Safety Data Sheet

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

FRAGOLTHERM 660

Version number: 5.0
Replaces version of: 2018-12-05 (4)

Revision: 2022-10-11

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

1.1 Product identifier

Trade name	**FRAGOLTHERM 660**
Identification of the substance	**Terphenyl, hydrogenated**
Registration number (REACH)	01-2119488183-33-xxxx.
EC number	262-967-7
CAS number	61788-32-7

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

Relevant identified uses	Heat transfer fluid Plasticizer Solvents

1.3 Details of the supplier of the safety data sheet

FRAGOL AG
Solinger Straße 16
D-45481 Mülheim
Germany

Telephone: +49 (0)208-300 02-50
Telefax: +49 (0)208-300 02-33
e-mail: htf@fragol.de
Website: www.fragol.de

e-mail (competent person)	htf@fragol.de

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
Germany	Giftnotruf der Charité - Universitätsmedizin Berlin	+49 30 30 686 700 (24/7)

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 statement
4.1C	hazardous to the aquatic environment - chronic hazard	2	Aquatic Chronic 2	H411

For full text of H-phrases: see SECTION 16

The most important adverse physicochemical, human health and environmental effects

Spillage and fire water can cause pollution of watercourses. The substance was identified as a vPvB (very persistent and very bioaccumulative).

2.2 Label elements

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

- signal word: Not required.

- pictograms

GHS09

- hazard statements

H411	Toxic to aquatic life with long lasting effects.

- precautionary statements

P273	Avoid release to the environment.
P391	Collect spillage.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other hazards

Special danger of slipping by leaking/spilling product.

Results of PBT and vPvB assessment

The substance was identified as a vPvB (very persistent and very bioaccumulative).

Endocrine disrupting properties

Does not contain an endocrine disruptor (EDC) in a concentration of ≥ 0.1%.

SECTION 3: Composition/information on ingredients

3.1 Substances

Name of substance	Terphenyl, hydrogenated
Identifiers	
REACH Reg. No	01-2119488183-33-xxxx
CAS No	61788-32-7
EC No	262-967-7
Purity	100 %

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. In case of unconsciousness place person in the recovery position. Never give anything by mouth. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice.

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 immediately all contaminated clothing and wash it before reuse. Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention.

Following eye contact

Irrigate copiously with clean, fresh water for at least 15 minutes, holding the eyelids apart. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Following ingestion

Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting. Call a POISON CENTER or doctor if you feel unwell.

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

For specialist advice physicians should contact the poison centre.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water spray; Dry extinguishing powder; Carbon dioxide (CO2);
Co-ordinate firefighting measures to the fire surroundings.

Unsuitable extinguishing media

Water jet.

5.2 Special hazards arising from the substance or mixture

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.

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. Use personal protective equipment as required.

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

Advice on how to contain a spill

Covering of drains.

Advice on how to clean up a spill

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

Appropriate containment techniques

Use of adsorbent materials.

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. Use only in well-ventilated areas.

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

- incompatible substances or mixtures

Keep away from alkalis, oxidising substances, acids.

Control of effects

Protect against external exposure, such as

High temperatures. UV-radiation/sunlight. Humidity.

Consideration of other advice

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

- 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

Occupational exposure limit values (Workplace Exposure Limits)

Country	Name of agent	CAS No	Identifier	TWA [ppm]	TWA [mg/m³]	STEL [ppm]	STEL [mg/m³]	Notation	Source
DE	terphenyl, hydrogenated	61788-32-7	AGW		19		47,5	i	TRGS 900
EU	terphenyl, hydrogenated	61788-32-7	IOELV	2	19	5	48		2017/164/EU

Notation

i	inhalable fraction
STEL	short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)
TWA	time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

