SECTION C — CHEMISTRY; METALLURGY

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

C10G CRACKING HYDROCARBON OILS; PRODUCTION OF LIQUID HYDROCARBON MIXTURES, e.g. BY DESTRUCTIVE HYDROGENATION, OLIGOMERISATION, POLYMERISATION (cracking to hydrogen or synthesis gas C01B; cracking or pyrolysis of hydrocarbon gases to individual hydrocarbons or mixtures thereof of definite or specified constitution C07C; cracking to cokes C10B); RECOVERY OF HYDROCARBON OILS FROM OIL-SHALE, OIL-SAND, OR GASES; REFINING MIXTURES MAINLY CONSISTING OF HYDROCARBONS; REFORMING OF NAPHTHA; MINERAL WAXES [6]

Note(s) [3]

1. In this subclass:
   - groups C10G 9/00-C10G 49/00 are limited to one-step processes;
   - combined or multi-step processes are covered by groups C10G 51/00-C10G 69/00;
   - refining or recovery of mineral waxes is covered by group C10G 73/00.
2. In this subclass, the following terms or expressions are used with the meanings indicated:
   - "in the presence of hydrogen" or "in the absence of hydrogen" mean treatments in which hydrogen, in free form or as hydrogen generating compounds, is added, or not added, respectively;
   - "hydrotreatment" is used for conversion processes as defined in group C10G 45/00 or group C10G 47/00;
   - "hydrocarbon oils" covers mixtures of hydrocarbons such as tar oils or mineral oils.
3. In this subclass, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

Subclass index

1/00 Production of liquid hydrocarbon mixtures from oil shale, oil-sand, or non-melting solid carbonaceous or similar materials, e.g. wood, coal (mechanical winning of oil from oil-shales, oil-sand, or the like B03B) **[1, 2006.01]**

1/02 • by distillation **[1, 2006.01]**

1/04 • by extraction **[1, 2006.01]**

1/06 • by destructive hydrogenation **[1, 2006.01]**

1/08 • • with moving catalysts **[1, 2006.01]**

1/10 • from rubber or rubber waste **[1, 2006.01]**

2/00 Production of liquid hydrocarbon mixtures of undefined composition from oxides of carbon [5, 2006.01]

3/00 Production of liquid hydrocarbon mixtures from oxygen-containing organic materials, e.g. fatty oils, fatty acids (production from non-melting solid oxygen-containing carbonaceous materials C10G 1/00) **[1, 2006.01]**

5/00 Recovery of liquid hydrocarbon mixtures from gases, e.g. natural gas [1, 2006.01]

5/02 • with solid adsorbents **[1, 2006.01]**

5/04 • with liquid absorbents **[1, 2006.01]**

5/06 • by cooling or compressing **[1, 2006.01]**

7/00 Distillation of hydrocarbon oils [1, 2006.01]

7/02 • Stabilising gasoline by removing gases by fractioning **[1, 2006.01]**

7/04 • De-watering **[1, 2006.01]**

7/06 • Vacuum distillation **[3, 2006.01]**
7/08 • Azeotropic or extractive distillation (refining of hydrocarbon oils, in the absence of hydrogen, by extraction with selective solvents C10G 21/00) **[3, 2006.01]**
7/10 • Inhibiting corrosion during distillation **[3, 2006.01]**
7/12 • Controlling or regulating **[3, 2006.01]**

Cracking in the absence of hydrogen

9/00 Thermal non-catalytic cracking, in the absence of hydrogen, of hydrocarbon oils [1, 2006.01]
9/02 • in retorts **[1, 2006.01]**
9/04 • • Retorts **[1, 2006.01]**
9/06 • by pressure distillation **[1, 2006.01]**
9/08 • • Apparatus therefor **[1, 2006.01]**
9/12 • • • Removing incrustation **[1, 2006.01]**
9/14 • in pipes or coils with or without auxiliary means, e.g. digesters, soaking drums, expansion means **[1, 2006.01]**
9/16 • • Preventing or removing incrustation **[1, 2006.01]**
9/18 • • Apparatus **[1, 2006.01]**
9/20 • • • Tube furnaces **[1, 2006.01]**
9/24 • by heating with electrical means **[1, 2006.01]**
9/26 • with discontinuously preheated non-moving solid material, e.g. blast and run **[1, 2006.01]**
9/28 • with preheated moving solid material **[1, 2006.01]**
9/30 • • according to the "moving bed" technique **[1, 2006.01]**
9/32 • • according to the "fluidised bed" technique **[1, 2006.01]**
9/34 • by direct contact with inert preheated fluids, e.g. with molten metals or salts **[1, 2006.01]**
9/36 • • with heated gases or vapours **[1, 2006.01]**
9/38 • • • produced by partial combustion of the material to be cracked or by combustion of another hydrocarbon **[1, 2, 2006.01]**
9/40 • by indirect contact with preheated fluid other than hot combustion gases **[1, 2006.01]**
9/42 • by passing the material to be cracked in thin streams or as spray on or near continuously heated surfaces **[1, 2006.01]**

