SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier
- **Trade name**: MARLOTERM® SH
- **REACH No.**: 01-2119488667-17-0000
- **Substance name (REACH / CLP)**: dibenzyltoluene

1.2 Relevant identified uses of the substance or mixture and uses advised against
- **Use**: Industrial use
  - **heat transfer medium**
- **Uses advised against**

1.3 Details of the supplier of the safety data sheet
- **Company**: SASOL Germany GmbH
  - **Anckelmannsplatz 1**
  - **20537 Hamburg**
- **Telephone**: +49 40 63684-1000
- **Telefax**: +49 40 63684-3700
- **Information (Product safety)**:
  - **Telephone**: + 49 (0) 23 65 - 49 47 05
  - **Telefax**: + 49 (0) 23 65 - 49 92 40
- **E-mail address**: msds-info.germany@de.sasol.com

1.4 Emergency telephone number
- **Emergency telephone number**: + 49 (0) 23 65 - 49 22 32

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
- **Classification (REGULATION (EC) No 1272/2008)**
  - **Chronic aquatic toxicity Category 4**: May cause long lasting harmful effects to aquatic life.
  - **Aspiration hazard Category 1**: May be fatal if swallowed and enters airways.

2.2 Label elements
- **Labelling (REGULATION (EC) No 1272/2008)**
- **Hazard pictograms**
- **Signal word**: Danger
- **Hazard statements**
H304  May be fatal if swallowed and enters airways.  
H413  May cause long lasting harmful effects to aquatic life.  

Precautionary statements  
P273  Avoid release to the environment.  
P301 + P310  IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.  
P331  Do NOT induce vomiting.  
P405  Store locked up.  
P501  Dispose of contents/container to an approved waste disposal plant.

2.3 Other hazards  
During the use at elevated temperatures thermal decomposition leads to the formation of low-boiling and high-boiling secondary products (e.g. hydrocarbons).

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS  

This product is a substance in the meaning of regulation (EC) 1907/2006.  

CHEMICAL CHARACTERIZATION  

Dibenzyltoluene  
component type: Active ingredient

EC-No.: 248-097-0  
Index-No.:  
CAS-No.: 26898-17-9

REACH No.: 01-211948667-17-0000

Substance name (REACH / CLP): dibenzyltoluene

COMPONENTS TO BE NAMED IN ACCORDANCE WITH REGULATION (EC) 1907/2006 AS WELL AS OTHER HAZARDOUS INGREDIENTS AND CONTAINED SUBSTANCES WITH WORK PLACE LIMIT VALUES  

Dibenzyltoluene  
component type: Active ingredient

EC-No.: 248-097-0  
Index-No.:  
CAS-No.: 26898-17-9

REACH No.: 01-211948667-17-0000

Substance name (REACH / CLP): dibenzyltoluene

Classification (Regulation (EC) No 1272/2008):  
Aquatic Chronic 4  
Asp. Tox. 1  
H413  
H304

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: FIRST AID MEASURES  

4.1 Description of first aid measures  

General advice  
Take off all contaminated clothing immediately. If you feel unwell, seek medical advice (show the label where possible).

If inhaled  
Move to fresh air in case of accidental inhalation of vapours. Consult a physician after significant exposure.
In case of skin contact Wash off with soap and water.
In case of eye contact Immediately flush eye(s) with plenty of water.
If swallowed Do NOT induce vomiting. Call a physician immediately.

4.2 Most important symptoms and effects, both acute and delayed
Most important symptoms and effects, both acute and delayed
Symptoms: No information available.
Risks: No information available.

4.3 Indication of any immediate medical attention and special treatment needed
Indication of any immediate medical attention and special treatment needed
Treatment: No information available.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media
Suitable extinguishing media Water spray, Dry powder, Foam, Carbon dioxide (CO2)
Unsuitable extinguishing media High volume water jet

5.2 Special hazards arising from the substance or mixture
Specific hazards during firefighting Dangerous gases or fumes may occur in case of fire.