Relevant DNELs/DMELs/PNECs and other threshold levels

Relevant DNELs and other threshold levels

Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
DNEL	83,8 mg/m³	human, inhalatory	worker (industry)	chronic - local effects
DNEL	25 mg/m³	human, inhalatory	consumer (private households)	chronic - local effects
DNEL	2,01 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
DNEL	0,622 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
DNEL	0,358 mg/m³	human, inhalatory	consumer (private households)	chronic - systemic effects
DNEL	0,222 mg/kg bw/day	human, dermal	consumer (private households)	chronic - systemic effects
DNEL	74 µg/kg	human, oral	consumer (private households)	chronic - systemic effects

Relevant PNECs and other threshold levels

Endpoint	Threshold level	Organism	Environmental compartment	Exposure time
PNEC	0,001 mg/l	aquatic organisms	water	intermittent release
PNEC	2 µg/l	aquatic organisms	freshwater	short-term (single instance)
PNEC	0,2 µg/l	aquatic organisms	marine water	short-term (single instance)
PNEC	10,3 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
PNEC	63,2 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
PNEC	6,32 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
PNEC	12,6 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).

Skin protection

Protective clothing (EN 340 & EN ISO 13688).

- hand protection

Wear suitable gloves. Check leak-tightness/impermeability prior to use. 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. Chemical protection gloves are suitable, which are tested according to EN 374. ATTENTION: Wearing moisture-proof gloves (occlusion) for longer than 4 hours is defined as a risk in Germany. The selection of the
suitable gloves does not only depend on the material, but also on other quality characteristics and varies from manufacturer to manufacturer.

- type of material

PVC: polyvinyl chloride, IIR: isobutene-isoprene (butyl) rubber, Nitrile rubber

- material thickness

Use gloves with a minimum material thickness: ≥ 0,38 mm.

- breakthrough time of the glove material

Use gloves with a minimum breakthrough time 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. Provide eyewash stations and safety showers at the workplace.

Respiratory protection

In case of inadequate ventilation wear respiratory protection. Full face mask/half mask/quarter mask (EN 136/140). Type: A (against organic gases and vapours with a boiling point of > 65 °C , colour code: Brown).

Environmental exposure controls

Take appropriate precautions to avoid uncontrolled release into the environment. Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	liquid
Colour	light yellow
Odour	characteristic
Melting point/freezing point	<-24 °C
Boiling point or initial boiling point and boiling range	360 °C at 1.000 mbar
Evaporation rate	not determined
Flammability	non-combustible
Lower and upper explosion limit	LEL: UEL: not determined
Flash point	175 °C (DIN EN ISO 2719)
Auto-ignition temperature	370 °C (ASTM E 659) (auto-ignition temperature (liquids and gases))
Decomposition temperature	no data available
pH (value)	not determined
Kinematic viscosity	30,39 $^{mm^2}/_s$ at 40 °C

Solubility(ies)

Water solubility	0,061 $^{mg}/_l$ at 20 °C

Partition coefficient n-octanol/water (log value)	>6,5
Soil organic carbon/water (log KOC)	5,5

Vapour pressure	0,00174 hPa at 20 °C

Density	1.008 $^{kg}/_{m^3}$ at 20 °C

Particle characteristics	not relevant (liquid)

9.2 Other information

Information with regard to physical hazard classes	hazard classes acc. to GHS (physical hazards): not relevant
Other safety characteristics	there is no additional information

SECTION 10: Stability and reactivity

10.1 Reactivity

This material is not reactive under normal ambient conditions.

10.2 Chemical stability

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

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.

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.

SECTION 11: Toxicological information

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

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

Acute toxicity

Shall not be classified as acutely toxic.

Acute toxicity			
Exposure route	**Endpoint**	**Value**	**Species**
oral	LD50	>10.000 $^{mg}/_{kg}$	rat
inhalation: dust/mist	LC50	>4,7 $^{mg}/_{l}$/4h	rat
dermal	LD50	>2.000 $^{mg}/_{kg}$	rabbit

Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin.

