

**CPC****COOPERATIVE PATENT CLASSIFICATION****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](#) to [C10L 2290/60](#)

**C10L 1/00****Liquid carbonaceous fuels**[C10L 1/003](#)

- {Marking, e.g. coloration by addition of pigments}

[C10L 1/006](#)

- {Making unflammable or hardly inflammable}

[C10L 1/02](#)

- essentially based on components consisting of carbon, hydrogen, and oxygen only

[C10L 1/023](#)

- . {for spark ignition}

[C10L 1/026](#)

- . {for compression ignition}

[C10L 1/04](#)

- essentially based on blends of hydrocarbons

[C10L 1/06](#)

- . for spark ignition

[C10L 1/08](#)

- . for compression ignition

[C10L 1/10](#)

- containing additives

[C10L 1/103](#)

- . {stabilisation of anti-knock agents}

[C10L 1/106](#)

- . {mixtures of inorganic compounds with organic macromolecular compounds}

**NOTES**

1. In groups [C10L 1/12](#) to [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](#) to [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

C10L 1/106  
(continued)

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](#) to [C10L 1/308](#).

C10L 1/12	. . inorganic compounds
C10L 1/1208	. . . {elements}
C10L 1/1216	. . . {metal compounds, e.g. hydrides, carbides}
C10L 1/1225	. . . {halogen containing compounds}
C10L 1/1233	. . . {oxygen containing compounds, e.g. oxides, hydroxides, acids and salts thereof}
C10L 1/1241	. . . . {metal carbonyls}
C10L 1/125	. . . . {water}
C10L 1/1258	. . . . {hydrogen peroxide, oxygenated water}
C10L 1/1266	. . . {nitrogen containing compounds, (e.g. NH <sub>3</sub> )}
C10L 1/1275	. . . {sulfur, tellurium, selenium containing compounds}
C10L 1/1283	. . . {phosphorus, arsenicum, antimonium containing compounds}
C10L 1/1291	. . . {Silicon and boron containing compounds}
C10L 1/14	. . Organic compounds
C10L 1/143	. . . {mixtures of organic macromolecular compounds with organic non-macromolecular compounds}
C10L 1/146	. . . {Macromolecular compounds according to different macromolecular groups, mixtures thereof}
C10L 1/16	. . . hydrocarbons
C10L 1/1608	. . . . {Well defined compounds, e.g. hexane, benzene}
C10L 1/1616	. . . . {fractions, e.g. lubricants, solvents, naphta, bitumen, tars, terpentine}
C10L 1/1625	. . . . {macromolecular compounds}
C10L 1/1633	. . . . . {homo- or copolymers obtained by reactions only involving carbon-to carbon unsaturated bonds}
C10L 1/1641	. . . . . . {from compounds containing aliphatic monomers}
C10L 1/165	. . . . . . {from compounds containing aromatic monomers}
C10L 1/1658	. . . . . . {from compounds containing conjugated dienes}
C10L 1/1666	. . . . . . {from compounds containing non-conjugated dienes}
C10L 1/1675	. . . . . {natural rubbers}
C10L 1/1683	. . . . . {obtained otherwise than by reactions only involving carbon to carbon unsaturated bonds}
C10L 1/1691	. . . . {petroleum waxes, mineral waxes; paraffines; alkylation products; Friedel-Crafts condensation products; petroleum resins; modified waxes (oxidised)}
C10L 1/18	. . . Containing oxygen
C10L 1/1802	. . . . {natural products, e.g waxes, extracts, fatty oils}
C10L 1/1805	. . . . {oxidised hydrocarbon fractions}

