ECLA EUROPEAN CLASSIFICATION

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 specific 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 (inhibiting corrosion or incrustation in general C23F) [C9506]

[N: **WARNING**
[C9809]

1.
2. The following IPC groups are not used in the internal ECLA classification system. Subject matter covered by these groups is classified in the following ECLA groups:

C10G73/23 covered by C10G73/06
Groups C10G2/30 to C10G2/50 do not correspond to former or current IPC groups.
The concordance ECLA : IPC is as follows:
- C10G2/30 - C01G2/50 : C10G2/00

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Notes

1. In this subclass,

- groups C10G9/00 to C10G49/00 are limited to one-step processes;
- combined or multi-step processes are covered by groups C10G51/00 to C10G69/00;
- refining or recovery of mineral waxes is covered by group C10G73/00.

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 C10G45/00 or group C10G47/00;
- "hydrocarbon oils" covers mixtures of hydrocarbons such as tar oils or mineral oils.

3. In this subclass, in the absence of an indication to the contrary, classification is made in the last appropriate place.

C10G1/00 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)

C10G1/00B . [N: in combination with oil conversion- or refining processes]

C10G1/00C . [N: Inhibiting of corrosion]

C10G1/00D . [N: Combinations of processes provided in groups C10G1/02 to C10G1/08]

C10G1/00R . [N: Controlling or regulating of liquefaction processes (controlling or regulation in general G05)]

C10G1/02 . by distillation (destructive distillation of oil-shale C10B53/06)

C10G1/04 . by extraction

C10G1/04B . . [N: by the use of hydrogen-donor solvents]

C10G1/04E . . [N: Separation of insoluble materials]

C10G1/04W . . [N: Hot water or cold water extraction processes]

C10G1/06 . by destructive hydrogenation

C10G1/06B . . [N: in the presence of a solvent]

C10G1/08 . with moving catalysts

C10G1/08B . . [N: in the presence of a solvent]

C10G1/08D . . [N: Characterised by the catalyst used]

C10G1/10 . from rubber or rubber waste

C10G2/00 Production of liquid hydrocarbon mixtures of undefined composition from oxides of carbon

C10G2/30 . [N: from carbon monoxide with hydrogen] [N1204]

C10G2/31 . . [N: thermal, non catalytic conversion] [N1204]

C10G2/32 . . [N: with the use of catalysts] [N1204]

C10G2/33 . . . [N: characterised by the catalyst used] [N1204]

C10G2/331 . . . . [N: containing group VIII-metals] [N1204]

C10G2/332 . . . . . [N: of the iron-group] [N1204]

C10G2/333 . . . . . [N: of the platinum-group] [N1204]

C10G2/334 . . . . [N: containing molecular sieve catalysts] [N1204]

C10G2/34 . . . [N: Apparatus, reactors] [N1204]

C10G2/341 . . . . [N: with stationary catalyst bed] [N1204]

C10G2/342 . . . . [N: with moving solid catalysts] [N1204]

C10G2/343 . . . . . [N: according to the "moving-bed" method] [N1204]

C10G2/344 . . . . . [N: according to the "fluidised-bed" technique] [N1204]

C10G2/35 . . [N: with the use of another activation, e.g. radiation, vibration, electrical or electromagnetic means] [N1204]

C10G2/40 . [N: from carbon monoxide with water vapor] [N1204]

C10G2/50 . [N: from carbon dioxide with hydrogen] [N1204]

C10G3/00 **Production of liquid hydrocarbon mixtures from oxygen-containing or organic materials, e.g. fatty oils, fatty acids** (production from non-melting solid oxygen-containing carbonaceous materials C10G1/00; preparation of individual hydrocarbons or mixtures thereof of definite or specified contribution C07C) [C9506]

[N: **WARNING** [N1111]
1. Groups C10G3/40 to C10G3/62 are not complete pending a reorganization. See also C10G3/00
2. Groups C10G3/40 to C10G3/62 do not correspond to former or current IPC groups. Concordance ECLA : IPC for these groups is as follows: - C10G3/40 - 3/62 : C10G3/00
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C10G3/40 . [N: Thermal non-catalytic treatment] [N1111]

