C11C
FATTY ACIDS FROM FATS, OILS OR WAXES; CANDLES; FATS, OILS OR FATTY ACIDS BY CHEMICAL MODIFICATION OF FATS, OILS, OR FATTY ACIDS OBTAINED THEREFROM

Definition statement
This place covers:
• Methods and apparatus for preparation of fatty acids from fats, fatty oils, or waxes; compositions thereof
• Refining the fatty acids; methods and apparatus thereof
• Fats, oils, or fatty acids by chemical modification of fats, oils, or fatty acids obtained therefrom; methods and apparatus thereof
• Candles; compositions therefor, processes and apparatus for production thereof

Relationships with other classification places
The use of fatty acids, fats, oils or waxes for different purposes should be classified in appropriate application places, e.g. using fatty acids esters of higher fatty acids as emulsifiers should relate to B01F 17/06; using fatty acids as active ingredients for mortars, concrete or artificial stone - to C04B 24/04; using oils, fats, or waxes and derivatives thereof in cosmetics or toilet preparations - to A61K 8/92; using fats, fatty oils, ester type waxes, higher fatty acids, oxidized oils or fats as active ingredients for mortars, concrete or artificial stone - to C04B 24/08; using fatty oil as lubricating composition base - to C10M 101/04.

C07 covers production or working up chemically synthesized substances, e.g. synthetic waxes, whereas subclass C11C covers synthesis of substances from natural materials.

C11B covers the production, purification/refining, recovery from waste material or working up of oils and fats (e.g. animal or vegetable oils). C11B does not cover obtaining fatty acid or chemical modification of fats, oils or fatty acid from fat, fatty oils or waxes, which are covered by C11C.

A23D covers edible oils or fats and compositions thereof, e.g. margarines, shortenings, cooking oils and provides for subject matter relating to working up or preservation of finished products. Obtaining or refining fatty acid or chemically modified fat, oils or fatty acids including edible oils or fats are covered by subclass C11C, e.g. hydrogenating is covered by C11C 3/12.

The various uses of fatty acids for different purposes is classified in corresponding places (see references).

References
Limiting references
This place does not cover:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation of carboxylic acid esters</td>
<td>C07C 67/00</td>
</tr>
<tr>
<td>Separation, purification, stabilisation, or use of additives associated with the preparation of carboxylic acid esters</td>
<td>C07C 67/48</td>
</tr>
<tr>
<td>Esters of carboxylic acids, e.g. fatty acid esters</td>
<td>C07C 69/00</td>
</tr>
<tr>
<td>Sulfonated fats or oils</td>
<td>C07C 309/62</td>
</tr>
<tr>
<td>Epoxidised fats</td>
<td>C07D 303/42</td>
</tr>
<tr>
<td>Natural vulcanized oils, e.g. factice</td>
<td>C08H 3/00</td>
</tr>
<tr>
<td>Compositions of oils, fats or waxes; Compositions of derivatives thereof</td>
<td>C08L 91/00</td>
</tr>
<tr>
<td>Production, refining, preservation of fats</td>
<td>C11B</td>
</tr>
</tbody>
</table>
Recovery of fatty acids from waste materials \textsuperscript{C11B 13/00}
Preparation of fats, fatty oils, ester-type waxes, higher fatty acids or oxidized oils or fats using enzymes or microorganisms \textsuperscript{C12P 7/64}
Lighting devices \textsuperscript{F21}

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

- Fuels from fatty acids (Biodiesel) \textsuperscript{C10L}
- Lubricants from fatty acids \textsuperscript{C10M}

**Glossary of terms**

*In this place, the following terms or expressions are used with the meaning indicated:*