C10L 1/1808	. . . . .	{oxidised mineral waxes}
C10L 1/1811	. . . . .	{peroxides; ozonides}
C10L 1/1814	. . . . .	{Chelates}
C10L 1/1817	. . . . .	{Compounds of uncertain formula; reaction products where mixtures of compounds are obtained}
C10L 1/182	. . . . .	containing hydroxy groups; Salts thereof {(C10L 1/1802, C10L 1/1805, C10L 1/1808, C10L 1/1811, C10L 1/1814, C10L 1/1817 take precedence)}
C10L 1/1822	. . . . .	{hydroxy group directly attached to (cyclo)aliphatic carbon atoms}
C10L 1/1824	. . . . .	. {mono-hydroxy}
C10L 1/1826	. . . . .	. {poly-hydroxy}
C10L 1/1828	. . . . .	. {Salts thereof}
C10L 1/183	. . . . .	at least one hydroxy group bound to an aromatic carbon atom {(C10L 1/1802, C10L 1/1805, C10L 1/1808, C10L 1/1811, C10L 1/1814, C10L 1/1817, C10L 1/1828 take precedence)}
C10L 1/1832	. . . . .	. {mono-hydroxy (C10L 1/1802, C10L 1/1805, C10L 1/1808, C10L 1/1811, C10L 1/1814, C10L 1/1817, C10L 1/1828 take precedence)}
C10L 1/1835	. . . . .	. {having at least two hydroxy substituted non condensed benzene rings (C10L 1/1802, C10L 1/1805, C10L 1/1808, C10L 1/1811, C10L 1/1814, C10L 1/1817, C10L 1/1828 take precedence)}
C10L 1/1837	. . . . .	. {hydroxy attached to a condensed aromatic ring system (C10L 1/1802, C10L 1/1805, C10L 1/1808, C10L 1/1811, C10L 1/1814, C10L 1/1817, C10L 1/1828 take precedence)}
C10L 1/185	. . . . .	Ethers; Acetals; Ketals; Aldehydes; Ketones {(C10L 1/1802, C10L 1/1805, C10L 1/1808, C10L 1/1811, C10L 1/1814, C10L 1/1817 take precedence)}
C10L 1/1852	. . . . .	. {Ethers; Acetals; Ketals; Orthoesters}
C10L 1/1855	. . . . .	. {Cyclic ethers, e.g. epoxides, lactides, lactones}
C10L 1/1857	. . . . .	. {Aldehydes; Ketones}
C10L 1/188	. . . . .	Carboxylic acids; {metal} salts thereof {(C10L 1/1802, C10L 1/1805, C10L 1/1808, C10L 1/1811, C10L 1/1814, C10L 1/1817 take precedence)}
C10L 1/1881	. . . . .	. {carboxylic group attached to an aliphatic carbon atom}
C10L 1/1883	. . . . .	. {polycarboxylic acid}
C10L 1/1885	. . . . .	. {resin acid}
C10L 1/1886	. . . . .	. {naphthenic acid}
C10L 1/1888	. . . . .	. {tall oil}
C10L 1/189	. . . . .	having at least one carboxyl group bound to an aromatic carbon atom {(C10L 1/1802, C10L 1/1805, C10L 1/1808, C10L 1/1811, C10L 1/1814, C10L 1/1817, C10L 1/1885, C10L 1/1886, C10L 1/1888 take precedence)}
C10L 1/1895	. . . . .	. {polycarboxylic acid (C10L 1/1802, C10L 1/1805, C10L 1/1808, C10L 1/1811, C10L 1/1814, C10L 1/1817, C10L 1/1885, C10L 1/1886, C10L 1/1888 take precedence)}

C10L 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)}
C10L 1/1905	. . . . .	{of di- or polycarboxylic acids}
C10L 1/191	. . . . .	{of di- or polyhydroxyalcohols}
C10L 1/1915	. . . . .	{complex esters (at least 3 ester bonds)}
C10L 1/192	. . . .	Macromolecular compounds {( <a href="#">C10L 1/1814</a> , <a href="#">C10L 1/1817</a> take precedence)}
C10L 1/195	. . . . .	obtained by reactions involving only carbon-to-carbon unsaturated bonds
C10L 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}
C10L 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}
C10L 1/1963	. . . . .	{mono-carboxylic}
C10L 1/1966	. . . . .	{poly-carboxylic}
C10L 1/197	. . . . .	derived from monomers containing a carbon-to-carbon unsaturated bond and an acyloxy group of a saturated carboxylic or carbonic acid
C10L 1/1973	. . . . .	{mono-carboxylic}
C10L 1/1976	. . . . .	{poly-carboxylic}
C10L 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}
C10L 1/1981	. . . . .	{Condensation polymers of aldehydes or ketones}
C10L 1/1983	. . . . .	{polyesters}
C10L 1/1985	. . . . .	{polyethers, e.g. di- polyglycols and derivatives; ethers - esters}
C10L 1/1986	. . . . .	{complex polyesters}
C10L 1/1988	. . . . .	{epoxy resins and derivatives; natural resins, e.g. colophony}
C10L 1/20	. . .	containing halogen
C10L 1/201	. . . .	{aliphatic bond}
C10L 1/202	. . . .	{aromatic bond}
C10L 1/203	. . . .	{hydroxyl compounds; ethers, acetals, ketals}
C10L 1/204	. . . .	{aldehydes and ketones}
C10L 1/205	. . . .	{carboxylic radical containing compounds or derivatives, e.g. salts, esters}
C10L 1/206	. . . .	{macromolecular compounds}

