

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH)

Revision date: 13 Feb 2024

Print date: 13 Feb 2024

Version: 7



MERCURIA
BIOFUELS BRUNSBÜTTEL GMBH & CO KG

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FAME Distillation Residues

SECTION 1: Identification of the substance/mixture and of the company/ undertaking

1.1. Product identifier

Trade name/designation:

FAME Distillation Residues

Other means of identification:

FAME Distillation Residues, Bioliquid Heating Oil

CAS No.:

102242-52-4

REACH No.:

01-2119552408-36-0013

EC No.:

310-083-8

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture:

Heating fuel, energy carrier for other processes, base material for extraction of special vegetable derived substances

For reasons of clarity and comprehensibility the following section contains only the most important identified uses. For additional uses please consult the manufacturer or the the trading company.

Relevant identified uses:

Sector of uses [SU]

SU 8: Manufacture of bulk, large scale chemicals (including petroleum products)

SU 9: Manufacture of fine chemicals

SU 23: Electricity, steam, gas water supply and sewage treatment

Product Categories [PC]

PC 13: Fuels

PC 19: Intermediate (precursor)

PC 26: Paper and board treatment products

Process categories [PROC]

PROC 1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

PROC 2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC 3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC 4: Chemical production where opportunity for exposure arises

PROC 5: Mixing or blending in batch processes

PROC 8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities

Environmental release categories [ERC]

ERC 1: Manufacture of the substance

ERC 2: Formulation into mixture (mixtures)

ERC 8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

ERC 8e: Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)

1.3. Details of the supplier of the safety data sheet

Supplier (manufacturer/importer/only representative/downstream user/distributor):

Mercuria Biofuels Brunsbüttel GmbH & Co. KG

Fährstr. 51

25541 Brunsbüttel

Germany

Telephone: +49 4852 836 8035

Telefax: +49 4852 836 8003

E-mail: fwerner@mercuria.com

E-mail (competent person): fwerner@mercuria.com

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1.4. Emergency telephone number

GIZ Nord, 24h: +49 (5 51) 1 92 40

Company: Laboratory Manager, +49 4852 836 8035 (Only available during office hours.)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [CLP]

The substance is classified as not hazardous according to regulation (EC) No 1272/2008 [CLP].

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

According to EC directives or the corresponding national regulations the product does not have to be labelled.

Hazard components for labelling:

No

Hazard statements: none

Supplemental hazard information: none

Precautionary statements: none

Special rules for supplemental label elements for certain mixtures:

No

2.3. Other hazards

Adverse human health effects and symptoms:

May cause minor eye irritation.

Vapors produced by heating the substance, or finely misted materials, may irritate the mucous membranes and cause dizziness, and nausea.

SECTION 3: Composition/information on ingredients

3.1. Substances

Description:

Fatty acids, C6-24 and C6-24 unsatd., Methylesters, distn. residues

The substance consists mainly of saturated and unsaturated fatty acids methyl ester (typical carbon chain length C6-C24).

The substance may contain residuals of glycerol, waxes, triglycerides and partial glycerides of a typical carbon chain length of C6-C24. Accumulation of hetero elements or heavy metals is possible.

SECTION 4: First aid measures

4.1. Description of first aid measures

Following inhalation:

In case of accident by inhalation: remove casualty to fresh air and keep at rest. Seek medical attention if symptoms persist.

In case of skin contact:

After contact with skin, wash immediately with plenty of water and soap.

IF ON CLOTHING: Change contaminated, saturated clothing.

After eye contact:

IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Following ingestion:

Do NOT induce vomiting.

Rinse mouth thoroughly with water.

If conscious, give half a litre of water to drink immediately.

Never give anything by mouth to an unconscious person or a person with cramps.

4.2. Most important symptoms and effects, both acute and delayed

May cause minor eye irritation.

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Vapors produced by heating the substance, or finely misted materials, may irritate the mucous membranes and cause dizziness, and nausea.

4.3. Indication of any immediate medical attention and special treatment needed

No special medical actions required.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Carbon dioxide (CO₂)

Water mist

alcohol resistant foam

Extinguishing powder

Unsuitable extinguishing media:

Strong water jet Water stream may splash the burning liquid and spread fire.

Consider halon use may not be permissible in some countries.

