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.
C10M (continued)

7. 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

1/00 [Liquid compositions essentially based on mineral lubricating oils or fatty oils; Their use as lubricants]
- 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- and polycarboxylic acids, polyhydroxy compounds, monocarboxylic acids, polycarboxylic acids and hydroxy carboxylic acids

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 C08L)]

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 C08L3))

Base-Materials

101/00 Lubricating compositions characterised by the base-material being a mineral or fatty oil (containing more than 10% water C10M 173/00)
- 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 monohydroxy compounds, dihydroxy compounds and dicarboxylic acids only and having no free hydroxy or carboxyl groups

101/02 . . Petroleum fractions
- 105/48 . . . of carbonic acid
- 105/50 . . containing halogen
- 105/52 . . containing carbon, hydrogen and halogen only
- 105/54 . . . [halogenated waxes]
- 105/56 . . containing nitrogen
- 105/58 . . Amines, e.g. polyalkylene polyamines, quaternary amines (polyalkylene polyamines with eleven or more monomer units C10M 107/44)

101/025 . . waxes

101/04 . . Fatty oil fractions

103/00 Lubricating compositions characterised by the base-material being an inorganic material (containing more than 10% water C10M 173/00)
- 105/48 . . . of carbonic acid
- 105/50 . . containing halogen
- 105/52 . . containing carbon, hydrogen and halogen only
- 105/54 . . . [halogenated waxes]
- 105/56 . . containing nitrogen
- 105/58 . . Amines, e.g. polyalkylene polyamines, quaternary amines (polyalkylene polyamines with eleven or more monomer units C10M 107/44)

103/02 . . Carbon; Graphite

103/04 . . Metals; Alloys

103/06 . . Metal compounds

105/00 Lubricating compositions characterised by the base-material being a non-macromolecular organic compound
- 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
- 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 dienes
- 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; Polyothers
- 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 105/78 - C10M 109/00.

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

Thickeners

NOTE
In groups C10M 111/00-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.

Lubricating compositions characterised by the thickening agent being an inorganic material

- Carbon; Graphite
- Sulfur
- Metals; Alloys
- Metal compounds
- Clays; Micas
- Silica
- Glass
- Inorganic material treated with organic compounds, e.g. coated

Lubricating compositions characterised by the thickener being a non-macromolecular organic compound other than a carboxylic acid or salt thereof

- Hydrocarbons (petroleum fractions)
- containing oxygen
- containing halogen
- containing nitrogen
- containing sulfur
- containing phosphorus

Lubricating compositions characterised by the thickener being a non-macromolecular carboxylic acid or salt thereof

- 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

Lubricating compositions characterised by the thickener being a macromolecular compound

- 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 additive being a compound of unknown or incompletely defined constitution

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

Lubricating compositions characterised by the thickener being a compound of unknown or incompletely defined constitution

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

Additives

Lubricating compositions characterised by the additive being an inorganic material

Lubricating compositions characterised by the additive being a non-macromolecular hydrocarbon (petroleum fractions C10M 159/04)
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 cycloaliphatic 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 cycloaliphatic 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. polynylkylene polyamines; Quaternary amines (polyalkylene polyamines with eleven or more monomer units C10M 149/22)

133/06 . . . having amino groups bound to acyclic or cycloaliphatic carbon atoms

133/08 . . . containing hydroxy groups

133/10 . . . cycloaliphatic

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, hydrazones, 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 or tellurium

135/02 . . . Sulphurised compounds

135/04 . . . Hydrocarbons

135/06 . . . Esters, e.g. fats

135/08 . . . containing a sulfur-to-oxygen bond

135/10 . . . Sulfonic acids or derivatives thereof

135/12 . . . Thio-; Thiocyanates; Derivatives thereof

135/14 . . . having a carbon-to-sulfur double bond

135/16 . . . thiourea type, i.e. containing the group $\text{CON} \neq \text{C}$

135/18 . . . thioacarbamatic type, e.g. containing the groups $\text{CONH} \neq \text{CO}$

135/20 . . . Thiols; Sulfides; Polysulfides

135/22 . . . containing sulfur atoms bound to acyclic or cycloaliphatic 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)
Additives

Lubricating compositions characterised by the additive being a mixture of two or more compounds covered by more than one of the main groups C10M 125/00 - C10M 139/00, each of these compounds being essential

- at least one of them being an organic oxygen-containing compound
- at least one of them being an organic halogen-containing compound
- at least one of them being an organic nitrogen-containing compound
- at least one of them being an organic sulfur-, selenium- or tellurium-containing compound
- at least one of them being an organic phosphorus-containing compound
- at least one of them being an organic compound containing atoms of elements not provided for in groups C10M 141/02 - C10M 141/10

