**C11B**

PRODUCING (PRESSING, EXTRACTION), REFINING AND PRESERVING FATS, FATTY SUBSTANCES (e.g. LANOLIN), FATTY OILS AND WAXES, INCLUDING EXTRACTION FROM WASTE MATERIALS; ESSENTIAL OILS; PERFUMES (drying-oils C09F)

**Definition statement**

*This place covers:*

- Methods and apparatus for preparation of fats from raw material
- Refining the fats; methods and apparatus thereof
- Preservation of fats
- Separating and recovery of fats.

**Relationships with other classification places**

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

**References**

**Limiting references**

*This place does not cover:*

| Use of fats in foods in general | A21D, A23B, A23L |
| Fat compositions | A23D |
| Use of fats in animal feeds | A23K |
| Preparation of carboxylic acid esters | C07C 67/00, C07C 67/48 |
| Fuels from fats, e.g. biodiesel | C10L |
| Lubricants from fats | C10M |
| Preparation of oxygen-containing organic compounds e.g. fats, fatty oils, ester-type waxes, oxidized oils or fats by processes using enzymes of microorganisms | C12P 7/64 |

**Glossary of terms**

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

| Essential oil | A concentrated, hydrophobic liquid containing volatile aromatic compounds from plants |
| Esterification | Reaction between acid and alcohol resulting in ester bond |
| Fat | Esters of glycerol and fatty acids, generally in solid form |
| Fatty acid | A carboxylic acid consisting of a hydrocarbon chain, which may have unsaturations and a terminal carboxyl group |
| Hydrogenation | Chemical process that adds hydrogen atoms to a molecule |
| Isomerizing | Process by which one molecule is transformed into another molecule which has exactly the same atoms |
| Lipid | Organic compounds based on fatty acids, generally hydrophobic |
| Oil | Fat which is in liquid form |
Wax

Any of a group of substances composed of hydrophobic hydrocarbons, alcohols, fatty acids, and esters that are solid at ambient temperatures.

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

**C11B 1/00**

Production of fats or fatty oils from raw materials

**Definition statement**

*This place covers:*
Separating fats/oils from source.

**C11B 1/02**

Pretreatment

**Definition statement**

*This place covers:*
Processes for facilitating separation of fats/oils from sources.

**C11B 1/025**

{by enzymes or microorganisms, living or dead}

**Definition statement**

*This place covers:*
Pretreatment with objective of facilitating separation essentially when enzyme mediated, either via direct addition or indirectly via microbes.

**C11B 1/04**

of vegetable raw material {**(C11B 1/025 takes precedence)**}

**Definition statement**

*This place covers:*
Separating from fats/oils sources which have cell walls.
**C11B 1/06**  
by pressing

**Definition statement**  
This place covers:  
Facilitating separation using extrusion, rollers, expressers, etc.

**C11B 1/08**  
by hot pressing

**Definition statement**  
This place covers:  
Facilitating separation by raising temperature or not cooling.

**C11B 1/10**  
by extracting

**Definition statement**  
This place covers:  
Separating from fats/oil sources using extractants (typically fluids)

**C11B 1/102**  
{in counter-current; utilisation of an equipment wherein the material is conveyed by a screw}

**Definition statement**  
This place covers:  
Separating from fats/oil sources when source and extractant move in opposite directions and use of extruders in combination with added extractant.

**C11B 1/104**  
{using super critical gases or vapours}

**Definition statement**  
This place covers:  
Separating from fats/oil sources with the aid of super- of near -critical fluids

**C11B 1/106**  
{using ultra-sounds}

**Definition statement**  
This place covers:  
Separating from fats/oil sources with the aid of sound above 20kHz.
C11B 1/108
{after-treatment, e.g. of miscellae}

Definition statement
This place covers:
All post separation treatment of extraction media.

C11B 1/12
by melting out

Definition statement
This place covers:
Separating from fats/oil sources with direct application of heat.

C11B 1/14
with hot water or aqueous solutions

Definition statement
This place covers:
Separating from fats/oil sources with application of heat via water or solutions.

C11B 1/16
with steam

Definition statement
This place covers:
Separating from fats/oil sources with application of heat via gaseous water.

