This subclass is indented under Class 520, subclass 1. Subject matter involving preparing a desired or intentional composition of at least one nonreactant material and at least one solid polymer or specified intermediate condensation product or product thereof.

**100 Food or tobacco contact composition or process of preparing:**
This subclass is indented under subclass 1. Subject matter wherein a composition having utility as a food or tobacco contact composition is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. This subclass includes food-packaging materials, such as, compositions useful for sandwich bags, or nonedible waxy materials to be deposited on the surface of edible fruit to reduce their shrinkage, but excludes sealant compositions for sealing can ends which are not intended to be in direct contact with the food or beverage.

(3) Note. Compositions not solely disclosed or claimed as food or tobacco contact materials are placed as appropriate in Classes 523 and 524 herein below.

SEE OR SEARCH CLASS:
206, Special Receptacle or Package, for containers with specified structure designed to hold a particular article or set of articles, or materials.
426, Food or Edible Material: Processes, Compositions, and Products, for food products in combination with nonfood materials such as package structures, inedible casings, liners, and infusion bags.

**101 Food release coating:**
This subclass is indented under subclass 100. Subject matter wherein said composition functions as a food release agent.

(1) Note. A solid polymer, such as a polytetrafluoroethylene, mixed with an additive, which is used to release food from a frying pan without the use of grease, would be classified herein.

**102 Odor masked, odor reduced or perfumed composition or process of preparing:**
This subclass is indented under subclass 1. Subject matter wherein a composition having utility as an odor masking, odor reducing, or perfuming composition is claimed or solely disclosed, said odor masking, odor reducing, or perfuming composition containing an ingredient which provides a perfumed fragrance which thereby conceals an otherwise obnoxious odor or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. Included herein are odor-masking or odor-reducing compositions containing a solid polymer or SICP or a composition comprising a perfume of the Class 512 type plus a solid polymer or SICP. A perfume is defined to be a composition specialized for the purpose of imparting a pleasant odor. See the related search class note below.

(3) Note. A composition which is not solely disclosed as an odor masked, odor reduced, or perfumed composition is placed as appropriate in Classes 523 and 524 hereinbelow.

SEE OR SEARCH CLASS:
424, Drug, Bio-Affecting and Body Treating Compositions, subclasses 76.1+ for deodorant compositions which are not applied to the living body which function by chemical combination with the odor-causing principle or by destroying the odor-causing organism or by desensitizing the olfactory mechanism.

426, Food or Edible Material: Processes, Compositions, and Products, appropriate subclasses for a composition having a utility as a perfume or flavor for foods.

512, Perfume Compositions, subclasses 1 through 27 for a composition or a perfume, per se, wherein a solid polymer or SICP is an essential component of the perfume composition.

**103 Compositions having reduced health risks upon exposure thereto during incidental handling or body contact or process of preparing; other than friction elements:**

This subclass is indented under subclass 1. Subject matter wherein a composition having utility effective in reducing health risks in materials which are frequently handled or in close contact with the body is claimed or solely disclosed or to processes of preparation thereof and wherein said composition is other than a friction element.

(1) Note. This subclass includes compositions which are either old compositions modified to reduce health risks on exposure or are novel compositions designed to replace compositions with deleterious effects. For example, a composition which reduces the carcinogenicity of carbon black would be classified herein.

(2) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(3) Note. A composition not solely disclosed or claimed as having reduced health risk is placed in Classes 523 and 524 hereinbelow.

(4) Note. A coating composition for application to surfaces containing a bitter testing component such as denatonium benzoate would be classified herein.

SEE OR SEARCH THIS CLASS, SUBCLASS:

112, for a composition having utility effective in reducing the clotting of blood.

149+, for a friction element composition.

SEE OR SEARCH CLASS:

424, Drug, Bio-Affecting and Body Treating Compositions, appropriate subclasses for a composition having utility as an anticarcinogenic drug, per se; or for a composition of the Class 424 type which has a taste or smell signal or is a chemical irritant, emetic, or detoxicant.

**105 Nonmedicated composition specifically intended for contact with living animal tissue or process of preparing; other than apparel:**

This subclass is indented under subclass 1. Subject matter wherein a nonmedicated composition having utility specifically intended to be in contact with animal living tissue is claimed or solely disclosed or to processes of preparation thereof other than apparel.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. The phrase “composition having utility specifically intended to be in contact with animal living tissue”, refers to an intentional or desired composition which has been designed or formulated by specifically taking into account the contact of said composition with living tissue during the ordinary use for which the composition or ultimate article therefrom is made. The subclasses indented hereunder are presumed, absent specific assertions to the contrary, to lie within the meaning of this phrase.

(3) Note. Included herein are compositions utilized as adhesives for adhering textile materials to the skin, such as a nylon stocking, to prevent irritation to the skin. Excluded herein are adhesives which are not solely disclosed to come into contact with living tissue.

(4) Note. Living tissue is defined to be all internal and external tissue, including blood, except for hair and nails.

(5) Note. Apparel for purposes of this subclass is any material normally worn externally on the body for warmth or decoration and includes, but is not limited to, clothing, shoes, jewelry, etc.

(6) Note. Search Classes 523 and 524, in the appropriate subclasses for a nonmedicated composition specifically intended to come into contact with the body and wherein such contact is not solely disclosed.

SEE OR SEARCH CLASS:

8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, subclasses 160, and 161 for processes and compositions for removing hair or fur from a living animal body.

128, Surgery, appropriate subclasses for methods of treatment of the living body and apparatus used in the inspection and treatment of diseases, wounds, and other abnormal conditions of the bodies of men and lower animals; and for a composition used in sutures where the claim has either significant structure or a significant physical property characterizing said suture. The mere use of the terms "filament" or "fiber" or suture, per se, is considered significant structure to be placed in Class 128. Numerical indices of tensile strength, handleability, sterility, density, or denier are other examples of significant characteristic physical properties proper of Class 128.

424, Drug, Bio-Affecting and Body Treating Compositions, appropriate subclasses for (A) a drug or bio-affecting composition capable of either (1) preventing, alleviating, treating, or curing abnormal and pathological conditions of the living body, (2) maintaining, increasing, decreasing, limiting, or destroying a physiologic body function, (3) diagnosing a physiological condition or state by an in vivo test or in vitro antigen-antibody test, or (4) controlling or protecting an environment or living body by attracting, disabling, inhibiting, killing, modifying, repelling, or retarding an animal or micro-organism; or (B) a body-treating composition generally intended for deodorizing, protecting, adorning, or grooming a body.

433, Dentistry, appropriate subclasses for methods, apparatus, implements, and devices relating to the treatment of teeth or gums or the replacement of teeth.

623, Prosthesis (i.e., Artificial Body Members), Parts Thereof, or Aids and Accessories Therefor, appropriate subclasses for artificial parts for a human body adapted to replace or supplement missing or defective body parts.

**106 Contact lens making composition:**

This subclass is indented under subclass 105. Subject matter wherein said composition relates to those used in making contact lenses, e.g., a composition containing hydroxyethyl methacrylate copolymers, etc.

(1) Note. This subclass provides for a contact lens composition containing its own preserving agent when it is clearly specified and restricted for that use.

SEE OR SEARCH CLASS:

8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, subclass 507 for the process of dyeing a contact lens or product thereof.

351, Optics: Eye Examining, Vision Testing and Correcting, appropriate subclasses for methods of and instruments for fitting contact lenses and structural features and adaptations for contact lenses, such as coloring a portion of the lens to absorb part of the visible spectrum; subclasses 160+ for eye contact lens.

422, Chemical Apparatus and Process Disinfecting, Deodorizing, Preserving, or Sterilizing, subclasses 1 through 43 for generic processes of deodorizing, preserving, or sterilizing contact lenses or compositions thereof.

424, Drugs, Bio-Affecting and Body Treating Compositions, subclass 429 for a contact lens with special physical form, e.g., one which is coated or impregnated, etc.; subclass 78.04 for compositions containing a bio-active polymer broadly claimed for (1) disinfecting, sterilizing or preserving a contact lens or (2) bio-active polymer in admixture with a polymer composition to be used in making a contact lens. Such a composition would usually be classified in Class 523 but, in most cases, said composition likewise reduces or eliminates eye injury or irritation to the contact lens wearer or (3) for topically treating the eye of a living animal.

510, Cleaning Compositions for Solid Surfaces, Auxiliary Compositions Therefor, or Processes of Preparing the Compositions, subclasses 112+ for compositions used for the mere cleaning of contact lenses.

514, Drug Bio-Affecting and Body Treating Compositions, appropriate subclasses for (1) a contact lens composition which contains a nonbioactive polymer admixed with a medicament or (2) a composition with or without a nonbioactive polymer used to sterilize a contact lens composition to reduce or eliminate any eye injury.

604, Surgery, subclass 290 for a method of applying a body treating or removing material or subclasses 294+ for a method of application to the eye or eye socket.

**107 Silicon-containing organic polymer:**
This subclass is indented under subclass 106. Subject matter wherein said composition contains an organic silicon-containing polymer.

**108 Polymer of a heterocyclic N-vinyl polymerizable compound:**
This subclass is indented under subclass 106. Subject matter wherein said composition contains a polymer derived from a heterocyclic N-vinyl monomer (e.g., N-vinyl lactam, etc.).

**109 Dental or body impression taking material:**
This subclass is indented under subclass 105. Subject matter wherein said composition is useful to take impressions of the mouth or other body member.

SEE OR SEARCH CLASS:

249, Static Molds, appropriate subclasses for a static implement having structure intended for shaping fluent material only, wherein the structure is so arranged as to define a space or cavity for retaining the fluent material and wherein the fluent material initially having no definite form conforms to the shape of the space or cavity.

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, appropriate subclasses for molding, casting, and plastic-shaping processes in general.

433, Dentistry, subclass 214 for a structurally defined material useful in making an impression of part of the dental cavity.

520, Synthetic Resins or Natural Rubbers, appropriate subclasses for compositions containing a synthetic resin used in preparing molds and models from which impressions can be made and not intended for contact with the wearer of the device.

**111 Composition for use in tape adhesives, binder or impregnate for a body fluid absorbent device:**
This subclass is indented under subclass 105. Subject matter wherein said composition is to be used as a tape adhesive, binder, or impregnate for a body fluid adsorbent device, e.g., a surgical adhesive tape, etc.

(1) Note. This subclass includes a composition used in a tampon or other sanitary device.

SEE OR SEARCH CLASS:

128, Surgery, appropriate subclasses, for bandages or body applicators which contain a medicine and are claimed in terms of more structure than a randomly distributed single layer on a

base material or randomly impregnated base material.

424, Drug, Bio-Affecting and Body Treating Compositions, appropriate subclasses, e.g., subclasses 447+ for bandages or body applicators which contain a specific or nominally recited ingredient which is either randomly distributed in a single layer on a base material or randomly impregnated in a base material; subclass 77 for an adhesive trapping composition; and subclass 78.06 for a composition containing a solid synthetic organic polymer, with or without a designated organic active ingredient, used to form a barrier layer or film on living animals to ward off harmful or disturbing agents, e.g., radiation, animals, insects, etc

428, Stock Material or Miscellaneous Articles, appropriate subclasses for a stock material product in the form of a singly or plural layer web or sheet; and especially subclasses 185+, 190, 193, and 196+ for such a product embodying a component of mechanically interengaged (e.g., woven, knitted) strands.

442, Fabric (Woven, Knitted, or Nonwoven Textile or Cloth, etc.), subclasses 181+ and 304+ for a woven or knit fabric.

514, Drug Bio-Affecting and Body Treating Compositions, for compositions containing an active ingredient used to treat burns, open wounds, or lesions with or without a solid synthetic organic bio-inactive polymer.

**112 Nonthrombogenic:**

This subclass is indented under subclass 105. Subject matter wherein said composition has the effect of preventing the clotting of blood.

(1) Note. Compositions which can be used to prepare articles in association with whole blood, for example, storage bottles, blood pouches, tubes, probes, cannulas, catheters, etc., and which are disclosed as having antithrombogenic utility are included herein.

SEE OR SEARCH CLASS:

206, Special Receptacle or Package, in particular, subclasses 363+ for containers for blood having significant claimed structural features.

**113 Composition suitable for use as tissue or body member replacement, restorative, or implant:**

This subclass is indented under subclass 105. Subject matter wherein said composition, which is fixated or situated in or on the body, is suitable for use as a tissue or body member replacement, restorative, or implant.

(1) Note. Compositions for prosthetic devices are examples of the compositions which would be included herein.

SEE OR SEARCH CLASS:

433, Dentistry, appropriate subclasses, methods, apparatus, implements, and devices directed to dental replacements, restoratives, or implants.

623, Prosthesis (i.e., Artificial Body Members), Parts Thereof or Aids and Accessories Therefor, appropriate subclasses for artificial parts for a human body adapted to replace or supplement missing or defective body parts.

**114 Composition which anchors by ingrowth of surrounding tissue:**

This subclass is indented under subclass 113. Subject matter wherein said composition assists in the process of anchoring the restorative, replacement, or implant in the bone or other body tissue with the resulting intergrowth or invasion occurring at the corresponding contact surfaces under in vivo conditions.

**115 Composition suitable for use as tooth or bone replacement, restorative, or implant:**

This subclass is indented under subclass 113. Subject matter wherein said composition is used specifically in a tooth or bone replacement, restorative, or implant.

(1) Note. Denture and artificial teeth compositions are included herein.

SEE OR SEARCH CLASS:

433, Dentistry, subclasses 171, 199.1, 200.1, 201.1, and 202.1+ for methods, apparatus, implements, and devices relating to the treatment of teeth or gums or the replacement of teeth, including those relating to denture, denture base, and artificial teeth compositions (See Note I, C in the main definition Class 433 for the general line).

**116 Cement or filling composition:**

This subclass is indented under subclass 115. Subject matter wherein said composition is used either as a cement or a filling.

SEE OR SEARCH CLASS:

106, Compositions: Coating or Plastic, subclass 35 for dental fillings or cement compositions which do not contain a synthetic resin.

433, Dentistry, subclasses 180 through 183 and 228.1 for methods of applying cement or filler compositions to the teeth.

**117 Radio- or X-ray opaque:**

This subclass is indented under subclass 116. Subject matter wherein said composition exhibits a high absorptivity for X-rays or radio rays.

**118 Sealant or adhesive:**

This subclass is indented under subclass 113. Subject matter wherein said composition is to be used as a sealant or adhesive.

(1) Note. Tissue sealants, which seal one tissue to another, are included herein.

**120 Denture plate repair, adhesive, cushion, or modification composition (e.g., modification of denture base to improve fit, etc.):**

This subclass is indented under subclass 105. Subject matter wherein said composition is used as a denture plate adhesive, denture plate liner, denture plate cushion, or to repair or modify denture plates.

(1) Note. A composition which is used to provide supplemental denture material to fill in the spaces between the high points of the jaw ridge is classified herein.

(2) Note. Included herein are denture plate liners used to repair or modify denture plates.

(3) Note. Denture plate adhesives are generally used to secure dentures within the mouth. Denture plate liners are generally used to decrease irritation of the gums.

SEE OR SEARCH CLASS:

433, Dentistry, subclasses 167 through 170 and 180-183 for methods, apparatus, implements, and devices directed to denture plate adhesives, liners, or cushions (See Note I, C in the main definition of Class 433 for the general line).

**121 Aperture affecting composition, e.g, earplug, dilator, etc.:**

This subclass is indented under subclass 105. Subject matter wherein said composition is used to affect a body aperture.

(1) Note. Compositions used to fabricate an earplug which is to be inserted into the ear to seal the auditory canal of the ear are classified herein.