C10L 1/207	. . . . .	{containing halogen with or without hydrogen}
C10L 1/208	. . . . .	{containing halogen, oxygen, with or without hydrogen}
C10L 1/209	. . . . .	{halogenated waxes or paraffines}
C10L 1/22	. . .	containing nitrogen
C10L 1/221	. . . . .	{compounds of uncertain formula; reaction products where mixtures of compounds are obtained}
C10L 1/222	. . . . .	containing at least one carbon-to-nitrogen single bond {(C10L 1/221 takes precedence)}
C10L 1/2222	. . . . .	{{(cyclo)aliphatic amines; polyamines (no macromolecular substituent 30C); quaternair ammonium compounds; carbamates (C10L 1/221 takes precedence)}
C10L 1/2225	. . . . .	. {hydroxy containing (C10L 1/221 takes precedence)}
C10L 1/2227	. . . . .	. {urea; derivatives thereof; urethane (C10L 1/221 takes precedence)}
C10L 1/223	. . . . .	having at least one amino group bound to an aromatic carbon atom {(C10L 1/221, C10L 1/2227 take precedence)}
C10L 1/2235	. . . . .	. {hydroxy containing (C10L 1/221, C10L 1/2227 take precedence)}
C10L 1/224	. . . . .	. Amides; Imides {carboxylic acid amides, imides (C10L 1/221, C10L 1/2227 take precedence)}
C10L 1/226	. . . . .	containing at least one nitrogen-to-nitrogen bond, e.g. azo compounds, azides, hydrazines {(C10L 1/221 takes precedence)}
C10L 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 {(C10L 1/221, C10L 1/226 take precedence)}
C10L 1/2283	. . . . .	. {containing one or more carbon to nitrogen double bonds, e.g. guanidine, hydrazone, semi-carbazone, azomethine (C10L 1/221, C10L 1/226 take precedence)}
C10L 1/2286	. . . . .	. {containing one or more carbon to nitrogen triple bonds, e.g. nitriles (C10L 1/221, C10L 1/226 take precedence)}
C10L 1/23	. . . . .	containing at least one nitrogen-to-oxygen bond, e.g. nitro-compounds, nitrates, nitrites {(C10L 1/221 takes precedence)}
C10L 1/231	. . . . .	. {nitro compounds; nitrates; nitrites (C10L 1/221 takes precedence)}
C10L 1/232	. . . . .	containing nitrogen in a heterocyclic ring {(C10L 1/221 takes precedence)}
C10L 1/233	. . . . .	. containing nitrogen and oxygen in the ring, e.g. oxazoles {(C10L 1/221 takes precedence)}
C10L 1/2335	. . . . .	. {morpholino, and derivatives thereof (C10L 1/221 takes precedence)}
C10L 1/234	. . . . .	. Macromolecular compounds {(C10L 1/221 takes precedence)}
C10L 1/236	. . . . .	. obtained by reactions involving only carbon-to-carbon unsaturated bonds {derivatives thereof (C10L 1/221 takes precedence)}
C10L 1/2362	. . . . .	. {homo- or copolymers derived from unsaturated compounds containing nitrile groups (C10L 1/221 takes precedence)}