5.3 Advice for firefighters
Special protective equipment for firefighters Wear self-contained breathing apparatus for firefighting if necessary.
Further information Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Personal precautions Handle in accordance with good industrial hygiene and safety practice. Do not breathe vapours or spray mist. Use personal protective equipment.
Special precautions Danger of slipping after spill or leakage. Spilling onto the container's outside will make container slippery.

6.2 Environmental precautions
Environmental precautions Avoid subsoil penetration. Do not flush into surface water or sanitary sewer system.

6.3 Methods and materials for containment and cleaning up
Methods for cleaning up Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Use mechanical handling equipment. The material taken up must be disposed of in accordance with regulations. If they get dirty, wash clothes. If
equipment gets dirty, clean using a surfactant solution. Clean contaminated floors and objects thoroughly while observing environmental regulations.

6.4 Reference to other sections

For personal protection see section 8.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling
Follow advice in the 'Marlotherm® Heat Transfer Fluids' product brochure and in DIN 4754 (heat transfer systems using organic heat transfer fluids). During the use at elevated temperatures thermal decomposition leads to the formation of low-boiling and high-boiling secondary products. During removal of low boiling decomposition products with potential highly flammable properties from the system, appropriate risk management measures for flammable liquids have to be applied – especially when they are concentrated and collected. Risk management measurements for flammable liquids are at least: Take precautionary measures against static discharge. Ground/bond container and receiving equipment. Use only non-sparking tools. Use explosion-proof electrical/ventilating/lighting/equipment. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Wear protective gloves/protective clothing/eye protection/face protection.

Advice on protection against fire and explosion
Normal measures for preventive fire protection. Spontaneous combustion can occur should the product come into contact with hot fibre glass or mineral fibre insulations (e.g. in case of leakages), especially when exposed to atmospheric oxygen (e.g. removal of insulation panels). The use of foam glass as an insulating material can reduce the risk of such spontaneous combustion. Insulation material soaked with the product must be replaced with new insulation material as soon as possible.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers
Keep container tightly closed.

Storage class (TRGS 510)
10: Combustible liquids not in Storage Class 3

Container material
suitable materials: Steel, Stainless steel

7.3 Specific end use(s)

Specific use(s)
This information is not available.
SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

COMPONENTS WITH WORKPLACE CONTROL PARAMETERS

National occupational exposure limits
No data available

EUROPEAN OCCUPATIONAL EXPOSURE LIMITS
No data available

DERIVED NO EFFECT LEVEL (DNEL)

<table>
<thead>
<tr>
<th>Substance name: dibenzyltoluene</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>End Use</strong></td>
</tr>
<tr>
<td>Workers</td>
</tr>
<tr>
<td>Inhalation, Acute/short-term exposure - systemic effects</td>
</tr>
<tr>
<td>dermal, Acute/short-term exposure - local effects</td>
</tr>
<tr>
<td>Inhalation, Acute/short-term exposure - local effects</td>
</tr>
<tr>
<td>dermal, long-term exposure - systemic effects</td>
</tr>
<tr>
<td>Inhalation, long-term exposure - systemic effects</td>
</tr>
<tr>
<td>dermal, long-term exposure - local effects</td>
</tr>
<tr>
<td>Inhalation, long-term exposure - local effects</td>
</tr>
<tr>
<td>Consumers</td>
</tr>
<tr>
<td>Inhalation, Acute/short-term exposure - systemic effects</td>
</tr>
<tr>
<td>Oral, Acute/short-term exposure - systemic effects</td>
</tr>
<tr>
<td>dermal, Acute/short-term exposure - local effects</td>
</tr>
<tr>
<td>Inhalation, Acute/short-term exposure - local effects</td>
</tr>
<tr>
<td>dermal, long-term exposure - systemic effects</td>
</tr>
<tr>
<td>Inhalation, long-term exposure - systemic effects</td>
</tr>
<tr>
<td>Oral, long-term exposure - systemic effects</td>
</tr>
<tr>
<td>dermal, long-term exposure - local effects</td>
</tr>
<tr>
<td>Inhalation, long-term exposure - local effects</td>
</tr>
</tbody>
</table>
PREDICTED NO EFFECT CONCENTRATION (PNEC)