**122 Composition having ingredient providing biocidal or biostatic protection thereto or process of preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition containing a synthetic resin and an ingredient which prevents the commencement of biocidal deterioration from fungi, bacteria, or other organism of the resin is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. This subclass includes, for example, a composition containing a polyurethane rubber and an ingredient which

prevents the attack of a fungus on the rubber.

(3) Note. A composition which is not claimed or solely disclosed as a coating, fiber, or film-forming composition having an ingredient which provides biocidal protection is placed in Classes 523 and 524 as appropriate hereinbelow.

SEE OR SEARCH CLASS:

71, Chemistry: Fertilizers, appropriate subclasses for fertilizers.

106, Compositions: Coating or Plastic, subclasses 15.05+ for a nonsynthetic resinous composition containing an agent or material specifically designed to render the coating or plastic composition resistant to the effects of an unwarranted organism.

424, Drug, Bio-Affecting and Body Treating Compositions, appropriate subclasses for a pest-repelling composition, per se, and for certain coated substrates wherein the substrate functions as an applicator or carrier for the composition and wherein the general intent is to provide a pesticidal or pest-repelling effect rather than a means to protect the carrier or substrate.

504, Plant Protecting and Regulating Compositions, appropriate subclasses for compositions relating to the treatment of plants for the purpose of defoliating or retarding growth, especially subclasses 101+ for a composition claimed as fertilizer in combination with a biocide or fungicide.

510, Cleaning Compositions for Solid Surfaces, Auxiliary Compositions Therefor, or Processes of Preparing the Compositions, appropriate subclasses for a biocide-containing composition which has a mere cleaning function.

**123 Plant receptacle composition or process of preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition having utility as a plant receptacle composition is claimed or soley disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. A plant receptacle is a pot, box, or other container adapted to hold earth or soil in which a plant or crop is grown.

(3) Note. A composition which is not solely disclosed as useful, in preparing a plant receptacle, is placed in Classes 523 and 524 as appropriate hereinbelow.

SEE OR SEARCH CLASS:

47, Plant Husbandry, subclasses 66.5 through 66.7 for an apparatus or process directed to a pot, box, or other container adapted to hold earth or soil in which a plant is grown.

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, appropriate subclasses for processes having significant molding steps.

**124 Composition containing an additive which enhances degradation by environmental stimuli or process of preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition is claimed or solely disclosed as having enhanced degradability by exposure to environmental stimuli or to processes of preparation thereof.

(1) Note. Environmental stimuli includes but are not limited to sunlight, heat, oxygen, moisture, radiation, organisms, etc.

(2) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(3) Note. A composition which is pretreated by another chemical species in order to commence the degradation process is included herein.

(4) Note. Included herein are degradable agricultural mulches devoid of fertilizer content, as well as compositions which

contain a material which generates oxygen by which an organic polymer composition is broken into smaller fragments, so that the smaller fragments can then be degraded by microorganisms or other environmental stimuli.

(5) Note. For purposes of this subclass, the solid polymer need not be the material having enhanced degradability.

(6) Note. A composition which contains a material which generates oxygen, by which an organic polymer composition is broken into smaller fragments; or a composition which is not solely disclosed to be degradable by environmental stimuli, is placed in Classes 523 and 524 as appropriate hereinbelow.

**125 By light, heat, or radiation:**
This subclass is indented under subclass 124. Subject matter wherein said composition is degraded or wherein the degradability of the composition is enhanced by the presence of light, heat, or radiation.

(1) Note. This subclass includes compositions degraded by solar or ionizing radiation or electromagnetic wave exposure.

**126 Containing organic salt of a transition metal:**
This subclass is indented under subclass 125. Subject matter wherein said composition contains an organic salt of a metal of atomic number 21-30, 39-47, 57-79, or 89 or higher.

(1) Note. The organic salt may either be a reactant or a nonreactant material.

**127 Containing organohalogenated additive:**
This subclass is indented under subclass 125. Subject matter wherein said composition contains a halogen-containing organic additive.

(1) Note. The halogen organic component may either be a reactant or a nonreactant material.

**128 Containing carbohydrate or cellular material derived from plant or animal:**
This subclass is indented under subclass 124. Subject matter wherein said composition is degraded by or in the presence of a carbohydrate or a cellular material derived form a plant or animal source (e.g., tree bark, fibers, etc.)

(1) Note. See the Class 520 Glossary for a definition of the term “carbohydrate”.

SEE OR SEARCH CLASS:
524, Synthetic Resins or Natural Rubbers, subclass 9, particularly the notes in the definition thereof, for a definition of the term “cellular material”.

**129 Composition containing nonresinous organic material derived from municipal solid waste disposal system or process of preparing:**
This subclass is indented under subclass 1. Subject matter wherein a composition is claimed or soley disclosed as containing municipal solid waste products or processes of preparation thereof.

(1) Note. Municipal waste for purposes of this subclass is the solid waste product resulting from towns, cities, or other habitable areas, and is not intended to including waste products from mills, factories, etc.

(2) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(3) Note. A composition wherein a nonreactant material, obtained from a scrap or waste product, is mixed with a synthetic resin, is classified herein.

(4) Note. A composition wherein the nonreactant material is the residue of a pyrolysis or incineration process is included herein.

SEE OR SEARCH CLASS:

521, Synthetic Resins or Natural Rubbers, subclasses 40+ for a process of treating a scrap or waste product to recover a synthetic resin therefrom.

524, Synthetic Resins or Natural Rubbers, subclass 34 for a composition wherein the nonreactant material is obtained from paper plant waste material.

**130 Composition for plugging pores in wells or other subterranean formations; consolidating formations in wells or cementing a well or process of preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition having utility in sealing fissures or crevices in stone, rock, or other subterranean formations, or in consolidating a formation in a well, or in cementing a well is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. Compositions used to produce a bond between the casing and the well wall are considered as well cements and are therefore classified herein.

(3) Note. A composition which is not solely disclosed as a composition for plugging pores in wells or other substerranean formations, or for consolidating formations in wells, or cementing a well, is placed as appropriate in classes 523 and 524 hereinbelow.

SEE OR SEARCH CLASS:

166, Wells, subclasses 244.1+ for processes with significantly claimed steps of well treating or operating which involves more than the mere use of such compositions; or subclasses 285+ for methods of cementing, plugging, or consolidating the earth around a well bore.

175, Boring or Penetrating the Earth, subclasses 65+ for processes of utilizing liquid, plastic, or fluent compositions to penetrate the earth's surface.

405, Hydraulic and Earth Engineering, subclasses 263+ for a method of applying a composition directly to an earth formation to fill a subterranean cavity within the formation.

507, Earth Boring, Well Treating, and Oil Field Chemistry, subclasses 100+ for liquid, plastic, or fluent compositions specialized and designed for use in earth boring or well fracturing, e.g., well drilling mud, etc., and subclasses 200+ for earth or well treating compositions which are other than those used for plugging the pores of the well, for consolidating a formation in a well, or for cementing a well.

**131 Composition for treating unconsolidated or loose strata, e.g., sand consolidation, etc.:**

This subclass is indented under subclass 130. Subject matter wherein the composition is used to treat unconsolidated, incompetent, or loose strata, such as sand in a well.

**132 Composition for in situ soil conditioning or treating or process of preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition has utility in situ as a soil conditioner or stabilizer.

(1) Note. Included herein are compositions such as those designed to penetrate, compact, or cement soil, or to alter the soil to a state of fine aggregates which thereby permits passage of air or water, or to perfect the substrate to be capable of growth of living matter. To be proper herein, a composition must be claimed or solely disclosed as having a utility necessary for this subclass.

(2) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(3) Note. The term “soil” is used in a general sense to refer to the various sands,

clays, silts, or loams in the various parts of the earth.

(4) Note. Agricultural mulch compositions devoid of fertilizer are classified herein.

(5) Note. A composition which is not solely disclosed as a soil conditioning or stabilizing composition is places as appropriate in Classes 523 and 524 hereinbelow.

SEE OR SEARCH THIS CLASS, SUBCLASS:

124+, for degradable argicultural mulch devoid of fertilizer.

SEE OR SEARCH CLASS:

299, Mining or In Situ Disintegration of Hard Material, appropriate subclasses for a process or apparatus for recovering valuable material from the earth or disintegrating hard material in situ.

404, Road Structure, Process, or Apparatus, appropriate subclasses for treating or otherwise working with the earth when limited to the making, installing, repairing or maintaining of a highway, pathway, or walking structure; especially note subclasses 76+ which relate to processes of conglomerating or combining minute surface particles or earth components into larger aggregate units or into relatively firm masses in said construction.

405, Hydraulic and Earth Engineering, appropriate subclasses for methods of utilizing soil stabilizing or conditioning compositions in the earth's formation.

**134 Battery container or battery container cover composition or process of preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition having utility as a battery container or battery container cover composition is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. See the subclass definition of this class for an explanation of patent placement referring to “claimed or solely disclosed”.

(2) Note. A composition which is not solely disclosed as a battery container or battery container cover composition is placed as appropriate in Classes 523 and 524 hereinbelow.

SEE OR SEARCH CLASS:

206, Special Receptacle or Package, appropriate subclasses for a battery container or battery container cover having more than a mere “nominal” inclusion of structure; especially note subclasses 524.1+ for acid proof receptacles; subclass 703 for a battery package; and subclasses 701-728 for an electrical article.

429, Chemistry: Electrical Current Producing Apparatus, Product, and Process, appropriate subclasses for a special receptacle having battery structure.

**135 Solar energy absorption or solar reflection composition or process of preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition having utility as a solar energy reflector or absorber is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. A composition utilized to minimize heat buildup in the interior of objects exposed to sunlight, by reflecting the solar heat, would be classified herein.

(3) Note. A composition which is not solely disclosed as a solar energy reflector or absorber is placed as appropriate in Class 523 and 524 hereinbelow.

SEE OR SEARCH CLASS:

34, Drying and Gas or Vapor Contact With Solids, subclass 93 for processes or apparatus for separating liquids from solids or contacting solids with gases or vapor by treating with solar energy.

62, Refrigeration, subclass 235.1 for processes or apparatus utilizing solar energy to remove heat from a substance.

**136 Composition sensitive to or resistant to radioactive material or cathode rays (e.g., electron bombardment, etc.) or process of preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition which is resistant to, yet does not absorb radioactive materials or cathode rays is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. A composition which is not solely disclosed as being resistant to radioactive materials or cathode rays is placed as appropriate in Classes 523 and 524 hereinbelow.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclass 515.1 for methods of using and apparatus for X-ray shields which absorb energy propagated in the form of electromagnetic waves or traveling subatomic, atomic, or molecular particles.

252, Compositions, for special use compositions of that class containing a synthetic resin and see in particular subclasses 582 through 589 for compositions specialized for use as optical filters including those which filter ray energy outside the visible spectrum, such as ultraviolet, infrared, or X-rays; subclasses 301.16+, especially subclass 301.35 for optical brighteners or organic luminescent compositions containing a synthetic resin; subclass 478 for shielding compositions which may contain a synthetic resin designed to prevent the passage of X-ray radiation and alpha, beta, or gamma rays and other energy sources which are released in nuclear transformation; and subclasses 600+ for compositions which do not contain a synthetic resin but are responsive to radiation.

424, Drug, Bio-Affecting and Body Treating Compositions, subclasses 9.1 through 10.4 for a X-ray contrast composition; and subclasses 59+ for a sun or radiation screening composition to be applied to a living body, such as sun lotion.

427, Coating Processes, subclass 160 for coating processes wherein the coating has X-ray properties.

430, Radiation Imagery Chemistry: Process, Composition, or Product Thereof, appropriate subclasses, and see in particular subclasses 269+ and 495.1+ for compositions which are affected by radiation to form an image and for processes of making images from compositions affected by radiation, and the resultant products thereof.

**137 Electromagnetic wave absorbing composition or process of preparing (excludes visible IR or UV portions of spectrum):**

This subclass is indented under subclass 1. Subject matter wherein a composition which absorbs electromagnetic waves (excluding the visible, IR or UV portions, of the electromagnetic spectrum) is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. A composition which absorbs electromagnetic waves which is not solely disclosed is placed as appropriate in Classes 523 and 524 hereinbelow.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclass 515.1 for methods of using and apparatus for X-ray shields which absorb energy propagated in the form of electromagnetic waves of traveling subatomic, atomic, or molecular particles.

252, Compositions, for special use compositions of that class containing a synthetic resin and see in particular subclasses 582 through 589 for compositions specialized for use as optical filters including those which filter ray energy outside the visible spectrum, such as ultraviolet, infrared, or X-rays; subclasses 301.16+, especially subclass 301.35 for optical brightners or organic luminescent compositions containing a synthetic resin; subclass 478 for shielding compositions which may contain a synthetic resin designed to prevent the passage of X-ray radiation and alpha, beta, and gamma rays and other energy energy sources which are released in nuclear transformations; and subclasses 600+ for compositions which do not contain a synthetic resin but are responsive to radiation.

424, Drug, Bio-Affecting and Body Treating Compositions, subclasses 9.1 through 10.4 for a X-Ray contrast composition; and subclasses 59+ for a sun or radiation screening composition to be applied to a living body, such as sun lotion.

427, Coating Processes, subclass 160 for coating process wherein the coating has X-ray properties.

430, Radiation Imagery Chemistry: Process, Composition, or Product Thereof, appropriate subclasses, and see in particular subclasses 269+ and 495.1+ for compositions which are affected by radiation to form an image and for processes of making images from compositions affected by radiation, and the resultant products thereof.

**138 Composition for contact with hot propulsion or exhaust gas or process of preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition which is to be in contact with either a hot propulsion gas or exhaust has is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. Included herein are compositions which line the combustion chamber of a rocket motor or the exhaust system of an automobile or space vehicle.

(3) Note. Ablative compositions which are to be in contact with hot propulsion or exhaust gases are included herein.

(4) Note. A compositions which is to be in contact with hot propulsion or exhaust gases which is not solely disclosed is placed as appropriate in Classes 523 and 524 hereinbelow.

SEE OR SEARCH THIS CLASS, SUBCLASS:

179, for an ablative composition not designed to be in contact with hot propulsion or exhaust gases.

**139 Composition related to metal foundry molding or metallurgical furnace or process or preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition having utility in the casting or metals or in metallurgical furnaces is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. Compositions drawn to separate components of a foundry system such as resin coated sands, binders, or powdered facing agents, as well as the composite foundry system, are classified herein.

(3) Note. Compositions relating to foundry molding with no reference to glass or metal are assumed to be metal foundry molding compositions are thus classified herein.

(4) Note. A composition solely disclosed as not having utility in the casting of metals or in metallurgical furnaces is placed as

appropriate in Classes 523 and 524 hereinbelow.

**140 Hot-top or taphole plug composition or process of preparing:**

This subclass is indented under subclass 139. Subject matter wherein the composition is used as or in hot-tops of ingot molds or for plugging tapholes of black furnaces.

SEE OR SEARCH THIS CLASS, SUBCLASS:

139, or 142+, for compositions relating to tundishes with no reference to hot-tops.

**141 Composition for metallurgical furnace or oven or process of preparing:**

This subclass is indented under subclass 139. Subject matter wherein the composition is for a metallurgical furnace or oven apparatus.

SEE OR SEARCH CLASS:

75, Specialized Metallurgical Processes, Compositions for Use Therein, Consolidated Metal Powder Compositions, and Loose Metal Particulate Mixtures, subclass 301.

252, Compositions, subclasses 500+ for compositions for lining electric furnaces or for linings recited only in terms of their composition when the composition, in addition, has the property of being electrically conductive.

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 30 for processes of furnace lining formation or repair.

