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

FRAGOLTHERM F-LT

United Kingdom: en

Version number: 2.0 Replaces version of: 2018-07-19 (1)

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

1.1 Product identifier

Identification of the substance

Trade name

Registration number (REACH)

EC number

1.3

CAS number

FRAGOL AG Solinger Straße 16 D-45481 Mülheim

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

Relevant identified uses

Heat transfer fluid Professional use Industrial use Do not use for private purposes (household)

Diethylbenzene

246-874-9

25340-17-4

htf@fragol.de

FRAGOLTHERM F-LT 01-2119493352-37-xxxx

Uses advised against

Germany Telephone: +49 (0)208-300 02-50 Telefax: +49 (0)208-300 02-33

Telefax: +49 (0)208-300 02-33 e-mail: htf@fragol.de Website: www.fragol.de

Details of the supplier of the safety data sheet

e-mail (competent person)

1.4 Emergency telephone number

Emergency information service

+49 (0)208-300 02-50 This number is only available during the following office hours: Mon-Fri 09:00 - 17:00

Poison centre			
Country	Name	Telephone	
United Kingdom	National Poisons Information Service (NPIS) (medical professionals only)	0344-8920111	
United Kingdom	NHS (general public)	non-emergency: 111 or a doctor; emergency: 999	

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

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

Section	Hazard class	Category	Hazard class and category	Hazard state- ment
2.6	flammable liquid	3	Flam. Liq. 3	H226
3.2	skin corrosion/irritation	2	Skin Irrit. 2	H315
3.10	aspiration hazard	1	Asp. Tox. 1	H304
4.1C	hazardous to the aquatic environment - chronic hazard	1	Aquatic Chronic 1	H410

For full text of abbreviations: see SECTION 16.





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The most important adverse physicochemical, human health and environmental effects The product is combustible and can be ignited by potential ignition sources. Spillage and fire water can cause pollution of watercourses.

Additional information

According to the results of its assessment, this substance is not a PBT or a vPvB.

2.2 Label elements

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

- signal word danger
- pictograms

GHS02, GHS07, GHS08, GHS09



 hazard statemen 	ts

H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H410	Very toxic to aquatic life with long lasting effects.

- precautionary statements

- precautionaly staten	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P302+P352	IF ON SKIN: Wash with plenty of water.
P331	Do NOT induce vomiting.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other hazards

Of no significance.

Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

SECTION 3: Composition/information on ingredients

3.1 Substances

Name of substance	Diethylbenzene
Identifiers	
REACH Reg. No	01-2119493352-37-xxxx
CAS No	25340-17-4
EC No	246-874-9
Molecular formula	C10H14
Molar mass	134.2 ^g / _{mol}



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SECTION 4: First aid measures

4.1 Description of first aid measures

General notes

Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth.

Following inhalation

Provide fresh air. If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. In case of respiratory tract irritation, consult a physician.

Following skin contact

Take off contaminated clothing. After contact with skin, wash immediately with plenty of water and soap.

Following eye contact

Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 15 minutes, holding the eyelids apart.

Following ingestion

Rinse mouth immediately and drink plenty of water. Do NOT induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms and effects are not known to date.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically. For specialist advice physicians should contact the poison centre.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water spray, Alcohol resistant foam, Dry extinguishing powder, Carbon dioxide (CO2)

Unsuitable extinguishing media

Water jet.

5.2 Special hazards arising from the substance or mixture

In case of insufficient ventilation and/or in use, may form flammable/explosive vapour-air mixture. Solvent vapours are heavier than air and may spread along floors. Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures.

Hazardous combustion products

During fire hazardous fumes/smoke could be produced.

5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Co-ordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

Special protective equipment for firefighters

Self-contained breathing apparatus (EN 133). Standard protective clothing for firefighters.



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SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety. Ventilate affected area.

For emergency responders

Wear breathing apparatus if exposed to vapours/dust/spray/gases. Wear suitable protective clothing and gloves.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. If substance has entered a water course or sewer, inform the responsible authority.

6.3 Methods and material for containment and cleaning up

Advices on how to contain a spill

Covering of drains.

Advices on how to clean up a spill

Wipe up with absorbent material (e.g. cloth, fleece).

Appropriate containment techniques

Use of adsorbent materials. Absorbent material (e.g. sand, diatomaceous earth, acid binder, universal binder, sawdust, etc.).

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Recommendations

- measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation. Avoidance of ignition sources. Keep away from sources of ignition - No smoking. Take precautionary measures against static discharge. Use only in well-ventilated areas. Due to danger of explosion, prevent leakage of vapours into cellars, flues and ditches. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Take precautionary measures against static discharge.