11/00 Catalytic cracking, in the absence of hydrogen, of hydrocarbon oils (cracking in direct contact with molten metals or salts C10G 9/34) **[1, 2006.01]**
11/02 • characterised by the catalyst used **[1, 2006.01]**
11/04 • • Oxides **[1, 2006.01]**
11/05 • • • Crystalline alumino-silicates, e.g. molecular sieves **[3, 2006.01]**
11/06 • • Sulfides **[1, 2006.01]**
11/08 • • Halides **[1, 2006.01]**
11/10 • with stationary catalyst bed **[1, 2006.01]**
11/12 • with discontinuously preheated non-moving solid catalysts, e.g. blast and run **[1, 2006.01]**
11/14 • with preheated moving solid catalysts **[1, 2006.01]**
11/16 • • according to the "moving bed" technique **[1, 2006.01]**
11/18 • • according to the "fluidised bed" technique **[1, 2006.01]**
11/20 • by direct contact with inert heated gases or vapours **[1, 2006.01]**
11/22 • • produced by partial combustion of the material to be cracked **[1, 2006.01]**

15/00 Cracking of hydrocarbon oils by electric means, electromagnetic or mechanical vibrations, by particle radiation or with gases superheated in electric arcs [1, 2006.01]
15/08 • by electric means or by electromagnetic or mechanical vibrations **[3, 2006.01]**
15/10 • by particle radiation **[3, 2006.01]**
15/12 • with gases superheated in an electric arc, e.g. plasma **[3, 2006.01]**

Refining in the absence of hydrogen

17/00 Refining of hydrocarbon oils, in the absence of hydrogen, with acids, acid-forming compounds, or acid-containing liquids, e.g. acid sludge [1, 2006.01]
17/02 • with acids or acid-containing liquids, e.g. acid sludge **[1, 2006.01]**
17/04 • • Liquid-liquid treatment forming two immiscible phases **[1, 2006.01]**
17/06 • • • using acids derived from sulfur or acid sludge thereof **[1, 2006.01]**
17/07 • • • using halogen acids or oxyacids of halogen (acids generating halogen C10G 27/02) **[3, 2006.01]**
17/08 • with acid-forming oxides (refining with CO_2 or SO_2 as a selective solvent C10G 21/06) **[1, 2006.01]**
17/085 • • with oleum **[3, 2006.01]**
17/09 • with acid salts **[3, 2006.01]**
17/095 • with "solid acids", e.g. phosphoric acid deposited on a carrier **[3, 2006.01]**
17/10 • Recovery of used refining agent **[1, 2006.01]**

19/00 Refining hydrocarbon oils, in the absence of hydrogen, by alkaline treatment [1, 2006.01]
19/02 • with aqueous alkaline solutions **[1, 2006.01]**
19/04 • • containing solubilisers, e.g. solutisers **[1, 2006.01]**
19/06 • • with plumbites or plumbates **[1, 2006.01]**
19/067 • with molten alkaline material **[3, 2006.01]**
19/073 • with solid alkaline material **[3, 2006.01]**
19/08 • Recovery of used refining agent **[1, 2006.01]**