C11B 3/00
Refining fats or fatty oils

Definition statement
This place covers:
Undefined processes for removing undesired material from fats/oils.

C11B 3/001
{by a combination of two or more of the means hereafter}

Definition statement
This place covers:
Processes for removing undesired material from fats/oil where a combination of processes is required.
C11B 3/003
(by enzymes or microorganisms, living or dead)

Definition statement
This place covers:
Processes for removing undesired material from fats/oil where process is essentially enzyme mediated, either via direct addition or indirectly via microbes.

C11B 3/005
(by wave energy or electric current, e.g. electrodialysis)

Definition statement
This place covers:
Processes for removing undesired material from fats/oil where process is based energy which has a frequency, e.g. sound or radiation.

C11B 3/006
(by extraction)

Definition statement
This place covers:
Processes for removing undesired material from fats/oil where process uses fluids.

C11B 3/008
(by filtration, e.g. including ultra filtration, dialysis (C11B 3/005 takes precedence))

Definition statement
This place covers:
Processes for removing undesired material from fats/oil where process depends on size retention.

C11B 3/02
by chemical reaction {(C11B 3/003 takes precedence)}

Definition statement
This place covers:
Processes for removing undesired material from fats/oil where process depends chemical change.

C11B 3/04
with acids

Definition statement
This place covers:
Processes for removing undesired material from fats/oil where process depends chemical change influenced by acidic material or pH<7.
**C11B 3/06**

with bases

**Definition statement**

*This place covers:*

Processes for removing undesired material from fats/oil where process depends chemical change influenced by alkaline material or pH>7.

**C11B 3/08**

with oxidising agents

**Definition statement**

*This place covers:*

Processes for removing undesired material from fats/oil where process depends chemical change influenced by reactions involving removal of electrons, e.g. peroxo compounds or hypochlorites.

**C11B 3/10**

by adsorption

**Definition statement**

*This place covers:*

Processes for removing undesired material from fats/oil where process depends physico-chemical attraction to solids, e.g. zeolites.

**Special rules of classification**

Classification is also made in group B01D 15/08 insofar as subject matter of general interest relating to chromatography is concerned.

**C11B 3/12**

by distillation

**Definition statement**

*This place covers:*

Processes for removing undesired material from fats/oil where process depends on change to gaseous phase, e.g. short path or wiped film.

**C11B 3/14**

with the use of indifferent gases or vapours, e.g. steam

**Definition statement**

*This place covers:*

Processes for removing undesired material from fats/oil where process depends change to gaseous phase using steam as boiling point depressant.
C11B 3/16

by mechanical means

Definition statement
This place covers:
Processes for removing undesired material from fats/oil where process depends on purely physical forces, e.g. gravity, decantation or centrifugation.

C11B 5/00

Preserving by using additives, e.g. anti-oxidants

Definition statement
This place covers:
Prevention of deterioration of oils/fats by addition of substances.

Special rules of classification
In groups C11B 5/0007 - C11B 5/0092, in the absence of an indication to the contrary, a composition is classified in the last appropriate place.

C11B 5/0007

{Organic substances}

Definition statement
This place covers:
Prevention of deterioration of oils/fats by addition of carbon containing substances generally.

C11B 5/0014

{Hydrocarbons}

Definition statement
This place covers:
Prevention of deterioration of oils/fats by addition of substances having only C and H constituents.

C11B 5/0021

{containing oxygen}

Definition statement
This place covers:
Prevention of deterioration of oils/fats by addition of O containing substances, generally organic.
C11B 5/0028  
{Carboxylic acids; Their derivates}

Definition statement
This place covers:
Prevention of deterioration of oils/fats by addition of substances containing COOH groups or anions, esters or salts thereof, e.g. acetate or fatty acids.

C11B 5/0035  
{Phenols; Their halogenated and aminated derivates, their salts, their esters with carboxylic acids}

Definition statement
This place covers:
Prevention of deterioration of oils/fats by addition of substances containing hydroxy group (including deprotonated) attached to aromatic ring structure, e.g. quinones, tocols or polyphenols.

C11B 5/0042  
{containing nitrogen}

Definition statement
This place covers:
Prevention of deterioration of oils/fats by addition of nitrogen containing substances, e.g. N₂, peptides or amino acids.

