

SAFETY DATA SHEET**1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING****1.1 Identification of the substance/preparation****Product name**

THERMERA

Product code

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1.2 Use of the Substance/Preparation**1.2.1 Expressed in writing**

Heat transfer fluid

1.2.2 Standard industrial classification

D Industry

1.2.3 Code for the purpose of use

29 Heat transfer fluid

1.3 Company/Undertaking Identification**1.3.1 Manufacturer, importer, supplier**Fortum Oil and Gas Oy
PL 100, 00048 FORTUM
010 4511, 010 45 25454**1.4 Emergency telephone number****1.4.1 Telephone number, name and address**

+358-9-471 977, +358-9-4711

Poison Information Centre
P.O.B 360 (Haartmaninkatu 4), FIN-00029 HYKS, HELSINKI, FINLAND**2. COMPOSITION/INFORMATION ON INGREDIENTS****2.1 Hazardous components**

2.1.1 CAS number or other code	2.1.2 Chemical name of the substance	2.1.3 Concentration	2.1.4 Warning symbol, R phrases and other information
590-47-6	Betaine monohydrate	20 - 60 %	-

3. HAZARDS IDENTIFICATION

FIRE AND EXPLOSION HAZARD: -

HEALTH HAZARD: -

ENVIRONMENTAL HAZARD:-

4. FIRST AID MEASURES**4.1 Additional advice**

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4.2 Inhalation

If vapour is inhaled, remove the person from exposure, keep warm and at rest. If symptoms persist, call a physician.

4.3 Skin contact

Remove contaminated clothing. Wash the skin with plenty of water and soap.

4.4 Eye contact

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Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists, consult a specialist.

4.5 Ingestion

Rinse mouth.

5. FIRE-FIGHTING MEASURES

5.1 Suitable extinguishing media

Water spray, foam, dry powder, carbon dioxide.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions

Sweep-up to prevent slipping hazard.

6.2 Environmental precautions

Restrict spreading of product into sewer, the ground, surface and ground water by embanking with sand, soil or other suitable absorptive material.

6.3 Methods for cleaning up

Pick up and transfer to properly labelled containers. Clean contaminated surface thoroughly. Flush into sewer with plenty of water.

7. HANDLING AND STORAGE

7.1 Handling

Open drum carefully as content may be under pressure. Wear safety shoes while handling containers.

7.2 Storage

Keep tightly closed in a dry and cool place. Protect from sunlight.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Exposure Limit Values

8.2 Exposure controls

8.2.1 Occupational exposure controls

Avoid contact with skin, eyes and clothing.

8.2.1.1 Respiratory protection

Spraying mist: Respirator (particle filter, type P2).

8.2.1.2 Hand protection

Protective gloves (e.g. of nitrile, neoprene, PVC).

8.2.1.3 Eye protection

Tightly fitting safety goggles.

8.2.1.4 Skin and body protection

Protective clothing when needed.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 General Information (appearance, odour)

Liquid, yellow, slightly sweet odour.

9.2 Important Health Safety and Environmental Information

9.2.1 pH Approx.8

9.2.2 Boiling point/range 105 °C

9.2.3 Flash point > 100°C

9.2.5 Explosive properties

9.2.5.1 Lower explosion limit -

9.2.5.2 Upper explosion limit -

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- 9.2.8 Relative density** 1,088 (25°C)
- 9.2.9 Solubility**
- 9.2.9.1 Water solubility** Soluble : 160 g/100 g .
- 9.2.9.2 Fat solubility (solvent - oil to be specified)** -
- 9.2.10 Partition coefficient (n-octanol/water)** Log Kow: - 4,94, Pow = 8,1 x 10⁻⁴ (Betaine)
- 9.3 Further information**
Decomposition temperature: >130 °C.
Melting point: - 40 °C (50 % solution), -18 °C (35 % solution)
Autoignition temperature: > 450 °C

10. STABILITY AND REACTIVITY

- 10.1 Conditions to avoid**
High temperatures, continuous > 100 °C, degrades above 130 °C
- 10.2 Materials to avoid**
Acids.
- 10.3 Hazardous decomposition products**
Decomposes on heating. During combustion e.g. carbon monoxide, nitrogen oxides, hydrocarbons and other organic and inorganic compounds can be formed depending on burning conditions.

11. TOXICOLOGICAL INFORMATION

- 11.1 Acute toxicity**
Betaine: LD50/oral/rat > 11 000 mg/kg.
Fish 96 h LC50 (mortality) > 1000 mg/l (10.12.1997)
Daphnid 96 h LC50 (mortality) > 1000 mg/l (10.12.1997).
- 11.2 Irritation and corrosion**
Betaine: Does not irritate eyes, tested with 10 % w/v betaine in distilled water.
No skin irritation, tested with 50 % w/v betaine in distilled water.
- 11.3 Sensitisation**
Non-sensitizing . Tested (Guinea pig).

12. ECOLOGICAL INFORMATION

- 12.1 Ecotoxicity effects**
- 12.1.1 Aquatic toxicity**
Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants.
- 12.1.2 Toxicity to other organisms**
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- 12.2 Mobility**
This product has no known eco-toxicological effects. Water solubility : 160 g/100 g. Product can penetrate soil until reaching ground water, where it spreads.
- 12.3 Persistence and degradability**
- 12.3.1 Biological degradability**
Readily biodegradable, according to appropriate OECD test. OECD 301 B 13.10.1997: 88 %
Biochemical oxygen demand within 5 days (BOD5) = 1000 mg O₂/ 1 g betaine.
- 12.3.2 Chemical degradation**
Chemical oxygen demand (COD) = 1300 mg O₂ / 1 g betaine.
- 12.4 Bioaccumulative potential**
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12.5 Other adverse effects

This product has no known eco-toxicological effects.

13. DISPOSAL CONSIDERATIONS

Small amounts can be diluted well with water and flushed into sewer. Large amounts should be disposed of according to national regulations and local authorities' advice.

14. TRANSPORT INFORMATION

14.1	UN-No	-
14.3	Land transport	-
14.3.1	ADR/RID	-
14.4	Sea transport	-
14.4.1	IMDG	-
14.5	Air transport	-
14.5.1	ICAO/IATA	-

15. REGULATORY INFORMATION

15.1	Information on the warning label
15.1.1	Letter code of the warning symbol and indications of danger for the preparation
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16. OTHER INFORMATION

16.1	Text of R phrases mentioned in Section 2
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16.4	Further Information
	Fortum Oil and Gas Oy, Oil Product Development, tel. int.+358-(0)10 4511