5.2. Special hazards arising from the substance or mixture

In combustion emits toxic fumes of carbon dioxide / carbon monoxide.

Soaked rags or spill absorbents (i.e. oil dry, sacks, sand) can cause spontaneous combustion if stored near combustibles and not handled properly.

5.3. Advice for firefighters

In case of fire: Wear self-contained breathing apparatus.

On danger by contact with substance: Wear protective gloves/protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Personal precautions:

Remove all sources of ignition.

If outside do not approach from downwind. If outside keep bystanders upwind and away from danger point.

Mark out the contaminated area with signs and prevent access to unauthorised personnel.

Turn leaking containers leaside up to prevent the escape of liquid.

Protective equipment:

During spraying wear suitable respiratory equipment.

Suitable gloves type NBR (Nitrile rubber), FKM (fluoro rubber), min 0.5 mm; Breakthrough times and swelling properties of the material must be taken into consideration.

Wear eye/face protection.

6.1.2. For emergency responders

Personal protection equipment:

Refer to section 6.1.1.

No Rubber boots !

6.2. Environmental precautions

Make sure spills can be contained, e.g. in sump pallets or kerbed areas.

Retain contaminated washing water and dispose it.

6.3. Methods and material for containment and cleaning up

For cleaning up:

Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents).

Recover large spills for salvage or disposal. Wash hard surfaces with safety solvent or detergent to remove remaining oil film.

Greasy nature will result in a slippery surface.

6.4. Reference to other sections

=> 8. Personal protection equipment

=> 13. Waste treatment methods

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6.5. Additional information

If appropriate sections 8 and 13 shall be referred to.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Protective measures

Advices on safe handling:

Note: Fatty Acid Methyl Esters with longer chain length are not classified as dangerous according to the criteria of CLP (Regulation CE 1272/2008). Specific Risk Management Measures are therefore not required. Nevertheless, the exposure of workers during and after normal operations should be minimised by the use of good industrial hygiene practice.

Direct contact with the substance should be avoided.

When using do not eat, drink or smoke.

Used working clothes should not be worn outside the work area.

Wash hands before breaks and after work.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels:

Keep container tightly closed in a cool, well-ventilated place.

Keep away from sources of ignition - No smoking.

Hints on storage assembly:

Do not store together with: Oxidising agent

Storage class (TRGS 510, Germany): 10 - Combustible liquids that cannot be assigned to any of the above storage classes

Further information on storage conditions:

Recommended storage temperature 15 °C - 60 °C

Below normal ambient temperatures, the material may solidify.

Not readily flammable

7.3. Specific end use(s)

Recommendation:

No sector specific guidance is available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No data available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

No data available

8.2.2. Personal protection equipment



Eye/face protection:

Wear eye/face protection.

Skin protection:

Hand protection: Wear protective gloves.

Suitable material: NBR (Nitrile rubber) FKM (fluoro rubber)

Breakthrough times and swelling properties of the material must be taken into consideration.

Respiratory protection:

Wear breathing apparatus if exposed to vapours/dusts/aerosols.

Other protection measures:

General health and safety measures: Wash hands and face before breaks and after work and take a shower if necessary.

Wash contaminated clothing before reuse.

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8.2.3. Environmental exposure controls

