CPC  COOPERATIVE PATENT CLASSIFICATION

C  CHEMISTRY; METALLURGY
   (NOTES omitted)

CHEMISTRY

C10  PETROLEUM, GAS OR COKE INDUSTRIES; TECHNICAL GASES CONTAINING CARBON MONOXIDE; FUELS; LUBRICANTS; PEAT

C10M  LUBRICATING COMPOSITIONS (well drilling compositions C09K 8/02); USE OF CHEMICAL SUBSTANCES EITHER ALONE OR AS LUBRICATING INGREDIENTS IN A LUBRICATING COMPOSITION ([lubricants for medical use A61]; mould release, i.e. separating, agents for metals B22C 3/00, for plastics or substances in a plastic state, in general B29C 33/56, for glass C03B 40/02; use of particular substances in particular apparatus or conditions, see F16N or the relevant groups for the application, e.g. A21D 8/08, B21C 9/00, H01B 3/18; immersion oils for microscopy G02B 21/33)

NOTES
1. In this subclass, the following terms are used with the meanings indicated:
   • “lubricant” or “lubricating composition” includes cutting oils, hydraulic fluids, metal drawing compositions, flushing oils, slushing oils, or the like;
   • “aliphatic” includes “cycloaliphatic”.
2. In respect of the classification of mixtures, attention is drawn to Note (4) (e) below.
3. In this subclass, in the absence of an indication to the contrary, classification is made in the last appropriate place. Thus, a compound having an aromatic ring is classified as aromatic regardless of whether the substituent(s) of interest are on the ring or on an aliphatic part of the molecule.
4. In this subclass:
   a. metal or ammonium salts of a compound are classified as that compound;
   b. salts or adducts formed between two or more organic compounds are classified according to all compounds forming the salt or adduct, if of interest;
   c. a specified compound, e.g. phenols, acids, substituted by a macromolecular hydrocarbon radical is classified as that compound;
   d. base-materials or thickeners or additives consisting of a mixture for which no specific main group is provided are classified in the most indented group covering all essential constituents of the mixture, for example,
      • a base-material mixture of ketone and amide - group C10M 105/00
      • a base-material mixture of ketone and ether - group C10M 105/08
      • an additive mixture of long and short chain esters - group C10M 129/00
      • an additive mixture of short chain aliphatic and aromatic carboxylic acids - group C10M 129/26
   e. except for aqueous lubricating compositions containing more than 10% water, which are classified separately, classification is made according to the type of ingredient or mixture of types of ingredient (base-material, thickener or additive) which characterises the composition. Attention is drawn to the fact that a mixture of essential ingredients characterised by only one of its components, rather than by the mixture as a whole, is not classified as a mixture, e.g. a lubricating composition consisting of:
      • a known base-material and a new additive is classified only in the "additive" part of the classification scheme;
      • a known base-material with both a thickener and a further additive as essential ingredients, which may be individually classified as a mixture of thickener and additive;
      • known base-material with a combination of additives as essential ingredients, which may be individually known or not, is classified in the appropriate place for the additive mixture.
5. In this subclass, it is desirable to add the indexing codes of:
   • subclass C10M, relating to the chemical constitution of individual compounds of the lubricating compositions;
   • subclass C10N, relating to physico-chemical aspects of the lubricating compositions or of their compounding ingredients.
   For more information about the way of allocating these indexing codes, see the notes after the titles of the respective subclasses.
6. In this subclass, until May 2003, indexing codes were added, relating to:
   • each of the essential ingredients of a mixture. However, in the case of an aqueous lubricating composition covered by group C10M 173/00, the presence of water is not indicated;
   • each of the essential reactants of a reaction product covered by groups C10M 109/02, C10M 121/04 or C10M 159/12
   The indexing codes, which are chosen from groups C10M 101/00 - C10M 109/00, C10M 113/00 - C10M 121/00, C10M 125/00 - C10M 139/00, C10M 143/00 - C10M 155/00, C10M 159/00 or C10M 163/00 - C10M 167/00, were given using Combination Sets.
In this subclass, until May 2003, the indexing codes of subclass C10N were added.
Documents classified with Combination Sets according to internal Notes 2), 3) and 5) are in the state of being reclassified according to Note 1).

WARNING
The following groups are no longer used for the classification of new documents from January, 1978:
- C10M 1/00 - C10M 7/00
The backlog of these groups is continuously being reclassified in groups C10M 101/00 - C10M 177/00.

IPC3 groups

C10M (continued)

1/00 [Liquid compositions essentially based on mineral lubricating oils or fatty oils; Their use as lubricants]
1/08 . (with additives)
3/00 [Liquid compositions essentially based on lubricating components other than mineral lubricating oils or fatty oils and their use as lubricants; Use as lubricants of single liquid substances (compositions in general essentially based on macromolecular compounds CO8L3)]
5/00 [Solid or semi-solid compositions containing as the essential lubricating ingredient mineral lubricating oils or fatty oils and their use]
7/00 [Solid or semi-solid compositions essentially based on lubricating components other than mineral lubricating oils or fatty oils and their use as lubricants; Use as lubricants of single solid or semi-solid substances (compositions in general essentially based on macromolecular compounds CO8L3)]

Base-Materials

Lubricating compositions characterised by the base-material being a mineral or fatty oil (containing more than 10% water C10M 173/00)
101/00
101/02 . Petroleum fractions
101/025 . (waxes)
101/04 . Fatty oil fractions

Lubricating compositions characterised by the base-material being an inorganic material (containing more than 10% water C10M 173/00)
103/00
103/02 . Carbon; Graphite
103/04 . Metals; Alloys
103/06 . Metal compounds