C10L 1/2364	. . . . .	{homo- or copolymers derived from unsaturated compounds containing amide and/or imide groups ( <a href="#">C10L 1/221</a> takes precedence)}
C10L 1/2366	. . . . .	{homo- or copolymers derived from unsaturated compounds containing amine groups ( <a href="#">C10L 1/221</a> takes precedence)}
C10L 1/2368	. . . . .	{homo- or copolymers derived from unsaturated compounds containing heterocyclic compounds containing nitrogen in the ring ( <a href="#">C10L 1/221</a> takes precedence)}
C10L 1/238	. . . . .	obtained otherwise than by reactions involving only carbon-to-carbon unsaturated bonds {( <a href="#">C10L 1/221</a> takes precedence)}
C10L 1/2381	. . . . .	{polyamides; polyamide-esters; polyurethane, polyureas ( <a href="#">C10L 1/221</a> takes precedence)}
C10L 1/2383	. . . . .	Polyamines or polyimines, or derivatives thereof {(poly)amines and imines; derivatives thereof (substituted by a macromolecular group containing 30C) ( <a href="#">C10L 1/221</a> takes precedence)}
C10L 1/2387	. . . . .	Polyoxyalkyleneamines {(poly)oxyalkylene amines and derivatives thereof (substituted by a macromolecular group containing 30C) ( <a href="#">C10L 1/221</a> takes precedence)}
C10L 1/24	. . .	containing sulfur, selenium and/or tellurium
C10L 1/2406	. . . . .	{mercaptans; hydrocarbon sulfides}
C10L 1/2412	. . . . .	{sulfur bond to an aromatic radical}
C10L 1/2418	. . . . .	{containing a carboxylic substituted; derivatives thereof, e.g. esters}
C10L 1/2425	. . . . .	{Thiocarbonic acids and derivatives thereof, e.g. xanthates; Thiocarbamic acids or derivatives thereof, e.g. dithio-carbamates; Thiurams}
C10L 1/2431	. . . . .	{sulfur bond to oxygen, e.g. sulfones, sulfoxides}
C10L 1/2437	. . . . .	{Sulfonic acids; Derivatives thereof, e.g. sulfonamides, sulfosuccinic acid esters}
C10L 1/2443	. . . . .	{heterocyclic compounds}
C10L 1/245	. . . . .	{only sulfur as hetero atom}
C10L 1/2456	. . . . .	{sulfur with oxygen and/or nitrogen in the ring, e.g. thiazoles}
C10L 1/2462	. . . . .	{macromolecular compounds}
C10L 1/2468	. . . . .	{obtained by reactions involving only carbon to carbon unsaturated bonds; derivatives thereof}
C10L 1/2475	. . . . .	{obtained otherwise than by reactions only involving unsaturated carbon to carbon bonds}
C10L 1/2481	. . . . .	{polysulfides (3 carbon to sulfur bonds)}
C10L 1/2487	. . . . .	{polyoxyalkylene thioethers (O + S 3=)}
C10L 1/2493	. . . . .	{compounds of uncertain formula; reactions of organic compounds (hydrocarbons, acids, esters) with sulfur or sulfur containing compounds}
C10L 1/26	. . .	containing phosphorus
C10L 1/2608	. . . . .	{containing a phosphorus-carbon bond}
C10L 1/2616	. . . . .	{sulfur containing}

C10L 1/2625	. . . . . {amine salts}
C10L 1/2633	. . . . . {phosphorus bond to oxygen (no P. C. bond)}
C10L 1/2641	. . . . . {oxygen bonds only}
C10L 1/265	. . . . . {oxygen and/or sulfur bonds}
C10L 1/2658	. . . . . {amine salts}
C10L 1/2666	. . . . . {macromolecular compounds}
C10L 1/2675	. . . . . {obtained by reactions involving only carbon to carbon unsaturated bonds; derivatives thereof}
C10L 1/2683	. . . . . {obtained otherwise than by reactions only involving unsaturated carbon to carbon bonds}
C10L 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}
C10L 1/28	. . . containing silicon
C10L 1/285	. . . . . {macromolecular compounds}
C10L 1/30	. . . compounds not mentioned before (complexes)
C10L 1/301	. . . . . {derived from metals}
C10L 1/303	. . . . . {boron compounds}
C10L 1/305	. . . . . {organo-metallic compounds (containing a metal to carbon bond)}
C10L 1/306	. . . . . {organo Pb compounds}
C10L 1/308	. . . . . {organo tin compounds}
C10L 1/32	. consisting of coal-oil suspensions or aqueous emulsions {or oil emulsions}
C10L 1/322	. . {Coal-oil suspensions}
C10L 1/324	. . {Dispersions containing coal, oil and water}
C10L 1/326	. . {Coal-water suspensions}
C10L 1/328	. . {Oil emulsions containing water or any other hydrophilic phase}
<b>C10L 3/00</b>	<b>Gaseous fuels; Natural gas; Synthetic natural gas obtained by processes not covered by subclass <a href="#">C10G</a>, <a href="#">C10K</a>; Liquefied petroleum gas</b>
C10L 3/003	. {Additives for gaseous fuels}
C10L 3/006	. . {detectable by the senses}
C10L 3/02	. Compositions containing acetylene
C10L 3/04	. . Absorbing composition, e.g. solvents
C10L 3/06	. Natural gas; Synthetic natural gas obtained by processes not covered by <a href="#">C10G</a> , <a href="#">C10K 3/02</a> or <a href="#">C10K 3/04</a> {(liquefying by pressure and cold treatment <a href="#">F25J</a> )}
C10L 3/08	. . Production of synthetic natural gas
C10L 3/10	. . Working-up natural gas or synthetic natural gas
C10L 3/101	. . . {Removal of contaminants}
C10L 3/102	. . . . {of acid contaminants}
C10L 3/103	. . . . . {Sulfur containing contaminants}
C10L 3/104	. . . . . {Carbon dioxide}
C10L 3/105	. . . . . {of nitrogen}