**142 Organic polyisocyanate or derived from polyisocyanate:**

This subclass is indented under subclass 139. Subject matter wherein the composition contains or reacts with a compound containing two or more N=C=X groups (wherein X is a chalcogen, i.e., O, S, Se, or Te) or wherein a solid polymer has been derived from a reactant containing two or more N=C=X groups (wherein X is a chalcogen, i.e., O, S, Se, or Te).

(1) Note. Polyurethanes absent a disclosure to the contrary are presumed to be prepared from polyisocyanates and as such are properly classifiable herein.

**143 Phenolic, amine or ketone condensate with aldehyde:**

This subclass is indented under subclass 142. Subject matter wherein the composition contains or reacts with a phenol-aldehyde, aldehyde-ketone, or amine-aldehyde condensate.

(1) Note. Included herein are condensation products formed from aldehydes or aldehyde derivatives. See the Class 520 Glossary for a definition of the term “aldehyde or aldehyde derivative”.

**144 Furan-type material:**

This subclass is indented under subclass 139. Subject matter wherein the composition contains or reacts with a resin or monomer derived from a furan-type material.

(1) Note. Furan-type material is limited to furan or to derivatives containing a five-membered hetero ring having four carbon atoms and one oxygen atom and also having two double bonds within the hetero ring, e.g., furan, furfuryl alcohol, etc.

**145 Phenolic or amine or ketone condensate with aldehyde:**

This subclass is indented under subclass 139. Subject matter wherein the composition contains or reacts with a phenol-aldehyde, aldehyde-ketone, or amine-aldehyde, condensate.

**146 With or derived from carboxlic acid or salt thereof or organic sulfur material:**

This subclass is indented under subclass 145. Subject matter wherein the composition contains or reacts with a carboxylic acid, carboxylic acid salt, or organic sulfur material.

(1) Note. A composition using benzenesulfonic acid as curing catalyst would be classified herein.

(2) Note. See the Class 520 Glossary for a definition of the term “carboxylic acid or derivative” which encompasses salt.

**147 With or derived from organic hydroxy group containing material containing eight or more carbon atoms:**
This subclass is indented under subclass 145. Subject matter wherein the composition contains or reacts with an organic hydroxyl group containing material having more than seven carbon atoms.

(1) Note. A composition for foundry molds wherein the resin binder is the reaction product or phenol, formaldehyde, and sucrose would be classified herein.

**148 Polyester bases:**
This subclass is indented under subclass 139. Subject matter wherein the composition contains a solid polymer derived from at least one polyol and at least one polycarboxylic acid.

**149 Friction element composition process of preparing:**
This subclass is indented under subclass 1. Subject matter wherein a composition having utility as a friction element is claimed or solely disclosed or ton processes of preparation thereof.

(1) Note. See the class definition of this class for an explanation of patent placement referring to “claimed or solely disclosed”.

(2) Note. Any composition used to enhance friction is condsidered to be a friction element for this subclass.

SEE OR SEARCH CLASS:
51, Abrasive Tool Making Process, Material, or Composition, for an abrasive material or composition.
508, Solid Antifriction Devices, Materials Therefor, Lubricant or Separant Compositions for Moving Solid Surfaces, and Miscellaneous Mineral Oil Compositions, subclasses 110+ for liquid, plastic, or fluent compositions specialized and designed for use between two moving surfaces for reducing friction therebetween or for preventing the surfaces from contacting each other.
451, Abrading, for apparatus and processes of abrading.

**150 Nonskid or nonslip composition for vehicle or pedestrian movement:**
This subclass is indented under subclass 149. Subject matter wherein the composition imparts nonskidding or nonslipping properties to surfaces used in pedestrian or vehicular movement.

(1) Note. Compositions to be applied to a fisherman's boat, to the bottom of a shoe, a wood deck, or a concrete floor in order to provide a nonslip or nonskid surface are examples of compositions for this subclass as well as are treaded surfaces or walks.

SEE OR SEARCH CLASS:
404, Road Structure, Process, or Apparatus, subclasses 19+ for pavement structure relating to characteristics which tend to reduce skidding or render the traffic surface nonslippery.
474, Endless Belt Power Transmission Systems or Components, subclasses 190+ for pulleys including a composition on the rim to increase the traction on the belt.

**152 For wheeled vehicle:**
This subclass is indented under subclass 149. Subject matter wherein the composition is used as a friction element for autombiles, trains, trailers, roller skates, skateboards, or other wheeled vehicles.

(1) Note. Any composition used to enhance friction is considered to be a friction element for this subclass.

(2) Note. Asbestos is a group of impure magnesium silicate minerals which occur in fibrous form. Included with the term asbestos are amianthus, earth flax, mountain cork stone flax, fibrous actinolite, amphibole, chrysotile.

(3) Note. Serpentine asbestos is the mineral chrysotile.

(4) Note. Amphibole asbestos includes the minerals, tremolite, actinolite, amosite, crocidolite, and anthopyllite.

(5) Note. For placement of patents in this subclass and its indents, the classification should be based upon the specification along with the claims. Thus, the specification and the claims should be read to determine if asbestos or an organic or inorganic material is present or absent. A patent which does not claim asbestos but wherein the disclosure is limited to asbestos would be originally classified into an asbestos containing subclass.

SEE OR SEARCH CLASS:

152, Resilient Tires and Wheels, appropriate subclasses, particularly subclasses 208+ for antiskid tires.

188, Brakes, subclasses 250+ for a brake element having significant brake structure and which brake element may include as an element a lining or facing of traction or friction composition.

192, Clutches and Power-Stop Control, subclass 107 for clutches having significant clutch structure which clutches may include as an element a lining or facing of a traction or friction composition.

**153 Containing fibrous or polycrystalline refractory oxide:**

This subclass is indented under subclass 152. Subject matter wherein the composition contains a refractory oride, either fibrous or polycrystalline in nature.

(1) Note. Single metal or double metal oxides or mixtures thereof of thoria, urania, yitria, titania, chromia, magnesia, calcia, alumina, zirconia, and of the alkaline earth or rare earth oxides are examples of refractory oxides for this subclass. Only those oxides however in fibrous or polycrystalline form are included herein.

SEE OR SEARCH THIS CLASS, SUBCLASS:

152, for placement of patents in this subclass and its indents, the classification should be based upon the specification along with the claims. Thus, the specification and the claims should be read to determine if asbestos or an organic or inorganic material is present or absent. A patent which does not claim asbestos but wherein the disclosure is limited to asbestos would be originally classified into an asbestos containing subclass.

**155 Composition devoid of asbestos:**

This subclass is indented under subclass 152. Subject matter wherein the composition does not contain asbestos.

SEE OR SEARCH THIS CLASS, SUBCLASS:

152, for placement of patents in this subclass and its indents, the classification should be based upon the specification along with the claims. Thus, the specification and the claims should be read to determine if asbestos or an organic or inorganic material is present or absent. A patent which does not claim asbestos but wherein the disclosure is limited to asbestos would be originally classified into an asbestos containing subclass.

**156 Containing at least two organic materials, e.g., binder plus other organic material, etc.:**

This subclass is indented under subclass 155. Subject matter wherein the composition contains at least two organic materials.

(1) Note. Included herein is an asbestos-free composition containing two organic binders.

(2) Note. The organic material may be in monomeric or polymeric form and may be either liquid, solid, or gas.

**157 Containing at least two organic materials, e.g., binder plus other organic material etc.:**
This subclass is indented under subclass 152. Subject matter wherein the composition contains at least two organic materials.

(1) Note. The organic material may be either solid, liquid, or gas and may be in monomeric or polymeric form.

(2) Note. An example of a composition for this subclass would be two solid polymers plus asbestos or a friction element or a solid polymer, organic binder, and asbestos.

SEE OR SEARCH THIS CLASS, SUBCLASS:
152, for placement of patents in this subclass and its indents, the classification should be based upon the specification along with the claims. Thus, the specification and the claims should be read to determine if asbestos or an organic or inorganic material is present or absent. A patent which does not claim asbestos but wherein the disclosure is limited to asbestos would be originally classified into an asbestos containing subclass.

**158 Composition contains a phenolic, amine, or ketone condensate with aldehyde plus a polymer derived from ethylenic monomers only:**
This subclass is indented under subclass 157. Subject matter wherein the composition contains a phenol-aldehyde, amine-aldehyde, or ketone-aldehyde, condensate and a solid polymer derived solely from ethylenic monomers.

SEE OR SEARCH THIS CLASS, SUBCLASS:
152, for placement of patents in this subclass and its indents, the classification should be based upon the specification along with the claims. Thus, the specification and the claims should be read to determine if asbestos or an organic or inorganic material is present or absent. A patent which does not claim asbestos but wherein the disclosure is limited to asbestos would be originally classified into an asbestos containing subclass.

**159 Containing asbestos and at least one inorganic material:**
This subclass is indented under subclass 152. Subject matter wherein the composition contains asbestos and at least one other inorganic nonreactive material.

SEE OR SEARCH THIS CLASS, SUBCLASS:
152, for placement of patents in this subclass and its indents, the classification should be based upon the specification along with the claims. Thus, the specification and the claims should be read to determine if asbestos or an organic or inorganic material is present or absent. A patent which does not claim asbestos but wherein the disclosure is limited to asbestos would be originally classified into an asbestos containing subclass.

**160 Printing ink composition for glass or ceramic substrate or process of preparing:**
This subclass is indented under subclass 1. Subject matter wherein a composition having utility as an ink for either a glass or ceramic substrate is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. An ink composition which is not solely disclosed to be used on a glass or ceramic substrate is placed as appropriate in Classes 523 and 524 hereinbelow.

SEE OR SEARCH CLASS:
106, Compositions: Coating or Plastic, subclasses 20+ for ink compositions not containing synthetic resins for either glass or ceramic substrates.

**161 Invisible, ballpoint, or typewriter ink compositions or process of preparing; or compo-**

**sition for correction ribbons or correction fluids or process of preparing:**
This subclass is indented under subclass 1. Subject matter wherein a composition having utility as an invisible ink, ballpoint ink, typewriter ink, or a composition having, utility as a correction ribbon or correction fluid is claimed or solely disclosed, or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. A invisible ink is a material to be used on a surface and which requires an activating means so as to become visible.

(3) Note. A composition for a correction ribbon or correction fluid is used to rectify mistakes on printed matter or duplicated matter.

(4) Note. An ink composition which is not solely disclosed as being of an invisible nature or for ballpoint or typewriter use or a composition which is not solely disclosed for use in a correction ribbon or correction fluid is placed as appropriate in Classes 523 and 524 hereinbelow.

SEE OR SEARCH CLASS:
106, Compositions: Coating or Plastic, subclasses 20+ for a ballpoint or typographic ink composition not containing a synthetic resin; and subclass 21 for an ink composition not containing a synthetic resin and which produces invisible characters when used, but which becomes visible when subjected to the action of heat, light, or other subsequent treatment.
252, Compositions, subclasses 301.16+ for inks containing a fluorescent or phosphorescent material which become visible when subjected to excitation, e.g., ultraviolet light, etc.
401, Coating Implements With Material Supply, subclasses 209+ for the combination of a ball-point pen and ink particularly suitable for such an implement (e.g., viscous ink).

**164 Lead pencil or marking crayon composition or process of preparing:**
This subclass is indented under subclass 1. Subject matter wherein a composition having utility as the writing material in a lead pencil or crayon composition is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. A composition which is not solely disclosed as useful as the marking material in a lead pencil or crayon is placed as appropriate in Classes 523 and 524 hereinbelow.

SEE OR SEARCH CLASS:
106, Compositions: Coating or Plastic, subclasses 19+ for a lead pencil or crayon composition not containing a synthetic resin.
401, Coating Implements With Material Supply, subclasses 49+ for pencils wherein significant structure of the pencil is claimed.

**166 Composition for puncture proof tire liner or in emergency tire repair (e.g., tire inflation, etc.) or process of preparing:**
This subclass is indented under subclass 1. Subject matter wherein a composition having utility as either a puncture sealant for a pneumatic tire or a composition used in the emergency repair of vehicular tires is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. Included herein are inflating compositions.

(3) Note. A composition which is not solely disclosed for a puncture proof liner or for use in emergency tire repair is placed

as appropriate in Classes 523 and 524 hereinbelow.

SEE OR SEARCH CLASS:

106, Compositions: Coating or Plastic, subclass 33 for leak stopping coating or plastic compositions not containing a synthetic resin.

152, Resilient Tires and Wheels, appropriate subclasses for puncture proof tire liner compositions in combination with the pneumatic tire, per se; not especially subclasses 502+ for self-healing materials provided for in the tire body or within the cavity of the tire; subclasses 367+ for devices for application to a tire surface for covering a puncture or blowout; and subclasses 415+ for devices combined with vehicle or wheel structure for inflating pneumatic tires.

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 94+ for processes directed to restoring a damaged or defective article or material by a laminating procedure; and in particular subclasses 95+ for repairing a toroidally shaped article.

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclasses 36.1+ for processes of molding, casting, or plastic shaping a nonmetallic material in which a worn, damaged, or used article is restored or repaired for reuse in a similar capacity without altering or destroying the overall configuration of the article. See especially, subclass 36.14 for toroidal shaped articles (e.g., resilient tires,etc.).

425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclasses 11+ for tire-repairing apparatus; subclasses 17+ for tire-recapping, rebeading or sidewall-replacing means; and subclasses 28.1+ for tire or tire tube reshaping, resizing, or vulcanizing performs.

**167 Composition utilized in the manufacturing or repairing of shoes (excluding shoe heels or soles or polish) or process of preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition having utility in the manufacturing or repairing of shoes is claimed or solely disclosed or to processes or preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. Shoe sole or heel compositions as well polishes are excluded from this subclass; however, compositions used to cover a heel or sole and bases for heels are included herein.

(3) Note. A composition which is not solely disclosed as useful in the manufacturing or repairing of shoes is placed as appropriate in Classes 523 and 524 hereinbelow.

SEE OR SEARCH CLASS:

12, Boot and Shoe Making, appropriate subclasses for a process of manufacturing or repairing a foot covering and apparatus used in said manufacturing or repairing.

36, Boot, Shoes, and Leggings, appropriate subclasses for shoes and shoe elements such as soles, heels, or insoles.

106, Compositions: Coating or Plastic, subclasses 3+ for shoe polishes (not containing a synthetic resin); and subclass 38 for a coating or plastic composition specifically designed for a filling in the bottom of shoes or soles.

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, appropriate subclasses for processes and apparatus for forming laminated articles including shoe parts of elements.

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 244 for a process of uniting a shoe part to an upper.

425, Plastic Article or Earthenware Shaping or Treating: Apparatus, appropriate subclasses for a means to mold a shoe heel or sole, per se, as a composite, into a disclosed diverse shoe part.

427, Coating Processes, appropriate subclasses for a process of coating in general, including coating leather.

**168 Optical glass cementing or slide mounting composition or process of preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition having utility as a cement either for cementing optical glass or for mounting specimens on glass slides is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. Cement compositions for mounting material for histological, pathological, or bacteriological specimens onto glass slides are classified herein.

(3) Note. A composition used as a cement either for cementing optical glass or for mounting specimens of glass slides and which is not solely disclosed for those purposes and for compositions to secure labels onto glass is placed as appropriate in Classes 523 and 524 hereinbelow.

**169 Antifogging or water repellent composition for optical or windshield application or process of preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition having utility to preserve visibility though a windshield or other optical device either by preventing the buildup of fog or rendering the surface hydrophobic thereby causing the surface to repel water is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. An antifogging or water repellent composition and which is not solely disclosed for those purposes is placed as appropriate in Classes 523 and 524 hereinbelow.