21/00 Refining of hydrocarbon oils, in the absence of hydrogen, by extraction with selective solvents (C10G 17/00, C10G 19/00 take precedence) **[1, 2006.01]**
21/02 • with two or more solvents, which are introduced or withdrawn separately **[1, 2006.01]**
21/04 • • by introducing simultaneously at least two immiscible solvents counter-current to each other **[1, 2006.01]**
21/06 • characterised by the solvent used **[1, 2006.01]**
21/08 • • Inorganic compounds only **[1, 2006.01]**
21/10 • • • Sulfur dioxide **[1, 2006.01]**
21/12 • • Organic compounds only **[1, 2006.01]**
21/14 • • • Hydrocarbons **[1, 2006.01]**
21/16 • • • Oxygen-containing compounds **[1, 2006.01]**
21/18 • • • Halogen-containing compounds **[1, 2006.01]**
21/20 • • • Nitrogen-containing compounds **[1, 2006.01]**
21/22 • • • Compounds containing sulfur, selenium, or tellurium **[1, 2006.01]**
21/24 • • • Phosphorus-containing compounds **[1, 2006.01]**
21/26 • • • Silicon-containing compounds **[1, 2006.01]**
21/27 • • • Organic compounds not provided for in a single one of groups C10G 21/14-C10G 21/26 **[3, 2006.01]**
21/28 • Recovery of used solvent **[1, 2006.01]**

21/30 • Controlling or regulating **[3, 2006.01]**

25/00 Refining of hydrocarbon oils, in the absence of hydrogen, with solid sorbents [1, 2006.01]

Note(s) [2006.01]

When classifying in this group, classification is also made in group B01D 15/08 insofar as subject matter of general interest relating to chromatography is concerned.

25/02 • with ion-exchange material **[1, 2006.01]**
25/03 • • with crystalline alumino-silicates, e.g. molecular sieves **[3, 2006.01]**
25/05 • • • Removal of non-hydrocarbon compounds, e.g. sulfur compounds **[3, 2006.01]**
25/06 • with moving sorbents or sorbents dispersed in the oil **[1, 2006.01]**
25/08 • • according to the "moving bed" technique **[1, 2006.01]**
25/09 • • according to the "fluidised bed" technique **[3, 2006.01]**
25/11 • • Distillation in the presence of moving sorbents **[3, 2006.01]**
25/12 • Recovery of used adsorbent **[1, 2006.01]**

27/00 Refining of hydrocarbon oils, in the absence of hydrogen, by oxidation [1, 2006.01]

27/02 • with halogen or compounds generating halogen; Hypochlorous acid or salts thereof **[1, 2006.01]**
27/04 • with oxygen or compounds generating oxygen **[1, 2006.01]**
27/06 • • in the presence of alkaline solutions **[1, 2006.01]**
27/08 • • in the presence of copper chloride **[1, 2006.01]**
27/10 • • in the presence of metal-containing organic complexes, e.g. chelates, or cationic ion-exchange resins **[3, 2006.01]**
27/12 • • with oxygen-generating compounds, e.g. per-compounds, chromic acid, chromates (plumbites or plumbates C10G 19/06) **[3, 2006.01]**
27/14 • • with ozone-containing gases **[3, 2006.01]**

29/00 Refining of hydrocarbon oils, in the absence of hydrogen, with other chemicals [1, 2006.01]

29/02 • Non-metals **[1, 2006.01]**
29/04 • Metals, or metals deposited on a carrier **[1, 2006.01]**
29/06 • Metal salts, or metal salts deposited on a carrier **[1, 2006.01]**
29/08 • • containing the metal in the lower valency **[1, 2006.01]**
29/10 • • Sulfides **[1, 2006.01]**
29/12 • • Halides **[1, 3, 2006.01]**
29/16 • Metal oxides **[1, 2006.01]**
29/20 • Organic compounds not containing metal atoms **[1, 2006.01]**
29/22 • • containing oxygen as the only hetero atom **[1, 2006.01]**
29/24 • • • Aldehydes or ketones **[1, 2006.01]**
29/26 • • Halogenated hydrocarbons **[1, 2006.01]**
29/28 • • containing sulfur as the only hetero atom, e.g. mercaptans, or sulfur and oxygen as the only hetero atoms **[1, 2006.01]**

31/00 Refining of hydrocarbon oils, in the absence of hydrogen, by methods not otherwise provided for (by distillation C10G 7/00) **[1, 2, 2006.01]**

31/06 • by heating, cooling, or pressure treatment **[1, 2006.01]**
31/08 • by treating with water **[1, 2006.01]**
31/09 • by filtration **[3, 2006.01]**
31/10 • with the aid of centrifugal force **[1, 2006.01]**
31/11 • by dialysis **[3, 2006.01]**

32/00 Refining of hydrocarbon oils by electric or magnetic means, by irradiation, or by using microorganisms [3, 2006.01]

