1. Product and Company Identification

Product Name: TMC-357
Identified Uses: Fluorinated Carrier Solvent
Supplier: TMC Industries
1423 Mill Lane
Waconia, MN 55387 952-442-1140
www.tmcindustries.com

Contact Person Milena Sousa

Emergency Contact: CHEM-TEL 24-HR EMERGENCY CONTACT
U.S, Canada, Puerto Rico, U.S. Virgin Islands (800) 424-9300
INTERNATIONAL CALLS: +01-703-527-3887
Non-emergency number: 952-442-1140 (US)

2. HAZARD IDENTIFICATION

TMC-357 has no flash point and is non-flammable per OSHA and DOT regulations. TMC-357 may flash if the vapor to air concentration is in the range of 5.4% to 9.4% and a high energy ignition source is present, such as a welding torch.

Appearance Liquid
Color Clear, Colorless.

Signal Word Warning

Hazard Statements
H332 Harmful if inhaled.
H302 Harmful if swallowed.
H315 Causes skin irritation.
H 320 Causes eye irritation.
H412 Harmful to aquatic life with long lasting effects.

Precautionary Statements
P271 Use in a well-ventilated area.
P273 Avoid release to the environment.
P261 Avoid breathing vapor/spray.
P312 Call a POISON CENTER or doctor if you feel unwell.

**Classification**

<table>
<thead>
<tr>
<th>Classification</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Eye irritation</td>
<td>Category 2B</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>Category 3 – (H332)</td>
</tr>
<tr>
<td>Ingestion (Acute Toxicity)</td>
<td>Category 4</td>
</tr>
</tbody>
</table>

**Response**

- **P308 + P313** IF EXPOSED or concerned: Get medical advice/attention
- **P305 + P351 + P338 + P337** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 If eye irritation persists, get medical advice/attention
- **P303 + P361 + P353 + P352** IF ON SKIN: remove immediately all contaminated clothing. Wash with plenty of soap and water. P332 + P313 If skin irritation occurs, get medical advice/attention.
- **P304 + P340** IF INHALED: Remove individual to fresh air and keep at rest in a position comfortable for breathing.
- **P301 + P330 + P331** IF SWALLOWED: Rinse mouth. DO NOT induce vomiting.
- **P306 + P361 + P363** IF ON CLOTHING: Remove immediately all contaminated clothing. Wash contaminated clothing before reuse.

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Concentration</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2 trans-dichloroethylene</td>
<td>70 - 90%</td>
<td>CAS 156-60-5</td>
</tr>
<tr>
<td>1,1,1,3,3-PENTAFUOROBUTANE</td>
<td>15 - 25%</td>
<td>CAS 406-58-6</td>
</tr>
<tr>
<td>methyl nonafluoroisobutyl ether</td>
<td>1 - 5%</td>
<td>CAS 163702-08-7</td>
</tr>
</tbody>
</table>

The exact percentage concentration of compounds included in the TMC-367 mixture has been withheld as a trade secret.

**4. FIRST AID MEASURES**

**Inhalation:** Move the exposed person to fresh air at once. Perform artificial respiration if breathing has stopped. Get medical attention if any discomfort continues.

**Ingestion** Do not induce vomiting. Never give liquid to an unconscious person. Get medical attention if any discomfort continues.

**Skin Contact** Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention if any discomfort continues.

**Eye Contact** Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.
FIRE FIGHTING MEASURES

Flash point (°C)  ASTM 56 – Does not flash
Extinguishing Media  Extinguish with foam, carbon dioxide, dry powder or water fog.
Unsuitable extinguishing media  Do not use water jet as an extinguisher, as this will spread the fire.
Hazardous combustion products  Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapors.
Special Fire Fighting Procedures  Avoid breathing fire vapors. Keep run-off water out of sewers and water sources. Dike for water control.
Protective Equipment For Fire-Fighters  Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

5. ACCIDENTAL RELEASE MEASURES

Personal Precautions  Wear protective clothing as described in Section 8 of this material safety data sheet.
Environmental Precautions  Do not discharge into drains, water courses or onto the ground. Contain spillages with sand, earth or any suitable adsorbent material.
Spill Clean Up Methods  Provide ventilation and confine spill. Do not allow runoff to sewer. Dam and absorb spillage with sand, sawdust or other absorbent. Collect spillage in containers, seal securely and deliver for disposal according to local regulations.
Reference to other sections  For personal protection, see section 8. For waste disposal, see section 13.

