MARLOTHERM® SH Heat Transfer Fluid

PRD / SDSGB / EN / 0001

Version	Revision Date:	SDS Number:	Date of last issue: 26.06.2023
2.5	28.06.2023	150000114174	Date of first issue: 03.04.2019

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

1.1 Product identifier

Trade name	:	MARLOTHERM® SH Heat Transfer Fluid
Product code	:	34536-00, 50214253, P34536S2, P34536S5, P34536S1, E3453601, P3453603, P3453602, P3453600, P3453601, P34536R0

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

Use of the Substance/Mixture	:	Heat transfer fluids
Recommended restrictions on use	:	None known.

1.3 Details of the supplier of the safety data sheet

Company	:	Eastman Chemical Company 200 South Wilcox Drive 37660-5280 Kingsport
Telephone	:	+14232292000
E-mail address of person responsible for the SDS	:	Visit our website at www.EASTMAN.com or email emnmsds@eastman.com

1.4 Emergency telephone number

Tel. 111

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

Reproductive toxicity, Category 1B	H360FD: May damage fertility. May damage the unborn child.
Aspiration hazard, Category 1	H304: May be fatal if swallowed and enters airways.
Long-term (chronic) aquatic hazard, Category 1	H410: Very toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

Hazard pictograms :

Signal word : Danger

Hazard statements :
H304 May be fatal if swallowed and enters airways.
H360FD May damage fertility. May damage the unborn child.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements :

Prevention:

P201 Obtain special instructions before use.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

Response:

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P331 Do NOT induce vomiting.
P391 Collect spillage.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Components

Chemical name	CAS-No. EC-No.	Concentration (% w/w)
Dibenzylbenzene, ar-methyl derivative	53585-53-8 258-649-2	>= 90 - <= 100

Eastman is committed to the safety, health and environment of our employees, our customers, and the communities we operate within. As part of this commitment, Eastman's Safety Data Sheets (SDS) are prepared in accordance with all applicable national and local regulations. The compositions of our

documents reflect these requirements which include, but are not limited to, requirements under the Globally Harmonized System of Classification and Labeling (GHS). These compositions commonly involve the use of ranges versus specific analytical values. If you require a composition that is more specific , please refer to the Certificate of Analysis, sales specification, or contact your Customer Service Representative.

SECTION 4: First aid measures

4.1 Description of first aid measures

If inhaled	:	Move to fresh air. Treat symptomatically. If symptoms persist, call a physician.
In case of skin contact	:	Wash off with soap and water. If symptoms persist, call a physician.
In case of eye contact	:	In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
If swallowed	:	Call a physician or poison control center immediately. Do NOT induce vomiting. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person. Hold person's head low, to prevent aspiration.

4.2 Most important symptoms and effects, both acute and delayed

Risks	:	May be fatal if swallowed and enters airways. May damage fertility. May damage the unborn child.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment	:	Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	:	Carbon dioxide (CO2) Dry chemical Water spray Foam
Unsuitable extinguishing media	:	Do not use a solid water stream as it may scatter and spread fire. Do NOT use water jet.

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting	:	None known.

5.3 Advice for firefighters

Special protective equipment for firefighters	:	Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear.
Further information	:	None known.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Wear appropriate personal protective equipment. Local authorities should be advised if significant spillages cannot be contained.

6.2 Environmental precautions

Environmental precautions	:	Avoid release to the environment.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up	:	Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

6.4 Reference to other sections

For personal protection see section 8., For disposal considerations see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	:	Do not taste or swallow. Wash thoroughly after handling.
Advice on protection against fire and explosion	:	None known.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Keep tightly closed.

7.3 Specific end use(s)

Specific use(s)	:	Heat transfer fluids

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.
Contains no substances with occupational exposure limit values.

Derived No Effect Level (DNEL):

Substance name	End Use	Exposure routes	Potential health effects	Value
Dibenzylbenzene, ar-methyl derivative	Workers	Inhalation	Long-term systemic effects	0.259 mg/m3
	Workers	Dermal	Long-term systemic effects	0.37 mg/kg bw/day
	General Population	Inhalation	Long-term systemic effects	64.4 µg/m³
	General Population	Dermal	Long-term systemic effects	0.185 mg/kg bw/day
	General Population	Oral	Long-term systemic effects	18.5 µg/kg bw/day

Predicted No Effect Concentration (PNEC):

Substance name	Environmental Compartment	Value
Dibenzylbenzene, ar-methyl derivative	Fresh water	0.028 µg/l
	Marine water	0.003 µg/l
	Fresh water sediment	0.11 mg/kg dry weight (d.w.)
	Marine sediment	0.11 mg/kg dry weight (d.w.)
	Soil	2 mg/kg dry weight (d.w.)
	Sewage Treatment Plant	1000 mg/l

8.2 Exposure controls

Engineering measures

Good general ventilation (typically 10 air changes per hour) should be sufficient to control airborne levels.