32/02 • by electric or magnetic means **[3, 2006.01]**
32/04 • by particle radiation **[3, 2006.01]**

33/00 De-watering or demulsification of hydrocarbon oils (by distillation C10G 7/04) **[1, 2006.01]**

33/02 • with electrical or magnetic means **[1, 2006.01]**
33/04 • with chemical means **[1, 2006.01]**
33/06 • with mechanical means, e.g. by filtration **[1, 2006.01]**
33/08 • Controlling or regulating **[3, 2006.01]**

35/00 Reforming naphtha [1, 2006.01]

Note(s) [3]

In this group, the following term is used with the meaning indicated:

- "reforming" means the treatment of naphtha in order to improve the octane number or its aromatic content.

35/02 • Thermal reforming **[1, 2006.01]**
35/04 • Catalytic reforming **[1, 2006.01]**
35/06 • • characterised by the catalyst used **[1, 2006.01]**
35/085 • • • containing platinum group metals or compounds thereof **[3, 2006.01]**
35/09 • • • • Bimetallic catalysts in which at least one of the metals is a platinum-group metal **[3, 2006.01]**
35/095 • • • containing crystalline alumino-silicates, e.g. molecular sieves **[3, 2006.01]**
35/10 • • with moving catalysts **[1, 2006.01]**
35/12 • • • according to the "moving bed" technique **[1, 2006.01]**
35/14 • • • according to the "fluidised bed" technique **[1, 2006.01]**
35/16 • with electric, electromagnetic, or mechanical vibrations; by particle radiation **[1, 2006.01]**
35/22 • Starting-up reforming operations **[3, 2006.01]**
35/24 • Controlling or regulating of reforming operations **[3, 2006.01]**

Hydrotreatment processes

45/00 Refining of hydrocarbon oils using hydrogen or hydrogen-generating compounds [3, 2006.01]

Note(s) [3]

Treatment of hydrocarbon oils in the presence of hydrogen-generating compounds not provided for in a single one of groups C10G 45/02, C10G 45/32, C10G 45/44, or C10G 45/58 is covered by group C10G 49/00.

45/02 • to eliminate hetero atoms without changing the skeleton of the hydrocarbon involved and without cracking into lower boiling hydrocarbons; Hydrofinishing **[3, 2006.01]**
45/04 • • characterised by the catalyst used **[3, 2006.01]**
45/06 • • • containing nickel or cobalt metal, or compounds thereof **[3, 2006.01]**

45/08 • • • • in combination with chromium, molybdenum, or tungsten metals, or compounds thereof **[3, 2006.01]**
45/10 • • • containing platinum group metals or compounds thereof **[3, 2006.01]**
45/12 • • • containing crystalline alumino-silicates, e.g. molecular sieves **[3, 2006.01]**
45/14 • • with moving solid particles **[3, 2006.01]**
45/16 • • • suspended in the oil, e.g. slurries **[3, 2006.01]**
45/18 • • • according to the "moving bed" technique **[3, 2006.01]**
45/20 • • • according to the "fluidised bed" technique **[3, 2006.01]**
45/22 • • with hydrogen dissolved or suspended in the oil **[3, 2006.01]**
45/24 • • with hydrogen-generating compounds **[3, 2006.01]**
45/26 • • • Steam or water **[3, 2006.01]**
45/28 • • • Organic compounds; Autofining **[3, 2006.01]**
45/30 • • • • characterised by the catalyst used **[3, 2006.01]**
45/32 • Selective hydrogenation of the diolefin or acetylene compounds **[3, 2006.01]**
45/34 • • characterised by the catalyst used **[3, 2006.01]**
45/36 • • • containing nickel or cobalt metal, or compounds thereof **[3, 2006.01]**
45/38 • • • • in combination with chromium, molybdenum or tungsten metals, or compounds thereof **[3, 2006.01]**
45/40 • • • containing platinum group metals or compounds thereof **[3, 2006.01]**
45/42 • • with moving solid particles **[3, 2006.01]**
45/44 • Hydrogenation of the aromatic hydrocarbons **[3, 2006.01]**
45/46 • • characterised by the catalyst used **[3, 2006.01]**
45/48 • • • containing nickel or cobalt metal, or compounds thereof **[3, 2006.01]**
45/50 • • • • in combination with chromium, molybdenum or tungsten metal, or compounds thereof **[3, 2006.01]**
45/52 • • • containing platinum group metals or compounds thereof **[3, 2006.01]**
45/54 • • • containing crystalline alumino-silicates, e.g. molecular sieves **[3, 2006.01]**
45/56 • • with moving solid particles **[3, 2006.01]**
45/58 • to change the structural skeleton of some of the hydrocarbon content without cracking the other hydrocarbons present, e.g. lowering pour point; Selective hydrocracking of normal paraffins (C10G 32/00 takes precedence; improving or increasing the octane number or aromatic content of naphtha C10G 35/00) **[3, 2006.01]**
45/60 • • characterised by the catalyst used **[3, 2006.01]**
45/62 • • • containing platinum group metals or compounds thereof **[3, 2006.01]**
45/64 • • • containing crystalline alumino-silicates, e.g. molecular sieves **[3, 2006.01]**
45/66 • • with moving solid particles **[3, 2006.01]**
45/68 • • Aromatisation of hydrocarbon oil fractions **[3, 2006.01]**
45/70 • • • with catalysts containing platinum group metals or compounds thereof **[3, 2006.01]**
45/72 • Controlling or regulating **[3, 2006.01]**