C10G3/42 . [N: Catalytic treatment] [N1111]
C10G3/44 . . [N: characterised by the catalyst used] [N1111]
C10G3/45 . . . [N: containing iron group metals or compounds thereof] [N1111]
C10G3/46 . . . . [N: in combination with chromium, molybdenum, tungsten metals or compounds thereof] [N1111]
C10G3/47 . . . [N: containing platinum group metals or compounds thereof] [N1111]
C10G3/48 . . . [N: further characterised by the catalyst support] [N1111]
C10G3/49 . . . . [N: containing crystalline aluminosilicates, e.g. molecular sieves] [N1111]

C10G3/50 . [N: in the presence of hydrogen, hydrogen donors or hydrogen generating compounds] [N1111]
C10G3/52 . . [N: Hydrogen in a special composition or from a special source] [N1111]

C10G3/54 . [N: characterised by the catalytic bed] [N1111]
C10G3/55 . . [N: with moving solid particles, e.g. moving beds] [N1111]
C10G3/56 . . . [N: suspended in the oil, e.g. slurries, ebullated beds] [N1111]
C10G3/57 . . . [N: according to the fluidised bed technique] [N1111]

C10G3/60 . [N: Controlling or regulating the process (controlling or regulating in general G05)] [N1111]

C10G3/62 . [N: Catalyst regeneration (regeneration or reactivation of catalysts in general B01J38/00)] [N1111]

C10G5/00 **Recovery of liquid hydrocarbon mixtures from gases, e.g. natural gas**

C10G5/02 . with solid adsorbents

C10G5/04 . with liquid absorbents

C10G5/06 . by cooling or compressing

C10G7/00 **Distillation of hydrocarbon oils** (distillation in general B01D)

C10G7/00L . [N: distillation of lubricating oils]

C10G7/00P . [N: of waste oils other than lubricating oils, e.g. PCB's containing oils] [N0403]

C10G7/02 . Stabilising gasoline by removing gases by fractioning

C10G7/04 . Dewatering

C10G7/06 . Vacuum distillation

C10G7/08 . Azeotropic or extractive distillation(refining of hydrocarbon oils, in the absence of hydrogen, by extraction with selective solvents C10G21/00)

C10G7/10 . Inhibiting corrosion during distillation [C9506]

C10G7/12 . Controlling or regulating (controlling or regulating in general G05)

Guide heading: **Cracking in the absence of hydrogen**

C10G9/00 **Thermal non-catalytic cracking, in the absence of hydrogen, of hydrocarbon oils**

C10G9/00C . [N: Cooling of cracked gases]

C10G9/00L . [N: Coking (in order to produce liquid products mainly)]

C10G9/00V . [N: Visbreaking]

C10G9/02 . in retorts

C10G9/04 . . Retorts

C10G9/06 . by pressure distillation

C10G9/08 . . Apparatus therefor

C10G9/12 . . . Removing incrustation

C10G9/14 . in pipes or coils with or without auxiliary means, e.g. digesters, soaking drums, expansion means

C10G9/16 . . Preventing or removing incrustation

C10G9/18 . . Apparatus

C10G9/20 . . . Tube furnaces

C10G9/20M . . . . [N: chemical composition of the tubes]

C10G9/20R . . . . [N: controlling or regulating the tube furnaces]

C10G9/24 . by heating with electrical means

C10G9/26 . with discontinuously preheated non-moving solid material, e.g. blast and run

C10G9/28 . with preheated moving solid material

C10G9/30 . . according to the "moving bed" method

C10G9/32 . . according to the "fluidised-bed" technique

C10G9/34 . by direct contact with inert preheated fluids, e.g. with molten metals or salts

C10G9/36 . . with heated gases or vapours

C10G9/38 . . . produced by partial combustion of the material to be cracked or by combustion of another hydrocarbon