Personal protective equipment

Eye/face protection : Safety glasses

Hand protection

Remarks : Wear suitable gloves.

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.

Protective measures : Remove respiratory and skin/eye protection only after vapors have been cleared from the area.

Ensure that eye flushing systems and safety showers are located close to the working place.
Use personal protective equipment as required.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	liquid
Colour	:	colourless, yellow
Odour	:	slight
Odour Threshold	:	not determined
pH	:	not determined
Melting point/freezing point	:	-39 - -32 °C
Boiling point/boiling range	:	390 °C
Flash point	:	212 °C Method: Pensky-Martens closed cup
Evaporation rate	:	not determined
Upper explosion limit / Upper flammability limit	:	not determined
Lower explosion limit / Lower flammability limit	:	not determined
Vapour pressure	:	< 0.01 hPa (20 °C)
Relative density	:	> 1
Solubility(ies)		
Water solubility	:	< 0.1 mg/l
Partition coefficient: n-octanol/water	:	log Pow: > 6 (22 °C)
Decomposition temperature	:	not determined
Viscosity		
Viscosity, dynamic	:	not determined
Viscosity, kinematic	:	48 mm2/s (20 °C)
		16 mm2/s (40 °C)

Explosive properties	:	No data available
Oxidizing properties	:	No data available

9.2 Other information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

None reasonably foreseeable.

10.2 Chemical stability

No decomposition if stored normally.
Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions	:	Heating can release hazardous gases.Stable Vapours may form explosive mixture with air.

10.4 Conditions to avoid

Conditions to avoid	:	Direct heating, dirt, chemical contamination, sunlight, UV or ionising radiation. Extremes of temperature and direct sunlight.

10.5 Incompatible materials

Materials to avoid	:	Strong oxidizing agents

10.6 Hazardous decomposition products

Carbon dioxide (CO2)
Carbon monoxide

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Not classified based on available information.

Product:

Acute oral toxicity	:	Remarks: No data available
Acute inhalation toxicity	:	Remarks: No data available
Acute dermal toxicity	:	Remarks: No data available

Components:

Dibenzylbenzene, ar-methyl derivative:

Acute oral toxicity : LD50 Oral (Rat): > 5,000 mg/kg
Method: OECD Test Guideline 401
Assessment: Based on available data, the classification criteria are not met.

Acute inhalation toxicity : LC0: > 0.24 mg/l
Test atmosphere: vapour
Method: OECD Test Guideline 403
Assessment: Based on available data, the classification criteria are not met.

Acute dermal toxicity : LD0 (Rabbit): > 2,000 mg/kg
Assessment: Based on available data, the classification criteria are not met.

LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: Based on available data, the classification criteria are not met.

Skin corrosion/irritation

Not classified based on available information.

Product:

Remarks : No data available

Components:

Dibenzylbenzene, ar-methyl derivative:

Method : OECD Test Guideline 404
Result : slight irritation
Remarks : Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation

Not classified based on available information.

Product:

Remarks : No data available

Components:

Dibenzylbenzene, ar-methyl derivative:

Method : OECD Test Guideline 405
Result : No eye irritation
Remarks : Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation

Skin sensitisation
Not classified based on available information.

Respiratory sensitisation
Not classified based on available information.

Product:
Remarks : No data available

Components:

Dibenzylbenzene, ar-methyl derivative:
Species : Guinea pig
Result : Does not cause skin sensitization.

Germ cell mutagenicity
Not classified based on available information.

Components:

Dibenzylbenzene, ar-methyl derivative:
Genotoxicity in vitro : Remarks: In vitro tests did not show mutagenic effects

Genotoxicity in vivo : Remarks: In vivo tests did not show mutagenic effects

Carcinogenicity
Not classified based on available information.

Product:
Remarks : This information is not available.

Components:

Dibenzylbenzene, ar-methyl derivative:
Remarks : Based on available data, the classification criteria are not met.

Reproductive toxicity
May damage fertility. May damage the unborn child.

Product:
Effects on fertility : Remarks: May damage fertility. May damage the unborn child.

Effects on foetal development : Remarks: May damage fertility. May damage the unborn child.

Components:

Dibenzylbenzene, ar-methyl derivative:

Effects on fertility	:	Species: Rat, male and female Application Route: Oral General Toxicity - Parent: NOAEL: 250 mg/kg bw/day General Toxicity F1: NOAEL: 250 mg/kg bw/day General Toxicity F2: NOAEL: 80 mg/kg body weight Method: OECD Test Guideline 421 Remarks: May damage fertility. May damage the unborn child.
Effects on foetal development	:	Test Type: Developmental Toxicity Species: Rabbit, female Strain: NZW Application Route: Oral General Toxicity Maternal: NOAEL: 75 mg/kg body weight Developmental Toxicity: LOAEL: 10 mg/kg body weight Method: OECD Test Guideline 414

STOT - single exposure

Not classified based on available information.

Product:

Remarks : No data available

Components:

Dibenzylbenzene, ar-methyl derivative:

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT - repeated exposure

Not classified based on available information.