47/00 Cracking of hydrocarbon oils, in the presence of hydrogen or hydrogen-generating compounds, to obtain lower boiling fractions (C10G 15/00 takes precedence; destructive hydrogenation of non-melting solid carbonaceous or similar materials C10G 1/06) **[3, 2006.01]**
47/02 • characterised by the catalyst used **[3, 2006.01]**
47/04 • • Oxides **[3, 2006.01]**
47/06 • • Sulfides **[3, 2006.01]**
47/08 • • Halides **[3, 2006.01]**
47/10 • • with catalysts deposited on a carrier **[3, 2006.01]**
47/12 • • • Inorganic carriers **[3, 2006.01]**
47/14 • • • • the catalyst containing platinum group metals or compounds thereof **[3, 2006.01]**
47/16 • • • • Crystalline alumino-silicate carriers **[3, 2006.01]**
47/18 • • • • • the catalyst containing platinum group metals or compounds thereof **[3, 2006.01]**
47/20 • • • • • the catalyst containing other metals or compounds thereof **[3, 2006.01]**
47/22 • Non-catalytic cracking in the presence of hydrogen **[3, 2006.01]**
47/24 • with moving solid particles **[3, 2006.01]**
47/26 • • suspended in the oil, e.g. slurries **[3, 2006.01]**
47/28 • • according to the "moving bed" technique **[3, 2006.01]**
47/30 • • according to the "fluidised bed" technique **[3, 2006.01]**
47/32 • in the presence of hydrogen-generating compounds **[3, 2006.01]**
47/34 • • Organic compounds, e.g. hydrogenated hydrocarbons **[3, 2006.01]**
47/36 • Controlling or regulating **[3, 2006.01]**

49/00 Treatment of hydrocarbon oils, in the presence of hydrogen or hydrogen-generating compounds, not provided for in a single one of groups C10G 45/02, C10G 45/32, C10G 45/44, C10G 45/58, or C10G 47/00 [3, 2006.01]
49/02 • characterised by the catalyst used **[3, 2006.01]**
49/04 • • containing nickel, cobalt, chromium, molybdenum, or tungsten metals, or compounds thereof **[3, 2006.01]**
49/06 • • containing platinum group metals or compounds thereof **[3, 2006.01]**
49/08 • • containing crystalline alumino-silicates, e.g. molecular sieves **[3, 2006.01]**
49/10 • with moving solid particles **[3, 2006.01]**
49/12 • • suspended in the oil, e.g. slurries **[3, 2006.01]**
49/14 • • according to the "moving bed" technique **[3, 2006.01]**
49/16 • • according to the "fluidised bed" technique **[3, 2006.01]**
49/18 • in the presence of hydrogen-generating compounds, e.g. ammonia, water, hydrogen sulfide **[3, 2006.01]**
49/20 • • Organic compounds **[3, 2006.01]**
49/22 • Separation of effluents **[3, 2006.01]**
49/24 • Starting-up hydrotreatment operations **[3, 2006.01]**
49/26 • Controlling or regulating **[3, 2006.01]**

50/00 Production of liquid hydrocarbon mixtures from lower carbon number hydrocarbons, e.g. by oligomerisation [6, 2006.01]
50/02 • of hydrocarbon oils for lubricating purposes **[6, 2006.01]**

Multi-step processes

Note(s) [3]

Groups C10G 51/00-C10G 69/00cover only those combined treating operations where the interest is directed to the relationship between the steps.

