

# CPC COOPERATIVE PATENT CLASSIFICATION

## C CHEMISTRY; METALLURGY

(NOTES omitted)

### CHEMISTRY

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

#### C10L FUELS NOT OTHERWISE PROVIDED FOR (fuels for generating pressure gas, e.g. for rockets [C06D 5/00](#); candles [C11C](#); nuclear fuel [G21C 3/00](#)); NATURAL GAS; SYNTHETIC NATURAL GAS OBTAINED BY PROCESSES NOT COVERED BY SUBCLASSES [C10G](#), [C10K](#); LIQUEFIED PETROLEUM GAS; ADDING MATERIALS TO FUELS OR FIRES TO REDUCE SMOKE OR UNDESIRABLE DEPOSITS OR TO FACILITATE SOOT REMOVAL; FIRELIGHTERS

##### NOTE

In subclass [C10L](#) it is desirable to give indexing codes for information about components of solid, liquid and gaseous fuels or firelighters, their additives and constituents and their preparation and use. The indexing codes are taken from [C10L 2200/00](#) - [C10L 2290/60](#)

##### WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

#### 1/00 Liquid carbonaceous fuels

- 1/003 . {Marking, e.g. coloration by addition of pigments}
- 1/006 . {Making uninflammable or hardly inflammable}
- 1/02 . essentially based on components consisting of carbon, hydrogen, and oxygen only
- 1/023 . . {for spark ignition}
- 1/026 . . {for compression ignition}
- 1/04 . essentially based on blends of hydrocarbons
- 1/06 . . for spark ignition
- 1/08 . . for compression ignition
- 1/10 . containing additives
- 1/103 . . {stabilisation of anti-knock agents}
- 1/106 . . {mixtures of inorganic compounds with organic macromolecular compounds}

##### NOTES

1. In groups [C10L 1/12](#) - [C10L 1/30](#){[C10L 1/308](#)} , in the absence of an indication to the contrary, a compound is always classified in the last appropriate place.
2. A metal salt or an ammonium salt of a compound is classified as that compound, e.g. a chromium sulfonate is classified as a sulfonate in group [C10L 1/24](#) and not in group [C10L 1/30](#).
3. When classifying in this group, it is desirable to classify the individual additional components using Combination Sets with symbols chosen from groups [C10L 1/12](#) - [C10L 1/308](#)
4. Mixtures of additives are classified in the corresponding main group. Individual

additives can be classified using Combination Sets according to the Note above

5. When several alternatives for the same individual additive are mentioned, e.g. as a Markush-formula, classification may be done in the corresponding main group only, the alternatives being classified using Combination Sets, according to the Note above.
6. Documents classified until April 2003, have been classified with Combination Sets as explained in the Notes above, however using symbols chosen from groups [C10L 1/10](#) - [C10L 1/308](#).

- 1/12 . . Inorganic compounds
- 1/1208 . . . {elements}
- 1/1216 . . . {metal compounds, e.g. hydrides, carbides}
- 1/1225 . . . {halogen containing compounds}
- 1/1233 . . . {oxygen containing compounds, e.g. oxides, hydroxides, acids and salts thereof}
- 1/1241 . . . . {metal carbonyls}
- 1/125 . . . . {water}
- 1/1258 . . . . {hydrogen peroxide, oxygenated water}
- 1/1266 . . . {nitrogen containing compounds, (e.g. NH<sub>3</sub>)}
- 1/1275 . . . {sulfur, tellurium, selenium containing compounds}
- 1/1283 . . . {phosphorus, arsenicum, antimonium containing compounds}
- 1/1291 . . . {Silicon and boron containing compounds}
- 1/14 . . Organic compounds

