



Safety Data Sheet

Version number: 17.01
Revision date: 5/22/2017
Supersedes date: None

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

1.1. Product identifier

TMC Industries FC-770

Product identification number

95021

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

Identified uses

Heat transfer fluid

1.3. Details of the supplier of the substance or mixture

Address: 1423 Mill Ln, Waconia, MN 55387
Website: <http://www.tmcindustries.com/index.html>

1.4. Emergency telephone number

Toll Free: 800-772-8179
Local: 952-442-1140

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture CLP REGULATION (EC) No 1272/2008

CLASSIFICATION:

This material is not classified as hazardous according to Regulation (EC) No. 1272/2008, as amended, on classification, labelling, and packaging of substances and mixtures.

Dangerous substances(67/548/EEC)/preparations(1999/45/EC) directive

This product is not classified as hazardous according to EU Directive 1999/45/EC.

2.2. Label elements

CLP REGULATION (EC) No 1272/2008

Dangerous substances(67/548/EEC)/preparations(1999/45/EC) directive

Symbols None.

Contains:

No ingredients are assigned to the label.

Risk phrases None.**Safety phrases** None.**2.3. Other hazards**

None known.

SECTION 3: Composition/information on ingredients

Ingredient	CAS Nbr	EU Inventory	% by Wt	Classification
Perfluoro N-alkyl morpholines, C=1-3 (REACH Reg. No.:01-0000019840-69)	1093615-61-2	ELINCS 473-390-7	100	

Please see section 16 for the full text of any R phrases and H statements referred to in this section

Please refer to section 15 for the any applicable Notas that have been applied to the above components

For information on ingredient occupational exposure limits or PBT or vPvB status, see sections 8 and 12 of this SDS

SECTION 4: First aid measures**4.1. Description of first aid measures****Eye contact**

No need for first aid is anticipated.

Skin contact

No need for first aid is anticipated.

Inhalation

No need for first aid is anticipated.

If swallowed

Rinse mouth. If you feel unwell, get medical attention.

4.2. Most important symptoms and effects, both acute and delayed

See Section 11.1 Information on toxicological effects

4.3. Indication of any immediate medical attention and special treatment required

Not applicable

SECTION 5: Fire-fighting measures**5.1. Extinguishing media**

Non-combustible. Choose material suitable for surrounding fire.

5.2. Special hazards arising from the substance or mixture

Exposure to extreme heat can give rise to thermal decomposition.

Hazardous Decomposition or By-Products

<u>Substance</u>	<u>Condition</u>
Carbon monoxide.	During combustion.
Carbon dioxide.	During combustion.
Hydrogen Fluoride	During combustion.
Toxic vapour, gas, particulate.	During combustion.

5.3. Advice for fire-fighters

No unusual effects are anticipated during fire extinguishing operations. Avoid breathing the products and substances that may result from the thermal decomposition of the product or the other substances in the fire zone. Keep containers cool with water spray when exposed to fire to avoid rupture.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

6.2. Environmental precautions

Avoid release to the environment. For larger spills, cover drains and build dykes to prevent entry into sewer systems or bodies of water.

6.3. Methods and material for containment and cleaning up

Contain spill. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue with detergent and water. Seal the container. Dispose of collected material as soon as possible.

6.4. Reference to other sections

Refer to Section 8 and Section 13 for more information

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Do not eat, drink or smoke when using this product. Wash thoroughly after handling. For industrial or professional use only. Do not use in a confined area or areas with little or no air movement.

7.2. Conditions for safe storage including any incompatibilities

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

7.3. Specific end use(s)

See information in Section 7.1 and 7.2 for handling and storage recommendations. See Section 8 for exposure controls and personal protection recommendations.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

No occupational exposure limit values exist for any of the components listed in Section 3 of this Safety Data Sheet.