Lubricating compositions characterised by the additive being a macromolecular compound containing hydrocarbon or such hydrocarbon 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 diene
- containing non-conjugated diene
- containing cycloaliphatic monomer
- Oxidised hydrocarbons, i.e. oxidised subsequent to macromolecular formation

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

- 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
- Vinyl esters of a saturated carboxylic or carboxonic acid
- containing monomers having an unsaturated radical bound to a carboxy radical, e.g. acrylate
- monocarboxylic
- Acrylate; Methacrylate
- polycarboxylic
- Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds
- Condensation polymers of aldehydes or ketones
- Polysters
- Polysters
- Polyoxalkylenes
- of alkylene oxides containing 2 carbon atoms only
- of alkylene oxides containing 3 carbon atoms only

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

- Monomer containing carbon, hydrogen and halogen only

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

- Macromolecular compounds obtained 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 amido or imido 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 obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds
- a condensation reaction being involved
- between the nitrogen-containing monomer and an aldehyde or ketone
- Polyamides
- Polyureas
- Polyamines

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

- 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

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

- 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

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

- Monomer containing silicon
- 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

- at least one of them being a halogen-containing compound
- at least one of them being a nitrogen-containing compound
- at least one of them being a sulfur-, selenium- or tellurium-containing compound
- at least one of them being a phosphorus-containing compound
- at least one of them being a compound containing atoms of elements not provided for in groups C10M 157/02 - C10M 157/08

Lubricating compositions characterised by the additive being of unknown or incompletely defined constitution (carboxylic acids with less than 30 carbon atoms in the chain, of unknown or incompletely defined constitution C10M 129/56)

- Natural products
- Petroleum fractions, e.g. tars, solvents
- Waxes, e.g. ozocerite, ceresine, petrolatum, slack-wax
- Fatty oils
- Rubber
- Reaction products
- [obtained by phosphorus or phosphorus-containing compounds, e.g. P x S x with organic compounds]
- [with hydrocarbon polymers]
- obtained by Friedel-Crafts condensation
- obtained by Mannich reactions
- Complexes with metals
- Reaction mixtures having an excess of neutralising base, e.g. so-called overbasic or highly basic products
- containing phenol radicals
- containing sulfonic radicals

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

- 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 157/00

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

- Mixtures of base-materials and thickeners
- Mixtures of base-materials and additives
- [the additives being macromolecular compounds only]
- [the additives being compounds of unknown or incompletely defined constitution only]
- [the additives being a mixture of non-macromolecular and macromolecular compounds]
- [the additives being a mixture of compounds of unknown or incompletely defined constitution and non-macromolecular compounds]
- [the additives being a mixture of compounds of unknown or incompletely defined constitution and macromolecular compounds]
- [the additives being a mixture of compounds of unknown or incompletely defined constitution, non-macromolecular and macromolecular compounds]
- [the additives being a mixture of compounds of unknown or incompletely defined constitution, non-macromolecular and macromolecular compounds]
- Mixtures of thickeners and additives
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
2201/012 . Water
2201/022 . Hydrogen peroxide; Oxygenated water
2201/04 . Elements
2201/0403 . used as base material
2201/0406 . used as thickening agents
2201/0411 . Carbon; Graphite; Carbon black
2201/0413 . used as base material
2201/0416 . used as thickening agents
2201/0422 . 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
2201/045 . 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; Carbons or bicarbonates
2201/0623 . used as base material
2201/0626 . used as thickening agents
2201/063 . Peroxides
2201/064 . Carbons
2201/065 . Sulfides; Selenides; 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
2201/068 . 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)
2201/083 . used as base material
2201/086 . used as thickening agent
2201/081 . containing halogen
2201/082 . containing nitrogen (nitrides C10M 201/061)
2201/083 . nitrates
2201/084 . containing sulfur, selenium or tellurium (sulfides, tellurides, selenides 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
Organic non-macromolecular hydrocarbon compounds and hydrocarbon fractions as ingredients in lubricant compositions

- Used as base material
- Used as thickening agents

Well-defined aliphatic compounds
- Well-defined cycloaliphatic compounds
- Well-defined aromatic compounds
- Petroleum or coal fractions, e.g. tars, solvents, bitumen

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) according to the last place rule, followed by the symbol of the other monomers, (e.g. C10M 2205/022, C10M 2205/022).