1/143	. . . {mixtures of organic macromolecular compounds with organic non-macromolecular compounds}	1/1835	. . . . . {having at least two hydroxy substituted non condensed benzene rings ( <a href="#">C10L 1/1802</a> , <a href="#">C10L 1/1805</a> , <a href="#">C10L 1/1808</a> , <a href="#">C10L 1/1811</a> , <a href="#">C10L 1/1814</a> , <a href="#">C10L 1/1817</a> , <a href="#">C10L 1/1828</a> take precedence)}
1/146	. . . {Macromolecular compounds according to different macromolecular groups, mixtures thereof}	1/1837	. . . . . {hydroxy attached to a condensed aromatic ring system ( <a href="#">C10L 1/1802</a> , <a href="#">C10L 1/1805</a> , <a href="#">C10L 1/1808</a> , <a href="#">C10L 1/1811</a> , <a href="#">C10L 1/1814</a> , <a href="#">C10L 1/1817</a> , <a href="#">C10L 1/1828</a> take precedence)}
1/16	. . . Hydrocarbons	1/185	. . . Ethers; Acetals; Ketals; Aldehydes; Ketones {( <a href="#">C10L 1/1802</a> , <a href="#">C10L 1/1805</a> , <a href="#">C10L 1/1808</a> , <a href="#">C10L 1/1811</a> , <a href="#">C10L 1/1814</a> , <a href="#">C10L 1/1817</a> take precedence)}
1/1608	. . . {Well defined compounds, e.g. hexane, benzene}	1/1852	. . . {Ethers; Acetals; Ketals; Orthoesters}
1/1616	. . . {fractions, e.g. lubricants, solvents, naphta, bitumen, tars, terpentine}	1/1855	. . . {Cyclic ethers, e.g. epoxides, lactides, lactones}
1/1625	. . . {macromolecular compounds}	1/1857	. . . {Aldehydes; Ketones}
1/1633	. . . {homo- or copolymers obtained by reactions only involving carbon-to carbon unsaturated bonds}	1/188	. . . Carboxylic acids; {metal} salts thereof {( <a href="#">C10L 1/1802</a> , <a href="#">C10L 1/1805</a> , <a href="#">C10L 1/1808</a> , <a href="#">C10L 1/1811</a> , <a href="#">C10L 1/1814</a> , <a href="#">C10L 1/1817</a> take precedence)}
1/1641	. . . {from compounds containing aliphatic monomers}	1/1881	. . . {carboxylic group attached to an aliphatic carbon atom}
1/165	. . . {from compounds containing aromatic monomers}	1/1883	. . . {polycarboxylic acid}
1/1658	. . . {from compounds containing conjugated dienes}	1/1885	. . . {resin acid}
1/1666	. . . {from compounds containing non-conjugated dienes}	1/1886	. . . {naphthenic acid}
1/1675	. . . {natural rubbers}	1/1888	. . . {tall oil}
1/1683	. . . {obtained otherwise than by reactions only involving carbon to carbon unsaturated bonds}	1/189	. . . having at least one carboxyl group bound to an aromatic carbon atom {( <a href="#">C10L 1/1802</a> , <a href="#">C10L 1/1805</a> , <a href="#">C10L 1/1808</a> , <a href="#">C10L 1/1811</a> , <a href="#">C10L 1/1814</a> , <a href="#">C10L 1/1817</a> , <a href="#">C10L 1/1885</a> , <a href="#">C10L 1/1886</a> , <a href="#">C10L 1/1888</a> take precedence)}