SEE OR SEARCH CLASS:

106, Compositions: Coating or Plastic, subclass 13 for a coating or plastic composition not containing a synthetic resin specialized in preventing the formation of fog, frost, or ice on a surface of a window.

252, Compositions, subclass 70 for a frost-preventing, ice-thawing, thermostatic, thermophoric, or cryogenic composition.

**170 Glass enamel composition or process of preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition having utility either as an enamel composition for a glass substrate or as a medium or binder in the production of glass enamel is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. An enamel for purposes of this subclass is a vitrifiable or glaze forming composition.

(3) Note. A glass enamel composition which is not solely disclosed for that purpose is placed as appropriate in Classes 523 and 524 hereinbelow.

SEE OR SEARCH CLASS:

106, Compositions: Coating or Plastic, subclass 312 for a material or ingredient specifically designed to produce opacity in glass in the form of vitreous enamels or glazes.

**171 Composition having opalescent, pearlescent, or variegated color or process of preparing:**
This subclass is indented under subclass 1. Subject matter wherein a composition having at least two distinct colors or exhibiting opal-like or pearl-like coloration is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. A composition having opalescent, pearlescent, or variegated color and which is not solely disclosed as having those properties is placed as appropriate in Classes 523 and 524 hereinbelow.

SEE OR SEARCH CLASS:
516, Colloid Systems and Wetting Agents; Subcombinations Thereof; Processes of Making, Stabilizing, Breaking, or Inhibiting, subclasses 9+ for continuous liquid phase colloid systems (e.g., foams, emulsions, suspensions, dispersions) or agents for such systems or making or stabilizing such systems or agents, when generically claimed or when there is hierarchically superior provision in the USPC for the specifically claimed art.

**172 Pavement or sign marking or reflex reflecting composition or process of preparing:**
This subclass is indented under subclass 1. Subject matter wherein a composition utilized either as an applied marking for pavements (e.g., roads, streets, highways, aircraft landing strips, etc.) or for signs, e.g., for defining traffic lanes, pedestrian crosswalks, traffic instruction, etc., or as an applied reflex-reflector is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. A reflex-reflector composition is defined to be either a composition applied to a reflective surface to return light back toward its source in a brilliant cone with the axis of the cone essentially common with the incident beam of light or a composition to exhibit to a viewer both true daytime color and true nighttime color.

(3) Note. A road surface paving composition is not considered to be a pavement marking composition and is therefore excluded herein.

SEE OR SEARCH CLASS:
40, Card, Picture, or Sign Exhibiting, appropriate subclasses for signs which impart information either permanently affixed to a road or merely mounted nearby.
404, Road Structure, Process, or Apparatus, appropriate subclasses for a road component used in the construction, maintenance, or repair of roads with significant structural description.
524, Synthetic Resins or Natural Rubbers, subclasses 59+ for asphalt containing compositions.

**173 Cable filling or flooding composition or process of preparing:**
This subclass is indented under subclass 1. Subject matter wherein a composition having utility as a filling or flooding composition for cables (especially, but not restricted to, telecommunication cables which are particularly subject to the ingress of water) is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. A composition which is not solely disclosed as useful in cable filling or flooding is placed as appropriate in Classes 523 and 524 hereinbelow.

SEE OR SEARCH CLASS:

174, Electricity: Conductors and Insulators, appropriate subclasses for a combination of a structurally claimed conductor either coated or covered with a dielectric.

252, Compositions, subclasses 570+ for a fluid dielectic not containing a synthetic resin.

425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclasses 500+ for a composite plastic cable molding apparatus.

**174 Phonograph record molding composition or process of preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition having utility as a phonograph record molding composition or a phonograph record, per se, is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. Included herein are phonograph record compositions, per se, without significant structure.

(3) Note. A molding composition which is not solely disclosed as useful in preparing a phonograph record is placed as appropriate in classes 523 and 524 hereinbelow.

SEE OR SEARCH CLASS:

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 36.13 for a process of repairing or restoring articles which have utility in making sound producing records; subclasses 106+ for a process of molding or shaping an article to produce sound reproducing grooves on its surface, and subclasses 239+ for molding operations which produce articles, per se, and which have utility in making sound producing records.

369, Dynamic Information Storage or Retrieval, subclasses 272.1-291.1 for a composition with sufficient claimed structure for records of sound or having such records formed in or on them. The mere presence of "sound grooves" but not the structure thereof is not considered significant sound record structure.

428, Stock Material or Miscellaneous Articles, appropriate subclasses for a disc of the type used in producing a sound record wherein some specific structure is recited, e.g., grooves, center hole, or circular shape, but does not include sound.

720, Dynamic Optical Information Storage or Retrieval, subclasses 718 through 746 for optical storage medium structure.

**175 Liquid-solid drag reduction composition or process of preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition having utility related to improving drag reduction formations or systems which are effective for reducing the dynamic drag of turbulent fluid in contact with a surface is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. Drag reduction is defined to be the increase in the volumetric flow rate of a fluid at a constant pressure drop due to the addition of a solid polymeric material of relatively high molecular weight. The mere mention of a "drag reduction" composition is sufficient to place a patent in this subclass.

(3) Note. A composition which is not solely disclosed to be useful in drag reduction is placed as appropriate in Classes 523 and 524 hereinbelow.

SEE OR SEARCH CLASS:

137, Fluid Handling, subclass 13 for processes of handling fluid materials,

including gas and liquids, in which the flow of fluent materials is facilitated by the addition of material to the fluid for the purposes of affecting the flow characteristics of the fluent material.

516, Colloid Systems and Wetting Agents; Subcombinations Thereof; Processes of Making, Stabilizing, Breaking, or Inhibiting, subclasses 198+ for wetting agents (e.g., spreading, penetrating, leveling) or methods of making such agents, when generically claimed or when there is no hierarchically superior provision in the USPC for the specifically claimed art.

**176 Anaerobic adhesive or thread sealing composition or process of preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition having utility as an anaerobic adhesive or thread sealant is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. An anaerobie adhesive is defined to be an adhesive which remains liquid in the presence of air but which polymerizes upon the exclusion of air to form a hard, durable resin with adhesive properties. A thread sealant is defined to be composition designed to obtain an adequate seal at high pressures for a threaded connection, such as a pipe joint.

(3) Note. A composition which is not solely disclosed as being an anaerobic adhesive or thread sealant is placed as appropriate in Classes 523 and 524 hereinbelow.

**177 Coating or adhesive composition for application to a wet or contaminated surface (e.g., underwater or oil-contaminated, etc.) or process of preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition intended for application to a wet or contaminated surface is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. Paint or repair compositions which are to be applied underwater, and coatings and adhesives designed for oil-contaminated surfaces are examples of compositions classified in this subclass.

(3) Note. A coating or adhesive composition intended for application to a wet or contaminated surface and which is not solely disclosed for that purpose is placed as appropriate in Classes 523 and 524 hereinbelow.

**179 Intumescent coating or ablative composition or process of preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition having utility as an ablative or an intumescent coating composition is claimed or solely disclosed, or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. An intumescent coating composition is defined to be a composition which contains, in addition to a synthetic resin, an additive (such as a phosphate containing or a carbonific or other carbon-yielding material) which intumesces (i.e., froths or puffs in such a manner that a considerably swollen solid cellular residue is produced, which is noncombustible) when heat or fire is applied thereto.

(3) Note. An ablative composition is one which tends to limit convective heat transfer from a high temperature source to a lower temperature source on a substrate to which the composition has been applied.

(4) Note. This subclass does not provide a for a fire-retardant composition which does not state the ability of the composition to intumesce or ablate.

(5) Note. A coating composition which is not solely disclosed as being ablative or intumescent is placed as appropriate in Classes 523 and 524 hereinbelow.

SEE OR SEARCH CLASS:

106, Compositions: Coating or Plastic, subclasses 15.05+ for a coating composition (not containing a synthetic resin) which when applied to a surface forms a hard tenacious adherent film and which contains a fireproofing or biocidal agent.

252, Compositions, subclasses 601+ for a composition which is specialized and designed for use in treating materials to make them less combustible or more resistant to fire.

428, Stock Material or Miscellaneous Articles, appropriate subclasses for a stock material product in the form of a single-layered shaped web or sheet or a plural-layered web or sheet which is intumescent.

**180 Solid propellant binder composition or process of preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition having utility as a binder in a solid propellant composition is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. An aerosol spray composition is not included under the definition of this subclass and is therefore excluded herein.

(3) Note. A composition which is not solely disclosed as a binder in a solid propellant composition is placed as appropriate in Classes 523 and 524 hereinbelow.

SEE OR SEARCH CLASS:

149, Explosive and Thermic Compositions or Charges, especially subclasses 2+ for an explosive or thermitic composition where a particular shape or structure of either an ingredient of the composition, a solid-solid suspension, or a compacted or bonded mass of ingredients is defined.

**181 Composition devoid of magnetic materials and suitable for preparation of magnetic tape recording or process of preparing:**

This subclass is indented under subclass 1. Subject matter wherein a composition having utility as a magnetic-tape recording composition is claimed or solely disclosed or to processes of preparation thereof.

(1) Note. For an explanation of patent placement referring to claimed or solely disclosed, see (in the class definition) the section of SEARCH THIS CLASS, SUBCLASS that refers to this subclass.

(2) Note. A “magnetic-tape recording composition” is defined to be a composition for magnetic purposes and contains a synthetic resin but does not contain a magnetic material.

(3) Note. A composition which is not solely disclosed to be used in the preparation of a magnetic tape is placed as appropriate in Classes 523 and 524 hereinbelow.

SEE OR SEARCH CLASS:

148, Metal Treatment, subclasses 100+ for a process of altering the magnetic property of a material which has at least one free metal or alloy component.

252, Compositions, subclasses 62.51+ for a composition containing a synthetic resin and a magnetic material.

427, Coating Processes, subclasses 502, 548, and 599 for a process of utilizing a magnetic force or field to form a magnetic recording device or medium; and subclasses 127+ for a process of wherein the base or the coating is disclosed as having magnetic properties.

**200 Process of forming a composition of a solid polymer or solid polymer-forming system by admixing a product in the form of a surface coated, impregnated, encapsulated, or surface modified fiber, sheet, particle, or web, with a material; or composition which is the result of said admixing:**

This subclass is indented under subclass 1. Subject matter wherein a composition is formed by admixing a material with a product, which product is a surface coated fiber, sheet, particle, or web; or an impregnated fiber, sheet, particle, or web; or an encapsulated or surface modified fiber, sheet, particle, or web; or the composition formed by any of the aforementioned mixing operations.

(1) Note. The product itself as recited above may contain a synthetic resin or material proper for the Class 520 series of classes, e.g., surface coated polymer particle, or the polymer may surface coat another polymer or nonpolymeric material. It is also permissible for this subclass that the polymeric material proper for the Class 520 series be admixed with a product which is a surface coated, impregnated, encapsulated, or surface modified product as noted above but which product itself is devoid of a polymer proper for the Class 520 series.

(2) Note. This subclass requires the admixing of a product proper for this subclass with a material to form a composition wherein at least one ingredient of the composition is nonreactive with a polymer proper for the Class 520 series. The nonreactive material may be the material or the product.

(3) Note. Compositions proper for this subclass either (a) must recite some process language consistent with an admixing process proper for this area, or (b) must be dependent totally or in part on a claim which recites a process proper for this area.

(4) Note. This subclass does not require that the product admixed be in the same physical or chemical state after the completion of the process as when said product was admixed with the material so as to form a composition therewith. For instance, the material may be ground up, further polymerized, transitory, etc.

(5) Note. A solid polymer-forming system is a single reactant or mixture of reactants which are disclosed or claimed as being capable of forming a solid polymer proper for the Class 520 series under the conditions recited in the claims or which in the absence of a claimed recitation are disclosed in the specification. See the Class 520 class definition for a further elaboration of the type of subject matter proper therein.

SEE OR SEARCH CLASS:

521, Synthetic Resins or Natural Rubbers, subclasses 50+ for a material impregnated or capsulated in a solid polymer.

**201 Solid polymer particle enclosed in layer of diverse solid polymer, e.g., core-shell, etc.:**

This subclass is indented under subclass 200. Subject matter wherein a product containing a layer of a solid polymer enveloping a diverse solid polymer is admixed with a material so as to form a composition therewith or the composition formed from such as admixing process.

(1) Note. The solid polymer which envelops the diverse solid polymer need not be in a contiguous relationship therewith, nor does the solid polymer need to be the outermost layer of a multilayer product.

(2) Note. The polymer need not completely surround the substrate polymer, but must substantially surround the polymer.

(3) Note. A core-shell polymer is considered as a layer of a polymer enclosing a diverse polymer.

SEE OR SEARCH THIS CLASS, SUBCLASS:

206, for a product involving two or more solid polymers but wherein the relationship of the polymers is not of one enveloping the other.

**202 Product having a monomeric ethylenic reactant material:**
This subclass is indented under subclass 200. Subject matter wherein a product containing an ethylenic reactant material is admixed with a material so as to form a composition therewith or the composition formed from such an admixing process.

(1) Note. The ethylenic reactant material may be polymerized in a step subsequent to the admixing process.

**203 Silicon ethylenic reactant:**
This subclass is indented under subclass 202. Subject matter wherein the ehtylenic reactant material contains a silicon atom.

**204 Product having an inorganic material surface coated onto an organic substrate:**
This subclass is indented under subclass 200. Subject matter wherein a product containing an inorganic material surface coated onto an organic substrate is admixed with a material so as to form a composition therewith or the composition formed from such an admixing process.

(1) Note. For purposes of this subclass, the inorganic material must be in a contiguous relationship with the organic substrate.

**205 Product having a solid synthetic polymer or solid polymer-forming system:**
This subclass is indented under subclass 200. Subject matter wherein a product containing a solid synthetic polymer or solid polymer-forming system is admixed with a material so as to form a composition therewith or the composition formed from such an admixing process.

**206 Product having two or more solid synthetic polymers, or a solid polymer and a solid polymer-forming system:**
This subclass is indented under subclass 205. Subject matter wherein a product containing two or more solid polymers, or at least one solid polymer and a solid polymer-forming system is admixed with a material so as to form a composition therewith or the composition formed from such an admixing process.

**207 Solid polymer or solid polymer-forming system is encapsulated in or impregnated in a nonreactant material:**
This subclass is indented under subclass 205. Subject matter wherein a product containing a solid polymer or solid polymer-forming system, impregnated in or encapsulated in a nonreactant material, is admixed with a material so as to form a composition therewith or the composition formed from such an admixing process.

**208 Solid polymer or solid polymer-forming system is or derived from an aldehyde or derivative:**
This subclass is indented under subclass 205. Subject matter wherein a product containing a solid polymer derived from an aldehyde or derivative or containing a solid polymer-forming system containing an aldehyde or derivative, is admixed with a material so as to form a composition therewith or the composition formed from such an admixing process.

(1) Note. See the Class 520 Glossary for the definitions of the terms “aldehyde” and “aldehyde derivative”.

**209 Product having a silicon atom:**
This subclass is indented under subclass 205. Subject matter wherein the product contains a silicon atom.

**210 Product having a material encapsulated in or impregnated in a nonreactant material:**
This subclass is indented under subclass 200. Subject matter wherein a product which contains a material encapsulated or impregnated in a nonreactant material is admixed with another material so as to form a composition therewith or the composition formed from such an admixing process.

**211 Reactant or catalyst is material encapsulated or impregnated:**
This subclass is indented under subclass 210. Subject matter wherein the material encapsulated in, or impregnated into the nonreactive material is a reactant or catalyst.

(1) Note. The term “reactant” as used herein is consistent with the context of the class definition of this class.