C10G9/40 . by indirect contact with preheated fluid other than hot combustion gases

C10G9/42 . by passing the material to be cracked in thin streams or as spray on or near continuously heated surfaces

C10G11/00 **Catalytic cracking, in the absence of hydrogen, of hydrocarbon oils** (cracking in direct contact with molten metals or salts C10G9/34)

C10G11/02 . characterised by the catalyst used

C10G11/04 . . Oxides

C10G11/05 . . . Crystalline alumino-silicates, e.g. molecular sieves

C10G11/06 . . Sulfides

C10G11/08 . . Halides

C10G11/10 . with stationary catalyst bed

C10G11/12 . with discontinuously preheated non-moving solid catalysts, e.g. blast and run

C10G11/14 . with preheated moving solid catalysts

C10G11/16 . . according to the "moving bed" method

C10G11/18 . . according to the "fluidised-bed" technique

C10G11/18A . . . [N: Regeneration]

C10G11/18B . . . [N: Energy recovery from regenerator effluent gases (using steam turbines, see F01K23/06C; using gas turbines, see F01K25/14; the combined use of gas and steam turbines, see F01K3/18C)]

C10G11/18R . . . [N: Controlling or regulating (controlling or regulating in general G05)]

C10G11/20 . by direct contact with inert heated gases or vapours

C10G11/22 . . produced by partial combustion of the material to be cracked

C10G15/00 **Cracking of hydrocarbon oils by electric means, electromagnetic or mechanical vibrations, by particle radiation or with gases superheated in electric arcs**

C10G15/08 . by electric means or by electromagnetic or mechanical vibrations

C10G15/10 . by particle radiation

C10G15/12 . with gases superheated in an electric arc, e.g. plasma

Guide heading: **Refining in the absence of hydrogen**

C10G17/00 **Refining of hydrocarbon oils in the absence of hydrogen, with acids, acid-forming compounds or acid-containing liquids, e.g. acid sludge**

C10G17/02	. with acids or acid-containing liquids, e.g. acid sludge
C10G17/04	. . Liquid-liquid treatment forming two immiscible phases
C10G17/06	. . . using acids derived from sulfur or acid sludge thereof
C10G17/07	. . . using halogen acids or oxyacids of halogen (acids generating halogen C10G27/02)
C10G17/08	. with acid-forming oxides (refining with CO2 or SO2 as a selective solvent C10G21/06)
C10G17/085	. . with oleum
C10G17/09	. with acid salts
C10G17/095	. with "solid acids" e.g. phosphoric acid deposited on a carrier
C10G17/10	. recovery of used refining agents
C10G19/00	**Refining hydrocarbon oils in the absence of hydrogen, by alkaline treatment**
C10G19/02	. with aqueous alkaline solutions
C10G19/04	. . containing solubilisers, e.g. solutisers
C10G19/06	. . with plumbites or plumbates
C10G19/067	. with molten alkaline material
C10G19/073	. with solid alkaline material
C10G19/08	. Recovery of used refining agents
C10G21/00	**Refining of hydrocarbon oils in the absence of hydrogen, by extraction with selective solvents** (C10G17/00, C10G19/00 take precedence; dewaxing oils C10G73/02)
C10G21/00A	. [N: Solvent de-asphalting]
C10G21/00P	. [N: of waste oils, e.g.PCB's containing oils] [N0403]
C10G21/02	. with two or more solvents, which are introduced or withdrawn separately
C10G21/04	. . by introducing simultaneously at least two immiscible solvents counter-current to each other
C10G21/06	. characterised by the solvent used
C10G21/08	. . Inorganic compounds only
C10G21/10	. . . Sulfur dioxide
C10G21/12	. . Organic compounds only
C10G21/14	. . . Hydrocarbons
C10G21/16	. . . Oxygen-containing compounds
C10G21/18	. . . Halogen-containing compounds
C10G21/20	. . . Nitrogen-containing compounds