Product:

Remarks : No data available

Components:

Dibenzylbenzene, ar-methyl derivative:

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Repeated dose toxicity

Components:

Dibenzylbenzene, ar-methyl derivative:

Species	:	Rat
NOAEL	:	50 mg/kg
LOAEL	:	500 mg/kg
Application Route	:	Oral
Exposure time	:	120 d

Method : OECD Test Guideline 408
Target Organs : Liver

Aspiration toxicity

May be fatal if swallowed and enters airways.

Experience with human exposure

Product:

Inhalation : Remarks: None known.

Skin contact : Remarks: None known.

Eye contact : Remarks: None known.

Ingestion : Remarks: May be fatal if swallowed and enters airways.

Further information

Product:

Remarks : None known.

Components:

Dibenzylbenzene, ar-methyl derivative:

Remarks : Not expected to have a wide dispersive use and there is no evidence of frequent or long-term human exposure. The substance has been shown to be not genotoxic, therefore it is not expected to have a carcinogenic potential.

SECTION 12: Ecological information

12.1 Toxicity

Components:

Dibenzylbenzene, ar-methyl derivative:

Toxicity to fish : (Danio rerio (zebra fish)): > 0.00005 mg/l
End point: mortality
Exposure time: 96 h
Test Type: Fish, Acute Toxicity Test

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): > 0.029 mg/l
End point: Immobilization
Exposure time: 48 h
Test Type: Daphnia sp. Acute Immobilisation Test

Toxicity to algae/aquatic plants : LC50 (Skeletonema costatum (marine diatom)): > 0.000016 mg/l
End point: Growth rate

Exposure time: 72 h
Test Type: Alga, Growth Inhibition Test

Toxicity to fish (Chronic toxicity) : NOEC: > 0.46 mg/l
End point: mortality
Exposure time: 14 d
Species: Leuciscus idus (Golden orfe)
Test Type: Fish, Prolonged Toxicity Test: 14-day Study

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0.0014 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: Daphnia magna Reproduction Test

M-Factor (Chronic aquatic toxicity) : 10

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

Product:

Endocrine disrupting potential : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Dispose of in accordance with local regulations.

SECTION 14: Transport information

14.1 UN number

ADR : UN 3082

IMDG : UN 3082

IATA : UN 3082

14.2 UN proper shipping name

ADR : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(Dibenzylbenzene, ar-methyl derivative)

IMDG : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(Dibenzylbenzene, ar-methyl derivative)

IATA : Environmentally hazardous substance, liquid, n.o.s.
(Dibenzylbenzene, ar-methyl derivative)

14.3 Transport hazard class(es)

ADR : 9

IMDG : 9

IATA : 9

14.4 Packing group

ADR

Packing group	:	III
Classification Code	:	M6
Hazard Identification Number	:	90
Labels	:	9
Tunnel restriction code	:	(-)

IMDG

Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F
Remarks	:	Shipping in package sizes of less than 5 L (liquids) or 5 KG (solids) may lead to a non-regulated classification.

IATA (Cargo)

Packing instruction (cargo aircraft)	:	964
Packing instruction (LQ)	:	Y964
Packing group	:	III
Labels	:	Miscellaneous
Remarks	:	Shipping in package sizes of less than 5 L (liquids) or 5 KG (solids) may lead to a non-regulated classification.

IATA (Passenger)

Packing instruction (passenger aircraft)	:	964
Packing instruction (LQ)	:	Y964
Packing group	:	III
Labels	:	Miscellaneous
Remarks	:	Shipping in package sizes of less than 5 L (liquids) or 5 KG (solids) may lead to a non-regulated classification.

14.5 Environmental hazards

ADR

Environmentally hazardous	:	yes

IMDG

Marine pollutant	:	yes

14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

Relevant EU provisions transposed through retained EU law

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer	:	Not applicable
Volatile organic compounds	:	Directive 2010/75/EU of 24 November 2010 on industrial emissions (integrated pollution prevention and control) Not applicable

The components of this product are reported in the following inventories:

TCSI	:	On the inventory, or in compliance with the inventory
TSCA	:	All substances listed as active on the TSCA inventory
AICS	:	On the inventory, or in compliance with the inventory
DSL	:	All components of this product are on the Canadian DSL
ENCS	:	On the inventory, or in compliance with the inventory
ISHL	:	On the inventory, or in compliance with the inventory

KECI	:	On the inventory, or in compliance with the inventory
PICCS	:	On the inventory, or in compliance with the inventory
IECSC	:	On the inventory, or in compliance with the inventory

15.2 Chemical safety assessment

yes

SECTION 16: Other information

Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of very high concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Further information

Other information :

Other means of identification

Dibenzylbenzene, ar-methyl derivative

Sources of key data used to compile the Safety Data Sheet	:	Chemical Safety Report

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

GB / EN

Annex: Exposure Scenarios

Table of Contents

Number	Title