Derived no effect level (DNEL)

Ingredient	Degradation Product	Population	Human exposure pattern	DNEL
Perfluoro N-alkyl morpholines, C=1-3		Worker	Dermal, Long-term exposure (8 hours), Systemic effects	3.3 mg/kg bw/d
Perfluoro N-alkyl morpholines, C=1-3		Worker	Inhalation, Long-term exposure (8 hours), Systemic effects	16,341 mg/m ³

Predicted no effect concentrations (PNEC)

Ingredient	Degradation Product	Compartment	PNEC
Perfluoro N-alkyl morpholines, C=1-3		Agricultural soil	0.0035 mg/kg w.w.
Perfluoro N-alkyl morpholines, C=1-3		Freshwater	0.000065 mg/l
Perfluoro N-alkyl morpholines, C=1-3		Freshwater sediments	0.0072 mg/kg w.w.
Perfluoro N-alkyl morpholines, C=1-3		Grassland average	0.0035 mg/kg w.w.
Perfluoro N-alkyl morpholines, C=1-3		Marine water	0.0000065 mg/l
Perfluoro N-alkyl morpholines, C=1-3		Marine water sediments	0.00072 mg/kg w.w.
Perfluoro N-alkyl morpholines, C=1-3		Sewage Treatment Plant	10 mg/l

8.2. Exposure controls

8.2.1. Engineering controls

For those situations where the material might be exposed to extreme overheating due to misuse or equipment failure, use with appropriate local exhaust ventilation sufficient to maintain levels of thermal decomposition products below their exposure guidelines.

8.2.2. Personal protective equipment (PPE)

Eye/face protection

The following eye protection(s) are recommended: Safety glasses with side shields.

Skin/hand protection

Skin protection is not required.

Respiratory protection

Under normal use conditions, airborne exposures are not expected to be significant enough to require respiratory protection.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid.
Appearance/Odour	Colourless, clear liquid.
pH	<i>Not applicable.</i>
Boiling point/boiling range	96 °C
Melting point	<i>No data available.</i>
Flammability (solid, gas)	Not classified
Explosive properties	Not classified
Oxidising properties	Not classified
Flash point	No flash point
Autoignition temperature	<i>No data available.</i>
Flammable Limits(LEL)	<i>Not applicable.</i>
Flammable Limits(UEL)	<i>Not applicable.</i>
Vapour pressure	6,746.1 Pa [@ 20 °C]
Relative density	1.8 [<i>Ref Std:WATER=1</i>]
Water solubility	0.0662 mg/l [@ 23 °C]
Partition coefficient: n-octanol/water	<i>No data available.</i>
Evaporation rate	1.0 [<i>Ref Std:BUOAC=1</i>]
Vapour density	14.0 [<i>Ref Std:AIR=1</i>]
Viscosity	0.8 mm ² /sec [@ 25 °C]
Density	1.8 g/ml
9.2. Other information	
Volatile organic compounds (VOC)	<i>No data available.</i>
Percent volatile	100 %
VOC less H₂O & exempt solvents	<i>No data available.</i>

SECTION 10: Stability and reactivity

10.1 Reactivity

This material is considered to be non reactive under normal use conditions

10.2 Chemical stability

Stable.

10.3 Possibility of hazardous reactions

Hazardous polymerisation will not occur.

10.4 Conditions to avoid

None known.

10.5 Incompatible materials

None known.

10.6 Hazardous decomposition products

Substance

None known.

Condition

If the product is exposed to extreme conditions of heat from misuse or equipment failure, toxic decomposition products that include hydrogen fluoride and perfluoroisobutylene can occur.

SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labelling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

11.1 Information on Toxicological effects

Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

Eye contact

Contact with the eyes during product use is not expected to result in significant irritation.

Skin contact

Contact with the skin during product use is not expected to result in significant irritation.

Inhalation

No health effects are expected.

Ingestion

May be harmful if swallowed.

Toxicological Data

Acute Toxicity

Name	Route	Species	Value
Perfluoro N-alkyl morpholines, C=1-3	Dermal		LD50 estimated to be > 5,000 mg/kg
Perfluoro N-alkyl morpholines, C=1-3	Inhalation-Vapor (4 hours)	Rat	LC50 > 20 mg/l
Perfluoro N-alkyl morpholines, C=1-3	Ingestion	Rat	LD50 > 2,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Perfluoro N-alkyl morpholines, C=1-3	Rabbit	No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
Perfluoro N-alkyl morpholines, C=1-3	Rabbit	No significant irritation

Skin Sensitisation

Name	Species	Value
Perfluoro N-alkyl morpholines, C=1-3	Mouse	Not sensitizing

Respiratory Sensitisation

Name	Species	Value
Perfluoro N-alkyl morpholines, C=1-3		No data available

Germ Cell Mutagenicity

Name	Route	Value
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Perfluoro N-alkyl morpholines, C=1-3	In Vitro	Not mutagenic
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Carcinogenicity