C10G21/22 . . . Compounds containing sulfur, selenium, or tellurium
C10G21/24 . . . Phosphorus-containing compounds
C10G21/26 . . . Silicon-containing compounds
C10G21/27 . . . Organic compounds not provided for in a single one of groups C10G21/14 to C10G21/26

C10G21/28 . Recovery of used solvent

C10G21/30 . Controlling or regulating (controlling or regulating in general G05)

C10G25/00 **Refining of hydrocarbon oils in the absence of hydrogen, with solid sorbents**

Note
[N0408] When classifying in this group, classification is also made in group B01D15/08 insofar as subject matter of general interest relating to chromatography is concerned.

C10G25/00B . [N: Specific sorbent material, not covered by C10G25/02 or C10G25/03]

C10G25/00P . [N: of waste oils, e.g.PCB's containing oils] [N0403]

C10G25/02 . with ion-exchange material
C10G25/03 . . with crystalline alumino-silicates, e.g. molecular sieves
C10G25/05 . . . Removal of non-hydrocarbon compounds, e.g sulfur compounds

C10G25/06 . with moving sorbents or sorbents dispersed in the oil
C10G25/08 . . according to the "moving bed" method
C10G25/09 . . according to the "fluidised bed" technique
C10G25/11 . . Distillation in the presence of moving sorbents

C10G25/12 . Recovery of used adsorbent

C10G27/00 **Refining of hydrocarbon oils in the absence of hydrogen, by oxidation**

C10G27/02 . with halogen or compounds generating halogen; hypochlorous acid or salts thereof

C10G27/04 . with oxygen or compounds generating oxygen
C10G27/06 . . in the presence of alkaline solutions
C10G27/08 . . in the presence of copper chloride
C10G27/10 . . in the presence of metal-containing organic complexes, e.g. chelates, or cationic ion-exchange resins
C10G27/12 . . with oxygen-generating compounds, e.g. per-compounds, chromic acid, chromates (plumbites or plumbates C10G19/06)
C10G27/14 . . with ozone-containing gases

C10G29/00 **Refining of hydrocarbon oils in the absence of hydrogen, with other chemicals**

C10G29/02 . Non-metals

C10G29/04 . Metals, or metals deposited on a carrier

C10G29/06 . Metal salts, or metal salts deposited on a carrier
C10G29/08 . . containing the metal in the lower valency
C10G29/10 . . Sulfides
C10G29/12 . . Halides

C10G29/16 . Metal oxides

C10G29/20 . Organic compounds not containing metal atoms
C10G29/20B . . [N: by reaction with hydrocarbons added to the hydrocarbon oil]
C10G29/22 . . containing oxygen as the only hetero atom
C10G29/24 . . . aldehydes or ketones
C10G29/26 . . halogenated hydrocarbons
C10G29/28 . . containing sulfur as the only hetero atom, e.g. mercaptans, or sulfur and oxygen as the only hetero atoms

C10G31/00 **Refining of hydrocarbon oils in the absence of hydrogen, by methods not otherwise provided for** (by distillation C10G7/00)

C10G31/06 . by heating, cooling, or pressure treatment

C10G31/08 . by treating with water

C10G31/09 . by filtration

C10G31/10 . with the aid of centrifugal force

C10G31/11 . by dialysis

C10G32/00 **Refining of hydrocarbons oils by electric or magnetic means, by irradiation or by using microorganisms**

C10G32/02 . by electric or magnetic means

C10G32/04 . by particle radiation

C10G33/00 **Dewatering or demulsification of hydrocarbon oils** (by distillation C10G7/04)

C10G33/02 . with electrical or magnetic means

C10G33/04 . with chemical means

C10G33/06 . with mechanical means, e.g. by filtration

C10G33/08 . Controlling or regulating (controlling or regulating in general G05)

C10G35/00 **Reforming naphtha**

Note
By reforming is meant the treatment of naphtha, in order to improve the octane number or its aromatic content.