<table>
<thead>
<tr>
<th>Substance name: dibenzyltoluene</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Compartment</td>
</tr>
<tr>
<td>Fresh water</td>
</tr>
<tr>
<td>Marine water</td>
</tr>
<tr>
<td>intermittent release</td>
</tr>
<tr>
<td>treatment plant</td>
</tr>
<tr>
<td>Fresh water sediment</td>
</tr>
<tr>
<td>Marine sediment</td>
</tr>
<tr>
<td>Soil</td>
</tr>
<tr>
<td>food</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

PERSONAL PROTECTIVE EQUIPMENT

Respiratory protection
No personal respiratory protective equipment normally required. In inadequately ventilated areas, where workplace limits are exceeded, where unpleasant odours exist or where aerosols are in use, or smoke and mist occur, use self-contained breathing apparatus or breathing apparatus with a type A filter or appropriate combined filter (e.g. where aerosols are in use, or smoke and mist occur, A-P2 or ABEK-P2), in compliance with EN 141.

Hand protection
The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Be aware that in daily use the durability of a chemical resistant protective glove can be notably shorter than the break through time measured according to EN 374, due to the numerous outside influences (e.g. temperature).

Gloves suitable for permanent contact:
Material: Fluorinated rubber
Break through time: >= 480 min
Layer thickness: 0.4 mm

Eye protection
Tightly fitting safety goggles

Hygiene measures
General industrial hygiene practice.

Protective measures
Avoid contact with eyes. Wear suitable gloves and eye/face protection.

ENVIRONMENTAL EXPOSURE CONTROLS

General advice
Avoid subsoil penetration.
Do not flush into surface water or sanitary sewer system.
SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>liquid; 20 °C; 1,013 hPa</td>
</tr>
<tr>
<td>Form</td>
<td>liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>colorless to yellow</td>
</tr>
<tr>
<td>Odour</td>
<td>very faint</td>
</tr>
<tr>
<td>Odour Threshold</td>
<td>No valid method available</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>ca. -39 -32 °C; OECD Test Guideline 102</td>
</tr>
<tr>
<td>Boiling point/boiling range</td>
<td>ca. 390 °C; 1,013 hPa</td>
</tr>
<tr>
<td>Flash point</td>
<td>ca. 212 °C; Regulation (EC) No 440/2008; Method A.9.</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>not applicable (liquid)</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>&lt; 0.01 hPa; 20 °C; Regulation (EC) No 440/2008; Method A.4</td>
</tr>
<tr>
<td>Relative vapour density</td>
<td>&gt; 1</td>
</tr>
<tr>
<td>Density</td>
<td>1.04 g/cm3; 20 °C; OECD Test Guideline 109</td>
</tr>
<tr>
<td>Water solubility</td>
<td>&lt; 0.1 mg/l; 20 °C; Regulation (EC) No 440/2008; Method A.6.</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>log Pow: &gt; 6; 22 °C; OECD Test Guideline 117</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td>ca. 500 °C; Regulation (EC) No 440/2008; Method A.15.</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>ca. 48 mm2/s; 20 °C; DIN 51562</td>
</tr>
<tr>
<td></td>
<td>ca. 16 mm2/s; 40 °C; DIN 51562</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>not expected based on structure and functional groups</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>not expected based on structure and functional groups</td>
</tr>
</tbody>
</table>

9.2 Other data

None known.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

**Note**

Stable at normal ambient temperature and pressure.

10.2 Chemical stability

**Note**

No decomposition if stored normally. Stable under normal conditions.
10.3 Possibility of hazardous reactions
   Hazardous reactions None reasonably foreseeable.