No data available

8.3. Additional information

DNELs & PNECs

DNELs

Population/route | Exposure pattern | Value

Workers.....Inhalation, Long-term systemic effects: 6.96 mg/m³

.....Dermal, Long-term systemic effects: 10 mg/kg bw/day

Consumers...Inhalation, Long-term systemic effects: 23 mg/m³

.....Dermal, Long-term systemic effects: 5 mg/kg bw/day

.....Oral, Long-term systemic effects: 5 mg/kg bw/day

PNECs

Compartment | Value

Water..... Freshwater: 2.504 mg/l

.....Marine water: 0.2504 mg/l

.....Intermittent releases: 25.04 mg/l

Sediment.....Not relevant

Soil.....Not relevant

Sewage treatment: 520 mg/l

Secondary poisoning: Not relevant

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

Physical state: Liquid / viscous

Colour: darkbrown

Odour: mild

Safety relevant basis data

Parameter	Value	at °C	① Method ② Remark
pH	not applicable		② Dissolved substance quantity: < 0.023 mg/l
Melting point	≥ 0 - ≤ 40 °C		① DIN ISO 3016
Freezing point	not applicable		
Initial boiling point and boiling range	≥ 300 - ≤ 570 °C		① ASTM D 7169 ② pressure: 1013 mbar
Flash point	≥ 150 - ≤ 220 °C		① EN ISO 2719
Evaporation rate	not applicable		
Upper/lower flammability or explosive limits	not applicable		
Vapour pressure	≥ 2 - ≤ 6 mbar	25 °C	① EN 13016-1
Vapour density	not applicable		
Density	≥ 878 - ≤ 910 kg/m ³	15 °C	① EN ISO 3675
Bulk density	not applicable		
Water solubility	≈ 0.023 mg/L		
Partition coefficient: n-octanol/water	≈ 6.2		① OECD 107
Dynamic viscosity	≥ 10 - ≤ 100 mPa*s	25 °C	① EN ISO 3104

9.2. Other information

Not readily flammable

Oxidising properties: Not oxidising.

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SECTION 10: Stability and reactivity

10.1. Reactivity

No known hazardous reactions.

10.2. Chemical stability

Substance is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.3. Possibility of hazardous reactions

The substance reacts with strong bases to form methanol.

10.4. Conditions to avoid

See incompatible materials.

10.5. Incompatible materials

Oxidising agent, strong
Alkali (lye), concentrated

10.6. Hazardous decomposition products

In combustion emits toxic fumes of carbon dioxide / carbon monoxide.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute oral toxicity:

(The data published in chapters 11 and 12 are based on studies concerning long chain fatty acid methyl ester. No impacts above will be expected.)

Acute toxicity (oral): LD₅₀: > 5000 mg/kg (Study is closely comparable to OECD 401; GLP)

Acute dermal toxicity:

Acute toxicity (dermal): Has been tested in a fixed dose test at 2000 mg/kg (C6-C12 ME, Rabbit): No sign of toxicity, Methode: EPA OPPTS 870.1200

Acute inhalation toxicity:

No data available

Skin corrosion/irritation:

Skin corrosion/irritation: In general, esters of long-chain fatty acid methyl esters are always negative with relation to irritation (from C18 onward), while esters of short-chain fatty acids are always (slightly) positive (up to C10). Methode: OECD 404

Serious eye damage/irritation:

Serious eye damage/irritation: Conjunctivae effects were observed 1 hour after exposure. Slight chemosis and slight conjunctivae were observed in two animals and four animals, respectively. Two animals presented conjunctivae with diffuse, crimson colour and individual vessels not easily discernible. These effects were fully reversible within 1 day. Methode: OECD 405

Respiratory or skin sensitisation:

Respiratory sensitisation: No information but no respiratory sensitisation is expected.

Skin sensitisation: Esterol C in corn oil was tested using the Guinea pig maximisation test.

No clinical signs and no deaths were noted during the study. No cutaneous reactions were observed after the challenge application. Under the experimental conditions of the study, it is concluded that Esterol C does not induce delayed contact hypersensitivity in guinea pig. Methode: OECD 406 (GLP)

Carcinogenicity:

Germ cell mutagenicity (bacteria), Esterol C: Ames test negative. Methode: OECD 471

In vitro cytogenicity test, Esterol C: Investigation in lymphocytes. negative Methode: OECD 473

In mammalian mutation test: Methyl myristate alone had no mitogenic activity. In combination with phytohemagglutinin, however, a comitogenic activity was found. Methode: EU Method B.17

Carcinogenicity: Methyl oleate and methyl 12-oxo-trans-10-octadecenoate have been tested for carcinogenicity by oral and subcutaneous administration. A positive effect of methyl oleate could not

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be assessed, while the results pointed to a promoter effect of methyl oxo-octadecenoate. Methode: EU Method B.32

Overall assessment on CMR properties No CMR properties are expected.

Additional information:

Repeated dose toxicity (subacute, subchronic, chronic): Reproductive toxicity Developmental effects/
Fertility effects: The tested substance revealed no effect in Screening for reproduction for a dose of until 1000 mg/kg. Methode: OECD 422

STOT-single exposure: No information available.

STOT- repeated exposure: The tested substance revealed no effect in Screening for reproduction for a dose of until 1000 mg/kg. Methode: OECD 422

* 11.2. Information on other hazards

Endocrine disrupting properties:

This substance does not have endocrine disrupting properties with respect to humans.