1/1691	. . . {petroleum waxes, mineral waxes; paraffines; alkylation products; Friedel-Crafts condensation products; petroleum resins; modified waxes (oxidised)}	1/1895	. . . {polycarboxylic acid ( <a href="#">C10L 1/1802</a> , <a href="#">C10L 1/1805</a> , <a href="#">C10L 1/1808</a> , <a href="#">C10L 1/1811</a> , <a href="#">C10L 1/1814</a> , <a href="#">C10L 1/1817</a> , <a href="#">C10L 1/1885</a> , <a href="#">C10L 1/1886</a> , <a href="#">C10L 1/1888</a> take precedence)}
1/18	. . . containing oxygen	1/19	. . . Esters {ester radical containing compounds; ester ethers; carbonic acid esters ( <a href="#">C10L 1/1802</a> , <a href="#">C10L 1/1805</a> , <a href="#">C10L 1/1808</a> , <a href="#">C10L 1/1811</a> , <a href="#">C10L 1/1814</a> , <a href="#">C10L 1/1817</a> take precedence)}
1/1802	. . . {natural products, e.g. waxes, extracts, fatty oils}	1/1905	. . . {of di- or polycarboxylic acids}
1/1805	. . . {oxidised hydrocarbon fractions}	1/191	. . . {of di- or polyhydroxyalcohols}
1/1808	. . . {oxidised mineral waxes}	1/1915	. . . {complex esters (at least 3 ester bonds)}
1/1811	. . . {peroxides; ozonides}	1/192	. . . Macromolecular compounds {( <a href="#">C10L 1/1814</a> , <a href="#">C10L 1/1817</a> take precedence)}
1/1814	. . . {Chelates}	1/195	. . . obtained by reactions involving only carbon-to-carbon unsaturated bonds
1/1817	. . . {Compounds of uncertain formula; reaction products where mixtures of compounds are obtained}	1/1955	. . . {homo- or copolymers of compounds having one or more unsaturated aliphatic radicals each having one carbon bond to carbon double bond, and at least one being terminated by an alcohol, ether, aldehyde, ketonic, ketal, acetal radical}
1/182	. . . containing hydroxy groups; Salts thereof {( <a href="#">C10L 1/1802</a> , <a href="#">C10L 1/1805</a> , <a href="#">C10L 1/1808</a> , <a href="#">C10L 1/1811</a> , <a href="#">C10L 1/1814</a> , <a href="#">C10L 1/1817</a> take precedence)}		
1/1822	. . . {hydroxy group directly attached to (cyclo)aliphatic carbon atoms}		
1/1824	. . . {mono-hydroxy}		
1/1826	. . . {poly-hydroxy}		
1/1828	. . . {Salts thereof}		
1/183	. . . at least one hydroxy group bound to an aromatic carbon atom {( <a href="#">C10L 1/1802</a> , <a href="#">C10L 1/1805</a> , <a href="#">C10L 1/1808</a> , <a href="#">C10L 1/1811</a> , <a href="#">C10L 1/1814</a> , <a href="#">C10L 1/1817</a> , <a href="#">C10L 1/1828</a> take precedence)}		
1/1832	. . . {mono-hydroxy ( <a href="#">C10L 1/1802</a> , <a href="#">C10L 1/1805</a> , <a href="#">C10L 1/1808</a> , <a href="#">C10L 1/1811</a> , <a href="#">C10L 1/1814</a> , <a href="#">C10L 1/1817</a> , <a href="#">C10L 1/1828</a> take precedence)}		