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 to avoid
   Materials to avoid Strong oxidizing agents;

10.6 Hazardous decomposition products
   Thermal decomposition During the use at elevated temperatures thermal decomposition leads to the formation of low-boiling and high-boiling secondary products. See also section 7.1 in this Safety Data Sheet

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
   Acute toxicity
      Acute oral toxicity LD50 Rat: > 5,000 mg/kg; OECD Test Guideline 401 Based on available data, the classification criteria are not met.
      Acute inhalation toxicity LC0 Rat: > 0.24 mg/l; 4 h; OECD Test Guideline 403 Test atmosphere: vapour Based on available data, the classification criteria are not met.
      Acute dermal toxicity LD50 Rat: > 2,000 mg/kg; OECD Test Guideline 402 Based on available data, the classification criteria are not met.
      LD50 Rabbit: > 2,000 mg/kg;
         (literature value) Based on available data, the classification criteria are not met.
   
   Skin corrosion/irritation
      Skin irritation Rabbit: slightly irritating; OECD Test Guideline 404 Based on available data, the classification criteria are not met.
   
   Serious eye damage/eye irritation
      Eye irritation Rabbit: not irritating; OECD Test Guideline 405 Based on available data, the classification criteria are not met.
   
   Respiratory or skin sensitisation
      Sensitisation Buehler Test Guinea pig: not sensitizing; OECD Test Guideline 406 Based on available data, the classification criteria are not met.
   
   Germ cell mutagenicity
      Genotoxicity in vitro In vitro tests did not show mutagenic effects
      Genotoxicity in vivo In vivo tests did not show mutagenic effects
   
   Remarks Based on available data, the classification criteria are not met.
   
   Carcinogenicity
      Carcinogenicity The study is not necessary.
Justification:
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.

Reproductive toxicity

Reproductive toxicity
Rat; Oral
NOAEL ((parents)): 120 mg/kg (based on body weight and day)
NOAEL (F1): 750 mg/kg (based on body weight and day); OECD Test Guideline 415

Remarks
Reproductive toxicity
Based on available data, the classification criteria are not met.

Teratogenicity
Rat; Oral
NOAEL: 150 mg/kg (based on body weight and day)
NOAEL (pregnant female): 150 mg/kg (based on body weight and day); OECD Test Guideline 414

Remarks
Teratogenicity
Based on available data, the classification criteria are not met.

STOT - single exposure

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

STOT - repeated exposure

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

Repeated dose toxicity
Rat; Oral: 120 d
NOAEL: 50 mg/kg (based on body weight and day); OECD Test Guideline 408
Target Organs: Liver

Aspiration hazard

Aspiration toxicity
May be fatal if swallowed and enters airways.

Further information

Toxicological information
Toxicokinetics
Absorption through gut is possible.
The substance is metabolised.
Bioaccumulation is unlikely.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish
(96 h) Danio rerio (zebra fish); semi-static test; OECD Test Guideline 203
In the range of water solubility not toxic under test conditions.

Toxicity to fish - Chronic toxicity
The study is not necessary.
Justification:
exposure considerations

Toxicity to daphnia and other aquatic invertebrates
(48 h) Daphnia magna (Water flea); static test; OECD Test Guideline 202
In the range of water solubility not toxic under test conditions.

Toxicity to daphnia and other aquatic invertebrates - Chronic toxicity
(21 d) Daphnia magna (Water flea); reproduction rate; semi-static test; OECD Test Guideline 202, part 2; In the range of water solubility not toxic under test conditions.
Toxicity to aquatic plants
(72 h) Skeletonema costatum; Growth inhibition; In the range of water solubility not toxic under test conditions.

Toxicity to bacteria
EC10 (4.92 h) Pseudomonas putida: > 1,000 mg/l; oxygen consumption test

Toxicity to soil dwelling organisms
LC50 (14 d) Eisenia fetida (earthworms): 850 mg/kg; mortality; artificial soil

NOEC (28 d) Folsomia candida, Arthropod (Collembola): 100 mg/kg; mortality; artificial soil

Toxicity to terrestrial flora
emergence, growth; EC50 (20 d): > 100 mg/kg; Raphanus sativus, Trifolium ornithopodioides, Triticum aestivum; OECD Test Guideline 208

Toxicity for other terrestrial non-mammalian fauna
The study is not necessary.