51/00 Treatment of hydrocarbon oils, in the absence of hydrogen, by two or more cracking processes only [3, 2006.01]

51/02 • plural serial stages only **[3, 2006.01]**

51/04 • • including only thermal and catalytic cracking steps **[3, 2006.01]**

51/06 • plural parallel stages only **[3, 2006.01]**

53/00 Treatment of hydrocarbon oils, in the absence of hydrogen, by two or more refining processes [3, 2006.01]

53/02 • plural serial stages only **[3, 2006.01]**

53/04 • • including at least one extraction step **[3, 2006.01]**

53/06 • • • including only extraction steps, e.g. deasphalting by solvent treatment followed by extraction of aromatics **[3, 2006.01]**

53/08 • • including at least one sorption step **[3, 2006.01]**

53/10 • • including at least one acid-treatment step **[3, 2006.01]**

53/12 • • including at least one alkaline-treatment step **[3, 2006.01]**

53/14 • • including at least one oxidation step **[3, 2006.01]**

53/16 • plural parallel stages only **[3, 2006.01]**

55/00 Treatment of hydrocarbon oils, in the absence of hydrogen, by at least one refining process and at least one cracking process [3, 2006.01]

55/02 • plural serial stages only **[3, 2006.01]**

55/04 • • including at least one thermal cracking step **[3, 2006.01]**

55/06 • • including at least one catalytic cracking step **[3, 2006.01]**

55/08 • plural parallel stages only **[3, 2006.01]**

57/00 Treatment of hydrocarbon oils, in the absence of hydrogen, by at least one cracking process or refining process and at least one other conversion process [3, 2006.01]

57/02 • with polymerisation **[3, 2006.01]**

59/00 Treatment of naphtha by two or more reforming processes only or by at least one reforming process and at least one process which does not substantially change the boiling range of the naphtha [3, 2006.01]

59/02 • plural serial stages only **[3, 2006.01]**

59/04 • • including at least one catalytic and at least one non-catalytic reforming step **[3, 2006.01]**

59/06 • plural parallel stages only **[3, 2006.01]**

61/00 Treatment of naphtha by at least one reforming process and at least one process of refining in the absence of hydrogen [3, 2006.01]

61/02 • plural serial stages only **[3, 2006.01]**

61/04 • • the refining step being an extraction **[3, 2006.01]**

61/06 • • the refining step being a sorption process **[3, 2006.01]**

61/08 • plural parallel stages only **[3, 2006.01]**

61/10 • processes also including other conversion steps **[3, 2006.01]**

63/00 Treatment of naphtha by at least one reforming process and at least one other conversion process (C10G 59/00, C10G 61/00 take precedence) **[3, 2006.01]**

63/02 • plural serial stages only **[3, 2006.01]**

63/04 • • including at least one cracking step **[3, 2006.01]**

63/06 • plural parallel stages only **[3, 2006.01]**

63/08 • • including at least one cracking step **[3, 2006.01]**

65/00 Treatment of hydrocarbon oils by two or more hydrotreatment processes only [3, 2006.01]

65/02 • plural serial stages only **[3, 2006.01]**

65/04 • • including only refining steps **[3, 2006.01]**

65/06 • • • at least one step being a selective hydrogenation of the diolefins **[3, 2006.01]**

65/08 • • • at least one step being a hydrogenation of the aromatic hydrocarbons **[3, 2006.01]**

65/10 • • including only cracking steps **[3, 2006.01]**

65/12 • • including cracking steps and other hydrotreatment steps **[3, 2006.01]**

65/14 • plural parallel stages only **[3, 2006.01]**

65/16 • • including only refining steps **[3, 2006.01]**

65/18 • • including only cracking steps **[3, 2006.01]**

67/00 Treatment of hydrocarbon oils by at least one hydrotreatment process and at least one process for refining in the absence of hydrogen only [3, 2006.01]

67/02 • plural serial stages only **[3, 2006.01]**

67/04 • • including solvent extraction as the refining step in the absence of hydrogen **[3, 2006.01]**

67/06 • • including a sorption process as the refining step in the absence of hydrogen **[3, 2006.01]**