C10G35/02 . Thermal reforming

C10G35/04 . Catalytic reforming
C10G35/06 . . characterised by the catalyst used
C10G35/06D . . . [N: containing crystalline zeolitic molecular sieves, other than aluminosilicates]
C10G35/085 . . . containing platinum group metals or compounds thereof
C10G35/09 . . . . bimetallic catalysts in which at least one of the metals is a platinum group metal
C10G35/095 . . . containing crystalline alumino-silicates, e.g. molecular sieves [N: (C10G35/06D takes precedence)]
C10G35/10 . . with moving catalysts
C10G35/12 . . . according to the "moving-bed" method
C10G35/14 . . . according to the "fluidised-bed" technique

C10G35/16 . with electric, electromagnetic, or mechanical vibrations; by particle radiation

C10G35/22 . Starting-up reforming operations

C10G35/24 . Controlling or regulating of reforming operations (controlling or regulating in general G05)

Guide heading: **Hydrotreatment processes** (reforming of naphtha C10G35/00)

C10G45/00 **Refining of hydrocarbon oils using hydrogen or hydrogen-generating compounds**

Note
Treatment of hydrocarbon oils in the presence of hydrogen-generating compounds not provided for in a single one of groups C10G45/02, C10G45/32, C10G45/44 or C10G45/58 is provided for in group C10G49/00.

C10G45/02 . to eliminate hetero atoms without changing the skeleton of the hydrocarbon involved and without cracking into lower boiling hydrocarbons; Hydrofinishing
C10G45/04 . . characterised by the catalyst used
C10G45/06 . . . containing nickel or cobalt metal, or compounds thereof
C10G45/08 . . . . in combination with chromium, molybdenum, or tungsten metals, or compounds thereof
C10G45/10 . . . containing platinum group metals or compounds thereof
C10G45/12 . . . containing crystalline alumino-silicates, e.g. molecular sieves
C10G45/14 . . with moving solid particles
C10G45/16 . . . suspended in the oil, e.g. slurries
C10G45/18 . . . according to the "moving-bed" technique

C10G45/20 . . . according to the "fluidised-bed" technique
C10G45/22 . . with hydrogen dissolved or suspended in the oil
C10G45/24 . . with hydrogen-generating compounds
C10G45/26 . . . Steam or water
C10G45/28 . . . Organic compounds; Autofining
C10G45/30 . . . . characterised by the catalyst used

C10G45/32 . Selective hydrogenation of the diolefin or acetylene compounds
C10G45/34 . . characterised by the catalyst used
C10G45/36 . . . containing nickel or cobalt metal, or compounds thereof
C10G45/38 . . . . in combination with chromium, molybdenum or tungsten metals, or compounds thereof
C10G45/40 . . . containing platinum group metals or compounds thereof
C10G45/42 . . with moving solid particles

C10G45/44 . Hydrogenation of the aromatic hydrocarbons
C10G45/46 . . characterised by the catalyst used
C10G45/48 . . . containing nickel or cobalt metal, or compounds thereof
C10G45/50 . . . . in combination with chromium, molybdenum or tungsten metal, or compounds thereof
C10G45/52 . . . containing platinum group metals or compounds thereof
C10G45/54 . . . containing crystalline alumino-silicates, e.g. molecular sieves
C10G45/56 . . with moving solid particles

C10G45/58 . 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 (C10G32/00 takes precedence; improving or increasing the octane number or aromatic content of naphtha C10G35/00)
C10G45/60 . . characterised by the catalyst used
C10G45/62 . . . containing platinum group metals or compounds thereof
C10G45/64 . . . containing crystalline alumino-silicates, e.g. molecular sieves
C10G45/66 . . with moving solid particles
C10G45/68 . . Aromatisation of hydrocarbon oil fractions (of naphtha C10G35/00)
C10G45/70 . . . with catalysts containing platinum group metals or compounds thereof

C10G45/72 . Controlling or regulating (controlling or regulating in general G05)