Studies on birds do not need to be conducted due to large mammalian dataset.

12.2 Persistence and degradability
Biodegradability
inherently biodegradable; 65 %; 62 d; aerobic

12.3 Bioaccumulative potential
Bioconcentration factor (BCF): 7,525; calculated (literature value)

12.4 Mobility in soil
Adsorption/Soil; log Koc: 3.548 - 5.578; OECD Test Guideline 121
Slightly mobile in soils

12.5 Results of PBT and vPvB assessment

Based on available data, the classification criteria are not met.

12.6 Other adverse effects

May cause long lasting harmful effects to aquatic life.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Product
Can be incinerated, when in compliance with local regulations.

A waste code in accordance with the European Waste Catalogue (EWC) may not be assigned to this product since it admits of a classification only when the consumer uses it for some purpose. The waste code must be determined in agreement with the regional waste disposal authority or company.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

ADR Not dangerous goods
RID Not dangerous goods
ADN Not dangerous goods
IMDG Not dangerous goods
ICAO/IATA Not dangerous goods
14.2 Proper shipping name
ADR  Not dangerous goods
RID  Not dangerous goods
ADN  Not dangerous goods
IMDG Not dangerous goods
ICAO/IATA Not dangerous goods

14.3 Transport hazard class
ADR  Not dangerous goods
RID  Not dangerous goods
ADN  Not dangerous goods
IMDG Not dangerous goods
ICAO/IATA Not dangerous goods

14.4 Packing group
ADR  Not dangerous goods
RID  Not dangerous goods
ADN  Not dangerous goods
IMDG Not dangerous goods
ICAO/IATA Not dangerous goods

14.5 Environmental hazards
ADR  Environmentally hazardous no
RID  Environmentally hazardous no
ADN  Environmentally hazardous no
IMDG Marine pollutant no
ICAO/IATA Environmentally hazardous no

14.6 Special precautions for user
Not classified as dangerous in the meaning of transport regulations.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Remarks No information available.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
Occupational restrictions Employment restrictions for children and young workers in accordance with Directive 94/33/EC and the respective national provisions are to be observed.

NATIONAL/OTHER REGULATIONS
Legislation on the control of major-accident hazards involving dangerous substances
list entry in the directive.: Not applicable
NOTIFICATION STATUS

- US. Toxic Substances Control Act (TSCA) y (positive listing)
- Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL) DSL y (positive listing)
- Australia. Industrial Chemical (Notification and Assessment) Act AICS y (positive listing)
- New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand NZIOC n (Negative listing)
- Japan. Kashin-Hou Law List ENCS (JP) y (positive listing)
- Japan. Industrial Safety & Health Law (ISHL) List ISHL (JP) y (positive listing)
- Korea. Existing Chemicals Inventory (KECI) KECI (KR) y (positive listing)
- Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act PICCS (PH) y (positive listing)
- China. Inventory of Existing Chemical Substances INV (CN) y (positive listing)
- Switzerland. Consolidated Inventory CH INV y (positive listing)

Please note: the names and CAS numbers which are used for this product in the stated inventories may deviate from the information which is listed in chapter 3.

15.2 Chemical Safety Assessment

dibenzyltoluene

A Chemical Safety Assessment has been carried out for this substance.

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

H304 May be fatal if swallowed and enters airways.
H413 May cause long lasting harmful effects to aquatic life.

Safety datasheet sections which have been updated:

9. Physical and chemical properties

Further information:

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. This safety datasheet only contains information relating to safety and does not replace any product information or product specification.

Key or legend to abbreviations and acronyms used in the safety data sheet
Annex

Attachments to the safety data sheet and/or lists of the identified uses for the listed substances can be downloaded using the internet links below.

dibenzytoluene