67/08 • • including acid treatment as the refining step in the absence of hydrogen **[3, 2006.01]**

67/10 • • including alkaline treatment as the refining step in the absence of hydrogen **[3, 2006.01]**

67/12 • • including oxidation as the refining step in the absence of hydrogen **[3, 2006.01]**

67/14 • • including at least two different refining steps in the absence of hydrogen **[3, 2006.01]**

67/16 • plural parallel stages only **[3, 2006.01]**

69/00 Treatment of hydrocarbon oils by at least one hydrotreatment process and at least one other conversion process (C10G 67/00 takes precedence) **[3, 2006.01]**

69/02 • plural serial stages only **[3, 2006.01]**

69/04 • • including at least one step of catalytic cracking in the absence of hydrogen **[3, 2006.01]**

69/06 • • including at least one step of thermal cracking in the absence of hydrogen **[3, 2006.01]**

69/08 • • including at least one step of reforming naphtha **[3, 2006.01]**

69/10 • • • hydrocracking of higher boiling fractions into naphtha and reforming the naphtha obtained **[3, 2006.01]**

69/12 • • including at least one polymerisation or alkylation step **[3, 2006.01]**

69/14 • plural parallel stages only **[3, 2006.01]**

70/00 Working-up undefined normally gaseous mixtures obtained by processes covered by groups C10G 9/00, C10G 11/00, C10G 15/00, C10G 47/00, C10G 51/00 [5, 2006.01]

70/02 • by hydrogenation **[5, 2006.01]**

70/04 • by physical processes **[5, 2006.01]**
70/06 • • by gas-liquid contact **[5, 2006.01]**

71/00 Treatment by methods not otherwise provided for of hydrocarbon oils or fatty oils for lubricating purposes [3, 2006.01]
71/02 • Thickening by voltolising (chemical modification of drying-oils by voltolising C09F 7/04) **[3, 2006.01]**

73/00 Recovery or refining of mineral waxes, e.g. montan wax (compositions essentially based on waxes C08L 91/00) **[3, 2006.01]**
73/02 • Recovery of petroleum waxes from hydrocarbon oils; De-waxing of hydrocarbon oils **[3, 2006.01]**
73/04 • • with the use of filter aids **[3, 2006.01]**
73/06 • • with the use of solvents **[3, 2006.01]**
73/08 • • • Organic compounds **[3, 2006.01]**
73/10 • • • • Hydrocarbons **[3, 2006.01]**
73/12 • • • • Oxygen-containing compounds **[3, 2006.01]**
73/14 • • • • Halogen-containing compounds **[3, 2006.01]**
73/16 • • • • Nitrogen-containing compounds **[3, 2006.01]**
73/18 • • • • containing sulfur, selenium or tellurium **[3, 2006.01]**
73/20 • • • • containing phosphorus **[3, 2006.01]**
73/22 • • • • Mixtures of organic compounds **[3, 2006.01]**
73/23 • • • Recovery of used solvents **[6, 2006.01]**
73/24 • • • by formation of adducts **[3, 2006.01]**
73/26 • • • by flotation **[3, 2006.01]**
73/28 • • • by centrifugal force **[3, 2006.01]**
73/30 • • • with electric means **[3, 2006.01]**
73/32 • • • Methods of cooling during de-waxing **[3, 2006.01]**
73/34 • • • Controlling or regulating **[3, 2006.01]**
73/36 • Recovery of petroleum waxes from other compositions containing oil in minor proportions, from concentrates or from residues; De-oiling, sweating **[3, 2006.01]**
73/38 • Chemical modification of petroleum waxes **[3, 2006.01]**
73/40 • Physical treatment of waxes or modified waxes, e.g. granulation, dispersion, emulsion, irradiation **[3, 2006.01]**
73/42 • Refining of petroleum waxes **[3, 2006.01]**
73/44 • • in the presence of hydrogen or hydrogen-generating compounds **[3, 2006.01]**

75/00 Inhibiting corrosion or fouling in apparatus for treatment or conversion of hydrocarbon oils, in general (C10G 7/10, C10G 9/16 take precedence) **[6, 2006.01]**
75/02 • by addition of corrosion inhibitors **[6, 2006.01]**
75/04 • by addition of antifouling agents **[6, 2006.01]**

99/00 Subject matter not provided for in other groups of this subclass [2006.01]