1/196	. . . . .	derived from monomers containing a carbon-to-carbon unsaturated bond and a carboxyl group or salts, anhydrides or esters thereof {homo- or copolymers of compounds having one or more unsaturated aliphatic radicals each having one carbon bond to carbon double bond, and at least one being terminated by a carboxyl radical or of salts, anhydrides or esters thereof}	1/2227	. . . . .	{urea; derivatives thereof; urethane ( <a href="#">C10L 1/221 takes precedence</a> )}
1/1963	. . . . .	{mono-carboxylic}	1/223	. . . . .	having at least one amino group bound to an aromatic carbon atom {( <a href="#">C10L 1/221</a> , <a href="#">C10L 1/2227 take precedence</a> )}
1/1966	. . . . .	{poly-carboxylic}	1/2235	. . . . .	{hydroxy containing ( <a href="#">C10L 1/221</a> , <a href="#">C10L 1/2227 take precedence</a> )}
1/197	. . . . .	derived from monomers containing a carbon-to-carbon unsaturated bond and an acyloxy group of a saturated carboxylic or carbonic acid	1/224	. . . . .	Amides; Imides {carboxylic acid amides, imides ( <a href="#">C10L 1/221</a> , <a href="#">C10L 1/2227 take precedence</a> )}
1/1973	. . . . .	{mono-carboxylic}	1/226	. . . . .	containing at least one nitrogen-to-nitrogen bond, e.g. azo compounds, azides, hydrazines {( <a href="#">C10L 1/221 takes precedence</a> )}
1/1976	. . . . .	{poly-carboxylic}	1/228	. . . . .	containing at least one carbon-to-nitrogen double bond, e.g. guanidines, hydrazones, semicarbazones, imines; containing at least one carbon-to-nitrogen triple bond, e.g. nitriles {( <a href="#">C10L 1/221</a> , <a href="#">C10L 1/226 take precedence</a> )}
1/198	. . . . .	obtained otherwise than by reactions involving only carbon-to-carbon unsaturated bonds {homo- or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon to carbon double bond, and at least one being terminated by an acyloxy radical of a saturated carboxylic acid, of carbonic acid}	1/2283	. . . . .	{containing one or more carbon to nitrogen double bonds, e.g. guanidine, hydrazone, semi-carbazone, azomethine ( <a href="#">C10L 1/221</a> , <a href="#">C10L 1/226 take precedence</a> )}
1/1981	. . . . .	{Condensation polymers of aldehydes or ketones}	1/2286	. . . . .	{containing one or more carbon to nitrogen triple bonds, e.g. nitriles ( <a href="#">C10L 1/221</a> , <a href="#">C10L 1/226 take precedence</a> )}
1/1983	. . . . .	{polyesters}	1/23	. . . . .	containing at least one nitrogen-to-oxygen bond, e.g. nitro-compounds, nitrates, nitrites {( <a href="#">C10L 1/221 takes precedence</a> )}
1/1985	. . . . .	{polyethers, e.g. di- polyglycols and derivatives; ethers - esters}	1/231	. . . . .	{nitro compounds; nitrates; nitrites ( <a href="#">C10L 1/221 takes precedence</a> )}
1/1986	. . . . .	{complex polyesters}	1/232	. . . . .	containing nitrogen in a heterocyclic ring {( <a href="#">C10L 1/221 takes precedence</a> )}
1/1988	. . . . .	{epoxy resins and derivatives; natural resins, e.g. colophony}	1/233	. . . . .	containing nitrogen and oxygen in the ring, e.g. oxazoles {( <a href="#">C10L 1/221 takes precedence</a> )}
1/20	. . . . .	containing halogen	1/2335	. . . . .	{morpholino, and derivatives thereof ( <a href="#">C10L 1/221 takes precedence</a> )}
1/201	. . . . .	{aliphatic bond}	1/234	. . . . .	Macromolecular compounds {( <a href="#">C10L 1/221 takes precedence</a> )}
1/202	. . . . .	{aromatic bond}	1/236	. . . . .	obtained by reactions involving only carbon-to-carbon unsaturated bonds {derivatives thereof ( <a href="#">C10L 1/221 takes precedence</a> )}
1/203	. . . . .	{hydroxyl compounds; ethers, acetals, ketals}	1/2362	. . . . .	{homo- or copolymers derived from unsaturated compounds containing nitrile groups ( <a href="#">C10L 1/221 takes precedence</a> )}
1/204	. . . . .	{aldehydes and ketones}	1/2364	. . . . .	{homo- or copolymers derived from unsaturated compounds containing amide and/or imide groups ( <a href="#">C10L 1/221 takes precedence</a> )}
1/205	. . . . .	{carboxylic radical containing compounds or derivatives, e.g. salts, esters}	1/2366	. . . . .	{homo- or copolymers derived from unsaturated compounds containing amine groups ( <a href="#">C10L 1/221 takes precedence</a> )}
1/206	. . . . .	{macromolecular compounds}	1/2368	. . . . .	{homo- or copolymers derived from unsaturated compounds containing heterocyclic compounds containing nitrogen in the ring ( <a href="#">C10L 1/221 takes precedence</a> )}
1/207	. . . . .	{containing halogen with or without hydrogen}			
1/208	. . . . .	{containing halogen, oxygen, with or without hydrogen}			
1/209	. . . . .	{halogenated waxes or paraffines}			
1/22	. . . . .	containing nitrogen			
1/221	. . . . .	{compounds of uncertain formula; reaction products where mixtures of compounds are obtained}			
1/222	. . . . .	containing at least one carbon-to-nitrogen single bond {( <a href="#">C10L 1/221 takes precedence</a> )}			
1/2222	. . . . .	{(cyclo)aliphatic amines; polyamines (no macromolecular substituent 30C); quaternair ammonium compounds; carbamates ( <a href="#">C10L 1/221 takes precedence</a> )}			
1/2225	. . . . .	{hydroxy containing ( <a href="#">C10L 1/221 takes precedence</a> )}			