C10G47/00 **Cracking of hydrocarbon oils in the presence of hydrogen or hydrogen generating compounds, to obtain lower boiling fractions,** (C10G15/00 takes precedence; destructive hydrogenation of non-melting solid carbonaceous or similar materials C10G1/06)

C10G47/02 . characterised by the catalyst used
C10G47/04 . . Oxides
C10G47/06 . . Sulfides
C10G47/08 . . Halides

C10G47/10 . . with catalysts deposited on a carrier
C10G47/12 . . . Inorganic carriers
C10G47/14 . . . . the catalyst containing platinum group metals or compounds thereof
C10G47/16 . . . . Crystalline alumino-silicate carriers
C10G47/18 . . . . . the catalyst containing platinum group metals or compounds thereof
C10G47/20 . . . . . the catalyst containing other metals or compounds thereof

C10G47/22 . Non-catalytic cracking in the presence of hydrogen

C10G47/24 . with moving solid particles
C10G47/26 . . suspended in the oil, e.g. slurries
C10G47/28 . . according to the "moving-bed" technique
C10G47/30 . . according to the "fluidised-bed" technique

C10G47/32 . in the presence of hydrogen-generating compounds
C10G47/34 . . Organic compounds, e.g. hydrogenated hydrocarbons

C10G47/36 . Controlling or regulating (controlling or regulating in general G05)

C10G49/00 **Treatment of hydrocarbon oils in the presence of hydrogen or hydrogen-generating compounds, not provided for in a single one of the groups C10G45/02, C10G45/32, C10G45/44, C10G45/58 or C10G47/00**

C10G49/00B . [N: Apparatus for fixed bed hydrotreatment processes]

C10G49/00C . [N: Inhibiting corrosion in hydrotreatment processes]

C10G49/00H . [N: in the presence of hydrogen from a special source or of a special composition or having been purified by a special treatment]

C10G49/02 . characterised by the catalyst used
C10G49/04 . . containing nickel, cobalt, chromium, molybdenum, or tungsten metals, or compounds thereof
C10G49/06 . . containing platinum group metals or compounds thereof
C10G49/08 . . containing crystalline alumino-silicates, e.g. molecular sieves

C10G49/10 . with moving solid particles
C10G49/12 . . suspended in the oil, e.g. slurries
C10G49/14 . . according to the "moving-bed" technique
C10G49/16 . . according to the "fluidised-bed" technique

C10G49/18 . in the presence of hydrogen-generating compounds, e.g. ammonia, water, hydrogen sulfide
C10G49/20 . . Organic compounds

C10G49/22 . Separation of effluents

C10G49/24 . Starting-up hydrotreatment operations

C10G49/26 . Controlling or regulating (controlling or regulating in general G05)

C10G50/00 **Production of liquid hydrocarbon mixtures from lower carbon number hydrocarbons, e.g. by oligomerisation** (preparation of individual hydrocarbons or mixtures thereof of definite or specified constitution C07C) [N9506]

C10G50/02 . of hydrocarbon oils for lubricating purposes [N9506]

Guide heading: **Multi-step processes**

Note
Groups C10G51/00 to C10G69/00 cover only those combined treating operations where the interest is directed to the relationship between the steps.

C10G51/00 **Treatment of hydrocarbon oils in the absence of hydrogen, by two or more cracking processes only**

C10G51/02 . plural serial stages only
C10G51/02B . . [N: only thermal cracking steps]
C10G51/02D . . [N: only catalytic cracking steps]
C10G51/04 . . including only thermal and catalytic cracking steps

C10G51/06 . plural parallel stages only

C10G53/00 **Treatment of hydrocarbon oils in the absence of hydrogen, by two or more refining processes**

C10G53/02 . plural serial stages only
C10G53/04 . . including at least one extraction step
C10G53/06 . . . including only extraction steps, e.g. deasphalting by solvent treatment followed by extraction of aromatics (refining in one step with two or more solvents which are introduced or withdrawn separately C10G21/02)
C10G53/08 . . including at least one sorption step
C10G53/10 . . including at least one acid-treatment step
C10G53/12 . . including at least one alkaline treatment step
C10G53/14 . . including at least one oxidation step