Serious eye damage/eye irritation

Shall not be classified as seriously damaging to the eye or eye irritant.

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

Shall not be classified as presenting an aspiration hazard.

11.2 Information on other hazards

Endocrine disrupting properties

Does not contain an endocrine disruptor (EDC) in a concentration of ≥ 0.1%.

Other information

There is no additional information.

SECTION 12: Ecological information

12.1 Toxicity

Acc. to 1272/2008/EC: Toxic to aquatic life with long lasting effects.

Aquatic toxicity (acute)			
Endpoint	**Value**	**Species**	**Exposure time**
LC50	>1.000 $^{mg}/_{l}$	rainbow trout (Oncorhynchus mykiss)	96 h
EC50	>0,1 $^{mg}/_{l}$	daphnia magna	48 h
EC50	56 $^{mg}/_{l}$	aquatic plants	72 h

12.2 Persistence and degradability

Data are not available.

12.3 Bioaccumulative potential

The substance fulfils the very bioaccumulative criterion.

n-octanol/water (log KOW)	>6,5
BCF	2.000

12.4 Mobility in soil

The Organic Carbon normalised adsorption coefficient	5,5

12.5 Results of PBT and vPvB assessment

The substance was identified as a vPvB (very persistent and very bioaccumulative).

12.6 Endocrine disrupting properties

Does not contain an endocrine disruptor (EDC) in a concentration of ≥ 0.1%.

12.7 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

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. Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

Relevant provisions relating to waste

List of wastes, Decision 2000/532/EC on the list of waste

according to the European Waste Catalog (EWC), waste code numbers are not product-related but application-related. Waste code numbers should be issued by the waste disposer, if possible in consultation with the waste disposal authorities

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.

SECTION 14: Transport information

14.1 UN number or ID number

ADR/RID/ADN	UN 3082
IMDG-Code	UN 3082
ICAO-TI	UN 3082

14.2 UN proper shipping name

ADR/RID/ADN	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
IMDG-Code	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
ICAO-TI	Environmentally hazardous substance, liquid, n.o.s.

Technical name	Terphenyl, hydrogenated

14.3 Transport hazard class(es)

ADR/RID/ADN	9
IMDG-Code	9
ICAO-TI	9

14.4 Packing group

ADR/RID/ADN	III
IMDG-Code	III
ICAO-TI	III

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 Maritime transport in bulk according to IMO instruments

No data available.

Information for each of the UN Model Regulations

Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN) - additional information

Classification code	M6
Danger label(s)	9, fish and tree

Environmental hazards	yes (hazardous to the aquatic environment)
Special provisions (SP)	274, 335, 375, 601
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
Transport category (TC)	3
Tunnel restriction code (TRC)	-
Hazard identification No	90

International Maritime Dangerous Goods Code (IMDG) - additional information

Marine pollutant	yes (hazardous to the aquatic environment) (Terphenyl, hydrogenated)
Danger label(s)	9, fish and tree

Special provisions (SP)	274, 335, 969
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
EmS	F-A, S-F
Stowage category	A

International Civil Aviation Organization (ICAO-IATA/DGR) - additional information

Environmental hazards	yes (hazardous to the aquatic environment)
Danger label(s)	9, fish and tree

Special provisions (SP)	A97, A158, A197, A215
Excepted quantities (EQ)	E1
Limited quantities (LQ)	30 kg

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)

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

Substance of Very High Concern (SVHC)

Name acc. to inventory	CAS No	Listed in	Remarks
terphenyl, hydrogenated	61788-32-7	Candidate list	vPvB A57e

Legend

candidate list	Substances meeting the criteria referred to in Article 57 and for eventual inclusion in Annex XIV
vPvB A57e	Very Persistent and very Bioaccumulative (article 57e)

Seveso Directive

2012/18/EU (Seveso III)

No	Dangerous substance/hazard categories	Qualifying quantity (tonnes) for the application of lower and upper-tier requirements		Notes
E2	environmental hazards (hazardous to the aquatic environment, cat. 2)	200	500	57)

Notation

57) hazardous to the Aquatic Environment in category Chronic 2

Regulation concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

Not listed.