Lubricating compositions characterised by the base-material being a non-macromolecular organic compound
105/00
105/02 . Well-defined hydrocarbons (petroleum fractions C10M 101/02)
105/04 . aliphatic
105/06 . aromatic
105/08 . containing oxygen
105/10 . having hydroxy groups bound to acyclic or cycloaliphatic carbon atoms
105/12 . monohydroxy
105/14 . polyhydroxy
105/16 . having hydroxy groups bound to a carbon atom of a six-membered aromatic ring
105/18 . Ethers, e.g. epoxides

Lubricating compositions characterised by the base-material being an inorganic material (containing more than 10% water C10M 173/00)

101/00
101/02 . Petroleum fractions
101/025 . (waxes)
101/04 . Fatty oil fractions

105/20 . . Aldehydes; Ketones
105/22 . . Carboxylic acids or their salts
105/24 . . having only one carboxyl group bound to an acyclic carbon atom, cycloaliphatic carbon atom or hydrogen
105/26 . . having more than one carboxyl group bound to an acyclic carbon atom or cycloaliphatic carbon atom
105/28 . . having only one carboxyl group bound to a carbon atom of a six-membered aromatic ring
105/30 . . having more than one carboxyl group bound to a carbon atom of a six-membered aromatic ring
105/32 . . Esters
105/34 . . of monocarboxylic acids
105/36 . . of polycarboxylic acids
105/38 . . of polyhydroxy compounds
105/40 . . containing free hydroxy or carboxyl groups
105/42 . . Complex esters, i.e. compounds containing at least three esterified carboxyl groups and derived from the combination of at least three different types of the following five types of compound: mono- hydroxy compounds, polyhydroxy compounds, monocarboxylic acids, polycarboxylic acids and hydroxy carboxylic acids

105/44 . . derived from the combination of monocarboxylic acids, dicarboxylic acids and dihydroxy compounds only and having no free hydroxy or carboxyl groups
105/46 . . derived from the combination of mono- hydroxy compounds, dihydroxy compounds and dicarboxylic acids only and having no free hydroxy or carboxyl groups
105/48 . . of carbonic acid
105/50 . . containing halogen
105/52 . . containing carbon, hydrogen and halogen only
105/525 . . [halogenated waxes]
105/54 . . containing carbon, hydrogen, halogen and oxygen
105/56 . . containing nitrogen
105/58 . . Amines, e.g. polyalkylene polyamines, quaternary amines (polyalkylene polynomials with eleven or more monomer units C10M 107/44)
105/60 . . having amino groups bound to an acyclic or cycloaliphatic carbon atom
105/62 . . containing hydroxy groups
105/64 . . having amino groups bound to a carbon atom of a six-membered aromatic ring
105/66 . . containing hydroxy groups
105/68 . . Amides; Imides
105/70 . . as ring hetero atom
105/72 . . containing sulfur, selenium or tellurium
105/74 . . containing phosphorus
105/76 . . containing silicon
Lubricating compositions characterised by the base-material being a macromolecular compound

- Hydrocarbon polymers; Hydrocarbon polymers modified by oxidation
- Polyethylene
- containing propene
- containing butene
- containing aliphatic monomer having more than 4 carbon atoms
- containing aromatic monomer, e.g. styrene
- containing conjugated dienes
- containing non-conjugated diene
- Hydrocarbon polymers modified by oxidation
- containing oxygen
- Macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds
- containing monomers having an unsaturated radical bound to an alcohol, aldehyde, ketonic, ether, ketal or acetal radical
- containing monomers having an unsaturated radical bound to an acyloxy radical of a saturated carboxylic or carboxonic acid
- containing monomers having an unsaturated radical bound to a carboxyl radical, e.g. acrylate
- Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds
- Condensation polymers of aldehydes or ketones; Polysters; Polyethers
- Polyoxyalkylenes
- Polysaccharides, e.g. cellulose
- containing halogen
- containing nitrogen
- Macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds
- Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds
- containing sulfur
- containing phosphorus
- containing silicon
- containing boron
- containing atoms of elements not provided for in groups C10M 107/02 - C10M 107/52

Lubricating compositions characterised by the base-material being a compound of unknown or incompletely defined constitution

- Reaction products

Lubrication compositions characterised by the base-material being a mixture of two or more compounds covered by more than one of the main groups C10M 101/00 - C10M 109/00, each of these compounds being essential

- at least one of them being a non-macromolecular organic compound
- at least one of them being a macromolecular organic compound
- at least one of them being a compound of the type covered by group C10M 109/00

**NOTE**

In groups C10M 113/00-C10M 123/00, the following term is used with the meaning indicated:

- “thickener” is an agent which solidifies other liquid components to form a grease. Solid lubricants consisting of solid components are classified in groups C10M 103/00 - C10M 111/00.

- Hydrocarbons (petroleum fractions C10M 121/02)
- containing oxygen
- containing halogen
- containing nitrogen
- containing sulfur
- containing phosphorus
- containing hydroxy groups
- containing reaction products
- Macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds
- containing monomers having an unsaturated radical bound to an alcohol, aldehyde, ketonic, ether, ketal or acetal radical

**Thickeners**

- Carbon; Graphite
- Sulfur
- Metals; Alloys
- Metal compounds
- Clays; Micas
- Silica
- Glass
- Inorganic material treated with organic compounds, e.g. coated
- Hydrocarbons
- containing oxygen
- containing halogen
- containing nitrogen
- containing sulfur
- containing phosphorus
- having only one carboxyl group bound to an acyclic carbon atom, cycloaliphatic carbon atom or hydrogen
- containing hydroxy groups
- having more than one carboxyl group bound to an acyclic carbon atom or cycloaliphatic carbon atom
- having only one carboxyl group bound to a carbon atom of a six-membered aromatic ring
- having more than one carboxyl group bound to a carbon atom of a six-membered aromatic ring