C10G53/16 . plural parallel stages only

C10G55/00 **Treatment of hydrocarbon oils in the absence of hydrogen, by at least one refining process and at least one cracking process**

C10G55/02 . plural serial stages only
C10G55/04 . . including at least one thermal cracking step
C10G55/06 . . including at least one catalytic cracking step

C10G55/08 . plural parallel stages only

C10G57/00 **Treatment of hydrocarbon oils in the absence of the hydrogen, by at least one cracking process or refining process and at least one other conversion process**

C10G57/00B . [N: with alkylation]

C10G57/02 . with polymerisation

C10G59/00 **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**

C10G59/02 . plural serial stages only

C10G59/04 . . including at least one catalytic and at least one non-catalytic reforming step

C10G59/06 . plural parallel stages only

C10G61/00 **Treatment of naphtha by at least one reforming process and at least one process of refining in the absence of hydrogen**

C10G61/02 . plural serial stages only

C10G61/04 . . the refining step being an extraction

C10G61/06 . . the refining step being a sorption process

C10G61/08 . plural parallel stages only

C10G61/10 . processes also including other conversion steps

C10G63/00 **Treatment of naphtha by at least one reforming process and at least one other conversion process** (C10G59/00, C10G61/00 take precedence)

C10G63/02 . plural serial stages only

C10G63/04 . . including at least one cracking step

C10G63/06 . plural parallel stages only

C10G63/08 . . including at least one cracking step

C10G65/00 **Treatment of hydrocarbon oils by two or more hydrotreatment processes only**

C10G65/02 . plural serial stages only

C10G65/04 . . including only refining steps

C10G65/04D . . . [N: at least one step being a change in the structural skeleton]

C10G65/04F . . . [N: at least one step being an aromatisation step]

C10G65/06 . . . at least one step being a selective hydrogenation of the diolefins

C10G65/08 . . . at least one step being a hydrogenation of the aromatic hydrocarbons

C10G65/10 . . including only cracking steps

C10G65/12 . . including cracking steps and other hydrotreatment steps

C10G65/14 . plural parallel stages only
C10G65/16 . . including only refining steps
C10G65/18 . . including only cracking steps

C10G67/00 Treatment of hydrocarbon oils by at least one hydrotreatment process and at least one process for refining in the absence of hydrogen only

C10G67/02 . plural serial stages only
C10G67/04 . . including solvent extraction as the refining step in the absence of hydrogen
C10G67/04D . . . [N: Extraction of unsaturated hydrocarbons]
C10G67/04D2 . . . . [N: The hydrotreatment being a hydrorefining]
C10G67/04D4 . . . . [N: The hydrotreatment being a selective hydrogenation of diolefins or acetylenes]
C10G67/04D6 . . . . [N: The hydrotreatment being an aromatic saturation]
C10G67/04D12 . . . . [N: The hydrotreatment being a hydrocracking]
C10G67/04F . . . [N: Solvent desasphalting]
C10G67/04F2 . . . . [N: The hydrotreatment being a hydrorefining]
C10G67/04F4 . . . . [N: The hydrotreatment being a selective hydrogenation of diolefines or acetylenes]
C10G67/04F6 . . . . [N: The hydrotreatment being an aromatics saturation]
C10G67/04F12 . . . . [N: The hydrotreatment being a hydrocracking]
C10G67/06 . . including a sorption process as the refining step in the absence of hydrogen
C10G67/08 . . including acid treatment as the refining step in the absence of hydrogen
C10G67/10 . . including alkaline treatment as the refining step in the absence of hydrogen
C10G67/12 . . including oxidation as the refining step in the absence of hydrogen
C10G67/14 . . including at least two different refining steps in the absence of hydrogen

C10G67/16 . plural parallel stages only

C10G69/00 Treatment of hydrocarbon oils by at least one hydrotreatment process and at least one other conversion process (C10G67/00 takes precedence)

