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

1.1 Product identifier

Product Name	Thermox ITF

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

Identified uses	Industrial grade heat transfer fluid with antifreeze and inhibitor functions designed for use in geothermal and air source heat recovery systems.
Uses advised against	This product is not recommended for any industrial, professional or consumer use other than the identified uses above.

1.3 Details of the supplier of the Safety Data Sheet

Supplier	Hydratech Division of Liquitherm Technologies Group Ltd Europa Way, Swansea West Business Park, Fforestfach, Swansea, SA5 4AJ +44 (0) 1792 586800 info@hydratech.co.uk

1.4 Emergency telephone number

Emergency telephone number	01792 586800
Opening Hours	08:30 - 17:00
First aid advice number	For emergencies that occur outside of office opening hours that pose a threat to human health, the environment or require immediate first aid advice call: +44 (0) 1792 572296
Note	This number is for emergencies only.

2 Section 2: Hazards identification

2.1 Classification of the substance or mixture

Classification - Regulation (EC) No. 1272/2008 (CLP)

Physical and chemical hazards	Not classified as a physical or chemical hazard
Human health	Acute Tox. 4 - H302, STOT RE 2 - H373
Environment	Not classified as an environmental hazard

2.2 Label elements

EC No.

N/A

Labelling - Regulation (EC) No. 1272/2008 (CLP)

Pictograms



Signal Word
Warning

Hazard statements
H302 - Harmful if swallowed.
H373 - May cause damage to organs - Kidneys - through prolonged or repeated exposure if swallowed.

Precautionary statements
P260 - Do not breathe dust/fumes/gas/mist/vapours/spray.
P264 - Wash hands thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P301+P312 - IF SWALLOWED: Call a POISON CENTRE or doctor/physician if you feel unwell.
P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomitting.

2.3 Other hazards

This product does not meet the PBT/vPvB criteria of REACH, annex XIII.

3 Section 3: Composition/information on ingredients

3.2 Mixtures

1 **Component - Monoethylene glycol (ethane-1, 2-diol)**

Concentration (% w/v)	80-95%
EC No.	203-473-3
CAS No.	107-21-1
Reach registration No.	01-2119456816-28-XXXX

Classification - Regulation (EC) No. 1272/2008 (CLP)
Acute Tox. 4 - H302
STOT RE 2 - H373

4 Section 4: First aid measures

4.1 Description of first aid measures

General Information	When safe to do so remove the victim from the source of exposure giving consideration as to whether this may cause further discomfort to the victim.
Inhalation	Move the affected person to fresh air at once. Keep warm in a position comfortable for breathing. If breathing becomes difficult, properly trained personnel may assist the victim by supplying oxygen to ease breathing. Get medical attention if any discomfort continues.
Ingestion	DO NOT INDUCE VOMITTING and seek medical attention immediately. Move victim to fresh air and keep warm and at rest in a position comfortable for breathing. Give victim approximately 250 mL of water however, do not give victim anything to drink if not fully conscious. If medical advice is delayed and an adult has consumed several ounces of this chemical, give approximately 100 mL of hard liquor (for children give 2 mL per kilogram of body weight).
Skin Contact	Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention if any discomfort continues.
Eye Contact	Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

General Information	The following symptoms are listed in case of exposure to the 100% neat product.
Inhalation	Inhalation of vapours may cause mild irritation of the upper respiratory tract.
Ingestion	Initial symptoms may include an upset stomach, nausea, vomiting and diarrhoea. Symptoms may progress to hyperventilation, metabolic acidosis, cardiovascular dysfunction and acute kidney failure depending on the extent of poisoning.
Skin Contact	Prolonged and repeated contact may cause mild irritation of the skin.
Eye Contact	Direct eye contact may cause reddening of the eyes.

4.3 Indication of any immediate medical attention and special treatment needed

If several ounces (> 50 mL) of this product have been ingested, early administration of ethanol may help to counteract the toxic side effects such as metabolic acidosis, cardiovascular dysfunction and in severe cases kidney failure. Consider haemodialysis or peritoneal dialysis and thiamine 100 mg plus pyridoxine 50 mg intravenously every 6 hours. If ethanol is used a therapeutically effective blood concentration in the range of 100-150 mg/dL may be achieved by a rapid loading dose followed by a continuous intravenous fusion.