- 1/238 . . . . . obtained otherwise than by reactions involving only carbon-to-carbon unsaturated bonds ([C10L 1/221 takes precedence](#))}
- 1/2381 . . . . . {polyamides; polyamide-esters; polyurethane, polyureas ([C10L 1/221 takes precedence](#))}
- 1/2383 . . . . . Polyamines or polyimines, or derivatives thereof {(poly)amines and imines; derivatives thereof (substituted by a macromolecular group containing 30C) ([C10L 1/221 takes precedence](#))}
- 1/2387 . . . . . Polyoxyalkyleneamines {(poly)oxyalkylene amines and derivatives thereof (substituted by a macromolecular group containing 30C) ([C10L 1/221 takes precedence](#))}
- 1/24 . . . containing sulfur, selenium and/or tellurium
- 1/2406 . . . . . {mercaptans; hydrocarbon sulfides}
- 1/2412 . . . . . {sulfur bond to an aromatic radical}
- 1/2418 . . . . . {containing a carboxylic substituted; derivatives thereof, e.g. esters}
- 1/2425 . . . . . {Thiocarbonic acids and derivatives thereof, e.g. xanthates; Thiocarbamic acids or derivatives thereof, e.g. dithio-carbamates; Thiurams}
- 1/2431 . . . . . {sulfur bond to oxygen, e.g. sulfones, sulfoxides}
- 1/2437 . . . . . {Sulfonic acids; Derivatives thereof, e.g. sulfonamides, sulfosuccinic acid esters}
- 1/2443 . . . . . {heterocyclic compounds}
- 1/245 . . . . . {only sulfur as hetero atom}
- 1/2456 . . . . . {sulfur with oxygen and/or nitrogen in the ring, e.g. thiazoles}
- 1/2462 . . . . . {macromolecular compounds}
- 1/2468 . . . . . {obtained by reactions involving only carbon to carbon unsaturated bonds; derivatives thereof}
- 1/2475 . . . . . {obtained otherwise than by reactions only involving unsaturated carbon to carbon bonds}
- 1/2481 . . . . . {polysulfides (3 carbon to sulfur bonds)}
- 1/2487 . . . . . {polyoxyalkylene thioethers (O + S 3=)}
- 1/2493 . . . . . {compounds of uncertain formula; reactions of organic compounds (hydrocarbons, acids, esters) with sulfur or sulfur containing compounds}
- 1/26 . . . containing phosphorus
- 1/2608 . . . . . {containing a phosphorus-carbon bond}
- 1/2616 . . . . . {sulfur containing}
- 1/2625 . . . . . {amine salts}
- 1/2633 . . . . . {phosphorus bond to oxygen (no P. C. bond)}
- 1/2641 . . . . . {oxygen bonds only}
- 1/265 . . . . . {oxygen and/or sulfur bonds}
- 1/2658 . . . . . {amine salts}
- 1/2666 . . . . . {macromolecular compounds}
- 1/2675 . . . . . {obtained by reactions involving only carbon to carbon unsaturated bonds; derivatives thereof}
- 1/2683 . . . . . {obtained otherwise than by reactions only involving unsaturated carbon to carbon bonds}
- 1/2691 . . . . . {Compounds of uncertain formula; reaction of organic compounds (hydrocarbons acids, esters) with Px Sy, Px Sy Halz or sulfur and phosphorus containing compounds}
- 1/28 . . . containing silicon
- 1/285 . . . . . {macromolecular compounds}
- 1/30 . . . compounds not mentioned before (complexes)
- 1/301 . . . . . {derived from metals}
- 1/303 . . . . . {boron compounds}
- 1/305 . . . . . {organo-metallic compounds (containing a metal to carbon bond)}
- 1/306 . . . . . {organo Pb compounds}
- 1/308 . . . . . {organo tin compounds}
- 1/32 . . consisting of coal-oil suspensions or aqueous emulsions {or oil emulsions}
- 1/322 . . {Coal-oil suspensions}
- 1/324 . . {Dispersions containing coal, oil and water}
- 1/326 . . {Coal-water suspensions}
- 1/328 . . {Oil emulsions containing water or any other hydrophilic phase}
- 3/00 Gaseous fuels; Natural gas; Synthetic natural gas obtained by processes not covered by subclass [C10G](#), [C10K](#); Liquefied petroleum gas**
- 3/003 . . {Additives for gaseous fuels}
- 3/006 . . {detectable by the senses}
- 3/02 . . Compositions containing acetylene
- 3/04 . . Absorbing compositions, e.g. solvents
- 3/06 . . Natural gas; Synthetic natural gas obtained by processes not covered by [C10G](#), [C10K 3/02](#) or [C10K 3/04](#) {(liquefying by pressure and cold treatment [F25J](#))}
- 3/08 . . Production of synthetic natural gas
- 3/10 . . Working-up natural gas or synthetic natural gas
- 3/101 . . . {Removal of contaminants}
- 3/102 . . . . . {of acid contaminants}
- 3/103 . . . . . {Sulfur containing contaminants}
- 3/104 . . . . . {Carbon dioxide}
- 3/105 . . . . . {of nitrogen}
- 3/106 . . . . . {of water}
- 3/107 . . . {Limiting or prohibiting hydrate formation}
- 3/108 . . . {Production of gas hydrates}
- 3/12 . . Liquefied petroleum gas {(liquefying by pressure and cold treatment [F25J](#))}
- 5/00 Solid fuels (produced by solidifying fluid fuels [C10L 7/00](#))**
- 5/02 . . {Solid fuels such as} briquettes consisting mainly of carbonaceous materials of mineral {or non-mineral} origin (peat briquettes [C10F](#))
- 5/04 . . Raw material {of mineral origin} to be used; Pretreatment thereof {(pretreatment of fuels of non-mineral origin [C10L 5/40](#))}
- 5/06 . . Methods of {shaping, e.g. pelletizing or} briquetting (mechanical part of pressing briquettes [B30B 11/00](#))
- 5/08 . . . without the aid of extraneous binders (briquetting peat [C10F](#))
- 5/10 . . . with the aid of binders, e.g. pretreated binders
- 5/105 . . . . . {with a mixture of organic and inorganic binders}