**212 Product having a silicon atom as part of an organic compound:**
This subclass is indented under subclass 200. Subject matter wherein a product containing a silicon atom as part of an organic compound is admixed with another material so as to form a composition therewith, or the composition formed from such an admixing process.

**213 Silicon containing organic material having an atom other than Si, C, H, or oxygen:**
This subclass is indented under subclass 212. Subject matter wherein the silicon organic compound contains at least one atom which is other than silicon, carbon, hydrogen, or oxygen.

**214 Product having glass:**
This subclass is indented under subclass 212. Subject matter wherein the product contains glass.

(1) Note. See the Class 520, Glossary for a definition of the term “glass”.

**215 Product having elemental carbon:**
This subclass is indented under subclass 200. Subject matter wherein a product containing elemental carbon in any of its allotropic forms is admixed with a material so as to form a composition therewith, or the composition formed from such an admixing process.

**216 Product having a silicon atom:**
This subclass is indented under subclass 200. Subject matter wherein a product containing a silicon atom is admixed with a material so as to form a composition therewith, or the composition formed from such an admixing process.

**217 Glass:**
This subclass is indented under subclass 216. Subject matter wherein the product contains glass.

(1) Note. See the Class 520 Glossary for a definition of the term “glass”.

**218 Process of forming a composition having a nonreactant material selected for its special void characteristic; or composition containing same, e.g., syntactic foam, etc.:**
This subclass is indented under subclass 1. Subject matter wherein a nonreactant or non-solid polymer material which is described as having at least one void therein is admixed with a material so as to form a composition therewith, or the composition formed from such an admixing process, e.g., syntactic foams, etc.

(1) Note. A material will not be considered as having a void therein unless it is specifically noted in the claims or solely described in the specification as having voids.

(2) Note. Included within the definition of void are those materials described as containing cells, pores, cavities, interstices or fissures.

(3) Note. Included herein are those processes wherein the void may be subsequently filled or destroyed.

SEE OR SEARCH THIS CLASS, SUBCLASS:
200+, for a material encapsulated or impregnated in a matrix or for a filled void.

SEE OR SEARCH CLASS:
521, Synthetic Resins or Natural Rubbers, subclasses 50+ for a solid synthetic polymer containing a void therein and which void containing polymer is not the result of the addition of a nonpolymeric void or cell-containing material; and in particular for subclasses 53+ for the addition of a material to a cellular solid polymer.

**219 Glass void:**
This subclass is indented under subclass 218. Subject matter wherein the void containing material is glass.

(1) Note. See the Class 520 Glossary for the definition of the term “glass”.

(2) Note. Included herein are hollow glass beads or glass balloons.

**220 Process of forming a composition having two or more solid materials having defined physical dimensions or surface areas; or composition containing same:**

This subclass is indented under subclass 1. Subject matter wherein two or more solid materials having numerically defined physical dimensions or surface areas are admixed either together or with another material so as to form a composition, or to the product formed from such an admixing process.

(1) Note. The solid materials may be reactants, polymers, or nonreactant materials. Included herein are also mixtures wherein only solid polymers are described as having a size or surface area.

**221 Two or more solid synthetic polymers having defined physical dimension or surface area:**

This subclass is indented under subclass 220. Subject matter containing two or more solid polymers having numerically defined physical dimensions or surface areas.

**222 Process of forming a composition having a fiber which is twisted, coiled, or involves specific mechanically interengaged fibers other than fibers solely of glass; or composition containing same, e.g., textiles, cloth, fiber bundles, mats, etc.:**

This subclass is indented under subclass 1. Subject matter wherein a fiber which is coiled, twisted, or mechanically interengaged with other fibers and which fiber is other than fibers solely of glass is admixed with a material so as to form a composition or to the product formed from such an admixing process.

(1) Note. Included herein are materials described as textiles, cloths, fiber bundles, mats, webs, etc.

**223 Process of forming a composition of a spheroidal material having physical dimension or composition containing same:**

This subclass is indented under subclass 1. Subject matter wherein a material which has numerically defined spheroidal shape is admixed with a material so as to form a composition therewith, or to the product formed such an admixing process.

(1) Note. A material will not be considered as being spheroidal in shape unless it is claimed as such or solely described in the specification as having such a shape.

**300 Utilizing direct application of magnetic, electrical, or wave energy:**

This subclass is indented under subclass 1. Process wherein a desired or intentional composition is prepared utilizing a step of directly applying magnetic, electrical, or other wave energy, including wave energy produced by the decay of radioactive isotopes or by impact of a beam of highly energetic particles or the impact of a laser beam.

(1) Note. The energy employed must be applied directly to the intentional composition or to an ingredient of said composition.

(2) Note. When the energy is not applied directly but is used to generate heat or other kinetic energy which is transferred to the desired composition or its ingredients, then search the appropriate subclasses hereinbelow.

(3) Note. Sonic and ultrasonic wave energy are included herein.

SEE OR SEARCH CLASS:

204, Chemistry: Electrical and Wave Energy, subclasses 157.15+ for processes preparing a specific compound utilizing a wave energy process.

427, Coating Processes, subclasses 446 through 601 for coating processes involving direct application.

**303 Controlling process in response to a stated measurement or test:**

This subclass is indented under subclass 1. Process wherein control of the treatment or formation of an intentional or desired composition is altered in response to a stated measurement or test.

(1) Note. Measurement or test must be described in more than mere nominal terms. For example, “reacting until an

acid value of 100 is reached" is not sufficient since the acid valve is a merely nominally stated desired result; however, a claim which describes specific measurement and specific means for responding to the measurement would be placed herein.

(2) Note. The control aspect relates to treating a previously formed composition or altering or maintaining the ingredient make-up of a composition in response to a stated measurement or test, etc.

SEE OR SEARCH CLASS:

700, Data Processing: Generic Control Systems or Specific Applications, subclasses 266 through 274 for chemical process control or monitoring systems.

702, Data Processing: Measuring, Calibrating, or Testing, subclasses 22+ for chemical analysis data processing for measurements.

**305 Adding material to maintain a stated equilibrium condition wherein the added material does not merely displace an equal amount from the treatment zone:**

This subclass is indented under subclass 1. Process of treating or forming a desired or intentional composition wherein nondisplacing material is added in order to maintain a stated equilibrium condition.

(1) Note. The material does not merely displace an equal amount from the zone as in a series of weirs but replaces material which has been removed by some other mechanism, e.g., distillation, etc.

(2) Note. The state equilibrium is a desired condition and any nonspecific means of measuring this equilibrium is included. If the equilibrium condition is measured according to a specific test or measurement then the process is classified in subclass 303 supra.

SEE OR SEARCH THIS CLASS, SUBCLASS:

343, for looped flow system.

**306 Utilizing energy potential described as obtained as waste or by-product from a prior or concurrent operation:**

This subclass is indented under subclass 1. Process of treating or forming a desired or intentional composition utilizing energy potential described as obtained as waste or by-product from a prior or concurrent operation, e.g., energy cascading, etc.

(1) Note. Mere cascading of streams from vessel to vessel is not sufficient unless the intent is to capture otherwise waste energy potential. Intent will not be presumed but must be shown by the description in the patent claims.

(2) Note. The process herein should be with recovery or recycling of an unusual energy source thus specific intent is required.

**307 Utilizing a temperature greater than 250°C (482°F) or less than 0°C:**

This subclass is indented under subclass 1. Process wherein an intentional composition is treated or formed at a temperature specified at either below 32°F or above 482°F, i.e., 0°C or above 250°C.

(1) Note. A process performed while "frozen" or under "cryogenic" conditions will be placed herein unless there is a disclosure that the temperature is greater than 32°F.

**309 With removal or communition of material at a temperature greater than 250°C or less than 0°, e.g., freeze drying, etc.:**

This subclass is indented under subclass 307. Process wherein there is a step of removing a material from the system or in particulating a material, and wherein the removal or particulation step must be at the specified temperature.

(1) Note. Included herein are latex concentration processes and freeze drying processes, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:

340, for removal of material at reduced pressure and temperature greater than

32°F and less than 428°F, e.g., vacuum stripping, etc.

**310 Utilizing an ion exchanger or a solid sorptive material or semipermeable membrane:**
This subclass is indented under subclass 1. Process of treating or forming an intentional or desired composition including a step of treating with an ion exchanger or solid sorptive material or semipermeable membrane.

(1) Note. Ion exchanger materials include, e.g., ion exchange organic polymers and other ion exchange materials such as synthetics and clays and modified clays.

(2) Note. The ion exchanger material must contain ionic groups exchangeable with other ionic groups.

(3) Note. Sorptive materials include molecular sieves such as zeolites which are a class of natural or manufactured hydrated silicates of aluminum and either sodium or calcium or both, of the type $Na_2O.Al_2O_3.nSiO_2$ - $.xH_2O$, which will accept and retain molecules that are small and/or slender enough to pass through the pores, thus separating them from a mixture with larger or bulkier molecules.

(4) Note. When the ion exchanger material chemically reacts with the solid polymer or solid polymer-forming system, there must be other chemically inert ingredients ultimately present for the process to be classified herein.

SEE OR SEARCH CLASS:
525, Synthetic Resins or Natural Rubbers, appropriate subclasses, for the reaction of an ion exchange material with a solid polymer or solid-polymer forming system when no NRM or DNRM is present.
528, Synthetic Resins or Natural Rubbers, subclasses 480+ for treatment of polymers with ion exchange or sorptive material.
585, Chemistry of Hydrocarbon Compounds, subclass 820 for purification of hydrocarbon liquids by sorption; and subclass 833 for purification by ion exchange.

**312 Utilizing quiescent treatment condition:**
This subclass is indented under subclass 1. Process wherein the intentional or desired composition is treated or formed utilizing at least one quiescent treatment condition, e.g., quiescent cooling, etc.

(1) Note. A quiescent condition involves not stirring or otherwise subjecting the system to shear as during flow, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:
313, for mixing under conditions which avoids or minimize turbulence or shear, e.g., laminar flow, etc.

**313 Utilizing mixing in a manner designed to avoid or minimize turbulence or shear, e.g., laminar flow, etc.:**
This subclass is indented under subclass 1. Process wherein a desired or intentional composition is treated or formed utilizing mixing which is performed in a manner intentionally designed to avoid or minimize turbulence, e.g., laminar flow or low shear, etc.

(1) Note. Laminar flow is specified nonturbulent flow for purposes of this subclass.

**315 Utilizing streams or masses moving relative to each other at a described angle of coincidence other than mere pouring, e.g., countercurrent mixing, etc.:**
This subclass is indented under subclass 1. Process of treating or forming a desired or intentional composition wherein the motion of forming or treating said composition is described by the angle of coincidence of two or more streams or masses in motion relative to each other than mere pouring.

(1) Note. Angle of coincidence refers to the contact of streams or masses of material which are in motion relative to each other.

(2) Note. The angle of coincidence can be described qualitatively, e.g, stream A mixed transversely into stream B; or quantitatively, e.g., stream A mixed with

stream B at an angle of 30° between the streams, etc.

(3) Note. Some aspect of the angle must be described rather than that which is merely inherent in "mixing" at all possible angles.

(4) Note. Where the gravitationally falling mass is in the form of a "curtain" or sheetlike path, directing a stream of material "toward" the curtain is a sufficient qualitative description of the angle since a family of angles relative to the vertical is described.

(5) Note. Included herein is countercurrent mixing, i.e., the relative direction of flow is substantially 180° apart.

**318 Utilizing stream or mass moving in a described attitude of presentment relative to a zone, vessel, or another apparently stationary mass or stream, excluding mere "pouring into", e.g., from above, below, tangentially, etc.:**

This subclass is indented under subclass 1. Subject matter wherein the motion of treating or forming said desired or intentional composition is described by attitude of presentment to a zone or vessel or stream, e.g., adding material horizontally, tangentially, or from above or from below, etc., other than mere "pouring into".

(1) Note. The attitude of presentment can be described qualitatively, e.g., from above, from below, etc., or quantitatively, e.g., adding at an angle 30° from a normal to the transverse axis of the vessel, etc.

(2) Note. Attitude of presentment refers to contact with a zone, vessel, or apparently stationary mass.

(3) Note. An apparently stationary mass is a material whose center of gravity is not in motion relative to the moving mass; however, the apparently stationary mass may have internal motion, e.g, a stirred mass or a fluidized bed of material.

**319 Utilizing treating or forming motion described by numerical data other than mere temperature, pressure, time, or amounts of material:**

This subclass is indented under subclass 1. Process of treating or forming a desired or intentional composition wherein the motion involved with said treating or forming is described by numerical data other than mere temperature, pressure, amount of material, or time.

(1) Note. The numerical data must describe motion on a macro scale, i.e., more than mere thermal or kinetic molecular motion.

(2) Note. The numerical data must describe motion directly, e.g., velocity or acceleration; or indirectly, e.g., shear rate or Reynolds number or amount of mixing energy expanded.

(3) Note. The numerical data should describe the treating or mixing motion as to intensity or quantity of energy or turbulence imparted but not simply treatment duration, temperature, or amounts of material mixed.

(4) Note. Pressure, per se, does not describe motion unless there is movement in repsonse thereto, e.g., compressing the mixture into a shape at 6000 psi, etc.

(5) Note. The list of excluded numerical data is not intended to be complete since any numerical data is intended to be excluded herefrom if there is no description of motion, e.g., concentration, or grinding to a given particle size, etc., is excluded unless somehow related to motion or intensity of motion.

**322 Rotational rate (RPM) or velocity:**

This subclass is indented under subclass 319. Process wherein the treating or mixing motion is described by a specified rotational rate or velocity.

**323 Work input, e.g., horsepower-hour/pound, etc.:**

This subclass is indented under subclass 319. Process wherein the treating or mixing motion is described by a specified work input, e.g., horsepower-hour/pound, etc.

**324 Utilizing a treatment zone specifically described by shape (other than nominally helical) or at least a part of which zone is specifically described by dimension, material, proportion, or angle of orientation:**

This subclass is indented under subclass 1. Process wherein a desired or intentional composition is treated or formed utilizing a treatment zone or vessel or portion of zone or vessel specifically described by shape (other than nominally helical, dimension, material, or angle of orientation to the earth or other surface.

(1) Note. Mere statement that a vessel is made of metal or plastic is not sufficient for this subclass, however, specific classes of metals or plastics, e.g., noble metal or polyolefin, etc., would be.

(2) Note. Relative statements of size, e.g., large, small, thick, thin, etc., are not given weight unless a relative proportional statement is made, e.g., base is three times wider than the height, etc.

(3) Note. Angle of orientation relates to the earth or some other surface, e.g., vertical, upright, normal, horizontal, level, inclined, slanted, sloped, pitched, etc., these terms are assumed to relate to the earth's surface. Angle of orientation of a zone can be used to described the orientation of the longer axis of the zone or vessel.

(4) Note. If no angle of orientation is stated in the claim then classification will be made on another basis.

(5) Note. Reference to a class of treating apparatus, e.g., roll mill, ball mill, etc., is not a specific shape or description sufficient for this subclass; however, a roll of 6 inches in diameter would be sufficient. See (6) Note.

(6) Note. The dimension of the zone or vessel relates to the size, volume, cross-sectional area or proportional relationship. An example of a proportional relationship would be the description of a helical zone by relative arrangement of helical flights.

(7) Note. Specific shape of the zone or vessel other than merely "helical" is sufficient for this subclass. Also excluded are the nominal terms "extruder", "screw extruder", or "worm extruder".

(8) Note. Ball, hammer, or rod mills, are excluded herefrom since these terms do not specifically describe the shape of the zone or vessel.

(9) Note. Mere statement that a zone or vessel is "elongated" is not sufficient.