Water Framework Directive (WFD)

Not listed.

Regulation (EU) 2019/1148 of the European Parliament and of the Council of 20 June 2019 on the marketing and use of explosives precursors, amending Regulation (EC) No 1907/2006 and repealing Regulation (EU) No 98/2013

Not listed.

Regulation on persistent organic pollutants (POP)

Not listed.

National regulations (Germany)

Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (Ordinance on facilities for handling substances hazardous to water) (AwSV)

Wassergefährdungsklasse, WGK (water hazard class) 2 hazardous to water

Index number 2396

Technical instructions on air quality control (Germany)

Number	Group of substances	Class	Conc.	Mass flow	Mass concentration	Notation
5.2.5	organic substances	class I	≥ 25 wt%	0,1 kg/h	20 mg/m³	3)
5.2.7.2	readily degradable, highly accumulative and highly toxic organic substances		≥ 25 wt%			4)

Notation
3) a total mass flow of 0.50 kg/h or a total mass concentration of 50 mg/m³, each of which to be indicated as total carbon, shall not be exceeded (except organic particulate matter)
4) in compliance with the emission reduction dictate

Storage of hazardous substances in non-stationary containers (TRGS 510) (Germany)

Storage class (LGK) 10 (combustible liquids)

15.2 Chemical Safety Assessment

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

SECTION 16: Other information

Indication of changes (revised safety data sheet)

Section	Former entry (text/value)	Actual entry (text/value)
1.4		Poison centre: change in the listing (table)
2.1		Classification according to Regulation (EC) No 1272/2008 (CLP): change in the listing (table)
2.3	Results of PBT and vPvB assessment: This substance / mixture contains components classified as either persistent, bioaccumulating and toxic (PBT) or very persistent and very bioaccumulating (vPvB).	Results of PBT and vPvB assessment: The substance was identified as a vPvB (very persistent and very bioaccumulative).
2.3		Endocrine disrupting properties: Does not contain an endocrine disruptor (EDC) in a concentration of ≥ 0.1%.
5.1	Suitable extinguishing media: Water spray, Alcohol resistant foam, Dry extinguishing powder, Carbon dioxide (CO2)	Suitable extinguishing media: Water spray; Dry extinguishing powder; Carbon dioxide (CO2); Co-ordinate firefighting measures to the fire surroundings.
8.1	Occupational exposure limit values (Workplace Exposure Limits)	
8.1		Relevant DNELs and other threshold levels: change in the listing (table)
8.1		Relevant PNECs and other threshold levels: change in the listing (table)
8.2		Material thickness: Use gloves with a minimum material thickness: ≥ 0,38 mm.