Respiratory symptoms such as pulmonary edema, may be delayed. Victims receiving significant exposure should be kept under observation for 24-48 hours for signs of respiratory distress. In the case of severe poisoning, respiratory support with mechanical ventilation and oxygenation of the patient.

Notes for the doctor

No specific recommendations in addition to the suggestions in Sections 4.1 and 4.3.
Treat symptomatically.

5 Section 5: Firefighting measures

5.1 Extinguishing media

Extinguish with alcohol-resistant foam, carbon dioxide (CO2), dry chemicals, sand and dolomite or water fog.

5.2 Special hazards arising from the substance or mixture

Specific Hazards	When heated and in the case of a fire, harmful vapours/gases (such as carbon monoxide and carbon dioxide) may be formed.
Unusual fire and explosion hazards	Exposure to extreme heat may cause product containers to explode.

5.3 Advice for firefighters

Protective actions during firefighting	Move containers away from fire area if this can be done without risk. Keep people away, isolate the fire and deny unnecessary entry. Use water fog to keep fire-exposed containers cool and disperse vapours. Runoff water should be prevented from entering sewers and watercourses.
Specialist protective equipment for firefighters	Wear positive-pressure self-contained breathing apparatus (SCBA) and full protective clothing.

6 Section 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions

Avoid flames, sparks, heat and smoking.
In the case of inadequate ventilation, use respiratory protection.

Protective Equipment

Wear protective clothing as described in Section 8 of this Safety Data Sheet.

Emergency Procedures

Stop leak/release if possible to do so without risk.
Extinguish all ignition sources if safe to do so.
Warn everybody of potential danger and evacuate if necessary.

6.2 Environmental precautions

Do not discharge into drains, water courses or onto the ground.
Spillages or uncontrolled discharges into watercourses must be reported immediately to the Environmental Agency or other appropriate regulatory body.

6.3 Methods and material for containment and cleaning up

Absorb spillage with inert, damp, non-combustible material, then flush the contaminated area with water.
Containers with collected spillage should be appropriately labelled with the correct contents and hazard labels.
Collect and place in suitable waste disposal containers and seal securely. For waste disposal, see Section 13.

6.4 Reference to other sections

Wear protective clothing as described in Section 8 of this Safety Data Sheet. Collect and dispose of spillage as indicated in Section 13.

7 Section 7: Handling and storage

7.1 Precautions for safe handling

Avoid spilling and contact with the skin and the eyes as well as direct inhalation of sprays and mists.
Provide good ventilation.
Do not eat, drink or smoke in work areas and wash hands after handling this product.

7.2 Conditions for safe storage, including any incompatibilities

Store in tightly-closed, original containers.
Keep separate from food, feedstuffs, fertilisers and other sensitive material.
Do not store near heat sources or expose to high temperatures.
Keep away from heat, sparks and open flame.

7.3 Specific end use(s)

The identified uses for this product are detailed in Section 1.2.

8 Section 8: Exposure controls/personal protection

8.1 Control parameters

Name	STD	TWA-8Hrs	STEL-15Min
Monoethylene glycol (ethane-1, 2-diol)	WEL	52 mg/m³	104 mg/m³

DNEL
Industry, Inhalation - Long term local effects: 35mg/m³
Industry, Dermal - Long term systemic effects: 106mg/m³
Consumer, Inhalation - Long term local effects: 7mg/m³
Consumer, Dermal - Long term systemic effects: 53mg/m³

PNEC
Fresh water: 10 mg/L
Marine water: 1mg/L
STP: 199.5 mg/L
Sediment fresh water: 37 mg/kg
Soil: 1.53 mg/kg

8.2 Exposure controls



Technical procedures

Engineering measures	Methods to prevent or control exposure are preferred. Provide adequate ventilation to minimise the risk of inhalation of sprays and mists.