SECTION 12: Ecological information

12.1. Toxicity

Aquatic toxicity:

EC₅₀ (48 h): 2504 mg/l Methode: OECD 202

EC₅₀ (72 h): 73729 mg/l Methode: OECD 201

Terrestrial toxicity:

LC₅₀: (freshwater fish) 100000 mg/l

12.2. Persistence and degradability

Biodegradation:

All methyl esters of fatty acids are readily biodegradable in water, soil and sediments. They pass the 10 days windows with 62% of degradation. Half life in the three compartment is less than 2 -3 days. In some case even less than 1 day. Methode: ISO 10712

12.3. Bioaccumulative potential

Partition coefficient: n-octanol/water:

≈ 6.2; Method: OECD 107

Accumulation / Evaluation:

All methyl esters of fatty acids are readily biodegradable in water, soil and sediments. They pass the 10 days windows with 62% of degradation. Half life in the three compartment is less than 2 -3 days. In some case even less than 1 day. Methode: ISO 10712

12.4. Mobility in soil

The substance is very poorly soluble in water and readily biodegradable. The equilibrium partitioning method, following a fugacity model III indicate a partition of the substance on sediments of 85.5%, based on log K_{oc} > 5.63 at 22°C.

According to equilibrium partitioning Fugacity model III, the soil % is 1.61%, FAME have a soil primary biodegradation of less than 2 days.

12.5. Results of PBT and vPvB assessment

Fatty acids, C6-24 and C6-24-unsatd., Me esters, distr. residues CAS No.: 102242-52-4 EC No.: 310-083-8

Results of PBT and vPvB assessment: —

Fatty acids, C16-18 and C18-unsatd., Me esters is not regarded as PBT or vPvB based on physicochemical, environmental and toxicological properties. Fatty acids, C16-18 and C18-unsatd., Me esters is not regarded as P or vP based on readily biodegradability. Fatty acids, C16-18 and C18-unsatd., Me esters is not regarded as bioaccumulative based on the measured BCF of 3. The long-term no-observed effect concentration (Noec) for marine or freshwater organisms is not available because of the high biodegradation rate in environmental conditions.

The substance is not classified as carcinogenic (category 1A or 1B), mutagenic (category 1A or 1B), or toxic for reproduction (category 1A, 1B or 2).

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* 12.6. Endocrine disrupting properties

This substance does not have endocrine disrupting properties with respect to humans.

12.7. Other adverse effects

Further ecological information: The substance is considered as stable in the environmental range of pH. Hydrolysis happens with the presence of strong acids or basis, with release of methanol and fatty acids or its salts.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Incineration is recommended.

13.1.1. Product/Packaging disposal

Waste codes/waste designations according to EWC/AVV

Waste code product

07 06 99	Wastes not otherwise specified
07 07 99	Wastes not otherwise specified

SECTION 14: Transport information

Land transport (ADR/RID)	Inland waterway craft (ADN)	Sea transport (IMDG)	Air transport (ICAO-TI / IATA-DGR)
14.1. UN number or ID number			
No dangerous good in sense of these transport regulations.	No dangerous good in sense of these transport regulations.	No dangerous good in sense of these transport regulations.	No dangerous good in sense of these transport regulations.
14.2. UN proper shipping name			
No dangerous good in sense of these transport regulations.	No dangerous good in sense of these transport regulations.	No dangerous good in sense of these transport regulations.	No dangerous good in sense of these transport regulations.
14.3. Transport hazard class(es)			
not relevant	not relevant	not relevant	not relevant
14.4. Packing group			
not relevant	not relevant	not relevant	not relevant
14.5. Environmental hazards			
not relevant	not relevant	not relevant	not relevant
14.6. Special precautions for user			
not relevant	not relevant	not relevant	not relevant

14.7. Maritime transport in bulk according to IMO instruments

Not classified for this transport carrier.

Additional information:

No

SECTION 15: Regulatory information

* 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU legislation

No data available

15.1.2. National regulations

[DE] National regulations

Water hazard class

WGK:

1 - slightly hazardous to water

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Source:

Self-classification according to AwSV (substance).