- specific notes/details

Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures. Vapours are heavier than air, spread along floors and form explosive mixtures with air.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

Managing of associated risks

- explosive atmospheres

Keep container tightly closed and in a well-ventilated place. Use local and general ventilation. Keep cool. Protect from sunlight.

- flammability hazards

Keep away from sources of ignition - No smoking. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge. Protect from sunlight.



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Control of effects

Protect against external exposure, such as

Heat. High temperatures. UV-radiation/sunlight. Static discharges.

Consideration of other advice

Store in a well-ventilated place. Keep container tightly closed.

- ventilation requirements

Use local and general ventilation. Ground/bond container and receiving equipment.

- packaging compatibilities

Only packagings which are approved (e.g. acc. to ADR) may be used.

7.3 Specific end use(s)

There is no additional information.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

National limit values

No information available.

Relevant DNELs/DMELs/PNECs and other threshold levels

No data available.

Relevant DNELs and other threshold levels				
Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
DNEL	21.2 mg/m ³	human, inhalatory	worker (industry)	chronic - systemic effects
DNEL	22 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects

Relevant PNECs and other threshold levels

Endpoint	Threshold level	Organism	Environmental compart- ment	Exposure time
PNEC	0.001 ^{mg} / _l	aquatic organisms	freshwater	short-term (single instance)
PNEC	0 ^{mg} / _l	aquatic organisms	marine water	short-term (single instance)
PNEC	100 ^{mg} / _l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
PNEC	0.063 ^{mg} / _{kg}	aquatic organisms	freshwater sediment	short-term (single instance)
PNEC	0.006 ^{mg} / _{kg}	aquatic organisms	marine sediment	short-term (single instance)
PNEC	0.012 ^{mg} / _{kg}	terrestrial organisms	soil	short-term (single instance)

8.2 Exposure controls

Appropriate engineering controls

General ventilation.

Individual protection measures (personal protective equipment)

Eye/face protection



Use safety goggle with side protection (EN 166).



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Skin protection

Protective clothing (EN 340).

- hand protection



Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

- type of material

PVC: polyvinyl chloride, PVA: polyvinyl alcohol, Viton®

- material thickness

>0.5 mm

- breakthrough times of the glove material

>480 minutes (permeation: level 6).

- other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.

Respiratory protection

In case of inadequate ventilation wear respiratory protection. Type: A-P2 (combined filters against particles and organic gases and vapours, colour code: Brown/White). Breathing apparatus only in case of aerosol or mist formation.

Environmental exposure controls

Use appropriate container to avoid environmental contamination. Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	liquid
Colour	light yellow
Odour	characteristic

Other safety parameters

pH (value)	not determined
Pour point	-75 °C (ISO 3016:1994)
Initial boiling point and boiling range	not determined
Flash point	>58 °C (DIN 51758)
Evaporation rate	not determined
Flammability (solid, gas)	not relevant, (fluid)
Explosive limits	not determined
Vapour pressure	not determined



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Density	0.866 ^g / _{cm³} at 20 °C
Vapour density	this information is not available
Solubility(ies)	
- water solubility	insoluble
Partition coefficient	
- n-octanol/water (log KOW)	>3.72-<4.45 (pH value: 7, 25 °C) (ECHA)
Auto-ignition temperature	429 °C
Viscosity	not determined
Explosive properties	none
Oxidising properties	none

9.2 Other information

Surface tension

0.036 ^N/_m (242 K) (ECHA)

SECTION 10: Stability and reactivity

10.1 Reactivity

It's a reactive substance. Risk of ignition.

If heated:

Risk of ignition.

10.2 Chemical stability

See below "Conditions to avoid".

10.3 Possibility of hazardous reactions

No known hazardous reactions.

10.4 Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Hints to prevent fire or explosion

Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Take precautionary measures against static discharge.

10.5 Incompatible materials

Oxidisers

10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.



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SECTION 11: Toxicological information

11.1 Information on toxicological effects

Classification according to GHS (1272/2008/EC, CLP)

Acute toxicity

Shall not be classified as acutely toxic.

Acute toxicity			
Exposure route	Endpoint	Value	Species
dermal	LD50	>5,000 ^{mg} / _{kg}	rabbit

Skin corrosion/irritation

Causes skin irritation. May cause slight irritation.

Serious eye damage/eye irritation

May cause slight irritation.

Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Shall not be classified as carcinogenic.

Reproductive toxicity

Shall not be classified as a reproductive toxicant.

Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure).

Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

May be fatal if swallowed and enters airways.