- Hydrocarbon polymers; Hydrocarbon polymers modified by oxidation
- containing oxygen
- Macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds
- containing monomers having an unsaturated radical bound to an alcohol, aldehyde, ketonic, ether, ketal or acetal radical
Lubricating compositions characterised by the thickener being a compound of unknown or incompletely defined constitution

- Petroleum fractions, e.g. tars
- Reaction products

Lubricating compositions characterised by the thickener being a mixture of two or more compounds covered by more than one of the main groups C10M 119/02 - C10M 119/28, each of these compounds being essential (inorganic materials coated with organic compounds C10M 113/16)

- at least one of them being a non-macromolecular compound
- at least one of them being a macromolecular compound
- at least one of them being a compound of the type covered by group C10M 121/00

Additives

Lubricating compositions characterised by the additive being an inorganic material

- Carbon; Graphite
- Metals; Alloys
- Sulfur
- Metal carbides or hydrides
- Metal oxides, hydroxides, carbonates or bicarbonates
- Metal carboxyls
- Water (aqueous lubricating compositions containing more than 10% water C10M 173/00)
- Hydrogen peroxide; Oxygenated water
- Compounds containing halogen
- Compounds containing nitrogen
- Compounds containing sulfur, selenium or tellurium
- Compounds containing phosphorus, arsenic or antimony
- Compounds containing silicon or boron, e.g. silica, sand
- Glass
- Clay

Lubricating compositions characterised by the additive being a non-macromolecular hydrocarbon (petroleum fractions C10M 159/04)

- well-defined aliphatic
- well-defined aromatic
- Alkylated aromatic hydrocarbons

Lubricating compositions characterised by the additive being an organic non-macromolecular compound containing oxygen

- having a carbon chain of less than 30 atoms
- Hydroxy compounds
- having hydroxy groups bound to acyclic or cycloaliphatic carbon atoms
- containing at least 2 hydroxy groups
- having hydroxy groups bound to a carbon atom of a six-membered aromatic ring
- with condensed rings
- containing at least 2 hydroxy groups
- Ethers
- Epoxides
- Cyclic ethers having 4 or more ring atoms, e.g. furans, dioxyethanes
- Peroxides; Ozonides
- Aldehydes; Ketones
- Carboxylic acids; Salts thereof
- having carboxyl groups bound to acyclic or cycloaliphatic carbon atoms
- having 7 or less carbon atoms
- monocarboxylic
- polycarboxylic
- containing hydroxy groups
- having 8 or more carbon atoms
- monocarboxylic
- polycarboxylic
- containing hydroxy groups
- cycloaliphatic
- having carboxyl groups bound to a carbon atom of a six-membered aromatic ring
- monocarboxylic
- polycarboxylic
- containing hydroxy groups
- Acids of unknown or incompletely defined constitution
- Naphthenic acids
- Tall oil acids
- Rosin acids
- Acids obtained from polymerised unsaturated acids
- Epoxidised acids or esters
- Esters (epoxidised C10M 129/66)
- of monocarboxylic acids
- of polycarboxylic acids
- of polyhydroxy compounds
- containing free hydroxyl or carboxyl groups
- Complex esters, i.e. compounds containing at least three esterified carboxyl groups and derived from the combination of at least three different types of the following five types of compound: monohydroxy compounds, polyhydroxy compounds, monocarboxylic acids, polycarboxylic acids, hydroxy carboxylic acids
Additives

129/80 . . . derived from the combination of monocarboxylic acids, dicarboxylic acids and dihydroxy compounds only and having no free hydroxy or carboxyl groups

129/82 . . . derived from the combination of monohydroxy compounds, dihydroxy compounds and dicarboxylic acids only and having no free hydroxy or carboxyl groups

129/84 . . . of carboxylic acid
129/86 . . . having a carbon chain of 30 or more atoms
129/88 . . . Hydroxy compounds
129/90 . . . having hydroxy groups bound to acyclic or cycloloiphatic carbon atoms
129/91 . . . having hydroxy groups bound to a carbon atom of a six-membered aromatic ring
129/92 . . . Carboxylic acids
129/93 . . . having carboxyl groups bound to acyclic or cycloloiphatic carbon atoms
129/94 . . . having carboxyl groups bound to a carbon atom of a six-membered aromatic ring
129/95 . . . Esters

131/00 Lubricating compositions characterised by the additive being an organic non-macromolecular compound containing halogen
131/02 . . . containing carbon, hydrogen and halogen only
131/04 . . . aliphatic
131/06 . . . aromatic
131/08 . . . containing carbon, hydrogen, halogen and oxygen
131/10 . . . Alcohols; Ethers; Aldehydes; Ketones
131/12 . . . Acids; Salts or esters thereof
131/14 . . . Halogenated waxes

133/00 Lubricating compositions characterised by the additive being an organic non-macromolecular compound containing nitrogen
133/02 . . . having a carbon chain of less than 30 atoms
133/04 . . . Amines, e.g. polyalkylene polyamines; Quaternary amines (polyalkylene polyamines with eleven or more monomer units C10M 149/22)
133/06 . . . having amino groups bound to acyclic or cycloloiphatic carbon atoms
133/08 . . . containing hydroxy groups
133/10 . . . cycloloiphatic
133/12 . . . having amino groups bound to a carbon atom of a six-membered aromatic ring
133/14 . . . containing hydroxy groups
133/16 . . . Amides; Imides
133/18 . . . of carboxylic or haloformic acids
133/20 . . . Ureas; Semicarbazides; Allophanates
133/22 . . . containing a carbon-to-nitrogen double bond, e.g. guanidines, hydrazines, semicarbazones
133/24 . . . Nitriles
133/26 . . . containing a nitrogen-to-nitrogen double bond
133/28 . . . Azo compounds
133/30 . . . containing a nitrogen-to-oxygen bond
133/32 . . . containing a nitro group
133/34 . . . containing a nitroso group
133/36 . . . Hydroxylamines
133/38 . . . Heterocyclic nitrogen compounds
133/40 . . . Six-membered ring containing nitrogen and carbon only
133/42 . . . Triazines

