

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.
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Synonyms and Keywords

In patent documents, the following abbreviations are often used:

DE	Degree of esterification
DG	Diglyceride
FA	Fatty acid
FAME	Fatty Acid Methyl Ester
HUFA	Highly Unsaturated Fatty Acid
MG	Monoglyceride
PUFA	Polyunsaturated Fatty Acid
TG	Triglyceride

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- or 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. electro dialysis}****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 $\text{pH} > 7$.

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. peroxy 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 derivatives}

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 derivatives, 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, tocopherols 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 pyrroles.

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 7/0008

{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 [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 [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. cristallisation 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:

Aromatherapy, air freshening methods and air fresheners	A61L 9/00
Perfume compositions characterized only by non-fragrant ingredients, e.g. emulsifiers, preservatives or stabilizer	A61Q 13/00
Body deodorants and antiperspirants	A61Q 15/00
Synthesis of perfume compounds and the compounds per se	C07C 1/00 , C07D1/00
Detergent compositions containing perfume ingredients	C11D 3/50

Informative references

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

Flavorings	A23L 27/00
Essential oils from non-citrus fruit, used for flavoring applications	A23L 27/12
Essential oils from citrus fruit, used for flavoring applications	A23L 27/13

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:

Essential oils	C11B 9/00 ,
Protected perfumes in detergent compositions	C11D 3/502
Perfume compounds in detergent compositions which generate a fragrance upon thermal or chemical activation	C11D 3/507

Informative references

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

Flavorings	A23L 27/00
Essential oils from non-citrus fruit, used for flavoring applications	A23L 27/12

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:

Pro-perfume	Fragrant compound obtained by reacting a fragrance-generating precursor compound, typically an aldehyde or ketone, with at least one additional compound
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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
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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:

Condensed rings; Spiro compounds; Aromatic ring compounds; Heterocyclic ring compounds	C11B 9/0042 - C11B 9/0069
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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:

Compounds with a benzene ring	C11B 9/0061
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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:

Spiro compounds containing a heterocyclic ring system which has only O or S as ring heteroatoms	C11B 9/0088
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C11B 9/02

Recovery or refining of essential oils from raw materials

References**Limiting references**

This place does not cover:

Essential oil compositions for perfume applications	C11B 9/00
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Informative references

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

Recovery of essential oils intended for flavoring applications only	A23L 27/12 , A23L 27/13
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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
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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
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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
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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 oil 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.