C11B 5/005  
{Amines or imines (C11B 5/0035 takes precedence)}

Definition statement
This place covers:
Prevention of deterioration of oils/fats by addition of substances with a free amine or imine groups.

C11B 5/0057  
{Amides or imides}

Definition statement
This place covers:
Prevention of deterioration of oils/fats by addition of substances with free amide or imide group.

C11B 5/0064  
{Heterocyclic compounds containing nitrogen in the ring}

Definition statement
This place covers:
e.g. quinolines or pyroles.
C11B 5/0071
{containing halogens, sulfur or phosphorus (halogenated phenols C11B 5/0035)}

Definition statement
This place covers:
e.g. chloro, thio or methio compounds.

C11B 5/0078
{Metal hydrides or organo-metallic compounds, i.e. organic compounds containing a metal-to-carbon link}

Definition statement
This place covers:
e.g. butyltin, ferrocene or silica hydrides.

C11B 5/0085
{Substances of natural origin of unknown constitution, f.i. plant extracts}

Definition statement
This place covers:
e.g. rosemary, sage, garlic or tea.

C11B 5/0092
{Mixtures}

Definition statement
This place covers:
Prevention of deterioration of oils/fats by addition of known mixtures of substances.

C11B 7/00
Separation of mixtures of fats or fatty oils into their constituents, e.g. saturated oils from unsaturated oils

Definition statement
This place covers:
Separation where the process is undefined.

Special rules of classification
In groups C11B 7/0008 - C11B 7/0091, in the absence of an indication to the contrary an invention is classified in the last appropriate place.
C11B 7/008
{by differences of solubilities, e.g. by extraction, by separation from a solution by means of anti-solvents (addition of a minor amount of solvent intended to lower the melting point \text{C11B 7/0083, C11B 7/0091})}

Definition statement
This place covers:
Separation of oils/fats where the process uses fluids and differential solubilities/miscibilities.

C11B 7/0016
{in hydrocarbons or halogenated hydrocarbons (in pressure liquefied gases \text{C11B 7/005})}

Definition statement
This place covers:
e.g. hexanes.

C11B 7/0025
{in solvents containing oxygen in their molecule}

Definition statement
This place covers:
e.g. acetone, carboxylic acid derivatives or alcohols.

C11B 7/0033
{in solvents containing other heteroatoms in their molecule}

Definition statement
This place covers:
e.g. nitropropane or sulfoxides.

C11B 7/0041
{in mixtures of individualized solvents (water is not taken into account)}

Definition statement
This place covers:
e.g. blends or mixtures.

C11B 7/005
{in solvents used at superatmospheric pressures}

Definition statement
This place covers:
e.g. near or super-critical fluids.
**C11B 7/0058**

{in solvents or mixtures of solvents of different natures or compositions used in succession}

**Definition statement**

*This place covers:*

e.g. solvent gradient systems or gas liquid mixtures.

**C11B 7/0066**

{between two or more non-miscible solvent phases}

**Definition statement**

*This place covers:*

e.g. bi- or tri-phasic systems.

**C11B 7/0075**

{by differences of melting or solidifying points}

**Definition statement**

*This place covers:*

Separation of oils/fats where the process uses heating or cooling and exploits, e.g. winterizing or crystallizing.

**C11B 7/0083**

{with addition of auxiliary substances, e.g. crystallisation promotors, filter aids, melting point depressors, (if a characterised solution is formed C11B 7/0008)}

**Definition statement**

*This place covers:*

Separation of oils/fats where the process uses separation additives, e.g. urea, chelation, salts or complexation.

**C11B 7/0091**

{non-solvents, e.g. water wherein the fat or oil is dispersed account a more washing out of fractions is not taken into}

**Definition statement**

*This place covers:*

e.g. wetting agents or pressure.
**C11B 9/00**

**Essential oils; Perfumes (synthesis of chemical substances C07)**

**Definition statement**

*This place covers:*

Perfume compositions otherwise not falling under the subclasses C11B 9/0003 - C11B 9/0096; Essential oil compositions; testing methods for perfumes which are not characterized by the equipment used, e.g. sniffer tests.