133/44 . . . Five-membered ring containing nitrogen and carbon only
133/46 . . . Imidazoles
133/48 . . . the ring containing both nitrogen and oxygen
133/50 . . . Morpholines
133/52 . . . having a carbon chain of 30 or more atoms
133/54 . . . Amines
133/56 . . . Amides; Imides
133/58 . . . Heterocyclic compounds

135/00 Lubricating compositions characterised by the additive being an organic non-macromolecular compound containing sulfur, selenium, tellurium or sulfur or selenium
135/02 . . . Sulphurised compounds
135/04 . . . Hydrocarbons
135/06 . . . Ethers, e.g. fats
135/08 . . . containing a sulfur-to-oxygen bond
135/10 . . . Sulfonic acids or derivatives thereof
135/12 . . . Thio-acids; Thiocyanates; Derivatives thereof
135/14 . . . having a carbon-to-sulfur double bond
135/16 . . . thiourea type, i.e. containing the group

135/18 . . . thioarbamite type, e.g. containing the groups

135/20 . . . Thiols; Sulfides; Polysulfides
135/22 . . . containing sulfur atoms bound to acyclic or cycloloiphatic carbon atoms
135/24 . . . containing hydroxy groups; Derivatives thereof
135/26 . . . containing carboxyl groups; Derivatives thereof
135/28 . . . containing sulfur atoms bound to a carbon atom of a six-membered aromatic ring
135/30 . . . containing hydroxy groups; Derivatives thereof
135/32 . . . Heterocyclic sulfur, selenium or tellurium compounds
135/34 . . . the ring containing sulfur and carbon only
135/36 . . . the ring containing sulfur and carbon with nitrogen or oxygen

137/00 Lubricating compositions characterised by the additive being an organic non-macromolecular compound containing phosphorus
137/02 . . . having no phosphorus-to-carbon bond
137/04 . . . Phosphate esters
137/06 . . . Metal salts
137/08 . . . Ammonium or amine salts
137/10 . . . Thio derivatives
137/105 . . . [not containing metal]
137/12 . . . having a phosphorus-to-carbon bond
137/14 . . . containing sulfur
137/16 . . . having a phosphorus-to-nitrogen bond

139/00 Lubricating compositions characterised by the additive being an organic non-macromolecular compound containing atoms of elements not provided for in groups C10M 127/00 - C10M 137/00
139/02 . . . Esters of silicon acids
139/04 . . . having a silicon-to-carbon bond, e.g. silanes
139/06 . . . having a metal-to-carbon bond (metal complexes of unknown constitution C10M 159/18)
143/00 Lubricating compositions characterised by the additive being a macromolecular compound or such hydrocarbon modified by oxidation

143/02 . Polyethene
143/04 . containing propene
143/06 . containing butene
143/08 . containing aliphatic monomer having more than 4 carbon atoms
143/10 . containing aromatic monomer, e.g. styrene
143/12 . containing conjugated diene
143/14 . containing non-conjugated diene
143/16 . containing cycloaliphatic monomer
143/18 . Oxidised hydrocarbons, i.e. oxidised subsequent to macromolecular formation

145/00 Lubricating compositions characterised by the additive being a macromolecular compound containing oxygen (oxidised hydrocarbons C10M 143/18)

145/02 . Macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds
145/04 . . . containing monomers having an unsaturated radical bound to an alcohol, aldehyde, ketonic, ether, ketal or acetal radical
145/06 . . . containing monomers having an unsaturated radical bound to an acyloxy radical of a saturated carboxylic or carbonic acid
145/08 . . . Vinyl esters of a saturated carboxylic or carbonic acid
145/10 . . . containing monomers having an unsaturated radical bound to a carboxyl radical, e.g. acrylate
145/12 . . . monocarboxylic
145/14 . . . . Acrylate; Methacrylate
145/16 . . . . polycarboxylic
145/18 . Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds
145/20 . . Condensation polymers of aldehydes or ketones
145/22 . . Polysters
145/24 . . Polysters
145/26 . . Polyoxalkylenes
145/28 . . . of alkylene oxides containing 2 carbon atoms only
145/30 . . . of alkylene oxides containing 3 carbon atoms only

145/32 . . . . of alkylene oxides containing 4 or more carbon atoms
145/34 . . . . of two or more specified different types
145/36 . . . . etherfied
145/38 . . . . esterfied
145/40 . Polysaccharides, e.g. cellulose

147/00 Lubricating compositions characterised by the additive being a macromolecular compound containing halogen

147/02 . Monomer containing carbon, hydrogen and halogen only
147/04 . Monomer containing carbon, hydrogen, halogen and oxygen

149/00 Lubricating compositions characterised by the additive being a macromolecular compound containing nitrogen

149/02 . Macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds
149/04 . . . containing monomers having an unsaturated radical bound to an amino group
149/06 . . . containing monomers having an unsaturated radical bound to an amido or imido group
149/08 . . . containing monomers having an unsaturated radical bound to a nitrile group
149/10 . . . containing monomers having an unsaturated radical bound to a nitrogen-containing hetero ring
149/12 . . . Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds
149/14 . . . a condensation reaction being involved
149/16 . . . . between the nitrogen-containing monomer and an aldehyde or ketone
149/18 . . . . Polyamides
149/20 . . . . Polyureas
149/22 . . . . Polyamines