**326 Adding steam or hot water (T> 60°C, i.e., 140°F):**

This subclass is indented under subclass 1. Process of treating or forming a desired or intentional composition wherein steam or hot water directly contacts said composition.

(1) Note. The hot water is hot water, per se, and not a hot aqueous solution or mixture.

(2) Note. Hot water is defined as having a temperature greater than about 60°C, (i.e., 140°F).

SEE OR SEARCH CLASS:

528, Synthetic Resins or Natural Rubbers, subclasses 499+ for a process of contacting a solid polymer or resinifiable intermediate condensation product with water.

**328 Removal of material by treatment with hot water or steam, e.g., steam stripping, etc.:**

This subclass is indented under subclass 326. Process wherein steam or hot water is employed to remove material from the composition, e.g., steam distillation, hot water extraction, etc., or steam stripping, etc.

SEE OR SEARCH CLASS:

528, Synthetic Resins or Natural Rubbers, subclass 500 for a process of steam stripping or steam distilling a solid polymer or resinifiable intermediate condensation product.

**330 Utilizing a gaseous stream to suspend to agitate a particulate solid polymer composition, e.g., fluidized bed, etc.:**
This subclass is indented under subclass 1. Process of treating or forming a desired or intentional composition wherein a gaseous steam is utilized to suspend or agitate a particulate solid polymer composition, e.g., fluidized bed or gaseous carrier, etc.

(1) Note. For example, included herein are various drying processes involving use of a gas stream such as spray drying, fluid bed drying, or jet drying.

**331 Drying a composition which is situated on a moving substrate or drying utilizing a thin film evaporator:**
This subclass is indented under subclass 1. Process of treating or forming a desired or intentional composition wherein there is (a) a step of drying a composition which is situated as a film or layer ona moving substrate, e.g., drum drying, etc., or (b) a step of removal of material using a thin film evaporator.

**332 Extracting material from solid polymer latex or aqueous dispersion or suspension with a liquid nonreactant material, e.g., solvent stripping coprecipitation, etc.:**
This subclass is indented under subclass 1. Process wherein a solid polymer latex or aqueous dispersion is extracted with a liquid solvent to remove material.

(1) Note. The product of this process must be a product proper for this class, i.e., an intentional or desired composition.

(2) Note. The liquid solvent need not be a solvent for the solid polymer but merely a liquid nonreactant which serves as an extractant for the material being removed.

(3) Note. The extraction step relates to removal of material which is dissolved or dispersed in the extractant liquid.

**333 Admixing a nonreactive additive ingredient in the form of a slurry, dispersion, or suspension (liquid-solid); said slurry, dispersion or suspension containing no solid polymer or SICP:**
This subclass is indented under subclass 1. Process of treating of forming a desired or intentional composition by admixing the nonreactant in the form of a solid-liquid slurry, suspension, or dispersion and wherein said slurry, suspension, or dispersion is devoid of any solid polymer (SP) or specified intermediate condensation product (SICP).

(1) Note. Slurry, suspension, or dispersion indicates at least a two phase solid-liquid system.

SEE OR SEARCH CLASS:
524, Synthetic Resins or Natural Rubbers, subclass 501 for admixing of aqueous latices containing SP or SICP.

**334 Slurried, dispersed, or suspended ingredient admixed with previously formed latex, aqueous dispersion or aqueous suspension of a solid polymer:**
This subclass is indented under subclass 333. Process wherein the slurried, dispersed or suspended ingredient is mixed with a previously formed latex or aqueous dispersion or aqueous suspension of a solid polymer.

SEE OR SEARCH THIS CLASS, SUBCLASS:
333, for the simultaneous addition of slurried ingredients to solid polymer and water.

**335 Creaming, agglomerating, or coalescing a solid polymer latex or aqueous dispersion wherein solid polymer latex or aqueous dispersion is the result:**
This subclass is indented under subclass 1. Process wherein an aqueous dispersion or latex of a solid polymer is treated by a step of creaming, agglomerating, or coalescing which step does not destroy the latex or aqueous dispersion.

(1) Note. Creaming relates to separation of a latex into a cream layer having most of the dispersed solid polymer and a layer having most of the aqueous components of the latex; however, the cream layer remains a latex or aqueous dispersion.

(2) Note. Agglomerating or coalescing refers to regulation of the particle size of the dispersed solid polymer particles in the latex.

(3) Note. The creamed, agglomerated, or coalesced latex, dispersion or suspension can be coagulated, broken, or otherwise destroyed in a later step.

**336 Inverting phase relationships or reapportioning the distribution of ingredients among phases:**
This subclass is indented under subclass 1. Process of treating or forming an intentional or desired composition with a step of inversion of an initial phase relationship, i.e., a continuous phase becomes a dispersed phase; or a step of reapportionment of the distribution of ingredients among the phases.

**337 Inversion to form water-in-oil system:**
This subclass is indented under subclass 336. Process wherein said inversion step forms a water dispersed in oil system, i.e., the aqueous phase is discontinuous.

**339 With removal of a phase:**
This subclass is indented under subclass 336. Process wherein at least one phase is removed partially or completely.

(1) Note. The phase removal step is generally subsequent to the phase inversion step.

**340 Removing material at reduced pressure, e.g., flashing, sublimination, spray drying, etc.:**
This subclass is indented under subclass 1. Process of treating or forming an intentional or desired composition wherein material is removed at reduced pressure, e.g., flashing, sublimation, etc., to yield a product which is an intentional or desired composition.

(1) Note. Use of the term “stripping” is presumed to indicate removal of materials under vacuum unless there are other factors disclosed which permit another inference.

(2) Note. This subclass includes both vacuum distillation or evaporation.

SEE OR SEARCH CLASS:
34, Drying and Gas or Vapor Contact With Solids, for processes of vacuum freeze drying.
528, Synthetic Resins or Natural Rubbers, subclasses 480+ for polymer purification by vacuum stripping, flashing, or sublimation.

**342 With step of spraying or centrifuging:**
This subclass is indented under subclass 340. Process wherein there is a step of spraying or centrifuging before, during, or after the removal of material at reduced pressure.

**343 Treating an intentional composition with a step of removing and recycling material into the composition:**
This subclass is indented under subclass 1. Process of treating a previously formed desired or intentional composition with a step of removing material and recycling said material into the composition.

(1) Note. This subclass provides for loops in a flowing system.

SEE OR SEARCH THIS CLASS, SUBCLASS:
305, wherein recycling is to achieve a stated equilibrium other than mere displacement equilibrium.

**344 Multistep operation achieved within a stated interval of time, e.g., total cycle time, etc.:**
This subclass is indented under subclass 1. Process wherein an intentional or desired composition is treated or formed by a multistep operation which is achieved within a stated interval of time, e.g., mixing, devolatilizing, and extruding accomplished within a specified time period, etc.

(1) Note. A single step of specified duration, e.g., mixing for five minutes or heating for two minutes, etc., is not sufficient for purposes of this subclass.

(2) Note. A specified time interval for a series of steps which are themselves a subunit of a claimed process is sufficient for this subclass so long as the subunit relates to manipulation or formation of

an intentional composition. On the other hand, if the subunit of the claimed process is some preliminary operation, e.g., mixing of nonpolymeric ingredients or preparation of the solid polymer, etc., then mere statements of a time interval for such subunit (or routine) is not sufficient for this subclass.

(3) Note. An open-ended range for the time interval is sufficient for this subclass, e.g., total time is "at least" or "greater than" or "up to" six hours, etc.

(4) Note. Plural time interval steps are sufficient even if not in a "subunit" of the process so long as each time interval step relates to an operation which forms or treats an intentional composition.

**346 Utilizing plural mixing operations of specified varying intensity, e.g., intensity of each mixing is reduced, etc.:**
This subclass is indented under subclass 1. Process wherein an intentional or desired composition is treated or formed utilizing plural mixing operations, at least two of which vary in intensity as compared to each other, e.g., a series of mixing operations specified to be of decreasing intensity, etc.

**347 Utilizing plural discrete pressures different than ambient:**
This subclass is indented under subclass 1. Subject matter wherein treatment or formation of the desired or intentional composition involves discrete plural steps at pressures different than ambient.

(1) Note. Process steps at ambient pressure can be included herein so long as there are plural steps at nonambient pressure.

(2) Note. Pressure can be elevated or reduced.

(3) Note. A continuous development of pressure is excluded herefrom unless there is a high or low "plateau" stated, e.g., 30 psi operation, increased to 60 psi and operation at 60 psi, etc.

**348 Utilizing plural interconnected distinct forming or treating zones or locations other than nominal screw extruder, e.g., zones interconnected parallel or having varying flow velocity, etc.:**
This subclass is indented under subclass 1. Subject matter wherein a desired or intentional composition is treated or formed in a process utilizing plural interconnected distinct forming or treating zones.

(1) Note. A mere screw extruder is excluded herefrom since the zones are not necessarily distinct; however, an extruder specifically described as having a plurality of distinct zones is included herein.

(2) Note. The interconnected zones can be arranged in series or in parallel relationship.

(3) Note. Distinctness of zones is indicated by language showing either physical separation, differing configuration, the assignment of different function, or distinctness of location within a physically continuous zone (e.g., points A and B in an extruder zone, etc.

(4) Note. Interconnected indicates physical connection enabling directed flow of fluent materials therebetween.

**351 Utilizing plural mixing operations in preparation of a solid polymer inert ingredient concentrate, e.g., master batch, etc.:**
This subclass is indented under subclass 1. Process wherein a desired or intentional composition is treated or formed utilizing plural mixing operations to produce a master batch of solid polymer with an inert ingredient.

(1) Note. The mixing process must either be (a) specifically described as a master batching, or (b) the intention of a subsequent further mixing step of the concentrate with additional material must be specified in the claim. In either case, plural mixing steps must be recited in the formation of the master batch.

(2) Note. Plural mixing steps includes plural stages of blending, etc.

**352 Utilizing multistage coagulation of a solid polymer latex:**

This subclass is indented under subclass 1. Process wherein a solid polymer latex is coagulated in stages, e.g., by a multistep or by treatment or addition of coagulant material to obtain a crumb rubber intentional composition, etc.

(1) Note. Multistage coagulation includes any process involving plural stages of completion of the degree of coagulation of the latex.

**353 Utilizing plural discrete mixing operations in specifically described distinct noninterconnected zones:**

This subclass is indented under subclass 1. Process wherein the intentional or desired composition is treated or formed utilizing mixing involving two or more distinct noninterconnected locations or zones.

(1) Note. The term mixing relates to the admixture of materials or to imparting motion to a system which serves to increase or maintain the homogeneity of the system.

(2) Note. Two mixing operations described as performed "separately" will be presumed to be performed in distinct zones or locations, e.g., "separately" mixing A with B and C with D "parallel", or "concurrent" mixing are presumed to be in discrete noninterconnected zones.

(3) Note. Distinctness is indicated by langage showing physical separation of the mixers or by independently performed mixing operations upon different compositions or batches.

(4) Note. Noninterconnected indicates that the mixers are not joined physically, e.g., as by conduits, etc.

**375 Radioactive or Group VIIIA atom containing NRM:**

This subclass is indented under subclass 1. Subject matter wherein a radioactive element or a radioactive compound or wherein an inert or noble gas or a compound thereof NRM is in admixture with a solid polymer or specified intermediate condensation product.

(1) Note. Radioactive materials are those which exhibit spontaneous nuclear disintegration with emission of radioactive particles and which comprise (a) an element or compound which contains an element which has an atomic number of at least 84, or (b) the compound or an element which has been treated to render an isotope thereof radioactive.

(2) Note. An inert or noble gas or compound thereof contains at least one element whose atom number is 2, 10, 18, 36, 54, or 86, i.e., He, Ne, Ar, Kr, Xe, Rn.

**400 Process of forming a composition containing a nonreactive material (NRM) and a polymer containing more than one 1,2-epoxy group, or a preformed polymer derived from or admixed with a reactant containing more than one 1,2-epoxy group; or with a polymer derived from an epihalohydrin and a polyhydrin phenol or polyol; or composition or product thereof:**

This subclass is indented under subclass 1. Subject matter concerning the process of forming a composition containing a nonreactive material (NRM) admixed with at least one polymer containing more than one 1,2-epoxy group; or with a polymer derived from or admixed with a reactant containing more than one 1,2-epoxy group; or with a polymer derived from an epihalohydrin and a polyhydric phenol or polyol; or composition or product thereof.

(1) Note. Polymers anticipated here would be of the type containing two or more 1,2-epoxy groups, e.g., phenol-formaldehyde resin etherified with epichlorohydrin, polyglycidyl methacrylate, epoxidized polybutadiene, polyglycidyl ethers of bis-phenol diglycidyl ether, or from the reaction of epichlorohydrin with resorcinol or 1,4-dimethylolcyclohexane, etc.

(2) Note. For purposes of classification here epoxidized soybean oil (triglycerides of oleic, linoleic, linolenic acids, etc.) if used as a reactant will be considered as a

plural epoxide in view of its inherent plural unsaturation. Likewise, the epoxidation of other plural unsaturated materials, e.g., polybutadiene, in the absence of disclosure to the contrary, will produce a plural epoxide reactant.

(3) Note. The presence of a polyfunctional epoxy compound, e.g, epoxidized peanut oil, which functions as a heat or light stabilizer in given compositions is classified elsewhere, e.g., in various subclasses of Class 524.

SEE OR SEARCH THIS CLASS, SUBCLASS:

500+, for compositions containing or derived from the excluded 1,2-epoxy polymers, e.g., polypropylene oxide, polystyrene oxide, etc., and a NRM.

SEE OR SEARCH CLASS:

524, Synthetic Resins or Natural Rubbers, approprite subclasses, for compositions containing or derived from the excluded 1,2-epoxy polymers, e.g., polypropylene oxide, polystyrene oxide, etc., and a NRM.

**401 Contains inorganic water settable material NRM:**

This subclass is indented under subclass 400. Subject matter wherein the composition contains an inorganic water settable material as a nonreactive material, e.g., a hydraulic cement comprising an aqueous emulsion of an epoxy resin (condensation product of epichlorohydrin and a polyhydric alcohol), emulsifier, polyfunctional primary amine curing agent and Portland cement, etc.

**402 Product contains water, per se, or water of hydration as designated nonreactive material (DNRM):**

This subclass is indented under subclass 400. Subject matter wherein the composition contains water or water of hydration as the DNRM.

(1) Note. Excluded from this subclass is water which is used as a solvent for a catalyst or appears as a hydrate therewith since such materials are not considered to be additives in forming a desired composition.

**403 Two or more polymers containing more than one 1,2-epoxy group, two or more polymers derived from reactants containing more than one 1,2-epoxy group, or combination thereof or one of said polymers and a reactant containing at least one 1,2-epoxy group:**

This subclass is indented under subclass 402. Subject matter wherein the composition contains two or more polymers each containing more than one 1,2-epoxy group, two or more polymers derived from reactants containing more than one 1,2-epoxy group, or combination thereof; or one of said polymers admixed with a reactant containing at least one 1,2-epoxy group, e.g., a mixture of the polyglycidyl ether of bisphenol A diglycidyl ether admixed either with an epoxidized soybean oil or epichlorohydrin, etc.

(1) Note. For purposes of classification, an epoxidized soybean oil or other unsaturated triglycerides will be assumed as plural epoxy materials.

**404 With organic nitrogen or organic sulfur reactant:**

This subclass is indented under subclass 403. Subject matter wherein the composition contains an organic nitrogen or organic sulfur compound as reactant, e.g., protein, etc.

**406 Solid polymer derived from ethylenic reactants only (includes in situ reactants from plural 1,2-epoxides):**

This subclass is indented under subclass 402. Subject matter , wherein the composition contains a solid polymer derived from ethylenic reactants only, e.g., polystyrene, etc.