- 5/12 . . . . with inorganic binders
- 5/14 . . . . with organic binders
- 5/143 . . . . . {with lignin-containing products}
- 5/146 . . . . . {with wax, e.g. paraffin wax}
- 5/16 . . . . . with bituminous binders, e.g. tar, pitch
- 5/18 . . . . . with naphthalene
- 5/20 . . . . . with sulfite lye
- 5/22 . . . . Methods of applying the binder to the other compounding ingredients; Apparatus therefor
- 5/24 . . Combating dust during {shaping or} briquetting; Safety devices against explosion
- 5/26 . . After-treatment of the {shaped fuels, e.g.} briquettes
- 5/28 . . . Heating the {shaped fuels, e.g.} briquettes; Coking the binders
- 5/30 . . . Cooling the {shaped fuels, e.g.} briquettes
- 5/32 . . . Coating
- 5/34 . . Other details of the {shaped fuels, e.g.} briquettes
- 5/36 . . . Shape
- 5/361 . . . . {Briquettes}
- 5/363 . . . . {Pellets or granulates}
- 5/365 . . . . {Logs}
- 5/366 . . . . {Powders}
- 5/368 . . . . {Shaped fuels bundled or contained in a bag or other container}
- 5/38 . . . . Briquettes consisting of different layers
- 5/40 . essentially based on materials of non-mineral origin
- 5/403 . . {on paper and paper waste}
- 5/406 . . {on plastic}
- 5/42 . . on animal substances or products obtained therefrom {, e.g. manure}
- 5/44 . . on vegetable substances
- 5/442 . . . {Wood or forestry waste}
- 5/445 . . . {Agricultural waste, e.g. corn crops, grass clippings, nut shells or oil pressing residues}
- 5/447 . . . {Carbonized vegetable substances, e.g. charcoal, or produced by hydrothermal carbonization of biomass}
- 5/46 . . on sewage, house, or town refuse {(C10L 5/403, C10L 5/406 take precedence)}
- 5/48 . . on industrial residues and waste materials {(C10L 5/403, C10L 5/406 take precedence)}
- 7/00 Fuels produced by solidifying fluid fuels**
- 7/02 . liquid fuels (lubricating compositions C10M)
- 7/04 . . alcohol
- 8/00 Fuels not provided for in other groups of this subclass**
- 9/00 Treating solid fuels to improve their combustion**
- 9/02 . by chemical means
- 9/04 . . by hydrogenating
- 9/06 . . by oxidation
- 9/08 . by heat treatments, e.g. calcining
- 9/083 . . {Torrefaction}
- 9/086 . . {Hydrothermal carbonization}
- 9/10 . by using additives
- 9/12 . . Oxidation means, e.g. oxygen-generating compounds