C10G69/02 . plural serial stages only
C10G69/04 . . including at least one step of catalytic cracking in the absence of hydrogen
C10G69/06 . . including at least one step of thermal cracking in the absence of hydrogen
C10G69/08 . . including at least one step of reforming naphtha
C10G69/10 . . . hydrocracking of higher boiling fractions into naphtha and reforming the naphtha obtained
C10G69/12 . . including at least one polymerisation or alkylation step
C10G69/12A . . . [N: alkylation]
C10G69/12P . . . [N: polymerisation, e.g. oligomerisation]

C10G69/14 . plural parallel stages only

C10G70/00 **Working-up undefined normally gaseous mixtures obtained by processes covered by groups C10G9/00, C10G11/00, C10G15/00, C10G47/00, C10G51/00**

C10G70/00B . [N: by forming adducts or complexes]
C10G70/00B2 . . [N: with solutions of copper salts]

C10G70/00D . [N: with the use of acids or sulfur oxides]

C10G70/00F . [N: with the use of organometallic compounds]

C10G70/02 . by hydrogenation

C10G70/04 . by physical processes
C10G70/04D . . [N: by distillation]
C10G70/04D2 . . . [N: with the use of auxiliary compounds]
C10G70/04E . . [N: by fractional condensation]
C10G70/04K . . [N: by crystallisation]
C10G70/04M . . [N: using membranes, e.g. selective permeation]
C10G70/04P . . [N: by adsorption, i.e. with the use of solids]
C10G70/04P2 . . . [N: by molecular sieve technique]
C10G70/04T . . [N: by liquid-liquid extraction]
C10G70/06 . . by gas-liquid contact

C10G71/00 **Treatment by methods not otherwise provided for of hydrocarbon oils or fatty oils for lubricating purposes** (by Fischer-Tropsch C07C1/00; lubricating compositions C10M)

C10G71/02 . Thickening by voltolising (chemical modification of drying oils by voltolising C09F7/04)

C10G73/00 **Recovery or refining of mineral waxes, e.g. montan wax** (compositions essentially based on waxes C08L91/00)

C10G73/02 . Recovery of petroleum waxes from hydrocarbon oils; Dewaxing of hydrocarbon oils
C10G73/02F . . [N: by filtration]
C10G73/04 . . with the use of filter aids
C10G73/06 . . with the use of solvents
C10G73/08 . . . Organic compounds
C10G73/10 . . . . Hydrocarbons
C10G73/12 . . . . Oxygen-containing compounds
C10G73/14 . . . . Halogen-containing compounds
C10G73/16 . . . . Nitrogen-containing compounds
C10G73/18 . . . . containing sulfur, selenium or tellurium
C10G73/20 . . . . containing phosphorus
C10G73/22 . . . . Mixtures or organic compounds

C10G73/24 . . by formation of adducts
C10G73/26 . . by flotation
C10G73/28 . . by centrifugal force
C10G73/30 . . with electric means
C10G73/32 . . Methods of cooling during dewaxing
C10G73/34 . . Controlling or regulating (controlling or regulating in general G05)

C10G73/36 . Recovery of petroleum waxes from other compositions containing oil in minor proportions, from concentrates or from residues; De-oiling, sweating

C10G73/38 . Chemical modification of petroleum

C10G73/40 . Physical treatment of waxes or modified waxes, e.g. granulation, dispersion, emulsion, irradiation

C10G73/42 . Refining of petroleum waxes
C10G73/44 . . in the presence of hydrogen or hydrogen-generating compounds

C10G75/00 **Inhibiting corrosion or fouling in apparatus for treatment or conversion of hydrocarbon oils, in general** (C10G7/10, C10G9/16 take precedence; protection of pipes against corrosion or incrustation F16L58/00) [N9611]

C10G75/02 . by addition of corrosion inhibitors [N9611]

C10G75/04 . by addition of antifouling agents [N9611]

C10G99/00 **Subject matter not provided for in other groups of this subclass** [N0704]