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.
C10M

2207/003 . used as base material
2207/006 . used as thickening agents
2207/02 . Hydroxy compounds
2207/0203 . used as base material
2207/0206 . used as thickening agents
2207/021 . having hydroxy groups bound to acyclic or cycloaliphatic carbon atoms
2207/0215 . used as base material
2207/022 . containing at least two hydroxy groups
2207/0225 . used as base material
2207/023 . having hydroxy groups bound to carbon atoms of six-membered aromatic rings
2207/0235 . used as base material
2207/024 . having at least two phenol groups but no condensed ring
2207/025 . with condensed rings
2207/026 . with tertiary alkyl groups
2207/027 . Neutral salts thereof
2207/028 . Overbased salts thereof
2207/0285 . used as base material
2207/04 . Ethers; Acetals; Ortho-esters; Ortho-carbonates
2207/0406 . used as base material
2207/0413 . used as thickening agent
2207/042 . Epoxides
2207/044 . Cyclic ethers having four or more ring atoms, e.g. furans, dioxolanes
2207/046 . Hydroxy ethers
2207/06 . Peroxides; Ozonides
2207/08 . Aldehydes; Ketones
2207/085 . used as base material
2207/09 . Metal enolates, i.e. keto-enol metal complexes
2207/095 . used as thickening agent
2207/10 . Carboxylic acids; Neutral salts thereof
2207/103 . used as base material
2207/106 . used as thickening agents
2207/11 . having carboxyl groups bound to acyclic or cycloaliphatic carbon atoms
2207/1203 . used as base material
2207/1206 . used as thickening agents
2207/121 . having hydroxy groups bound to acyclic or cycloaliphatic carbon atoms
2207/1213 . used as base material
2207/1216 . used as thickening agent
2207/122 . monocarboxylic
2207/1225 . used as thickening agent
2207/123 . polycarboxylic
2207/1233 . used as base material
2207/1236 . used as thickening agent
2207/124 . containing hydroxy groups; Ethers thereof
2207/1245 . used as thickening agent
2207/125 . having hydrocarbon chains of eight up to twenty-nine carbon atoms, i.e. fatty acids
2207/1253 . used as base material
2207/1256 . used as thickening agent
2207/126 . monocarboxylic
2207/1265 . used as thickening agent
2207/127 . polycarboxylic
2207/1273 . used as base material
2207/1276 . used as thickening agent
2207/128 . containing hydroxy groups; Ethers thereof
2207/1285 . used as thickening agents
2207/129 . having hydrocarbon chains of thirty or more carbon atoms
2207/1293 . used as base material
2207/1296 . used as thickening agents
2207/14 . having carboxyl groups bound to carbon atoms of six-membered aromatic rings
2207/1403 . used as base material
2207/1406 . used as thickening agents
2207/141 . monocarboxylic
2207/1415 . used as thickening agent
2207/142 . polycarboxylic
2207/1423 . used as base material
2207/1426 . used as thickening agent
2207/144 . containing hydroxy groups
2207/1443 . used as base material
2207/1446 . used as thickening agent
2207/146 . having carboxyl groups bound to carbon atoms of six-membered aromatic rings having a hydrocarbon substituent of thirty or more carbon atoms
2207/1465 . used as base material
2207/16 . Naphthenic acids
2207/163 . used as base material
2207/166 . used as thickening agents
2207/18 . Tall oil acids
2207/183 . used as base material
2207/186 . used as thickening agents
2207/20 . Rosin acids
2207/203 . used as base material
2207/206 . used as thickening agents
2207/22 . Acids obtained from polymerised unsaturated acids
2207/223 . used as base material
2207/226 . used as thickening agents
2207/24 . Epoxidised acids; Ester derivatives thereof
2207/243 . used as base material
2207/246 . used as thickening agents
2207/26 . Overbased carboxylic acid salts
2207/2606 . used as base material
2207/2613 . used as thickening agents
2207/262 . derived from hydroxy substituted aromatic acids, e.g. salicylates
2207/2622 . used as base material
2207/2626 . used as thickening agents
2207/28 . Esters (epoxidised esters C10M 2207/24)
2207/2805 . used as base material
2207/281 . of (cyclo)aliphatic monocarboxylic acids
2207/2815 . used as base material
2207/282 . of (cyclo)aliphatic olycarboxylic acids
2207/2822 . used as base material
2207/2823 . of polyhydroxy compounds
2207/2825 . used as base material
2207/2828 . of aromatic monocarboxylic acids
2207/283 . of aromatic polycarboxylic acids
2207/2835 . used as base material
2207/284 . of aromatic monocarboxylic acids
2207/2845 . used as base material
2207/285 . of aromatic polycarboxylic acids
2207/2855 . used as base material
2207/286 . of polymerised unsaturated acids
2207/2865 . used as base material
2207/287 . Partial esters
2207/2875 . used as base material
2207/288 . containing free carboxyl groups
2207/2885 . used as base material
Organic macromolecular compounds containing oxygen as ingredients in lubricant compositions (oxidised hydrocarbons C10M 2209/12)