SECTION 12: Ecological information

12.1 Toxicity

Very toxic to aquatic life with long lasting effects.

Aquatic toxicity (acute)			
Endpoint	Value	Species	Exposure time
EC50	2.01 ^{mg} / _l	aquatic invertebrates	48 h
LC50	8.9 ^{mg} / _l	aquatic invertebrates	48 h



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12.2 Persistence and degradability

Process of degradability			
Process Degradation rate Time			
carbon dioxide generation	4.7 %	28 d	

12.3 Bioaccumulative potential

The substance fulfils the very bioaccumulative criterion. The bioaccumulation potential is low.

n-octanol/water (log KOW)	>3.72 - <4.45 (pH value: 7, 25 °C) (ECHA)
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12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

12.6 Other adverse effects

Data are not available.

Endocrine disrupting potential Not listed.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Waste treatment-relevant information Solvent reclamation/regeneration.

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used. Handle contaminated packages in the same way as the substance itself.

Remarks

Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

SEC	SECTION 14: Transport information		
14.1	UN number	2049	
14.2	UN proper shipping name	DIETHYLBENZENE	
14.3	Transport hazard class(es)		
	Class	3 (flammable liquids)	
14.4	Packing group	III (substance presenting low danger)	
14.5	Environmental hazards	hazardous to the aquatic environment	

14.6 Special precautions for user

Provisions for dangerous goods (ADR) should be complied within the premises.

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code Not applicable.



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Transport of dangerous goods by road,	rail and inland waterway (ADR/RID/ADN)
UN number	2049
Proper shipping name	DIETHYLBENZENE
Class	3
Classification code	F1
Packing group	Ш
Danger label(s)	3, fish and tree
Environmental hazards	yes (hazardous to the aquatic environment)
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
Transport category (TC)	3
Tunnel restriction code (TRC)	D/E
Hazard identification No	30
Emergency Action Code	3Y
International Maritime Dangerous Good	ls Code (IMDG)
UN number	2049
Proper shipping name	DIETHYLBENZENE
Class	3
Marine pollutant	yes (hazardous to the aquatic environment)
Packing group	III
Danger label(s)	3, fish and tree
Special provisions (SP)	-
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
EmS	F-E, S-D
Stowage category	A
International Civil Aviation Organization	n (ICAO-IATA/DGR)
UN number	2049
Proper shipping name	Diethylbenzene
Class	3
Environmental hazards	yes (hazardous to the aquatic environment)
Packing group	Ш
Danger label(s)	3





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Excepted quantities (EQ)	E1	
Limited quantities (LQ)	10 L	

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture Relevant provisions of the European Union (EU) Restrictions according to REACH, Annex XVII

Dangerous substances with restrictions (REACH, Annex XVII)				
Name of substance	Name acc. to inventory	CAS No	Type of registration	No
FRAGOLTHERM F-LT	this product meets the criteria for clas- sification in accordance with Regula- tion No 1272/2008/EC		1907/2006/EC annex XVII	3
FRAGOLTHERM F-LT	flammable / pyrophoric		1907/2006/EC annex XVII	40

List of substances subject to authorisation (REACH, Annex XIV) / SVHC - candidate list

Not listed. None of the ingredients are listed.

Seveso Directive

2012/18/EU (Seveso III)				
No	Dangerous substance/hazard categories	categories Qualifying quantity (tonnes) for the applica- tion of lower and upper-tier requirements Notes		Notes
E1	environmental hazards (hazardous to the aquatic environ- ment, cat. 1)	100	200	56)
P5c	flammable liquids (cat. 2, 3)	5,000	50,000	51)

Notation

51) flammable liquids, categories 2 or 3 not covered by P5a and P5b

56) hazardous to the Aquatic Environment in category Acute 1 or Chronic 1

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance by the supplier.

SECTION 16: Other information

Indication of changes (revised safety data sheet)

Complete revision of the safety data sheet.

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations	
ADN	Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)	
ADR	Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)	
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)	
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures	
DGR	Dangerous Goods Regulations (see IATA/DGR)	
DMEL	Derived Minimal Effect Level	



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Abbr.	Descriptions of used abbreviations
DNEL	Derived No-Effect Level
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
MARPOL	International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")
NLP	No-Longer Polymer
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concern- ing the International carriage of Dangerous goods by Rail)
SVHC	Substance of Very High Concern
vPvB	Very Persistent and very Bioaccumulative

Key literature references and sources for data

Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures. Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU.

Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

List of relevant phrases (code and full text as stated in chapter 2 and 3)

Code	Text
H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H410	Very toxic to aquatic life with long lasting effects.

Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product. FRAGOL cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.