- C10L 3/106 . . . . {of water}
- C10L 3/107 . . . {Limiting or prohibiting hydrate formation}
- C10L 3/108 . . . {Production of gas hydrates}
- C10L 3/12 . Liquefied petroleum gas {(liquefying by pressure and cold treatment [F25J](#))}
  
- C10L 5/00** **Solid fuels** (produced by solidifying fluid fuels [C10L 7/00](#))
- C10L 5/02 . {Solid fuels such as} briquettes consisting mainly of carbonaceous materials of mineral {or non-mineral} origin (peat briquettes [C10F](#))
- C10L 5/04 . . Raw material {of mineral origin} to be used; Pretreatment thereof {(pretreatment of fuels of non-mineral origin [C10L 5/40](#))}
- C10L 5/06 . . Methods of {shaping, e.g. pelletizing or} briquetting (mechanical part of pressing briquettes [B30B 11/00](#))
- C10L 5/08 . . . without the aid of extraneous binders (briquetting peat [C10F](#))
- C10L 5/10 . . . with the aid of binders, e.g. pretreated binders
- C10L 5/105 . . . . {with a mixture of organic and inorganic binders}
- C10L 5/12 . . . . with inorganic binders
- C10L 5/14 . . . . with organic binders
- C10L 5/143 . . . . . {with lignin-containing products}
- C10L 5/146 . . . . . {with wax, e.g. paraffin wax}
- C10L 5/16 . . . . . with bituminous binders, e.g. tar, pitch
- C10L 5/18 . . . . . with naphthalene
- C10L 5/20 . . . . . with sulfite lye
- C10L 5/22 . . . . Methods of applying the binder to the other compounding ingredients; Apparatus therefor
- C10L 5/24 . . Combating dust during {shaping or} briquetting; Safety devices against explosion
- C10L 5/26 . . After-treatment of the {shaped fuels, e.g.} briquettes
- C10L 5/28 . . . Heating the {shaped fuels, e.g.} briquettes; Coking the binders
- C10L 5/30 . . . Cooling the {shaped fuels, e.g.} briquettes
- C10L 5/32 . . . Coating
- C10L 5/34 . . Other details of the {shaped fuels, e.g.} briquettes
- C10L 5/36 . . . Shape
- C10L 5/361 . . . . {Briquettes}
- C10L 5/363 . . . . {Pellets or granulates}
- C10L 5/365 . . . . {Logs}
- C10L 5/366 . . . . {Powders}
- C10L 5/368 . . . . {Shaped fuels bundled or contained in a bag or other container}
- C10L 5/38 . . . . Briquettes consisting of different layers
- C10L 5/40 . essentially based on materials of non-mineral origin
- C10L 5/403 . . {on paper and paper waste}
- C10L 5/406 . . {on plastic}
- C10L 5/42 . . on animal substances or products obtained therefrom, {e.g. manure}



- C10L 5/44 . . on vegetable substances
- C10L 5/442 . . . {Wood or forestry waste}
- C10L 5/445 . . . {Agricultural waste, e.g. corn crops, grass clippings, nut shells or oil pressing residues}
- C10L 5/447 . . . {Carbonized vegetable substances, e.g. charcoal, or produced by hydrothermal carbonization of biomass}
- C10L 5/46 . . on sewage, house, or town refuse {(C10L 5/403, C10L 5/406 take precedence)}
- C10L 5/48 . . on industrial residues and waste materials {(C10L 5/403, C10L 5/406 take precedence)}