151/00 Lubricating compositions characterised by the additive being a macromolecular compound containing sulfur, selenium or tellurium

151/02 . Macromolecular compounds obtained by reactions involving only carbon-to-carbon unsaturated bonds
151/04 . Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds

153/00 Lubricating compositions characterised by the additive being a macromolecular compound containing phosphorus

153/02 . Macromolecular compounds obtained by reactions involving only carbon-to-carbon unsaturated bonds
153/04 . Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds

155/00 Lubricating compositions characterised by the additive being a macromolecular compound containing atoms of elements not provided for in groups C10M 143/00 - C10M 153/00

155/02 . Monomer containing silicon
155/04 . Monomer containing boron
Lubricating compositions characterised by the additive being a mixture of two or more macromolecular compounds covered by more than one of the main groups C10M 143/00 - C10M 155/00, each of these compounds being essential.

NOTE

{ Compositions containing compounds covered by C10M 159/005, as compounds of unknown or incompletely defined constitution are classified in C10M 157/00 }

Lubricating compositions characterised by the additive being a mixture of a macromolecular compound and a compound of unknown or incompletely defined constitution, each of these compounds being essential.

NOTE

{ Compositions containing compounds covered by C10M 159/005, as compounds of unknown or incompletely defined constitution are classified in C10M 161/00 }

Lubricating compositions characterised by the additive being a mixture of a macromolecular compound, a non-macromolecular compound and a compound of unknown or incompletely defined constitution, each of these compounds being essential.

NOTE

{ Compositions containing compounds covered by C10M 159/005, as compounds of unknown or incompletely defined constitution are classified in C10M 161/00 }

Mixtures of base-materials, thickeners and additives

Lubricating compositions characterised by containing as components a mixture of at least two types of ingredient selected from base-materials, thickeners or additives, covered by the preceding groups, each of these compounds being essential.

NOTE

{ Compositions containing compounds covered by C10M 159/005, as compounds of unknown or incompletely defined constitution are classified in C10M 161/00 }

Lubricating compositions characterised by the additive being a mixture of a macromolecular compound and a non-macromolecular compound, each of these compounds being essential.

NOTE

{ Compositions containing compounds covered by C10M 159/005, as compounds of unknown or incompletely defined constitution are classified in C10M 161/00 }

Lubricating compositions characterised by the additive being a mixture of a macromolecular compound, a non-macromolecular compound and a compound of unknown or incompletely defined constitution, each of these compounds being essential.

NOTE

{ Compositions containing compounds covered by C10M 159/005, as compounds of unknown or incompletely defined constitution are classified in C10M 161/00 }

Lubricating compositions characterised by the additive being a mixture of a macromolecular compound and a compound of unknown or incompletely defined constitution, each of these compounds being essential.

NOTE

{ Compositions containing compounds covered by C10M 159/005, as compounds of unknown or incompletely defined constitution are classified in C10M 161/00 }

Lubricating compositions characterised by the additive being a mixture of a compound of unknown or incompletely defined constitution and a non-macromolecular compound, each of these compounds being essential.

NOTE

{ Compositions containing compounds covered by C10M 159/005, as compounds of unknown or incompletely defined constitution are classified in C10M 161/00 }

Lubricating compositions characterised by the additive being a mixture of a compound of unknown or incompletely defined constitution and a non-macromolecular compound, each of these compounds being essential.

NOTE

{ Compositions containing compounds covered by C10M 159/005, as compounds of unknown or incompletely defined constitution are classified in C10M 161/00 }

Lubricating compositions characterised by the additive being a mixture of a compound of unknown or incompletely defined constitution and a non-macromolecular compound, each of these compounds being essential.

NOTE

{ Compositions containing compounds covered by C10M 159/005, as compounds of unknown or incompletely defined constitution are classified in C10M 161/00 }

Lubricating compositions characterised by the additive being a mixture of a compound of unknown or incompletely defined constitution and a non-macromolecular compound, each of these compounds being essential.

NOTE

{ Compositions containing compounds covered by C10M 159/005, as compounds of unknown or incompletely defined constitution are classified in C10M 161/00 }
Compositions characterised by physical properties

NOTE
Attention is drawn to Note (5) following the title of the subclass.

171/00 Lubricating compositions characterised by purely physical criteria, e.g. containing as base-material, thickener or additive, ingredients which are characterised exclusively by their numerically specified physical properties, i.e. containing ingredients which are physically well-defined but for which the chemical nature is either unspecified or only very vaguely indicated (chemically defined ingredients C10M 101/00 - C10M 169/00; petroleum fractions C10M 101/02, C10M 121/02, C10M 159/04)

171/001 . [Electrorheological fluids; smart fluids]
171/002 . [Traction fluids]
171/004 . [Foam inhibited lubricant compositions]
171/005 . [Volatile oil compositions; Vaporous lubricants]
171/007 . [Coloured or dyes-containing lubricant compositions]
171/008 . [Lubricant compositions compatible with refrigerants]
171/02 . Specified values of viscosity or viscosity index
171/04 . Specified molecular weight or molecular weight distribution
171/06 . Particles of special shape or size

Aqueous lubricating compositions

NOTE
Attention is drawn to Note (5) following the title of the subclass.