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fat</td>
<td>Esters of glycerol and fatty acids, generally in solid form</td>
</tr>
<tr>
<td>Fatty acid</td>
<td>A carboxylic acid consisting of a hydrocarbon chain, which may have unsaturations and a terminal carboxyl group</td>
</tr>
<tr>
<td>Oil</td>
<td>Fat which is in liquid form</td>
</tr>
<tr>
<td>Esterification</td>
<td>Reaction between acid and alcohol resulting in ester bond</td>
</tr>
<tr>
<td>Hydrogenation</td>
<td>Chemical process that adds hydrogen atoms to a molecule</td>
</tr>
<tr>
<td>Isomerizing</td>
<td>Process by which one molecule is transformed into another molecule which has exactly the same atoms</td>
</tr>
<tr>
<td>Lipid</td>
<td>Organic compounds based on fatty acids, generally hydrophobic</td>
</tr>
<tr>
<td>Wax</td>
<td>Any of a group of substances composed of hydrophobic hydrocarbons, alcohols, fatty acids, and esters that are solid at ambient temperatures.</td>
</tr>
</tbody>
</table>

**Synonyms and Keywords**

*In patent documents, the following abbreviations are often used:*

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>FA</td>
<td>Fatty acid</td>
</tr>
<tr>
<td>DE</td>
<td>Degree of esterification</td>
</tr>
<tr>
<td>FAME</td>
<td>Fatty Acid Methyl Ester</td>
</tr>
<tr>
<td>PUFA</td>
<td>Polyunsaturated Fatty Acid</td>
</tr>
<tr>
<td>HUFA</td>
<td>Highly Unsaturated Fatty Acid</td>
</tr>
<tr>
<td>TG</td>
<td>Triglyceride</td>
</tr>
<tr>
<td>MG</td>
<td>Monoglyceride</td>
</tr>
<tr>
<td>DG</td>
<td>Diglyceride</td>
</tr>
</tbody>
</table>
**C11C 1/00**

Preparation of fatty acids from fats, fatty oils, or waxes; Refining the fatty acids (recovery of fatty acids from waste materials **C11B 13/00**)

**Definition statement**

*This place covers:*

Production of fatty acids in general.

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**C11C 1/002**

{Sources of fatty acids, e.g. natural glycerides, characterised by the nature, the quantities or the distribution of said acids}

**Definition statement**

*This place covers:*

Sources selected for production of particular types of fatty acids (e.g. HUFA, PUFA, CLA, branched fatty acids, etc.)

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**C11C 1/005**

{Splitting up mixtures of fatty acids into their constituents (processes intended for both fats and fatty acids **C11B 7/00**)}

**Definition statement**

*This place covers:*

Processes specifically for separating fatty acids (e.g. stearic from oleic, CLA from C18 in general)

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**C11C 1/007**

{using organic solvents}

**Definition statement**

*This place covers:*

Recovery and refining of fatty acids specifically.

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**C11C 1/02**

from fats or fatty oils

**Definition statement**

*This place covers:*

Recovery and refining of fatty acids specifically from pre-separated oils/fats in general.
C11C 1/025
{by saponification and release of fatty acids}

**Definition statement**

This place covers:
Recovery and refining of fatty acids specifically from pre-separated oils/fats using base hydrolysis.

C11C 1/04
by hydrolysis

**Definition statement**

This place covers:
Recovery and refining of fatty acids specifically from pre-separated oils/fats using non-base hydrolysis.

C11C 1/045
{using enzymes or microorganisms, living or dead}

**Definition statement**

This place covers:
Preparation of fatty acids from fatty acid containing material, e.g. hydrolysis of fats or fatty oils using esterase, lipase to prepare fatty acids

C11C 1/06
using solid catalysts

**Definition statement**

This place covers:
e.g. clays, resins, etc.

C11C 1/08

Refining

**Definition statement**

This place covers:
Undefined processes for removing undesired material from fatty acids.

C11C 1/10
by distillation

**Definition statement**

This place covers:
Processes for removing undesired material from fatty acids where process depends on change to gaseous phase., e.g. distillation, short path, wiped film
C11C 1/103
{after or with the addition of chemicals}

Definition statement
This place covers:
E.g. steam.