**C10L 7/00 Fuels produced by solidifying fluid fuels**

- C10L 7/02 . liquid fuels (lubricating compositions C10M)
- C10L 7/04 . . alcohol

**C10L 8/00 Fuels not provided for in other groups of this subclass**

**C10L 9/00 Treating solid fuels to improve their combustion**

- C10L 9/02 . by chemical means
- C10L 9/04 . . by hydrogenating
- C10L 9/06 . . by oxidation
- C10L 9/08 . by heat treatments, e.g. calcining
- C10L 9/083 . . {Torrefaction}
- C10L 9/086 . . {Hydrothermal carbonization}
- C10L 9/10 . by using additives
- C10L 9/12 . . oxidation means, e.g. oxygen-generating compounds

**C10L 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)

**WARNING**

IPC8 subgroups C10L 10/00, introduced in the CPC scheme in June 2006, might be temporarily incomplete as a number of documents presently classified under the main group needs reclassification to these IPC subgroups

- C10L 10/02 . for reducing smoke development
- C10L 10/04 . for minimising corrosion or incrustation
- C10L 10/06 . for facilitating soot removal

**WARNING**

Groups C10L 10/08 to C10L 10/18 were introduced in May 2006. These groups might be incomplete as documents, presently classified in C10L 10/00 and C10L 10/04 are in the process of being reclassified to these groups

- C10L 10/08 . for improving lubricity; for reducing wear
- C10L 10/10 . for improving the octane number
- C10L 10/12 . for improving the cetane number
- C10L 10/14 . for improving low temperature properties
- C10L 10/16 . . Pour-point depressants
- C10L 10/18 . use of detergents or dispersants for purposes not provided for in groups [C10L 10/02](#) - [C10L 10/16](#)

**C10L 11/00****Manufacture of firelighters**

- C10L 11/02 . based on refractory porous bodies
- C10L 11/04 . consisting of combustible material ([matches C06F](#))
- C10L 11/06 . of a special shape
- C10L 11/08 . Apparatus therefor

**C10L 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](#) to [C10L 11/08](#) is such distinction between the terms additive and component not made.

- C10L 2200/02 . Inorganic or organic compounds containing atoms other than C,H or O, e.g. organic compounds containing heteroatoms or metal organic complexes
- C10L 2200/0204 . . Metals or alloys
- C10L 2200/0209 . . . Group I metals: Li, Na, K, Rb, Cs, Fr, Cu, Ag, Au
- C10L 2200/0213 . . . Group II metals: Be, Mg, Ca, Sr, Ba, Ra, Zn, Cd, Hg
- C10L 2200/0218 . . . Group III metals: Sc, Y, Al, Ga, In, Tl
- C10L 2200/0222 . . . Group IV metals: Ti, Zr, Hf, Ge, Sn, Pb
- C10L 2200/0227 . . . Group V metals: V, Nb, Ta, As, Sb, Bi
- C10L 2200/0231 . . . Group VI metals: Cr, Mo, W, Po
- C10L 2200/0236 . . . Group VII metals: Mn, Tc, Re
- C10L 2200/024 . . . Group VIII metals: Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt
- C10L 2200/0245 . . . Lanthanide group metals: La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu
- C10L 2200/025 . . Halogen containing compounds
- C10L 2200/0254 . . Oxygen containing compounds
- C10L 2200/0259 . . Nitrogen containing compounds
- C10L 2200/0263 . . Sulphur containing compounds
- C10L 2200/0268 . . Phosphor containing compounds
- C10L 2200/0272 . . Silicon containing compounds
- C10L 2200/0277 . . Hydrogen
- C10L 2200/0281 . . Carbon monoxide
- C10L 2200/0286 . . Carbon dioxide