173/00 Lubricating compositions containing more than 10% water
173/02 . not containing mineral or fatty oils
173/025 . . . [for lubricating conveyor belts]

Working-up

175/00 Working-up used lubricants to recover useful products [(destructive distillation C10B; extraction and elimination of PCBs C10G 7/006, C10G 21/006, C10G 25/006; combustion processes F23G; filtration, filters in general B01D; Cleaning (in a mechanical way B08B; integrated processes C23; solid waste B09B)]

175/0008 . . . [with the use of adsorbentia]
175/0016 . . . [with the use of chemical agents]
175/0025 . . . [by thermal processes]
175/0033 . . . . [using distillation processes; devices therefor]
175/0041 . . . . [by hydrogenation processes]
175/005 . . . . [using extraction processes; apparatus therefor]
175/0058 . . . . [by filtration and centrifugation processes; apparatus therefor]
175/0066 . . . . . [Use of electrical and magnetic means]
175/0075 . . . . . [synthetic oil based]
175/0083 . . . . . [Lubricating greases]
175/0091 . . . Treatment of oils in a continuous lubricating circuit (e.g. motor oil system)]
175/02 . . . mineral-oil based
175/04 . . . aqueous emulsion based
175/06 . . . by ultrafiltration or osmosis

Preparation or after-treatment

177/00 Special methods of preparation of lubricating compositions; Chemical modification by after-treatment of components or of the whole of a lubricating composition, not covered by other classes

2201/00 Inorganic compounds or elements as ingredients in lubricant compositions
2201/003 . . . used as base material
2201/006 . . . used as thickening agents
2201/02 . . . Water
2201/022 . . . Hydrogen peroxide; Oxygenated water
2201/04 . . . Elements
2201/0403 . . . used as base material
2201/0406 . . . used as thickening agents
2201/041 . . . Carbon; Graphite; Carbon black
2201/0413 . . . used as base material
2201/0416 . . . used as thickening agents
2201/042 . . . halogenated, i.e. graphite fluoride
2201/0423 . . . . . . used as base material
2201/0426 . . . . . . used as thickening agents
2201/043 . . . Sulfur; Selenium; Tellurium
2201/0433 . . . . . . used as base material
2201/0436 . . . . . . used as thickening agents
2201/05 . . . . . . Metals; Alloys
2201/053 . . . . . . used as base material
2201/056 . . . . . . used as thickening agents
2201/06 . . . . . . Metal compounds (of chromium C10M 2201/086)
2201/0603 . . . . . . used as base material
2201/0606 . . . . . . used as thickening agents
2201/061 . . . . . . Carbides; Hydrides; Nitrides
2201/0613 . . . . . . used as base material
2201/0616 . . . . . . used as thickening agents
2201/062 . . . . . . Oxides; Hydroxides; Carbonates or bicarbonates
2201/0623 . . . . . . used as base material
2201/0626 . . . . . . used as thickening agents
2201/063 . . . . . . Peroxides
2201/064 . . . . . . Carboxyls
2201/065 . . . . . . Sulfides; Selencides; Tellurides
2201/0653 . . . . . . used as base material
2201/0656 . . . . . . used as thickening agents
2201/066 . . . . . . Molybdenum sulfide
2201/0663 . . . . . . . used as base material
2201/0666 . . . . . . . used as thickening agents
2201/08 . . . . . . Inorganic acids or salts thereof (of phosphorus C10M 2201/085, of chromium C10M 2201/086, of boron C10M 2201/087; metal carbonates or bicarbonates C10M 2201/062)
2201/0803 . . . . . . used as base material
2201/0806 . . . . . . used as thickening agent
2201/081 . . . . . . containing halogen
2201/082 . . . . . . containing nitrogen (nitrides C10M 2201/061)
2201/083 . . . . . . nitriles
2201/084 . . . . . . containing sulfur, selenium or tellurium (sulfides, tellurides, selencides C10M 2201/065)
2201/085 . . . . . . Phosphorus oxides, acids or salts
2201/0853 . . . . . . used as base material
2201/0856 . . . . . . used as thickening agent
2201/086 . . . . . . Chromium oxides, acids or salts
C10M 2205/00

Organic non-macromolecular hydrocarbon compounds and hydrocarbon fractions as ingredients in lubricant compositions

2203/00  Organic non-macromolecular hydrocarbon compounds and hydrocarbon fractions as ingredients in lubricant compositions

2203/003  used as base material
2203/006  used as thickening agents
2203/02  Well-defined aliphatic compounds
2203/0206  used as base material
2203/0213  used as thickening agents
2203/022  saturated
2203/024  unsaturated
2203/04  Well-defined cycloaliphatic compounds
2203/045  used as base material
2203/06  Well-defined aromatic compounds
2203/065  used as base material
2203/10  Petroleum or coal fractions, e.g. tars, solvents, bitumen
2203/1006  used as base material
2203/1013  used as thickening agents
2203/1012  Aliphatic fractions
2203/1025  used as base material
2203/104  Aromatic fractions
2203/1045  used as base material
2203/106  Naphthenic fractions
2203/1065  used as base material
2203/108  Residual fractions, e.g. bright stocks
2203/1085  used as base material

2205/00  Organic macromolecular hydrocarbon compounds or fractions, whether or not modified by oxidation or as ingredients in lubricant compositions

NOTE: Copolymers are indexed with the symbol for the main monomer always being present, (e.g. C10M 2205/022, C10M 2205/022) according to the last place rule, followed by the symbol of the other monomers, (e.g. C10M 2205/022, C10M 2205/00).

