Safety Data Sheet

SECTION 1: Identification

1.1 Product identifier
TMC Industries TMC-3283 Electronic Fluorinated Liquid

Product Identification Numbers
TMC-3283, CAS Number: 338-83-0

1.2 Recommended use and restrictions on use
TMC-3283 has good chemical inertia. When in contact with electronic components, it will not produce any corrosion. After use, it does not need specific cleaning steps. Therefore, it is widely used as electronic test liquid Because of its excellent thermal conductivity

1.3 Supplier's details
Manufacturer: TMC Industries
Address: 1423 Mill Lane Waconia, MN 55387
Telephone: 952-442-1140
Fax: 952-442-1142

1.4 Emergency telephone number
952-442-1140

SECTION 2: Hazard identification

2.1 Hazard classification
Non-hazardous goods (GB13690-2009). There is no known GHS risk classification.

2.2 Label elements
Tag elements: A, graphic symbols: not applicable; B, pictogram: not applicable; C, warning words: not applicable.

2.3 Symbols
Not applicable.

2.4 Pictograms
Not applicable.

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S No.	% by Wt
Perfluoroamine (Fluorinated liquid)	338-83-0	≧99%

SECTION 4: First aid measures

4.1 Description of first aid measures

Inhalation:
Move to a place with fresh air. If breathing becomes difficult, give artificial respiration or breathe in oxygen. Seek immediate medical attention.

Skin Contact:
Wipe the product from the skin with a dry cloth or towel and wash the exposed parts with soap.

Eye Contact:
Flush immediately with plenty of water for at least 15 minutes.

If Swallowed:
Gargle with water if the person is still conscious. Don't feed unconscious people. Seek immediate medical attention.

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media
Use a fire fighting agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture
Cracking in excess of 500℃ may produce a toxic and highly corrosive hydrogen fluoride gas.

5.3 Special protective acts for fire-fighters
When fire fighting conditions are severe and total thermal decomposition of the product is possible, wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Ventilate the workplace with fresh air. If a large amount of overflow occurs in a confined space, according to good industrial hygiene measures, use mechanical ventilation measures to disperse and discharge steam.

6.2 Environmental precautions
Avoid release into the environment. In the event of a large overflow, cover the sewer inlet and build a dike to prevent the overflow from flowing into the sewer or water environment.

6.3 Methods and material for containment and cleaning up

Collect the spill in a container and store as much as possible in an airtight container approved by the authorities for transport. Cover the spill from the edge inward (with bentonite, vermiculite or commercially available inorganic absorption material), mix until dry after full absorption, and clean the residue with the appropriate solvent chosen by the professional. Finally, ventilate the operating area. Read and follow the safety instructions on the solvent label and safety specification (SDS) when handling.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Use under adequate ventilated conditions. Keep away from heat source (volatile). No heating more than 500°C. Do not inhale thermal decomposition products. Avoid contact with skin and hot substances, and store work clothes and other clothes, food and tobacco items separately. Smoking is prohibited. Smoking in the use of this product will lead to the pollution of tobacco, smoke, and form harmful decomposition products. No direct contact with strong bases (pH >10). Keep container closed when not in use.

7.2 Conditions for safe storage including any incompatibilities

Store at normal temperature under normal warehouse conditions and keep away from heat and flame source. Do not put the container sideways. Keep away from children.

Leakage monitoring method Halogen tester, test for leakage.

Incompatible storage: not applicable.
Explosion-proof: not applicable

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Acute inhalation LC50 greater than 5,502 mg/m^3

8.2 Exposure controls

8.2.1 Engineering controls

Engineering facilities: Halogen monitoring equipment should be installed in storage and application sites, and automatic exhaust fans should be installed near the ground; It can exhaust air normally. If the monitoring index exceeds the standard, it can automatically accelerate the forced exhaust air cycle.

8.2.2 Personal protective equipment (PPE)

Eye/Face protection

Protective glasses. A contact lens wearer should take appropriate precautions.

Skin/hand protection

Plastic film or rubber gloves.