**10/00 Use of additives to fuels or fires for particular purposes** (additives for liquid carbonaceous fuels characterised by their chemical nature C10L 1/10; using binders for briquetting solid fuels C10L 5/10; using additives to improve the combustion of solid fuels C10L 9/10)

- 10/02 . for reducing smoke development
- 10/04 . for minimising corrosion or incrustation
- 10/06 . for facilitating soot removal
- 10/08 . for improving lubricity; for reducing wear
- 10/10 . for improving the octane number
- 10/12 . for improving the cetane number
- 10/14 . for improving low temperature properties
- 10/16 . . Pour-point depressants
- 10/18 . use of detergents or dispersants for purposes not provided for in groups C10L 10/02 - C10L 10/16

**11/00 Manufacture of firelighters**

- 11/02 . based on refractory porous bodies
- 11/04 . consisting of combustible material (matches C06F)
- 11/06 . of a special shape
- 11/08 . Apparatus therefor

## **2200/00 Components of fuel compositions**

### **NOTE**

Additives in liquid fuels present in concentrations lower than 5% get a class taken from C10L 1/10 -C10L 1/308 and corresponding C10L 1/10 -C10L 1/308. In groups C10L 1/32 - C10L 11/08 is such distinction between the terms additive and component not made.

- 2200/02 . Inorganic or organic compounds containing atoms other than C, H or O, e.g. organic compounds containing heteroatoms or metal organic complexes
- 2200/0204 . . Metals or alloys
- 2200/0209 . . . Group I metals: Li, Na, K, Rb, Cs, Fr, Cu, Ag, Au
- 2200/0213 . . . Group II metals: Be, Mg, Ca, Sr, Ba, Ra, Zn, Cd, Hg
- 2200/0218 . . . Group III metals: Sc, Y, Al, Ga, In, Tl
- 2200/0222 . . . Group IV metals: Ti, Zr, Hf, Ge, Sn, Pb
- 2200/0227 . . . Group V metals: V, Nb, Ta, As, Sb, Bi
- 2200/0231 . . . Group VI metals: Cr, Mo, W, Po
- 2200/0236 . . . Group VII metals: Mn, Tl, Re
- 2200/024 . . . Group VIII metals: Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt
- 2200/0245 . . . Lanthanide group metals: La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu
- 2200/025 . . Halogen containing compounds
- 2200/0254 . . Oxygen containing compounds
- 2200/0259 . . Nitrogen containing compounds
- 2200/0263 . . Sulphur containing compounds
- 2200/0268 . . Phosphor containing compounds
- 2200/0272 . . Silicon containing compounds
- 2200/0277 . . Hydrogen
- 2200/0281 . . Carbon monoxide
- 2200/0286 . . Carbon dioxide
- 2200/029 . . Salts, such as carbonates, oxides, hydroxides, percompounds, e.g. peroxides, perborates, nitrates, nitrites, sulfates, and silicates
- 2200/0295 . . Water
- 2200/04 . Organic compounds