6. HANDLING AND STORAGE

Handling  Avoid spilling, skin and eye contact. Avoid inhalation of vapors and spray mists. In use, may form flammable/explosive vapor-air mixture.
Storage  Store in tightly closed original container in a dry, cool and well-ventilated place.

7. EXPOSURE CONTROL AND PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>STD</th>
<th>TWA (8-hrs)</th>
<th>STEL (15 min)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2 trans-dichloroethylene</td>
<td>ACGIH</td>
<td>200 ppm TLV</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Protective Equipment

Process Conditions  Provide eyewash, quick drench.
Engineering Measures  Provide adequate general and local exhaust ventilation.
Respiratory Equipment
Suitable respiratory protection should be provided. Check that mask fits tight and change filter regularly.

Hand Protection
Use suitable protective gloves if risk of skin contact.

Eye Protection
Wear approved safety goggles.

Hygiene Measures
Wash hands at the end of each work shift and before eating, smoking and using the toilet. Wash promptly with soap & water if skin becomes contaminated. When using do not eat, drink or smoke.

Skin Protection
Wear apron or protective clothing in case of splashes.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Liquid

Color
Colorless

Initial boiling point and boiling range
39 - 42°C

Relative density
1.252 @ 20°C

Viscosity
0.60 cSt @ 25°C

Flash point
None. ASTM 56

10. STABILITY AND REACTIVITY

Stability
Stable under normal temperature conditions and recommended use. Forms an azeotrope and will not flash.

Conditions To Avoid
Avoid heat, flames and other sources of ignition. Does not support combustion and will decompose when exposed to extreme conditions of heat at elevated temperatures, naked flames or incompatible materials.

Materials To Avoid
Strong oxidizing substances.

Hazardous Decomposition Products
Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapors.

11. TOXICOLOGICAL INFORMATION

No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity
The product contains a substance which is harmful to aquatic organisms and which may cause long term adverse effects in the aquatic environment.

Degradability
No data available.

Bio-accumulative potential
No data available on bio-accumulation.

Mobility:
No information available.

Results of PBT and vPvB assessment
No information available.
13. **DISPOSAL CONSIDERATIONS**

Disposal Methods  
Dispose of waste and residues in accordance with local authority requirements. Confirm disposal procedures with environmental engineer and local regulations. Do not allow runoff to sewer, waterway or ground.

14. **TRANSPORTATION INFORMATION**

General  
This product is not hazardous for transportation.

15. **REGULATORY INFORMATION**

US Federal Regulations  
US State Regulations  
International Inventories  
EU - EINECS/ELINCS: The following ingredients are listed. 1, 1, 1, 3, 3-PENTAFLUOROBUTANE  
Canada – DSL/NDSL: The following ingredients are listed. 1, 1, 1, 3, 3-PENTAFLUOROBUTANE, US - TSCA All ingredients are listed or exempt.  
Japan – MITI: The following ingredients are listed. Methyl Nonaflouoroisobutyl ether  
Korea - KECl: The following ingredients are listed. 1, 1, 1, 3, 3-PENTAFLUOROBUTANE  
China - IECSC: The following ingredients are listed. 1, 1, 1, 3, 3-PENTAFLUOROBUTANE Nonaflouroisobutyl ether

16. **OTHER INFORMATION**

Only trained personnel should use this material. Since empty containers retain product residue, follow label warnings, even after container is emptied. For further Health and Safety information contact: Health and Safety Officer. Each user of this product should study this SDS carefully and consult appropriate expertise as necessary to become aware of and understand the data contained in this SDS and any hazards that may be associated with this product. The information provided in this Safety Data Sheet relates only to the specific material designated herein. The user is responsible for determining the conditions of safe use of this product and for complying with all Federal, State and Local governmental laws and regulations concerning its use. TMC Industries, Inc. makes no warranty, express or implied, including the warranty of merchantability and fitness for a particular purpose, and assumes no liability or responsibility for the accuracy, completeness, timeliness or usefulness of this information. TMC Industries, Inc. assumes no liability for any damages incurred, whether directly or indirectly, as a result of any errors, omissions or discrepancies in this information. TMC Industries, Inc. assumes no liability for reliance on this data and assumes no liability for damages related to the use or misuse of this product.

DATE: October 10, 2019

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