(1) Note. This subclass includes those ethylenic reactants prepared in situ, i.e., preliminary reactions prior to the polymerization step, e.g., reaction of acrylic acid with an epoxy resin and subsequently polymerized with styrene, etc. Had the epozy polymer been a solid, the reaction with acrylic acid and subsequent polymerization is not applicable here and is classifiable below or in subclass 402.

**407 Polymer derived from ethylenic reactants only is graft, graft-type, block, or block-type copolymer:**
This subclass is indented under subclass 406. Subject matter wherein the solid polymer is a graft, graft-type, block, or block-type copolymer, e.g., polybutadiene-co-graft-polystyrene-acrylonitrile, etc.

(1) Note. See the Class 520 Glossary for the definition to "graft and graft-type copolymer" and "block and block-type copolymer".

**408 Two or more polymers derived from ethylenic reactants only:**
This subclass is indented under subclass 406. Subject matter wherein the composition contains two or more polymers derived from ethylenic reactants only, e.g., a mixture of polystyrene and polymethyl methacrylate, etc.

**409 Polymer derived from ethylenic reactants only derived from reactant-containing chalcogen:**
This subclass is indented under subclass 406. Subject matter wherein the composition contains a polymer derived from ethylenic ractants only, at least one of which contains chalcogen, e.g., polyacrylic acid, etc.

(1) Note. Chalcogen for purposes of this subclass includes oxygen, sulfur, selenium, or tellurium.

**410 Polymer derived from ethylenic reactant only derived from reactant-containing oxygen heterocycle:**
This subclass is indented under subclass 409. Subject matter wherein the polymer derived from ethylenic reactants only is derived from at least one reactant which contains an oxygen heterocyclic, e.g., polystyrene-maleic anhydride, etc.

(1) Note. See the Class 520 Glossary for a definition of the term "heterocyclic".

**411 Polymer derived from ethylenic reactants only derived from reactant-containing nitrogen:**
This subclass is indented under subclass 409. Subject matter wherein the polymer derived from ethylenic reactants only is derived from a nitrogen-containing reactant.

(1) Note. The nitrogen atom may be in the same reactant as the chalcogen atom or may be in a separate nitrogen, nonchalcogen-containing reactant which is copolymerized with a chalcogen-containing reactant.

**412 Polymer from ethylenic reactants only derived from reactant-containing carboxylic acid ester:**
This subclass is indented under subclass 409. Subject matter wherein the polymer derived from ethylenic reactants only is derived from a reactant containing a carboxylic acid ester group, e.g., polymethylmethacrylate, polystyrene-vinyl acetate, etc.

(1) Note. See the Class 520 Glossary under carboxylic acid or derivative for a definition of the term "carboxylic acid ester".

**413 Polymer derived from ethylenic reactants only derivedffrom plural unsaturated reactant:**
This subclass is indented under subclass 406. Subject matter wherein the solid polymer from ethylenic reactants only is one derived from a plural unsaturated reactant, e.g., polybutadiene, poly(styrene-divinyl benzene), etc.

**414 Polymer contains more than one 1,2-epoxy group or one derived from reactant containing more than one 1,2-epoxy group is further derived from or reacted with organic nitrogen or sulfur compound:**
This subclass is indented under subclass 402. Subject matter wherein the composition contains a polymer containing more than one 1,2-epoxy group or a polymer derived from a reactant containing more than one 1,2-epoxy group and is further derived from or reacted with an organic nitrogen or organic sulfur compound, e.g., a glycidyl polyether of bisphenol A cured with diethylene triamine, etc.

**415 Organic nitrogen compound contains isocyanate group:**
This subclass is indented under subclass 414. Subject matter wherein the organic nitrogen compound contains at least one -N=C=O group or a blocked form thereof.

(1) Note. A blocked isocyanate is one wherein the -N=C=O group has been rendered inert by conversion to an inactive group.

**416 Organic nitrogen compound is amine-aldehyde condensation product:**
This subclass is indented under subclass 414. Subject matter wherein the organic nitrogen compound is an amine-aldehyde condensation product, e.g., melamine-formaldehyde resin, hexamethylol-melamine or any methylolated amine, etc.

**417 Two or more organic nitrogen compounds as reactants:**
This subclass is indented under subclass 414. Subject matter wherein the composition contains two or more organic nitrogen compounds as reactants, e.g., a mixture of ethanolamine and ethylenediamine, etc.

**418 Organic nitrogen compound contains N-(C)*-(C=O)- group where *=0, 1, 2. . . , e.g., protein, etc.:**
This subclass is indented under subclass 414. Subject matter wherein the composition contains a nitrogen compound which contains the N group wherein n=0, 1, 2, e.g., protein, amide hydrazide, etc.

(1) Note. Included herein also are the nitrogen heterocycles with this functionality.

**420 Organic nitrogen compound contains three or more nitrogen atoms other than as solid polymer, e.g., diethylene triamine, etc.:**
This subclass is indented under subclass 414. Subject matter wherein the organic nitrogen compound contains three or more nitrogen atoms other than as contained in a solid polymer wherein the nitrogen is a repeating group, e.g., diethylene triamine, tetraethylene pentamine, etc.

(1) Note. Included herein is liquid polyacrylonitrile.

SEE OR SEARCH THIS CLASS, SUBCLASS:
406, for solid polyacrylonitrile compositions proper for this class.

**421 Organic nitrogen compound contains element other than C, H, O, or N:**
This subclass is indented under subclass 414. Subject matter wherein the organic nitrogen compound contains an element other than C, H, O, or N.

**423 Polymer is graft, graft-type, block, or block-type copolymer:**
This subclass is indented under subclass 402. Subject matter wherein the compositions contains a graft, graft-type, block, or block-type copolymer.

(1) Note. See the Class 520 Glossary for definitions for the terms “graft, graft-type, block, or block-type copolymer”.

**424 Polymer is phenol-aldehyde condensation product:**
This subclass is indented under subclass 402. Subject matter wherein the composition contains a phenol-aldehyde condensate or polymer thereof.

**425 Polymer derived from silicon reactant:**
This subclass is indented under subclass 402. Subject matter wherein the composition contains a polymer derived from a silicon-containing reactant, e.g., organopolysiloxanes, etc.

(1) Note. A polymer derived from a silicon reactant need not be solid, but if it is a liquid there should be disclosure that it is curable to produce a solid polymer.

**426 Carboxylic acid, ester, or salt thereof DNRM:**
This subclass is indented under subclass 402. Subject matter wherein the composition contains a carboxylic acid, ester, or salt thereof as DNRM, e.g., polyethylene-glycol monoacetate, sodium laurate, etc.

(1) Note. See the Class 520 Glossary for a definition of the term "carboxylic acid, ester, or salt".

**427 Composition wherein two or more polymers or a polymer and a reactant all contain more than one 1,2-epoxy group, or product thereof:**
This subclass is indented under subclass 400. Subject matter wherein the composition contains two or more polymers or a polymer and a reactant all of which contains more than one 1,2-epoxy group or product thereof, e.g., an epoxy resin of a diglycidyl ether of an aliphatic diol and an epoxy resin from bisphenol A, etc.

**428 With reactant nitrogen or salt compound:**
This subclass is indented under subclass 427. Subject matter wherein the 1,2-epoxy reactant or 1,2-epoxy polymer are treated with an organic nitrogen or sulfur compound.

**429 Organic nitrogen compound contains N-heterocycle:**
This subclass is indented under subclass 428. Subject matter wherein the organic nitrogen compound contains a nitrogen heterocycle, e.g., melamine-formaldehyde condensation product, etc.

(1) Note. See the Class 520 Glossary for a definition of the term "heterocyclic".

**433 Polymer derived from reactant containing element other than C, H, O, or N or chlorine-containing reactant of three or more carbon atoms:**
This subclass is indented under subclass 427. Subject matter wherein the composition contains a polymer derived from a reactant containing an element other than C, H, O, N or other than a chlorine-containing reactant of less than three carbon atoms, e.g., chloroprene, polydiphenylsiloxanes, etc.

**434 Polymer derived from ethylenic reactants only:**
This subclass is indented under subclass 427. Subject matter wherein the composition contains a polymer derived from ethylenic reactants only, e.g., polymethyl methacrylate, etc.

**435 Solid polymer derived from reactant containing element other than C, H, O, or N or chlorine-containing reactant of three or more carbon atoms:**
This subclass is indented under subclass 400. Subject matter wherein the composition contains a solid polymer derived from a reactant other than C, H, N, O, or other than a chlorine-containing reactant of less than three carbons atoms, e.g., chloroprene, polyvinylidene fluoride, etc.

**436 Polymer is graft, graft-type, block, or block-type:**
This subclass is indented under subclass 400. Subject matter wherein the composition contains a polymer that is a graft, graft-type, block, or block-type copolymer, e.g., A-B-A copolymer of styrene and butadiene, etc.

(1) Note. See the Class 520 Glossary for a definition to the terms "graft, graft-type, block, or block-type copolymers".

**437 Two or more polymers derived from ethylenic reactants only:**
This subclass is indented under subclass 400. Subject matter wherein the composition contains two or more solid polymers derived from ethylenic reactants only, e.g., polymethyl methacrylate admixed with polybutadiene-styrene, etc.

**438 Polymer derived from ethylenic reactants only derived from plural unsaturated reactants:**
This subclass is indented under subclass 437. Subject matter wherein a polymer derived from ethylenic reactants only is derived from a plural unsaturated reactant, e.g., butadiene, 1,4-divinylbenzene, etc.

**439 Polymer derived from ethylenic reactants only derived from heterocyclic reactant other than 1,2-epoxy solely:**
This subclass is indented under subclass 400. Subject matter wherein the composition contains a polymer derived from ethylenic reactants only and wherein the reactant is a non 1,2-epoxy heterocycle, e.g., poly(2-methyl-5-vinylpridine), etc.

(1) Note. See the Class 520 Glossary for a definition of the term "heterocyclic".

**440 Designated nonreactive material (DNRM) has numerically specified characteristics, e.g., particle size, density, etc., other than viscosity, m.p., b.p., molec. wt., chemical composition or percentage range:**
This subclass is indented under subclass 400. Subject matter wherein the composition contains a DNRM having numerically specified limitations, e.g., particle size, density, etc., other than viscosity, melting point (m.p.), boiling point (b.p.) molecular weight (molec. wt.), chemical composition, or percentage range.

**442 Heavy or transition metal or compound thereof:**
This subclass is indented under subclass 440. Subject matter wherein the DNRM having numerical limitations contains a heavy or transition metal or compound thereof, e.g., antimony oxide, copper, nickel, etc.

(1) Note. A heavy metal is limited to those elements having a specific gravity which is four or greater; and see the Class 520 Glossary for a definition of "transition metal".

**443 Silicon:**
This subclass is indented under subclass 440. Subject matter wherein the DNRM having numerical limitations contains a silicon atom, e.g., silica, mica, clay, etc.

**444 Glass:**
This subclass is indented under subclass 443. Subject matter wherein the silicon-containing material is a glass, e.g., fiber glass 0.060 inch in length, etc.

(1) Note. See the Class 520 Glossary for a definition of the term "glass".

**445 Boron DNRM:**
This subclass is indented under subclass 400. Subject matter wherein the DNRM contains boron, e.g., boron nitride, etc.

**446 Biologically derived cellular material other than cereal, cotton or diatomaceous earth DNRM:**
This subclass is indented under subclass 400. Subject matter wherein the DNRM is biologically derived cellular material other than cereal, cotton, or diatomaceous earth, e.g., cork, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:
447, for a DNRM which is cereal or cotton.
466+, for diatomaceous earth.

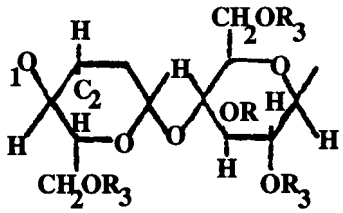
**447 Carbohydrate or derivative including tannin or derivative DNRM:**
This subclass is indented under subclass 400. Subject matter wherein the DNRM is a carbohydrate or derivative.

(1) Note. See the Class 520 Glossary for a definition of the term "carbohydrate or derivative".

(2) Note. Included herein are tannins and tannin derivatives as well as farinaceous meals or flours, starch, etc.; and see Class 560, subclass 68 for a definition of tannin or derivative.

SEE OR SEARCH CLASS:
560, Organic Compounds, subclass 68 for a definition of tannin or derivative

**448 Cellulose derivative containing -C(=O) or N:**
This subclass is indented under subclass 447. Subject matter wherein the carbohydrate DNRM contains repeating glucose units having the following structure shown below, and wherein $R_1$ to $R_5$ at least one of which is a $R_6$, e.g., -$OCH_3$, etc., or wherein one or more of the -OR groups has been substituted with another atom or group containing nitrogen, e.g., -$NH_2$, -C-$NH_2$, etc.



**449 Protein or biologically active polypeptide DNRM:**

This subclass is indented under subclass 400. Subject matter wherein the DNRM is a protein or biologically active polypeptide, e.g., animal glue, etc.

(1) Note. See the Class 520 Glossary for a definition of the term "protein or biologically active polypeptide".

**450 Coal, asphaltic, or bituminous material DNRM:**

This subclass is indented under subclass 400. Subject matter wherein the DNRM is coal, bituminous, or asphaltic material.

(1) Note. The term bitumen refers to solid or semisolid materials which are often black or dark brown and which occur naturally or are obtained by refining petroleum or are the components of coal which are soluble in organic solvents. The term also applies generically to include natural and synthetic asphalts, tar, and pitches. For example, natural asphalts such as Trinidad, Bermuda, gilsonite, grahamite, and Cuban, etc. Petroleum asphalt may be used such as these obtained from California crudes, Smack over Arkansas crudes, Mid-Continental air-blown oils, Mexican petroleum asphalts, tarry residues known as cracked asphalts by-products during the cracking of gas oil, or other heavier petroleum fractions to obtain gasoline or other lighter fractions, etc. Further still, bituminous materials may be used such as coal tar, wood tar, petroleum pitches, and pitches obtained from various industrial processes such as a fatty acid pitch, etc.

(2) Note. Included within the subclass are oil shale or shale material from which oil has or has not been recovered as well as stearine pitch, coke products, coal tar and pitches.

(3) Note. Included within this subclass are materials generally described as asphalt. Asphalt derived from natural deposits, e.g., gilsonite, etc., coal, or petroleum is included herein.

**451 Phosphorus DNRM:**

This subclass is indented under subclass 400. Subject matter wherein the DNRM is a phosphorous compound, e.g., triphenyl phosphite, zinc phosphate, etc.

**452 Phosphorus directly bonded to nitrogen:**

This subclass is indented under subclass 451. Subject matter wherein the phosphorus compound contains a phosphorus-to-nitrogen bond, e.g., $(PNCl_2)_3$, etc.

**453 Organic sulfur compound DNRM:**

This subclass is indented under subclass 400. Subject matter wherein the DNRM is an organic compound containing sulfur, e.g., benzene sulfonic acid sodium salt, etc.

**454 Ketone or aldehyde DNRM:**

This subclass is indented under subclass 400. Subject matter wherein the DNRM contains a ketone or aldehyde group, e.g., acetone, acetaldehyde, etc.

**455 Boron DNRM:**

This subclass is indented under subclass 400. Subject matter wherein the DNRM contains boron, e.g., boron nitride, etc.

(1) Note. See Class 520 Glossary for a definition of the term "carboxylic acid or derivative".

(2) Note. A heavy metal atom is an element having a specific gravity of four or greater.

SEE OR SEARCH THIS CLASS, SUBCLASS:

456, for a carboxylic acid or derivative containing a heavy metal atom.