Hygiene measures	Handle in accordance with good industrial hygiene and safety practices. Wash hands after handling this product and at the end of each work shift. Routinely wash work clothing and personal protective equipment to remove possible contaminants.
Respiratory equipment	Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
Hand protection	PVC/butyl rubber/neoprene gloves are recommended.
Eye protection	Wear approved chemical goggles or face shield.
Skin Protection	Wear rubber apron or protective clothing in case of contact.
Other Protection	Wear suitable protective clothing/footwear as protection against splashing or contamination.
Thermal Hazards	No specific measures required.
Environmental Exposure Controls	Product not classified as an environmental hazard - no specific environmental exposure controls required.

9 Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	Clear liquid
Colour	Colourless (unless dyed according to customer specification)
Odour	Non-pungent but characteristic aroma
Odour Threshold	Not applicable
pH	7.5 - 9.0 depending on inhibitor formulation
Melting point / Pour point	-35°C (corresponding to 45% v/v of ITF)
Initial boiling point	> 180°C
Flash point	> 64°C
Evaporation Rate	No test data available
Flammability	Product is not classified as flammable
Flammability / explosion limits	Upper limit: 13% Lower limit: 3%
Vapour pressure	No test data available
Vapour density (air = 1)	No test data available
Relative density of the mixture	1.09 - 1.14
Solubility	Soluble in water
Partition coefficient: n-octanol / water	No test data available
Auto-ignition temperature	> 390°C
Decompostion temperature	No test data available
Viscosity	See product data sheet
Explosive properties	Not applicable - product is not classified as an explosive
Oxidising properties	Not applicable - product is not classified as an oxidising agent

9.2 Other information

Not determined.

10 Section 10: Stability and reactivity

10.1 Reactivity

There are no known reactivity hazards associated with this product.

10.2 Chemical stability

Stable at normal ambient temperatures and when used as recommended.
Product is hygroscopic and will absorb water by contact with the moisture in the air.

10.3 Possibility of hazardous reactions

There are no known hazardous reactions associated with this product.

10.4 Conditions to avoid

Avoid temperatures >180°C for prolonged periods of time, flames and sources of ignition.

10.5 Incompatible materials

Strong acids, strong alkalis and strong oxidising agents.

10.6 Hazardous decomposition products

No known hazardous decomposition products. Potentially hazardous products released due to fire are listed in Section 5.2 of this Safety Data Sheet.

11 Section 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

This product has not been tested as a whole for acute toxicity health effects. For this reason, the acute toxicity values for the main components of this mixture are listed below.

Acute toxicity values for monoethylene glycol:
LD50, oral, rat: 4700 mg/kg bw
LD50, dermal, rabbit: >10,600 mg/kg bw
LD50, dermal, mouse: >3500 mg/kg bw
LC50, inhalation (vapours), rat: >2.5 mg/L

Oral toxicity of monoethylene glycol is expected to be moderate in humans despite animal testing showing a lower degree of toxicity. The estimated lethal dose in humans of NEAT MONOETHYLENE GLYCOL is expected to be approximately 100mL.

Acute toxicity values for ethanol:
LD50, oral, rat: 10,470 mg/kg bw
LD50, dermal rabbit: 17,100 mg/kg bw

Skin corrosion/ irritation	Skin irritation is not expected when this product is used/handled correctly.
Serious eye damage/ irritation	Eye irritation is not expected when this product is used/handled correctly.
Respiratory/ skin sensitisation	Product not classified as a skin/respiratory sensitiser.
Germ cell mutagenicity	Product is not expected to be mutagenic.
Carcinogenicity	Product is not expected to be carcinogenic.
Reproductive toxicity	Product is not expected to damage the reproductive system or harm a developing fetus.
Evaluation of CMR properties	No test data available.
STOT-single exposure	No test data available.
STOT-repeated exposure	No test data available.
Aspiration hazard	No test data available.

General information

See Section 4.2 of this Safety Data Sheet.