C11C 1/106
{inert gases or vapors}

Definition statement
This place covers:
Refining of fatty acids by distillation after or with the addition of expandable fluids, either noble type, e.g. inert gases, inert co-solvents or molecules, e.g. CO2

C11C 3/00
Fats, oils, or fatty acids by chemical modification of fats, oils, or fatty acids obtained therefrom (sulfonated fats or oils C07C 309/62; factice C08H; drying oils C09F)

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Derivative of natural macromolecular compounds | C08H |
| Natural resins; French polish; drying oils | C09F |

C11C 3/003
{by esterification of fatty acids with alcohols (C11C 3/02 takes precedence)}

Definition statement
This place covers:
Preparation of fatty acid esters where fatty acid containing material is esterified with an alcohol per se.

C11C 3/006
{by oxidation}

Definition statement
This place covers:
Fats, oils, or fatty acids obtained by combination with oxidation, e.g. epoxidation, peroxidation, lactones,
C11C 3/02
by esterification of fatty acids with glycerol

Definition statement
This place covers:
Preparation of fatty acid esters where fatty acids which are not esterified are esterified with glycerol.

C11C 3/04
by esterification of fats or fatty oils

Definition statement
This place covers:
Preparation of fatty acid esters where non-free fatty acid containing material is esterified.

Special rules of classification
General esterification reactions (i.e. transesterification, interesterification)

C11C 3/06
with glycerol

Definition statement
This place covers:
Preparation of fatty acid esters where non-free fatty acid containing material is esterified with glycerol
(e.g. triglyceride reaction with glycerol)

C11C 3/08
with fatty acids

Definition statement
This place covers:
Preparation of fatty acid esters where non-free carboxylic acid with a long unbranched aliphatic tail
(fatty acid) containing material is esterified with a free carboxylic acid with a long unbranched aliphatic
tail (fatty acid), for example triglyceride reacted with oleic acid.

C11C 3/10
Ester interchange

Definition statement
This place covers:
Preparation of fatty acid esters where non-free fatty acid containing material is esterified with esterified
material by swapping one type of acid-alcohol with another acid-alcohol type, for example triglyceride
with ethyl stearate, triglyceride with diglyceride, interesterification.
C11C 3/123

{using catalysts based principally on nickel or derivates}

Definition statement
This place covers:
Preparation of fats, oils or fatty acids by hydrogenation using catalysts based principally on nickel or derivates, i.e. any compounds derived from a nickel based compound, e.g. nickel based organometallic

C11C 3/126

{using catalysts based principally on other metals or derivates}

Definition statement
This place covers:
Preparation of fats, oils or fatty acids by hydrogenation using catalysts based principally on other metals or derivates, i.e. any compounds derived from a other metal based compound, e.g. other metal based organometallic

C11C 5/00

Candles

Definition statement
This place covers:
Wick containing products and processes to prepare.

C11C 5/002

{Ingredients}

Definition statement
This place covers:
E.g. fuel components, blends, additives, etc.

C11C 5/006

{wicks, related accessories}

Definition statement
This place covers:
Material, usually a fiber bundle, that draws, usually by capillary action, the combustible substance to be burned, wick components, and related apparatus, wicks, wicks related accessories of a candle, e.g. wick holders, wick clips, etc.
C11C 5/008

{Candles characterised by their form; Composite candles, e.g. candles containing zones of different composition, inclusions, or the like}

Definition statement
This place covers:
E.g. decorative, aesthetic, novelty, segmented, etc.

C11C 5/02

Apparatus for preparation thereof

Definition statement
This place covers:
Methods and apparatus for candle making

C11C 5/021

{by compressing solid materials in a mould without heating}

Definition statement
This place covers:
Processes using pressure and no external heat

C11C 5/023

{by casting or melting in a mould}

Definition statement
This place covers:
Processes whereby candle material is poured

C11C 5/025

{by dipping a wick in a melt}

Definition statement
This place covers:
Processes involving repetitive dipping of wick into molten candle material

C11C 5/026

{by a continuous process, e.g. by extrusion by conveying a melt together with the wick through a solidification zone}

Definition statement
This place covers:
Processes whereby candle material is continuously injection molded or extruded
C11C 5/028
{by shaping a preform, e.g. forming the butts, trimming}

Definition statement

This place covers:
Processes whereby the candle is carved or compressed into shape from preformed candle.