Respiratory protection
Approved breathing apparatus.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	
Physical state	Transparent liquid
Color	Colorless
Specific Physical Form	Liquid
Odor	Odorless
Boiling Point Range	112°C-122°C
Dielectric Constant	1.96
Dielectric strength	52 KV
Surface Tension	12.7 mN/m
Density	1.83 g/mL
Saturated Water Content	50 ppm
pH	7
Flash Point	None
ODP	0
GWP	High
Specific Heat 25°C	1.431 J/g°C
Thermal Conductivity 25°C	0.0834
Heat of Vaporization	136 J/g°C

SECTION 10: Stability and reactivity

10.1 Reactivity
This material may be reactive with certain agents under certain conditions – see the remaining headings in this section.

10.2 Chemical Stability
Stable.

10.3 Possibility of hazardous reactions
Flammable and toxic gases are produced when exposed to fire or high temperature (greater than 500°C).

10.4 Conditions to avoid
Heat.

10.5 Incompatible materials
Highly alkaline.

10.6 Hazardous decomposition products

Substance	**Condition**
Carbon monoxide and incomplete combustion carbon traces	Elevated Temperatures – greater than 500 °C

Fluorine compounds	Elevated Temperatures – greater than 500 °C

The product will produce the following harmful decomposition products after thermal decomposition: Carbon monoxide and incomplete combustion carbon traces and fluorine compounds.

SECTION 11: Toxicological information

11.1 Information on Toxicological effects

Signs and Symptoms of Exposure

Inhalation:
Skin Contact:
Contact with the skin during product use is not expect to result in significant irritation.

Eye Contact:
Contact with the skin during product use is not expect to result in significant irritation.

Ingestion:
No known health effects.

Toxicological Data
If a component is disclosed in Section 3 but does not appear in the table below, either no data are available for that endpoint or the data are not sufficient for classification.

Acute Toxicity

Name	Route	Species	Value
Perfluoroamine	Oral	Mouse	LD50: BBB 2g/kg acute oral toxicity in rats is low toxicity
Perfluoroamine	Inhalation	Rat	LC50(inhalation/rat): >5000mg/m3 acute inhalation toxicity in rats is low toxicity

Chronic Toxicity
The component/components may cause conjunctivitis, dizziness, insomnia, gastrointestinal and visual disorders.

Carcinogenicity
For the component/components: NNTP: NNTP, IARC: NNTP, OSHA: NNTP

Mutagenicity
For the component/components: Negative (nuclear test (mouse)), Negative (chromosome analysis) [flurane]

Other Information
If the product is heated above 300°C, it may crack to produce harmful fluorine compounds.

SECTION 12: Ecological information

Biodegradable: biodegradable Bioaccumulation: no
useful information Aquatic toxicity:
96Hr LC50(mine fish blackhead):>2.75mg//L 48Hr
EC50(fleas):>2.55mg/LL
72Hr EC50(kelp):>22.32mg/L

SECTION 13: Disposal considerations

Disposal methods
Dispose of the contents and container in accordance with the local/regional/national/international regulations in a permitted industrial waste facility.

EPA Hazardous Waste Number (RCRA): Not regulated

SECTION 14: Transport Information

Non-dangerous goods can be transported and stored as ordinary goods

Packing category: Not Restricted in IMDG CODE, IATA DGR, GB 12268/, TB/T 2688.

SECTION 15: Regulatory information

Specific safety, health and environmental laws and regulations

EU REACH SVHC No: HKTEC2204994602

EU REACH ANNEX XVII No: HKTEC2205175902

Environmental management measures for new chemicals:
This product conforms to the environmental management measures for new substances in China and all ingredients have been listed or exempted from the existing chemical substances list.

Regulations on the safety management of hazardous chemicals:
Catalogue of hazardous chemicals (2015): None
GB18218: None
Regulations on labor protection in workplaces where toxic substances are used: None

SECTION 16: Other information

Hazard identification: None

Suggestion according to:
Not subjection to GB 12268
Not subjection to IMDG CODE
Not subjection to IATA DGR
Not subjection to TB/T 2688

Reference resources:
GB12268/GB6944, Provisions on the Administration of the Road Transport of Dangerous.

IMDG CODE
IATA DGR

List of Dangerous Goods for Railway Transport (LDGRT), TB/T, Provisions on the Administration of the Railway Transport of Dangerous Goods.
Recommendations on the Transport of Dangerous Goods.
United Nations GHS