Name	Route	Species	Value
Perfluoro N-alkyl morpholines, C=1-3			No data available

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test result	Exposure Duration
Perfluoro N-alkyl morpholines, C=1-3	Ingestion	Not toxic to female reproduction	Rat	NOAEL 1,000 mg/kg/day	pre mating & during gestation
Perfluoro N-alkyl morpholines, C=1-3	Ingestion	Not toxic to male reproduction	Rat	NOAEL 1,000 mg/kg/day	pre mating & during gestation
Perfluoro N-alkyl morpholines, C=1-3	Ingestion	Not toxic to development	Rat	NOAEL 1,000 mg/kg/day	pre mating & during gestation

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
Perfluoro N-alkyl morpholines, C=1-3			No data available			

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
Perfluoro N-alkyl morpholines, C=1-3	Inhalation	heart endocrine system bone, teeth, nails, and/or hair hematopoietic system liver immune system nervous system eyes kidney and/or bladder respiratory system	All data are negative	Rat	NOAEL 813 mg/l	13 weeks
Perfluoro N-alkyl morpholines, C=1-3	Ingestion	auditory system heart endocrine system blood hematopoietic system liver immune system nervous system kidney and/or bladder respiratory system vascular system	All data are negative	Rat	NOAEL 1,000 mg/kg/day	28 days

Aspiration Hazard

Name	Value
Perfluoro N-alkyl morpholines, C=1-3	Not an aspiration hazard

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

SECTION 12: Ecological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. Additional information leading to material classification in Section 2 is available upon request. In addition, environmental fate and effects data on ingredients may not be reflected in this section because an ingredient is present below the threshold for labelling, an ingredient is not expected to be available for exposure, or the data is considered not relevant to the material as a whole.

12.1. Toxicity

Acute aquatic hazard:

Not acutely toxic to aquatic life by GHS criteria.

Chronic aquatic hazard:

Not chronically toxic to aquatic life by GHS criteria.

No component test data available.

Material	Organism	Type	Exposure	Test endpoint	Test result
TMC Industries FC- 770 Reclaim		Insufficient to classify			

12.2. Persistence and degradability

No test data available.

12.3 : Bioaccumulative potential

No test data available.

12.4. Mobility in soil

Please contact manufacturer for more details

12.5. Results of the PBT and vPvB assessment

No information available at this time, contact manufacturer for more details

12.6. Other adverse effects

No information available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Dispose of contents/ container in accordance with the local/regional/national/international regulations

Incinerate in a permitted waste incineration facility.

The coding of a waste stream is based on the application of the product by the consumer. Since this is out of the control of

TMC Industries FC-770 Reclaim

TMC Industries, no waste code(s) for products after use will be provided. Please refer to the European Waste Code (EWC - 2000/532/EC and amendments) to assign the correct waste code to your waste stream. Ensure national and/or regional regulations are complied with and always use a licensed waste contractor.

EU waste code (product as sold)

070103* Organic halogenated solvents, washing liquids and mother liquors

14 06 02* Other halogenated solvents and solvent mixtures

SECTION 14: Transportation information

Product #: 95021

Not hazardous for transportation

SECTION 15: Regulatory information

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

Global inventory status

Contact TMC Industries for more information. The components of this material are in compliance with the China "Measures on Environmental Management of New Chemical Substance". Certain restrictions may apply. Contact the selling division for additional information. The components of this material are in compliance with the provisions of the Korean Toxic Chemical Control Law. Certain restrictions may apply. Contact the selling division for additional information. The components of this material are in compliance with the provisions of Australia National Industrial Chemical Notification and Assessment Scheme (NICNAS). Certain restrictions may apply. Contact the selling division for additional information. The components of this material are in compliance with the provisions of Japan Chemical Substance Control Law. Certain restrictions may apply. Contact the selling division for additional information. The components of this material are in compliance with the provisions of Philippines RA 6969 requirements. Certain restrictions may apply. Contact the selling division for additional information. The components of this product are in compliance with the new substance notification requirements of CEPA. The components of this product are in compliance with the chemical notification requirements of TSCA.

15.2. Chemical Safety Assessment

Not applicable

SECTION 16: Other information

Revision information:

Revision Changes: N/A

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