2205/003  used as base material
2205/006  used as thickening agents
2205/02  containing acyclic monomers
2205/0206  used as base material
2205/0213  used as thickening agents
2205/022  Ethene
2205/0225  used as base material
2205/024  Propene
2205/0245  used as base material
2205/026  Butene
2205/0265  used as base material
2205/028  containing aliphatic monomers having more than four carbon atoms
2205/0285  used as base material
2205/04  containing aromatic monomers, e.g. styrene
2205/043  used as base material
2205/046  used as thickening agents
2205/06  containing conjugated dienes
2205/063  used as base material
2205/066  used as thickening agents
2205/08  containing non-conjugated dienes
2205/083  used as base material
2205/086  used as thickening agents
2205/10  containing cycloaliphatic monomers
2205/103  used as base material
2205/106  use as thickening agent
2205/12  Oxidised hydrocarbons, i.e. oxidised subsequent to macromolecular formation
2205/123  used as base material
2205/126  used as thickening agents
2205/14  Synthetic waxes, e.g. polyethylene waxes
2205/143  used as base material
2205/146  used as thickening agents
2205/16  Paraffin waxes; Petroleum, e.g. slack wax
2205/163  used as base material
2205/166  used as thickening agent
2205/17  Fisher Tropsch reaction products
2205/173  used as base material
2205/176  used as thickening agent
2205/18  Natural waxes, e.g. cerasin, ozocerite, bees wax, carnauba; Degras
2205/183  used as base material
2205/186  used as thickening agents
2205/20  Natural rubber; Natural resins
2205/203  used as base material
2205/206  used as thickening agents
2205/22  Alkylation reaction products with aromatic type compounds, e.g. Friedel-crafts
2205/223  used as base material
2205/226  use as thickening agent

2207/00  Organic non-macromolecular hydrocarbon compounds containing hydrogen, carbon and oxygen as ingredients in lubricant compositions

NOTE: In this group compounds, (e.g. phenols, succinic acid) substituted by an alkyl group derived from a polymerised olefin are not considered as macromolecular compounds.
Metal enolates, i.e. keto-enol metal complexes

Peroxides; Ozonides

Hydroxy compounds used as thickening agents

cycloaliphatic carbon atoms used as thickening agents

having hydroxy groups bound to acyclic or cycloaliphatic carbon atoms

used as base material

containing at least two hydroxy groups

used as base material

having hydroxy groups bound to carbon atoms of six-membered aromatic rings

used as base material

having at least two phenol groups but no condensed ring

with condensed rings

with tertiary alkyl groups

Neutral salts thereof

Overbased salts thereof

Ethers; Acetals; Ortho-esters; Ortho-carbonates

used as base material

used as thickening agent

Epoxides

Cyclic ethers having four or more ring atoms, e.g. furans, dioxolanes

Hydroxy ethers

used as base material

used as thickening agent

Carboxylic acids; Neutral salts thereof

used as base material

used as thickening agents

having carboxyl groups bound to acyclic or cycloaliphatic carbon atoms

used as base material

used as thickening agents

having hydroxy groups bound to acyclic or cycloaliphatic carbon atoms

used as base material

used as thickening agents

having hydroxy groups bound to acyclic or cycloaliphatic carbon atoms

used as base material

used as thickening agents

having hydrocarbon chains of seven or less carbon atoms

used as base material

used as thickening agent

monocarboxylic

polycarboxylic

used as thickening agent

containing hydroxy groups; Ethers thereof

used as thickening agent

having hydrocarbon chains of eight up to twenty-nine carbon atoms, i.e. fatty acids

used as base material

used as thickening agent

used as thickening agent

used as base material

used as thickening agent

containing hydroxy groups; Ethers thereof

used as thickening agents

having hydrocarbon chains of thirty or more carbon atoms

used as base material

used as thickening agents

having carboxyl groups bound to carbon atoms of six-membered aromatic rings

used as base material

used as thickening agents

monocarboxylic

used as thickening agent

polycarboxylic

used as base material

used as thickening agent

containing hydroxy groups

used as base material

used as thickening agent

having carboxyl groups bound to carbon atoms of six-membered aromatic rings having a hydrocarbon substituent of thirty or more carbon atoms

used as base material

Naphthenic acids

used as base material

used as thickening agents

Epoxidised acids; Ester derivatives thereof

Acids obtained from polymerised unsaturated acids

Epoxidised acids; Ester derivatives thereof

overbased carboxylic acid salts

e.g. salicylates

derived from hydroxy substituted aromatic acids, e.g. salicylates

used as base material

used as thickening agents

Esters (epoxidised esters C10M 2207/24)

used as base material
Organic macromolecular compounds containing oxygen as ingredients in lubricant compositions (oxidised hydrocarbons C10M 2205/12)

- Containing free hydroxy groups
- Used as base material
- Complex esters, i.e. compounds containing at least three esterified carboxyl groups and derived from the combination of at least three different types of the following five types of compounds: monohydroxy compounds, polyhydroxy compounds, monocarboxylic acids, polycarboxylic acids or hydroxy carboxylic acids
- Used as base material
- Derived from the combination of monocarboxylic acids, dicarboxylic acids and dihydroxy compounds only and having no free hydroxy or carboxyl groups
- Used as base material
- Derived from the combination of monohydroxy compounds, dihydroxy compounds and dicarboxylic acids only and having no free hydroxy or carboxyl groups
- Used as base material
- Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds
- Used as base material
- Condensation polymers of aldehydes or ketones and phenols, e.g. Also polyoxalkylene ether derivatives thereof
- Used as base material
- Polymers
- Used as base material
- Use as thickening agent
- Polymers, i.e. containing di- or higher polyoxalkylene groups
- Used as base material
- Used as thickening agents
- Of alkylene oxides containing two carbon atoms only
- Used as base material
- Of alkylene oxides containing three carbon atoms only
- Used as base material
- Of alkylene oxides containing four carbon atoms only
- Used as base material
- Of two or more specified different alkylene oxides covered by groups C10M 2209/104 - C10M 2209/106
- Used as base material
- Etherified

NOTE
When applying indexing code C10M 2209/108, it should be linked to the appropriate code for identifying the alkylene oxide involved, chosen from groups C10M 2209/104 - C10M 2209/107 and by using alpha-numerical order in the combination.
Example: C10M 2209/107 + C10M 2209/108