**Relationships with other classification places**

**Multiple classification:**

Perfume compounds or compositions described as being suitable for flavoring applications are also classified under A23L 27/00 - essential oils described as being suitable for flavoring applications are also classified under A23L 27/12 or A23L 27/13.

**References**

**Limiting references**

*This place does not cover:*

<table>
<thead>
<tr>
<th>Aromatherapy, air freshening methods and air fresheners</th>
<th>A61L 9/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perfume compositions characterized only by non-fragrant ingredients, e.g. emulsifiers, preservatives or stabilizer</td>
<td>A61Q 13/00</td>
</tr>
<tr>
<td>Body deodorants and antiperspirants</td>
<td>A61Q 15/00</td>
</tr>
<tr>
<td>Synthesis of perfume compounds and the compounds per se</td>
<td>C07C 1/00</td>
</tr>
<tr>
<td>Detergent compositions containing perfume ingredients</td>
<td>C11D 3/50</td>
</tr>
</tbody>
</table>

**Informative references**

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

<table>
<thead>
<tr>
<th>Flavorings</th>
<th>A23L 27/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essential oils from non-citrus fruit, used for flavoring applications</td>
<td>A23L 27/12</td>
</tr>
<tr>
<td>Essential oils from citrus fruit, used for flavoring applications</td>
<td>A23L 27/13</td>
</tr>
</tbody>
</table>

**Special rules of classification**

In C11B 9/0007 - C11B 9/0069, classify each compound under one class only, according to last place rule. All exemplified compounds to be classified.

**Synonyms and Keywords**

*In patent documents, the following words/expressions are often used as synonyms:*

- "volatile oils", "ethereal oils", "aetherolea" and "fragrances"
**C11B 9/0003**

{Compounds of unspecified constitution defined by the chemical reaction for their preparation}

**Definition statement**

*This place covers:*

Reaction products of fragrant compounds with further chemical compounds, adapted to release the fragrant compound when later activated by e.g. heat.

**References**

**Limiting references**

*This place does not cover:*

<table>
<thead>
<tr>
<th>Compound Type</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essential oils</td>
<td>C11B 9/00</td>
</tr>
<tr>
<td>Protected perfumes in detergent compositions</td>
<td>C11D 3/502</td>
</tr>
<tr>
<td>Perfume compounds in detergent compositions which generate a fragrance upon thermal or chemical activation</td>
<td>C11D 3/507</td>
</tr>
</tbody>
</table>

**Informative references**

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

<table>
<thead>
<tr>
<th>Compound Type</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flavorings</td>
<td>A23L 27/00</td>
</tr>
<tr>
<td>Essential oils from non-citrus fruit, used for flavoring applications</td>
<td>A23L 27/12</td>
</tr>
</tbody>
</table>

**Special rules of classification**

For pro-perfumes, the fragrance-generating precursor compound according to one of the classes C11B 9/0007 - C11B 9/0069 should also be classified.

**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>Pro-perfume</td>
<td>Fragrant compound obtained by reacting a fragrance-generating precursor compound, typically an aldehyde or ketone, with at least one additional compound</td>
</tr>
</tbody>
</table>

**C11B 9/0007**

{Aliphatic compounds}

**Definition statement**

*This place covers:*

Fragrant compounds with no rings.
References

Limiting references

This place does not cover:

| Alicyclic ring compounds; Aromatic ring compounds; Heterocyclic ring compounds | C11B 9/0026 - C11B 9/0069 |

C11B 9/0011

{containing S}

Definition statement

This place covers:
Aliphatic sulfur compounds, e.g. mercaptans or thiols.

C11B 9/0015

{containing oxygen as the only heteroatom}

Definition statement

This place covers:
Aliphatic compounds containing an oxygen atom, e.g. alcohols, ethers, aldehydes or ketones.

References

Limiting references

This place does not cover:

| Carboxylic acids; Salts or esters thereof | C11B 9/0019 |
| Aliphatic aminoalcohols | C11B 9/0023 |

C11B 9/0023

{containing nitrogen as the only heteroatom}

Definition statement

This place covers:
Aliphatic compounds containing nitrogen atoms, e.g. amines or aminoalcohols.