Inhalation	Inhalation of vapours may cause mild irritation of the upper respiratory tract.
Ingestion	Initial symptoms may include an upset stomach, nausea, vomiting and diarrhoea. Symptoms may progress to hyperventilation, metabolic acidosis, cardiovascular dysfunction and acute kidney failure depending on the extent of poisoning.
Skin contact	Prolonged and repeated contact may cause mild irritation of the skin.
Eye contact	Direct eye contact may cause reddening of the eyes.

12 Section 12: Ecological information

Ecotoxicity
The product is not classified as hazardous to the environment.

12.1 Toxicity

LC50, 96 hours, fish:	>100 mg/L - not classified as harmful to fish
EC50, 48 hours, daphnia magna:	>100 mg/L - not classified as harmful to daphnia
EC50, 96 hours, aquatic plants:	>100 mg/L - not classified as harmful to aquatic plants

12.2 Persistence and degradability

This product is readily biodegradable (90% over 10 days).

12.3 Bioaccumulative potential

Will not bio-accumulate.
Partition coefficient - not determined.

12.4 Mobility in soil

Product is mobile in soil as it is water soluble.

12.5 Results of PBT and vPvB assessment

This product does not meet the PBT/vPvB criteria of REACH, annex XIII.

12.6 Other adverse effects

Not determined.

13 Section 13: Disposal considerations

Section 13: Disposal considerations

General information
Waste to be treated as controlled waste. Disposal to licensed waste disposal site in accordance with Local Waste Disposal Authority.

Disposal methods
Dispose of waste and residues in accordance with local authority and/or local sewage treatment plant requirements.

14 Section 14: Transport information

14.1 UN number

Product not hazardous for transport - no information required.

14.2 UN proper shipping name

Product not hazardous for transport - no information required.

14.3 Transport hazard class(es)

Product not hazardous for transport - no information required.

Transport labels

Product not hazardous for transport - no information required.

14.4 Packing group

Product not hazardous for transport - no information required.

14.5 Environmental hazards

Product not classed as an environmentally hazardous substance or marine pollutant.

14.6 Special precautions for user

Product not hazardous for transport - no information required.

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

Product not hazardous for transport - no information required.

15 Section 15: Regulatory information

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

EU Legislation

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) as amended, incorporating all amendments up to, and including, Regulation (EC) No 588/2018 and Regulation (EC) No 589/2018.

Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures as amended, incorporating all amendments up to, and including, Regulation (EC) No 776/2017.

Guidance notes

CHIP for everyone HSG228. Approved Classification and Labelling Guide (Sixth edition) L131. Safety Data Sheets for substances and preparations.

15.2 Chemical safety assessment

No chemical safety assessment for this mixture has been carried out.

16 Section 16: Other information

Issued by	Hydratech
Revision Date	16/06/2020
Approved by	Stephen Hickson
Revision Comments	Review in line with CLP regulation

Hazard statements in full

The following hazard statements are the hazard statements 'in full' for the components of this mixture and do not necessarily represent the final classifications of this product.

H302 - Harmful if swallowed.
H373 - May cause damage to organs - Kidneys - through prolonged or repeated exposure if swallowed.

Further classification and composition comments

No further classification or composition comments required.

(i) Indication of changes

Safety Data Sheet updated to comply with the new requirements as set out in Regulation (EC) No. 1272/2008 (CLP).

(ii) Abbreviations and acronyms

bw: bodyweight
CAS No: Chemical Abstracts Service number
CLP: Classification Labelling and Packaging Regulation
DNEL: Derived No-Effect Level
EC: European Commission
EC No: European Chemical number: EINECS, ELINCS or NLP
ECHA: European Chemicals Agency
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
LC50: Lethal Concentration, 50%
LD50: Median Lethal Dose
PBT: Persistent, Bioaccumalative & Toxic
PNEC: Predicted No Effect Concentration
REACH: Registration, Evaluation, Authorisation & restrictions of Chemicals
SDS: Safety Data Sheet
vPvB: Very Persistent and Very Bioaccumalative
WEL: Workplace Exposure Limit

(iii) Training advice

Product should only be handled by trained operators.

(iv) Additional information

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give advice about the safe handling of the product named in this Safety Data Sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with products or in the case of processing, the information on this Safety Data Sheet is not necessarily valid for the new made-up material.