C10L 2200/029	<ul style="list-style-type: none"> <li>• Salts, such as carbonates, oxides, hydroxides, percompounds, e.g. peroxides, perborates, nitrates, nitrites, sulfates, and silicates</li> </ul>
C10L 2200/0295	<ul style="list-style-type: none"> <li>• Water</li> </ul>
C10L 2200/04	<ul style="list-style-type: none"> <li>• Organic compounds</li> </ul>
C10L 2200/0407	<ul style="list-style-type: none"> <li>• Specifically defined hydrocarbon fractions as obtained from e.g. a distillation column</li> </ul>
C10L 2200/0415	<ul style="list-style-type: none"> <li>• Light distillates, e.g. LPG, naphtha</li> </ul>
C10L 2200/0423	<ul style="list-style-type: none"> <li>• Gasoline</li> </ul>
C10L 2200/043	<ul style="list-style-type: none"> <li>• Kerosene, jet fuel</li> </ul>
C10L 2200/0438	<ul style="list-style-type: none"> <li>• Middle or heavy distillates, heating oil, gasoil, marine fuels, residua</li> </ul>
C10L 2200/0446	<ul style="list-style-type: none"> <li>• Diesel</li> </ul>
C10L 2200/0453	<ul style="list-style-type: none"> <li>• Petroleum or natural waxes e.g. paraffin waxes, asphaltenes</li> </ul>
C10L 2200/0461	<ul style="list-style-type: none"> <li>• Fractions defined by their origin</li> </ul>
C10L 2200/0469	<ul style="list-style-type: none"> <li>• Renewables or materials of biological origin</li> </ul>
C10L 2200/0476	<ul style="list-style-type: none"> <li>• Biodiesel, i.e. defined lower alkyl esters of fatty acids first generation biodiesel</li> </ul>
C10L 2200/0484	<ul style="list-style-type: none"> <li>• Vegetable or animal oils</li> </ul>
C10L 2200/0492	<ul style="list-style-type: none"> <li>• Fischer-Tropsch products</li> </ul>
<b>C10L 2230/00</b>	<b>Function and purpose of a components of a fuel or the composition as a whole</b>
C10L 2230/02	<ul style="list-style-type: none"> <li>• Absorbents e.g. in the absence of an actual absorbent column or scavenger</li> </ul>
C10L 2230/04	<ul style="list-style-type: none"> <li>• Catalyst added to fuel stream to improve a reaction</li> </ul>
C10L 2230/06	<ul style="list-style-type: none"> <li>• Firelighters or wicks, as additive to a solid fuel</li> </ul>
C10L 2230/08	<ul style="list-style-type: none"> <li>• Inhibitors</li> </ul>
C10L 2230/081	<ul style="list-style-type: none"> <li>• Anti-oxidants</li> </ul>
C10L 2230/082	<ul style="list-style-type: none"> <li>• for anti-foaming</li> </ul>
C10L 2230/083	<ul style="list-style-type: none"> <li>• Disinfectants, biocides, anti-microbials</li> </ul>
C10L 2230/085	<ul style="list-style-type: none"> <li>• Metal deactivators</li> </ul>
C10L 2230/086	<ul style="list-style-type: none"> <li>• Demulsifiers</li> </ul>
C10L 2230/087	<ul style="list-style-type: none"> <li>• for inhibiting misting</li> </ul>
C10L 2230/088	<ul style="list-style-type: none"> <li>• for inhibiting or avoiding odor</li> </ul>
C10L 2230/10	<ul style="list-style-type: none"> <li>• for adding an odor to the fuel or combustion products</li> </ul>
C10L 2230/12	<ul style="list-style-type: none"> <li>• for producing sound e.g. during burning an artificial fire log to mimic sound of real wood</li> </ul>
C10L 2230/14	<ul style="list-style-type: none"> <li>• for improving storage or transport of the fuel</li> </ul>
C10L 2230/16	<ul style="list-style-type: none"> <li>• Tracers which serve to track or identify the fuel component or fuel composition</li> </ul>
C10L 2230/18	<ul style="list-style-type: none"> <li>• for rendering the fuel or flame visible or for adding or altering its color</li> </ul>
C10L 2230/20	<ul style="list-style-type: none"> <li>• for improving conductivity</li> </ul>
C10L 2230/22	<ul style="list-style-type: none"> <li>• for improving fuel economy or fuel efficiency</li> </ul>

**C10L 2250/00****Structural features of fuel components or fuel compositions, either in solid, liquid or gaseous state**

C10L 2250/02

- Microbial additives

C10L 2250/04

- Additive or component is a polymer

C10L 2250/06

- Particle, bubble or droplet size

C10L 2250/08

- Emulsion details

C10L 2250/082

- . Oil in water (o/w) emulsion

C10L 2250/084

- . Water in oil (w/o) emulsion

C10L 2250/086

- . Microemulsion or nanoemulsion

C10L 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

**C10L 2270/00****Specifically adapted fuels**

C10L 2270/02

- for internal combustion engines

C10L 2270/023

- . for gasoline engines

C10L 2270/026

- . for diesel engines, e.g. automobiles, stationary, marine

C10L 2270/04

- for turbines, planes, power generation

C10L 2270/06

- for fuel cells

C10L 2270/08

- for small applications, such as tools, lamp oil, welding

C10L 2270/10

- for transport, e.g. in pipelines as a gas hydrate slurry

**C10L 2290/00****Fuel preparation or upgrading, processes or apparatus therefore, comprising specific process steps or apparatus units**