NOTE
When applying indexing code C10M 2209/109, it should be linked to the appropriate code for identifying the alkylene oxide involved, chosen from groups C10M 2209/104 - C10M 2209/107 and by using alpha-numerical order in the combination.
Example: C10M 2209/107 + C10M 2209/109

C10M 2209/105...used as base material
C10M 2209/106...used as base material
C10M 2209/107...of two or more specified different alkylene oxides covered by groups C10M 2209/104 - C10M 2209/106
C10M 2209/108...etherified
Organic non-macromolecular compounds containing halogen as ingredients in lubricant compositions

Organic macromolecular compounds containing halogen as ingredients in lubricant compositions

Organic non-macromolecular compounds containing nitrogen as ingredients in lubricant compositions

Compositions containing nitrogen as ingredients in lubricant compositions

Compositions containing halogen as ingredients in lubricant compositions

Amines, e.g. polyalkylene polyamines; Quaternary amines (polyalkylene polyamines with eleven or more monomer units C10M 2217/046)

Amines, e.g. polyalkylene polyamines; Quaternary amines (polyalkylene polyamines with eleven or more monomer units C10M 2217/046)
Organic non-macromolecular compounds containing sulfur, selenium or tellurium as ingredients in lubricant compositions

- Amines.
- Amides; Imides.
- Heterocyclic compounds.

Organic macromolecular compounds containing nitrogen as ingredients in lubricant compositions

- Macromolecular compounds obtained from nitrogen-containing monomers by reactions only involving carbon-to-carbon unsaturated bonds.
- containing monomers having an unsaturated radical bound to an amino group.
- containing monomers having an unsaturated radical bound to a nitrile group.
- containing monomers having an unsaturated radical bound to a nitrogen-containing hetero ring.

Macromolecular compounds from nitrogen-containing monomers obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds.

- containing monomers having an unsaturated radical bound to an amino group.
- containing monomers having an unsaturated radical bound to an imido group.

Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds.

- the amino group containing an ester bond.
- containing monomers having an unsaturated radical bound to an amido group.

Sulfur-containing compounds obtained by sulfurisation with sulfur or sulfur-containing compounds.

Neutral salts.
Organic non-macromolecular compounds containing phosphorus as ingredients in lubricant compositions

- used as base material
- used as thickening agents
- having no phosphorus-to-carbon bonds
- used as base material
- used as thickening agents
- Phosphate esters
- used as base material
- Triaryl phosphates
- used as base material
- Metal salts thereof
- Ammonium or amine salts thereof
- Metal containing thio derivatives
- Thioderivatives not containing metallic elements
- Phosphite
- used as base material
- having phosphorus-to-carbon bonds
- used as base material
- used as thickening agents
- Metal salts
- Ammonium or amine salts
- containing sulfur
- used as thickening agents
- having phosphorus-to-nitrogen bonds
- used as base material
- used as thickening agents
- Phosphatides, e.g. lecithin, cephalin
- used as base material
- used as thickening agents
- obtained by phosphorisation of organic compounds, e.g. with PxSy,PxSyHal or PxOy
- of alcohols or phenols

Organic macromolecular compounds containing phosphorus as ingredients in lubricant compositions

- used as base material
- used as thickening agents

Macromolecular compounds from phosphorus-containing monomers, obtained by reactions involving only carbon-to-carbon unsaturated bonds

- used as base material

obtained by phosphorisation of macromolecular compounds not containing phosphorus in the monomers

- used as base material

Hydrocarbon polymers

Organic non-macromolecular compounds containing atoms of elements not provided for in groups C10M 2203/00, C10M 2207/00, C10M 2211/00, C10M 2215/00, C10M 2219/00 or C10M 2223/00 of elements not provided for in groups

- used as base material
- having a silicon-to-carbon bond, e.g. organo-silanes
- used as base material
- Organic compounds derived from inorganic acids or metal salts
- used as base material
- Esters derived from boron
- used as base material
- Cyclic esters
- complexes of boron halides
- derived from Ti or Zr
- derived from Mo or W
- having metal-to-carbon bonds (metal complexes of unknown constitution C10M 2227/09)
- with a metal carbon bond belonging to a ring, e.g. ferocene
- Pb compounds
- Sn compounds
- Complexes with metals

Organic non-macromolecular compounds containing atoms of elements not provided for in groups C10M 2205/00, C10M 2209/00, C10M 2213/00, C10M 2217/00, C10M 2221/00 or C10M 2225/00 as ingredients in lubricant compositions

- used as base material
- used as thickening agents
- Unspecified siloxanes; Silicones
- used as base material
- Siloxanes with specific structure
- used as base material
- containing aliphatic substituents
- containing aromatic substituents
- containing carbon-to-carbon double bonds
- containing carbon-to-carbon aromatic bonds
- containing silicon-to-carbon aromatic bonds
- containing silicon-to-hydrogen bonds
- containing silicon-to-hydroxyl bonds
- containing silicon-oxygen-bonded
- containing silicon-oxygen-carbon bonds
- containing silicon-oxygen-hydrogen bonds
- containing silicone
- containing silicon-oxygen-hydrogen and carbon
- containing silicon-oxygen-hydrogen and oxygen
- containing silicon-oxygen-hydrogen and oxygen or carbon
- containing halogen
- containing halogen
- containing nitrogen
- containing nitrogen
- containing sulfur
- containing sulfur
- containing phosphorus
- containing phosphorus
- containing phosphorus
- containing phosphorus
- containing phosphorus

Mixtures of base materials or thickeners or additives (not used, see subgroups)

- Mineral base oils; Mixtures of fractions
2290/026  . Fuels
2290/04  . Synthetic base oils
2290/10  . Thickener