2200/0407	. . Specifically defined hydrocarbon fractions as obtained from, e.g. a distillation column	2270/06	. for fuel cells
2200/0415	. . . Light distillates, e.g. LPG, naphtha	2270/08	. for small applications, such as tools, lamp oil, welding
2200/0423	. . . Gasoline	2270/10	. for transport, e.g. in pipelines as a gas hydrate slurry
2200/043	. . . Kerosene, jet fuel	<b>2290/00</b>	<b>Fuel preparation or upgrading, processes or apparatus therefore, comprising specific process steps or apparatus units</b>
2200/0438	. . . Middle or heavy distillates, heating oil, gasoil, marine fuels, residua	2290/02	. Combustion or pyrolysis
2200/0446	. . . Diesel	2290/04	. Gasification
2200/0453	. . . Petroleum or natural waxes, e.g. paraffin waxes, asphaltenes	2290/06	. Heat exchange, direct or indirect
2200/0461	. . Fractions defined by their origin	2290/08	. Drying or removing water
2200/0469	. . . Renewables or materials of biological origin	2290/10	. Recycling of a stream within the process or apparatus to reuse elsewhere therein
2200/0476	. . . Biodiesel, i.e. defined lower alkyl esters of fatty acids first generation biodiesel	2290/12	. Regeneration of a solvent, catalyst, adsorbent or any other component used to treat or prepare a fuel
2200/0484	. . . Vegetable or animal oils	2290/14	. Injection, e.g. in a reactor or a fuel stream during fuel production
2200/0492	. . . Fischer-Tropsch products	2290/141	. . of additive or catalyst
<b>2230/00</b>	<b>Function and purpose of a components of a fuel or the composition as a whole</b>	2290/143	. . of fuel
2230/02	. Absorbents, e.g. in the absence of an actual absorbent column or scavenger	2290/145	. . of air
2230/04	. Catalyst added to fuel stream to improve a reaction	2290/146	. . of water
2230/06	. Firelighters or wicks, as additive to a solid fuel	2290/148	. . of steam
2230/08	. Inhibitors	2290/18	. Spraying or sprinkling
2230/081	. . Anti-oxidants	2290/20	. Coating of a fuel as a whole or of a fuel component
2230/082	. . for anti-foaming	2290/22	. Impregnation or immersion of a fuel component or a fuel as a whole
2230/083	. . Disinfectants, biocides, anti-microbials	2290/24	. Mixing, stirring of fuel components
2230/085	. . Metal deactivators	2290/26	. Composting, fermenting or anaerobic digestion fuel components or materials from which fuels are prepared
2230/086	. . Demulsifiers	2290/28	. Cutting, disintegrating, shredding or grinding
2230/087	. . for inhibiting misting	2290/30	. Pressing, compressing or compacting
2230/088	. . for inhibiting or avoiding odor	2290/32	. Molding or moulds
2230/10	. for adding an odor to the fuel or combustion products	2290/34	. Applying ultrasonic energy
2230/12	. for producing sound, e.g. during burning an artificial fire log to mimic sound of real wood	2290/36	. Applying radiation such as microwave, IR, UV
2230/14	. for improving storage or transport of the fuel	2290/38	. Applying an electric field or inclusion of electrodes in the apparatus
2230/16	. Tracers which serve to track or identify the fuel component or fuel composition	2290/40	. Applying a magnetic field or inclusion of magnets in the apparatus
2230/18	. for rendering the fuel or flame visible or for adding or altering its color	2290/42	. Fischer-Tropsch steps
2230/20	. for improving conductivity	2290/44	. Deacidification step, e.g. in coal enhancing
2230/22	. for improving fuel economy or fuel efficiency	2290/46	. Compressors or pumps
<b>2250/00</b>	<b>Structural features of fuel components or fuel compositions, either in solid, liquid or gaseous state</b>	2290/48	. Expanders, e.g. throttles or flash tanks
2250/02	. Microbial additives	2290/50	. Screws or pistons for moving along solids
2250/04	. Additive or component is a polymer	2290/52	. Hoppers
2250/06	. Particle, bubble or droplet size	2290/54	. Specific separation steps for separating fractions, components or impurities during preparation or upgrading of a fuel
2250/08	. Emulsion details	2290/541	. . Absorption of impurities during preparation or upgrading of a fuel
2250/082	. . Oil in water (o/w) emulsion	2290/542	. . Adsorption of impurities during preparation or upgrading of a fuel
2250/084	. . Water in oil (w/o) emulsion	2290/543	. . Distillation, fractionation or rectification for separating fractions, components or impurities during preparation or upgrading of a fuel
2250/086	. . Microemulsion or nanoemulsion	2290/544	. . Extraction for separating fractions, components or impurities during preparation or upgrading of a fuel
2250/088	. . Complex emulsions, e.g. water in oil in water (w/o/w) or oil in water in oil (o/w/o), bicontinuous emulsion, e.g. wherein both phases are continuous or multiple emulsions	2290/545	. . Washing, scrubbing, stripping, scavenging for separating fractions, components or impurities during preparation or upgrading of a fuel
<b>2270/00</b>	<b>Specifically adapted fuels</b>		
2270/02	. for internal combustion engines		
2270/023	. . for gasoline engines		
2270/026	. . for diesel engines, e.g. automobiles, stationary, marine		
2270/04	. for turbines, planes, power generation		

## C10L

- 2290/546 . . Sieving for separating fractions, components or impurities during preparation or upgrading of a fuel
- 2290/547 . . Filtration for separating fractions, components or impurities during preparation or upgrading of a fuel
- 2290/548 . . Membrane- or permeation-treatment for separating fractions, components or impurities during preparation or upgrading of a fuel
- 2290/56 . . Specific details of the apparatus for preparation or upgrading of a fuel
- 2290/562 . . Modular or modular elements containing apparatus
- 2290/565 . . Apparatus size
- 2290/567 . . Mobile or displaceable apparatus
- 2290/58 . . Control or regulation of the fuel preparation or upgrading process
- 2290/60 . . Measuring or analysing fractions, components or impurities or process conditions during preparation or upgrading of a fuel

**2300/00** Mixture of two or more additives covered by the same group of [C10L 1/00](#) - [C10L 1/308](#)

### NOTE

After the code and separated therefrom by a + sign, the codes [C10L 2300/20](#) - [C10L 2300/40](#) are added according to the number of components in the mixture. Example: **C10L1/16A** + [C10L 2300/20](#) corresponds to a mixture of two well defined hydrocarbons, e.g. mixture of hexane and benzene

- 2300/20 . Mixture of two components
- 2300/30 . Mixture of three components
- 2300/40 . Mixture of four or more components