C11B 9/0026

{compounds containing an alicyclic ring not condensed with another ring}

Definition statement

This place covers:
Aliphatic ring compounds, saturated or unsaturated, optionally with substituents bonded to the ring, these substituents may include heteroatoms, e.g. halogen atoms, hydroxy groups or ether linkages.
References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Condensed rings; Spiro compounds; Aromatic ring compounds; Heterocyclic ring compounds</th>
</tr>
</thead>
</table>

C11B 9/003

{the ring containing less than six carbon atoms}

Definition statement

This place covers:
Compounds containing cyclopentane, cyclopentene, cyclobutane, cyclobutene or cyclopropane rings.

C11B 9/0034

{the ring containing six carbon atoms}

Definition statement

This place covers:
Cyclohexane or cyclohexene compounds.

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Compounds with a benzene ring</th>
</tr>
</thead>
<tbody>
<tr>
<td>C11B 9/0061</td>
</tr>
</tbody>
</table>

C11B 9/0038

{the ring containing more than six carbon atoms}

Definition statement

This place covers:
Cycloheptane; Cycloheptene or larger ring compounds.

C11B 9/0053

{both rings being six-membered}

Definition statement

This place covers:
Naphthalene compounds.
C11B 9/0061
{compounds containing a six-membered aromatic ring not condensed with another ring}

References
Limiting references
This place does not cover:

<table>
<thead>
<tr>
<th>Spiro compounds containing a heterocyclic ring system which has only O or S as ring heteroatoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>C11B 9/0088</td>
</tr>
</tbody>
</table>

C11B 9/02
Recovery or refining of essential oils from raw materials

References
Limiting references
This place does not cover:

<table>
<thead>
<tr>
<th>Essential oil compositions for perfume applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>C11B 9/00</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Recovery of essential oils intended for flavoring applications only</th>
</tr>
</thead>
<tbody>
<tr>
<td>A23L 27/12, A23L 27/13</td>
</tr>
</tbody>
</table>

C11B 9/022
{Refining}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:
Refining and purification of essential oils, e.g. for removing unwanted constituents such as allergens.

C11B 9/025
{Recovery by solvent extraction}

Definition statement
This place covers:
Extraction of essential oils from raw materials using an organic solvent or an inorganic solvent, e.g. water or supercritical CO₂.
References

Informative references

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

| Solvent extraction of natural raw materials to produce flavorings | A23L 27/11 |

C11B 9/027

{Recovery of volatiles by distillation or stripping}

References

Informative references

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

| Distilling, stripping or recovering volatile compounds intended for flavoring applications | A23L 27/115 |

Glossary of terms

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

| Stripping | Removal of volatile compounds from a liquid stream by a vapour stream, typically steam or a heated gas |

C11B 11/00

Recovery or refining of other fatty substances, e.g. lanolin, waxes (synthetic waxes C07, C08; mineral waxes C10G)

Definition statement

This place covers:
Specific cases of recovery and refining of non-glyceride material containing fatty acids.

References

Informative references

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

| Organic chemistry | C07 |
| Organic macromolecular compounds | C08 |
| Cracking hydrocarbon oils, production of liquid hydrocarbon mixtures | C10G |
C11B 13/00
Recovery of fats, fatty oils, or fatty acids from waste materials (mechanical separation from waste water C02F, E03F)

Definition statement
This place covers:
Separating greasy materials, e.g. trap grease, yellow grease or used cooking oils from refuse, garbage, rubbish, etc.

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

| Treatment of water, waste water, sewage or sludge | C02F |
| Sewers, cesspools                                | E03F |

C11B 13/005
(of residues of the fabrication of wood-cellulose (in particular tall-oil))

Definition statement
This place covers:
Recovery of fats, fatty oils or fatty acids obtained as by-products of wood-cellulose process, e.g. rosin.

C11B 13/02
from soap stock

Definition statement
This place covers:
Recovery or refining of fats/oils from aqueous caustic refining by product.

C11B 13/04
from spent adsorption materials

Definition statement
This place covers:
Recovery of fats, fatty oils or fatty acids from used adhered substances, e.g. from filter cake, bleaching earths.

C11B 15/00
Solidifying fatty oils, fats, or waxes by physical processes

Definition statement
This place covers:
Coagulating fatty oils, fats or waxes by non-chemical processes, e.g. prilling, coating.