- C10M 2209/000
- C10M 2209/003
- C10M 2209/006
- C10M 2209/02
- C10M 2209/023
- C10M 2209/026
- C10M 2209/04
- C10M 2209/043
- C10M 2209/046
- C10M 2209/06
- C10M 2209/0606
- C10M 2209/0613
- C10M 2209/062
- C10M 2209/0623
- C10M 2209/0625
- C10M 2209/08
- C10M 2209/0806
- C10M 2209/0813
- C10M 2209/082
- C10M 2209/084
- C10M 2209/0845
- C10M 2209/086
- C10M 2209/0863
- C10M 2209/0866
- C10M 2209/10
- C10M 2209/1003
- C10M 2209/1006
- C10M 2209/101
- C10M 2209/1013
- C10M 2209/1016
- C10M 2209/102
- C10M 2209/1023
- C10M 2209/1026
- C10M 2209/103
- C10M 2209/1033
- C10M 2209/1036
- C10M 2209/104
- C10M 2209/1045
- C10M 2209/105
- C10M 2209/1055
- C10M 2209/106
- C10M 2209/1065
- C10M 2209/107
- C10M 2209/1075
- C10M 2209/108
- C10M 2209/1085
- C10M 2209/109

**NOTE**

When applying indexing code C10M 2209/08, it should be linked to the appropriate code for identifying the alkylene oxide involved, chosen from groups C10M 2209/04 - C10M 2209/07 and by using alpha-numerical order in the combination.

Example:

C10M 2209/10 + C10M 2209/08

**NOTE**

When applying indexing code C10M 2209/09, it should be linked to the appropriate code for identifying the alkylene oxide involved, chosen from groups C10M 2209/04 - C10M 2209/07 and by using alpha-numerical order in the combination.

Example:

C10M 2209/10 + C10M 2209/09
Organic non-macromolecular compounds containing halogen as ingredients in lubricant compositions

2211/00

- 2211/003 . . . used as base material
- 2211/006 . . . used as thickening agents
- 2211/02 . . . containing carbon, hydrogen, halogen and oxygen only
- 2211/0206 . . . used as base material
- 2211/0213 . . . used as thickening agents
- 2211/022 . . . aliphatic
- 2211/0225 . . . used as base material
- 2211/024 . . . aromatic
- 2211/0245 . . . used as base material
- 2211/04 . . . containing carbon, hydrogen, halogen, and oxygen
- 2211/0406 . . . used as base material
- 2211/0413 . . . used as thickening agents
- 2211/042 . . . Alcohols; Ethers; Aldehydes; Ketones
- 2211/0425 . . . used as base material
- 2211/044 . . . Acids; Salts or esters thereof
- 2211/0445 . . . used as base material
- 2211/06 . . . Perfluorinated compounds
- 2211/063 . . . used as base material
- 2211/066 . . . used as thickening agents
- 2211/08 . . . Halogenated waxes
- 2211/083 . . . used as base material
- 2211/086 . . . used as thickening agents