Section	Former entry (text/value)	Actual entry (text/value)
8.2	Respiratory protection: In case of inadequate ventilation wear respiratory protection. Breathing apparatus only in case of aerosol or mist formation.	Respiratory protection: In case of inadequate ventilation wear respiratory protection. Full face mask/half mask/quarter mask (EN 136/140). Type: A (against organic gases and vapours with a boiling point of > 65 °C , colour code: Brown).
9.1	Melting point/freezing point: <-24 °C (ECHA)	Melting point/freezing point: <-24 °C
9.1	Auto-ignition temperature: 370 °C (ASTM E 659)	Auto-ignition temperature: 370 °C (ASTM E 659) (auto-ignition temperature (liquids and gases))
9.1	Vapour pressure: no measured value at 20 ° C	Vapour pressure: 0,00174 hPa at 20 °C
11.2	Information on other hazards: There is no additional information.	Information on other hazards
11.2		Endocrine disrupting properties: Does not contain an endocrine disruptor (EDC) in a concentration of ≥ 0.1%.
12.3	Bioaccumulative potential: The substance fulfils the very bioaccumulative criterion. The bioaccumulation potential is low.	Bioaccumulative potential: The substance fulfils the very bioaccumulative criterion.
12.5	Results of PBT and vPvB assessment: This substance / mixture contains components classified as either persistent, bioaccumulating and toxic (PBT) or very persistent and very bioaccumulating (vPvB).	Results of PBT and vPvB assessment: The substance was identified as a vPvB (very persistent and very bioaccumulative).
12.6	Endocrine disrupting properties: Not listed.	Endocrine disrupting properties: Does not contain an endocrine disruptor (EDC) in a concentration of ≥ 0.1%.
14.7	Maritime transport in bulk according to IMO instruments: Not applicable.	Maritime transport in bulk according to IMO instruments: No data available.
14.7	Special provisions (SP): A97, A158, A197	Special provisions (SP): A97, A158, A197, A215
15.1		Regulation concerning the establishment of a European Pollutant Release and Transfer Register (PRTR): Not listed.
15.1		Water Framework Directive (WFD): Not listed.
15.1		Regulation (EU) 2019/1148 of the European Parliament and of the Council of 20 June 2019 on the marketing and use of explosives precursors, amending Regulation (EC) No 1907/2006 and repealing Regulation (EU) No 98/2013: Not listed.
15.1	Wassergefährdungsklasse, WGK (water hazard class): 2 obviously hazardous to water	Wassergefährdungsklasse, WGK (water hazard class): 2 hazardous to water
15.1	Remarks: The product is a mixture that may contain substances or is a substance whose classification has not been published by the Federal Environment Agency in the Federal Gazette and the Rigoletto database. The following officially applies to these substances: Substances whose classification has not been published by the Federal Environment Agency in the Federal Gazette and the Rigoletto database are not classified and must be viewed as a precautionary measure as highly hazardous to water (WGK 3).	

Section	Former entry (text/value)	Actual entry (text/value)
15.1		Index number: 2396
15.1		Technical instructions on air quality control (Germany)
15.1		Technical instructions on air quality control (Germany): change in the listing (table)
15.1		Storage of hazardous substances in non-stationary containers (TRGS 510) (Germany)
15.1		Storage class (LGK): 10 (combustible liquids)
16		Abbreviations and acronyms: change in the listing (table)

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
2017/164/EU	Commission Directive establishing a fourth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC, and amending Commission Directives 91/322/EEC, 2000/39/EC and 2009/161/EU
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 relatif au transport international des marchandises dangereuses par route (Agreement concerning the International Carriage of Dangerous Goods by Road)
ADR/RID/ADN	Agreements concerning the International Carriage of Dangerous Goods by Road/Rail/Inland Waterways (ADR/RID/ADN)
AGW	Workplace exposure limit
BCF	Bioconcentration factor
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
DNEL	Derived No-Effect Level
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
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
ICAO-TI	Technical instructions for the safe transport of dangerous goods by air
IMDG	International Maritime Dangerous Goods Code

Abbr.	Descriptions of used abbreviations
IMDG-Code	International Maritime Dangerous Goods Code
IOELV	Indicative occupational exposure limit value
LC50	Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval
LD50	Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval
LEL	Lower explosion limit (LEL)
LGK	Lagerklasse (storage class according to TRGS 510, Germany)
NLP	No-Longer Polymer
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
ppm	Parts per million
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
STEL	Short-term exposure limit
SVHC	Substance of Very High Concern
TRGS	Technische Regeln für Gefahrstoffe (technical rules for hazardous substances, Germany)
TRGS 900	Arbeitsplatzgrenzwerte (TRGS 900)
TWA	Time-weighted average
UEL	Upper explosion limit (UEL)
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 2020/878/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 section 2 and 3)

Code	Text
H411	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.