C10L 2290/02

- Combustion or pyrolysis

C10L 2290/04

- Gasification

C10L 2290/06

- Heat exchange, direct or indirect

C10L 2290/08

- Drying or removing water

C10L 2290/10

- Recycling of a stream within the process or apparatus to reuse elsewhere therein

C10L 2290/12

- Regeneration of a solvent, catalyst, adsorbent or any other component used to treat or prepare a fuel

C10L 2290/14

- Injection, e.g. in a reactor or a fuel stream during fuel production

C10L 2290/141

- . of additive or catalyst

C10L 2290/143

- . of fuel

C10L 2290/145

- . of air

C10L 2290/146

- . of water

C10L 2290/148

- . of steam

C10L 2290/18

- Spraying or sprinkling

C10L 2290/20

- Coating of a fuel as a whole or of a fuel component

C10L 2290/22

- Impregnation or immersion of a fuel component or a fuel as a whole

C10L 2290/24

- Mixing, stirring of fuel components

- C10L 2290/26 . Composting, fermenting or anaerobic digestion fuel components or materials from which fuels are prepared
- C10L 2290/28 . Cutting, disintegrating, shredding or grinding
- C10L 2290/30 . Pressing, compressing or compacting
- C10L 2290/32 . Molding or moulds
- C10L 2290/34 . Applying ultrasonic energy
- C10L 2290/36 . Applying radiation such as microwave, IR, UV
- C10L 2290/38 . Applying an electric field or inclusion of electrodes in the apparatus
- C10L 2290/40 . Applying a magnetic field or inclusion of magnets in the apparatus
- C10L 2290/42 . Fischer-Tropsch steps
- C10L 2290/44 . Deacidification step, e.g. in coal enhancing
- C10L 2290/46 . Compressors or pumps
- C10L 2290/48 . Expanders, e.g. throttles or flash tanks
- C10L 2290/50 . Screws or pistons for moving along solids
- C10L 2290/52 . Hoppers
- C10L 2290/54 . Specific separation steps for separating fractions, components or impurities during preparation or upgrading of a fuel
- C10L 2290/541 . . Absorption of impurities during preparation or upgrading of a fuel
- C10L 2290/542 . . Adsorption of impurities during preparation or upgrading of a fuel
- C10L 2290/543 . . Distillation, fractionation or rectification for separating fractions, components or impurities during preparation or upgrading of a fuel
- C10L 2290/544 . . Extraction for separating fractions, components or impurities during preparation or upgrading of a fuel
- C10L 2290/545 . . Washing, scrubbing, stripping, scavenging for separating fractions, components or impurities during preparation or upgrading of a fuel
- C10L 2290/546 . . Sieving for separating fractions, components or impurities during preparation or upgrading of a fuel
- C10L 2290/547 . . Filtration for separating fractions, components or impurities during preparation or upgrading of a fuel
- C10L 2290/548 . . Membrane- or permeation-treatment for separating fractions, components or impurities during preparation or upgrading of a fuel
- C10L 2290/56 . Specific details of the apparatus for preparation or upgrading of a fuel
- C10L 2290/562 . . Modular or modular elements containing apparatus
- C10L 2290/565 . . Apparatus size
- C10L 2290/567 . . Mobile or displaceable apparatus
- C10L 2290/58 . Control or regulation of the fuel preparation or upgrading process
- C10L 2290/60 . Measuring or analysing fractions, components or impurities or process conditions during preparation or upgrading of a fuel

**C10L 2300/00** **Mixture of two or more additives covered by the same group of**  
**C10L 1/00 - C10L 1/308**

**NOTE**

C10L 2300/00  
(continued)

After the code and separated therefrom by a + sign, the codes [C10L 2300/20](#) to [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

- [C10L 2300/20](#) . Mixture of two components
- [C10L 2300/30](#) . Mixture of three components
- [C10L 2300/40](#) . Mixture of four or more components