**456 Organic chalcogen compound DNRM:**
This subclass is indented under subclass 400. Subject matter wherein the DNRM is an organic compound containing a chalcogen atom, e.g., ethylene glycol monobutyl ether, etc.

(1) Note. Chalcogen for purposes of this subclass is limited to oxygen, selenium, or tellurium.

**457 Elemental metal or metal compound other than as silicate DNRM:**
This subclass is indented under subclass 400. Subject matter wherein the DNRM contains an elemental or metal compound thereof other than as a silicate, e.g., strontium-aluminum alloy, barium sulfate, magnesium oxide, calcium carbonate, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:
466+, for a silicate DNRM such as glass, mica, asbestos, etc.

**458 Transition metal:**
This subclass is indented under subclass 457. Subject matter wherein the metal or compound thereof contains a transition metal atom, e.g., titanium dioxide, ferric oxide, etc.

(1) Note. See the Class 520 Glossary for a definition of the term “transition metal”.

**459 Heavy metal:**
This subclass is indented under subclass 457. Subject matter wherein the metal or compound thereof contains a heavy metal, e.g., zinc sulfide, etc.

(1) Note. A heavy metal atom is an element having a specific gravity of four or more.

**460 Group VA metal (As, Sb, Bi):**
This subclass is indented under subclass 459. Subject matter wherein the heavy metal is a Group VA metal, i.e., arsenic, antimony, or bismuth, e.g., antimony oxide, etc.

**461 Organic nitrogen compound DNRM:**
This subclass is indented under subclass 400. Subject matter wherein the DNRM is an organic compound containing nitrogen, e.g., an azo dye, etc.

**462 Halogenated hydrocarbon or other than carbon tetrachloride, chloroform methylene chloride DNRM:**
This subclass is indented under subclass 400. Subject matter wherein the DNRM is a halogenated hydrocarbon other than carbon tetrachloride, chloroform, or methylene chloride, or mixtures thereof, e.g., hexabromobutadiene, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:
400, for a DNRM which is carbon tetrachloride, chloroform, methylene chloride, or mixtures thereof.

**463 Hydrocarbon other than xylenes, benzene, or toluene DNRM:**
This subclass is indented under subclass 400. Subject matter wherein the DNRM is a hydrocarbon other than xylenes, benzene, or toluene, e.g., microcrystalline wax, hydrocarbon oil, etc.

**464 Hydrocarbon having ethylenic unsaturation:**
This subclass is indented under subclass 463. Subject matter wherein the hydrocarbon contains ethylenic unsaturation, e.g., d-limonene, etc.

**465 Hydrocarbon wax:**
This subclass is indented under subclass 463. Subject matter wherein the DNRM is a hydrocarbon wax, e.g., paraffin wax, microcrystalline wax, etc.

(1) Note. To be classified herein, a material must be claimed or disclosed as being a wax.

**466 Inorganic Si-O bond DNRM:**
This subclass is indented under subclass 400. Subject matter wherein the DNRM is an inorganic material which contains a silicon-to-oxygen bond, e.g., silica, glass, etc.

**467 Polymer derived from ethylenic reactants only:**

This subclass is indented under subclass 466. Subject matter wherein the composition contains a polymer derived from ethylenic reactants only, e.g., polyethylene, polybutadiene, etc.

**468 Elemental carbon DNRM:**

This subclass is indented under subclass 400. Subject matter wherein the DNRM is elemental carbon in any of its allotropic forms.

**500 Process of forming a composition of an ethylenically unsaturated reactant or ethylenically unsaturated polymer admixed with nonreactive material (NRM) and a polyester whose polymer backbone was derived through the direct formation of the ester linkage, e.g., polyethylene terephthalate, polycaprolactone, etc., or product thereof:**

This subclass is indented under subclass 1. Subject matter wherein the composition contains an ethylenically unsaturated reactant or ethylenically unsaturated polymer admixed with a nonreactive material (NRM) and a polyester whose polymer backbone was derived through the direct formation of the ester linkage, and must link through the carbonyl group, i.e., -O

(1) Note. Polymerization of di- or higher esters of polycarboxylic acids, lactones, lactides, glycolides, hydroxy-substituted carboxylic acids or derivatives, condensation of polyols with polycarboxylic acids or derivatives and polyketenes all produce polyesters proper for this subclass. Excluded here are those products wherein solid polyester formation does not link through the ester carbonyl and along the polymer backbone, e.g., polyester urethanes prepared through the condensation of polyhydroxy terminated esters with a polyisocyanate, esterification of polycarboxylic acids or derivatives with polyepoxides, esterification of monomers, or polymers containing plural hydroxyl groups, e.g., pentaerythritol with monocarboxylic acids, or ethylenic polymerization of unsaturated esters.

(2) Note. The polyester can be a solid or a liquid polymer.

(3) Note. Included herein are processes or compositions which are the result of the formation of a polyester in the presence of a NRM and the subsequent blending of an ethylenic reactant or ethylenic polymer therewith.

(4) Note. Where a reaction is indicated between a polyester and an ethylenically unsaturated reactant, such a reaction may occur prior to, concurrent with, or subsequent to the addition of a nonreactive material. For example, the reaction between polyethyleneglycol maleate with dicyclopentadiene and subsequently blended with 2 percent fiber glass is properly classified here.

(5) Note. Unless otherwise indicated, addition polymers derived respectively from mono- and plural-ethylenically unsaturated reactants will be respectively considered saturated and unsaturated. Thus, when blended with a DNRM and an appropriate polyester the composition containing the saturated polymer is not classified here while the unsaturated polymer is.

(6) Note. An ethylenically unsaturated polymer may be one whose unsaturation was retained during or introduced after polymerization, e.g., polymerization of butadiene, transesterification of hydroxy-terminated polyethylene terephthalate with methyl acrylate, dehydrohalogenation of polyvinylidene chloride, etc.

SEE OR SEARCH CLASS:

525, Synthetic Resins or Natural Rubbers, subclasses 10+ for the admixture of an ethylenically unsaturated reactant admixed with either a polyester derived from a saturated di- or higher ester of a polycarboxylic acid as sole reactant or admixed with a polyester derived from a polycarboxylic acid or anhydride with a polyol wherein at least one of the reactants is saturated;

and subclasses 242+ for the admixture of an ethylenically unsaturated reactant admixed with the polyester derived from ethylenically unsaturated reactants only.

**501 Product contains water, per se, or water of hydration as DNRM or admixed with other designated nonreactant material:**
This subclass is indented under subclass 500. Subject matter wherein the composition contains water as the designated nonreactive material either singly or in combination with other designated nonreactant materials.

(1) Note. The water, however, may function both as a reactant as well as an inert material with the proviso that its latter role is clearly specified or claimed. Thus, if a composition calls for the use of $Al_2(SO_4)_3$ (alum) or $MgSO_4$ as a DNRM, no weight is given to the fact that these materials are used in their hydrated state. The hydrate must be claimed or its importance stated. Water which accompanies a chemical reactant used in reacting with any or all of the components proper for this subclass is not considered to be a designated nonreactive material. For example, the hydrolysis of hydroxy-terminated polyethylene glycol terephthalate with aqueous sodium hydroxide and subsequently blended with polybutadiene will not produce a composition containing an inert material.

**502 Composition contains water-in-oil or oil-in-water mixture:**
This subclass is indented under subclass 501. Subject matter wherein the composition contains or is prepared as an water-in-oil or oil-in-water emulsion, i.e., a fluid in which one liquid forms minute droplets suspended in the other liquid.

(1) Note. A polymer suspension product prepared in part from an emulsified ingredient will not be considered as an emulsion but as a suspension, i.e., finely divided particles floating in a liquid and kept in this state by Brownian movement.

SEE OR SEARCH THIS CLASS, SUBCLASS:
501+, for suspension compositions of the type discussed above.

**503 Organic nitrogen DNRM:**
This subclass is indented under subclass 501. Subject matter wherein an organic nitrogen compound is present as a DNRM, e.g., dimethyl glyoxime, etc.

**504 Organic chalcogen DNRM:**
This subclass is indented under subclass 501. Subject matter wherein an organic chalcogen compound is present as a DNRM, e.g., polyhydric alcohols, etc.

(1) Note. Chalcogen is limited to oxygen, sulfur, selenium, or tellurium.

**505 Metal compound other than silicate as DNRM:**
This subclass is indented under subclass 501. Subject matter wherein a metal-containing compound other than derived from a silicate is present as a DNRM, e.g., iron oxide, zinc oxide, etc.

**506 Phosphorus DNRM:**
This subclass is indented under subclass 500. Subject matter wherein a phosphorus-containing material is present as a DNRM, e.g., red phosphorus, trimethyl-phosphate, phosphonic acid, etc.

**507 Organic sulfur DNRM:**
This subclass is indented under subclass 500. Subject matter wherein an organic sulfur-containing compound is present as a DNRM, e.g., alkyl sulfones, sulfonated phenols, etc.

**508 Organic compound containing nitrogen DNRM:**
This subclass is indented under subclass 500. Subject matter wherein an organic nitrogen-containing compound is present as a DNRM, e.g., a lubricant which is an amine end-block dimethyl silicon fluid, etc.

**509 Carbohydrate or derivative including tannin or derivative DNRM:**

This subclass is indented under subclass 500. Subject matter wherein a carbohydrate or derivative is present as a DNRM, e.g., cellulose butyrate, dextran, rice hulls, etc.

(1) Note. See the Class 520 Glossary for a definition of the term "carbohydrate or derivative".

(2) Note. Tannin or derivative is treated as a carbohydrate proper for this area.

SEE OR SEARCH CLASS:

560, Organic Compounds, subclass 68 for a definition of "tannin or derivative".

**510 Phenol, phenol ether or phenolate salt, DNRM:**

This subclass is indented under subclass 500. Subject matter wherein a phenol, phenol ether, or phenolate salt is present as a DNRM, e.g., resorcinol, anisole, etc.

SEE OR SEARCH CLASS:

528, Synthetic Resins or Natural Rubbers, subclass 86 for a definition of the terms "phenol, phenol ether, or phenolate salt".

**511 Organic chalcogen other than metallocarboxylate salt, e.g., diethylene glycol, etc., DNRM:**

This subclass is indented under subclass 500. Subject matter wherein the organic DNRM contains a chalcogen atom other than as part of a metallocarboxylate salt, e.g., diethyleneglycol, etc.

(1) Note. Chalcogen for purposes of this subclass is limited to oxygen, selenium, or tellurium.

(2) Note. See the Class 520 Glossary for a definition of the term "metal".

SEE OR SEARCH THIS CLASS, SUBCLASS:

514+, for an organic compound containing a chalcogen atom as part of a metallocarboxylate salt.

**512 Elemental metal or elemental carbon DNRM:**

This subclass is indented under subclass 500. Subject matter wherein the DNRM is elemental metal or elemental carbon in any of its allotropic forms.

(1) Note. See the Class 520 Glossary for a definition of the term "metal".

**513 Designated nonreactive material (DNRM) has numerically specified characteristic, e.g., particle size, density, etc., other than viscosity, m.p., b.p., molec. wt., chemical composition or percentage range:**

This subclass is indented under subclass 500. Subject matter wherein the composition contains a DNRM having numerically specified limitations, e.g., particle size, density, etc., other than viscosity, melting point (m.p.), boiling point (b.p.), molecular weight (molec. wt.), chemical composition or percentage range.

**514 Metal atom other than as silicate DNRM:**

This subclass is indented under subclass 500. Subject matter wherein a material containing a metal atom other than one found in a silicate is present as a DNRM, e.g., magnesium oxide, etc.

(1) Note. See the Class 520 Glossary for a definition of the term "metal".

SEE OR SEARCH THIS CLASS, SUBCLASS:

521, for a DNRM in the form of a metal silicate other than glass, e.g., mica, sand, etc.

**515 Transition metal atom:**

This subclass is indented under subclass 514. Subject matter wherein a material containing a transition metal atom is present as a DNRM, e.g., zirconium oxide, iron oxide, titanium dioxide, etc.

(1) Note. See the Class 520 Glossary for a definition of the term "metal".

**516 Heavy metal atom:**
This subclass is indented under subclass 514. Subject matter wherein a material containing a heavy metal atom is present as a DNRM, e.g., zinc stearate, organo antimony halide, etc.

(1) Note. Heavy metals are those with a specified gravity equal to or greater than four.

**517 Halogenated hydrocarbon other than methylene chloride, chloroform, or carbon tetrachloride DNRM:**
This subclass is indented under subclass 500. Subject matter wherein a halogenated hydrocarbon exclusive of methylene chloride, chloroform, or carbon tetrachloride or mixtures thereof is present as a DNRM.

(1) Note. See the Class 520 Glossary for a definition of the term "halogenated hydrocarbon".

**518 Bituminous, coal, or hydrocarbon other than benzene, toluene, or xylene or mixtures thereof DNRM:**
This subclass is indented under subclass 500. Subject matter where the DNRM is bituminous, coal, or a hydrocarbon other than benzene, toluene, or xylene or a mixture other than of the specified excluded hydrocarbons.

(1) Note. The term bitumen refers to solid or semisolid materials which are often black or dark brown and which occur naturally or are obtained by refining petroleum or are the components of coal which are soluble in organic solvents. The term also applies generically to include natural and synthetic asphalts, tar, and pitches. For example, natural asphalts such as Trinidad, Bermuda, glisonite, grahamite and Cuban, etc. Petroleum asphalt may be used such as these obtained from California crudes, Smake over Arkansas crudes, Mid-Continental air-blown oils, Mexican petroleum asphalts, tarry residues known as cracked asphalts by-products during the cracking of gas, oil, or other heavier petroleum fractions to obtain gasoline or other lighter fractions, etc. Further still, bituminous materials may be used such as coal tar, wood tar, petroleum pitches, and pitches obtained from various industrial processes such as a fatty acid pitch, etc.

(2) Note. Included within the subclass are oil shale or shale material from which oil has or has not been recovered as well as stearine pitch, coke products, coal tar and pitches.

**521 Inorganic silicon atom other than glass DNRM:**
This subclass is indented under subclass 500. Subject matter wherein inorganic silicon other than as found in glass is present as a DNRM, e.g., kaolin, chrysotile asbestos, etc.

**522 Contains graft, graft-type, block, or block-type copolymer:**
This subclass is indented under subclass 500. Subject matter wherein the composition contains a graft graft-type, block, or block-type copolymer.

(1) Note. See the Class 520 Glossary for the definition to "graft, and graft-type copolymer" and "block and block-type copolymer".

**523 Contains solid polymer derived from ethylenic reactants only, one of which contains chalcogen; or solid polymer reacted with ethylenic reactant-containing chalcogen:**
This subclass is indented under subclass 500. Subject matter wherein the composition contains a solid polymer derived from ethylenic reactants only wherein at least one of the reactants contains chalcogen, e.g., polyethylene-vinyl acetate copolymer, etc.; or a solid polymer reacted with an ethylenic reactant containing a chalcogen atom, e.g., reacting methyl acrylate with polyethylene glycol maleate, phenol-formaldehyde novolak with methyl methacrylate, polymethyl methacrylate with styrene, etc.

(1) Note. Chalcogen for purposes of this subclass includes oxygen, sulfur, selenium, or tellurium.

**526 Contains polymer derived from ethylenically unsaturated reactant only:**

This subclass is indented under subclass 500. Subject matter wherein the composition contains a polymer derived from ethylenically unsaturated reactants only, e.g., styrene, etc.

**527 Glass DNRM:**

This subclass is indented under subclass 500. Subject matter wherein the composition contains glass as a DNRM, e.g., fiber glass, etc.

(1) Note. See the Class 520 Glossary for a definition of the term “glass”.

END