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

2215/00

- 2215/003 . . . used as base material
- 2215/006 . . . used as thickening agents
- 2215/02 . . . Amines, e.g. polypeptide polymers; Quaternary amines (polypeptide polymers with eleven or more monomer units C10M 2217/046)
- 2215/023 . . . used as base material
- 2215/026 . . . used as thickening agents
- 2215/04 . . . having amino groups bound to acyclic or cycloaliphatic carbon atoms
- 2215/041 . . . used as base material
- 2215/042 . . . containing hydroxy groups; Alkoxylated derivatives thereof
- 2215/0425 . . . used as base material
- 2215/044 . . . having cycloaliphatic groups
- 2215/06 . . . having amino groups bound to carbon atoms of six-membered aromatic rings
- 2215/061 . . . used as base material
- 2215/062 . . . containing hydroxy groups bound to the aromatic ring
- 2215/064 . . . Di- and triaryl amines
- 2215/065 . . . Phenyl-Naphthyl amines
- 2215/066 . . . Arylene diamines
- 2215/067 . . . Polaryl amine alkanes
- 2215/068 . . . having amino groups bound to polycyclic aromatic ring systems, i.e. systems with three or more condensed rings
- 2215/08 . . . Amides
- 2215/0806 . . . used as base material
- 2215/0813 . . . used as thickening agents
- 2215/082 . . . containing hydroxyl groups; Alkoxylated derivatives
- 2215/086 . . . Imides
- 2215/0865 . . . used as base material
- 2215/10 . . . Amides of carbonic or haloformic acids
- 2215/1006 . . . used as base material
- 2215/1013 . . . used as thickening agents
- 2215/102 . . . Ureas; Semicarbazides; Allophanates
- 2215/1023 . . . used as base material
- 2215/1026 . . . used as thickening material
- 2215/12 . . . Partial amides of polycarboxylic acids
- 2215/121 . . . used as thickening agents
- 2215/122 . . . Phthalamic acid
- 2215/14 . . . Containing carbon-to-nitrogen double bounds, e.g. guanidines, hydrazones, semicarbazones
- 2215/16 . . . Nitriles
- 2215/18 . . . Containing nitrogen-to-nitrogen bonds, e.g. hydrazine
- 2215/182 . . . Azo compounds
- 2215/20 . . . Containing nitrogen-to-oxygen bonds
- 2215/202 . . . containing nitro groups
- 2215/204 . . . containing nitroso groups
- 2215/206 . . . hydroxylamines
- 2215/22 . . . Heterocyclic nitrogen compounds
- 2215/2203 . . . used as base material
- 2215/2206 . . . used as thickening agents
- 2215/221 . . . Six-membered rings containing nitrogen and carbon only
- 2215/222 . . . Triazines
- 2215/2225 . . . used as base material
- 2215/223 . . . Five-membered rings containing nitrogen and carbon only
- 2215/224 . . . Imidazoles
- 2215/2245 . . . used as base material
- 2215/225 . . . the rings containing both nitrogen and oxygen
- 2215/226 . . . Morpholines
- 2215/2265 . . . used as base material
- 2215/227 . . . Phthalocyanines
- 2215/2275 . . . used as thickening agents
- 2215/24 . . . having hydrocarbon substituents containing thirty or more carbon atoms , e.g. nitrogen derivatives of substituted succinic acid
- 2215/245 . . . used as base material
Organic macromolecular compounds containing nitrogen as ingredients in lubricant compositions

Organic non-macromolecular compounds containing sulfur, selenium or tellurium as ingredients in lubricant compositions
Organic non-macromolecular compounds containing phosphorus as ingredients in lubricant compositions

- Phosphite
- Metal salts
- Metal salts thereof
- Ammonium or amine salts thereof
- Metal containing thio derivatives
- Thioderivatives not containing metallic elements
- Metalloid phosphates
- Metalloid salts thereof
- Metalloid containing thio derivatives
- Thioderivatives
- of alcohols or phenols

Organic macromolecular compounds containing phosphorus as ingredients in lubricant compositions

- Phosphite
- Metal
- Ammonium or ammonium salts
- Metal containing sulfur
- Metal containing thio derivatives
- Metal containing aromatic thio derivatives
- Metal containing thioether groups
- Metal containing siloxane groups
- Metal containing halogen

Organic non-macromolecular compounds containing atoms of elements not provided for in groups C10M 2200/00, C10M 2209/00, C10M 2213/00, C10M 2217/00, C10M 2221/00 or C10M 2225/00 as ingredients in lubricant compositions

- Metal
- Metal salts
- Metal containing thio derivatives
- Metal containing thioether groups
- Metal containing siloxane groups
- Metal containing halogen

Organic compounds containing phosphorus as ingredients in lubricant compositions

- Metal
- Metal salts
- Metal containing thio derivatives
- Metal containing thioether groups
- Metal containing siloxane groups
- Metal containing halogen

Organic compounds containing phosphorus as ingredients in lubricant compositions

- Metal
- Metal salts
- Metal containing thio derivatives
- Metal containing thioether groups
- Metal containing siloxane groups
- Metal containing halogen

Organic compounds containing phosphorus as ingredients in lubricant compositions

- Metal
- Metal salts
- Metal containing thio derivatives
- Metal containing thioether groups
- Metal containing siloxane groups
- Metal containing halogen

Mineral base oils; Mixtures of fractions

Unspecified siloxanes; Silicones

Stearic esters

Lecithins

Cephalins

Phosphatides, e.g. lecithin, cephalin

Organic compounds derived from inorganic acids or metal salts

Organic compounds containing phosphorus as ingredients in lubricant compositions

- Metal
- Metal salts
- Metal containing thio derivatives
- Metal containing thioether groups
- Metal containing siloxane groups
- Metal containing halogen

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

Mineral base oils; Mixtures of fractions
C10M

2290/026  . Fuels
2290/04   . Synthetic base oils
2290/10   . Thickener