15.2. Chemical Safety Assessment

For this substance a chemical safety assessment has been carried out.

SECTION 16: Other information

16.1. Indication of changes

11.2.	Information on other hazards
12.6.	Endocrine disrupting properties
15.1.	Safety, health and environmental regulations/legislation specific for the substance or mixture

16.2. Abbreviations and acronyms

Abbreviations:

CSA: Chemical Safety Assessment

PBT: Substance with persistent, bioaccumulative and toxic properties.

vPvB: Substance with very persistent and very bioaccumulative properties.

MFSU: Manufacture, formulation, supply and use

16.3. Key literature references and sources for data

See annex

16.4. Classification for mixtures and used evaluation method according to regulation (EC) No 1272/2008 [CLP]

The substance is classified as not hazardous according to regulation (EC) No 1272/2008 [CLP].

16.5. List of relevant hazard statements and/or precautionary statements from sections 2 to 15

No data available

16.6. Training advice

No data available

16.7. Additional information

This SDS is not required by Article 31 of Regulation 1907/2006/EU as the substance is not classified as hazardous, however, to comply with Article 32 of REACH and provide customers with relevant information the format of the SDS (according to Regulation 2015/830/EU) has been used.

Given data sheets are based on our present experiences, however they are no assurance of product properties and do not justify a contractual legal relationship.

The safety data sheet is designed in accordance with the requirements of Regulation (EU) 2020/878.

* Data changed compared with the previous version.

(FAME Distillation Residues)

Assigned to 'Fatty acids, C6-24 and C6-24 unsatd., Methyl esters distn. residues'

Literature

Allan J (2010a). combined Repeated Dose Toxicity Study with the reproduction/Developmental Toxicity screening Test in Rats. Testing laboratory: Charls River. Report no.: 495325. Owner company: European Biodiesel Board.

Allan J (2010b). combined Repeated Dose Toxicity Study with the reproduction/Developmental Toxicity screening Test in Rats. Testing laboratory: Charles River. Report no.: 495325. Owner company: European Biodiesel Board.

Allan J (2010c). FAME, according SDA group C10-C18 and C12-C22 (Biodiesel, broadband): Combined Repeated Dose Toxicity Study with the reproduction/Developmental Toxicity screening Test in Rats. Testing laboratory: Charls River. Report no.: 495367. Owner company: Arbeitsgemeinschaft Qualitätsmanagement Biodiesel e.V.

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Defleur P (1999b). Ester methylique de colza - Etude eco toxicoloogique pour determinatiion du WGK. Testing laboratory: BfB Oil Research S. A. Report no.: 15728. Owner company: Diester Industrie.

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Dr. Van Dievoet (1999). Etude toxicologique. Testing laboratory: BFB oil research. Owner company: BFB oil research. Study number: 14447.

Fina Research (1997). Assessment of the bioconcentration factor (BCF) of the fluid (67762-26-9) in the blue Mussel *Mytilus edulis*. Testing laboratory: Fina Research Laboratories. Report no.: ERT 97/241. Owner company: Fina Research. Study number: 184-6-2.

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Assigned to 'Fatty acids, C6-24 and C6-24 unsatd., Methyl esters distn. residues'

Gancet C (2009a). Fatty acids, C16-C18 and C18 unsaturated, methyl esters - Estimation of Adsorption Coefficient (Koc) on Soil and Sewage Sludge. Testing laboratory: Arkema Groupement de Recherches de Lacq - Analysis department. Report no.: 0066/09/A1. Owner company: Arkema France. Report date: 2010-01-14.

Gancet C (2009b). Fatty acids, C16 C18 and C18 unsaturated, methyl esters - fish(Danio, rerio), acute toxicity test under semistatic conditions. Testing laboratory: Groupement de recherches de LACQ (GRL). Report no.: 0048/08/B. Owner company: Arkema. Report date: 2009-08-20.

Haddouk H. (1999). Bacterial reverse mutation test. Testing laboratory: CIT. Report no.: 18051 MMO. Owner company: ARKEMA former ATOCHEM. Report date: 1999-07-27.

Haddouk H. (2000). In vitro mammalian chromosome aberration test in cultured human lymphocytes. Testing laboratory: CIT. Report no.: 19877MLH. Owner company: ARKEMA former Elf Atochem SA. Report date: 2000-12-08.

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