

# SAFETY DATA SHEET

## TMC-649 Engineered Fluid

### SECTION 1: IDENTIFICATION

#### 1.1. Product identifier:

▼ **Trade name:** TMC-649 Engineered Fluid  
**Other names / Synonyms:** Perfluoro(2-methyl-3-pentanone)  
▼ **Product no.:** 1649, 1649-B, 1649-2.2, 1649-44, 1649-55, 1649-550  
**Other means of identification:** CAS No.: 756-13-8

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

**Relevant identified uses of the substance or mixture:** Heat Transfer Fluid, Cooling Agent  
Restricted to professional users.  
**Uses advised against :** None known.

#### 1.3. Details of the supplier of the safety data sheet:

**Company and address:** TMC Industries, Inc.  
1423 Mill Lane  
Waconia, Minnesota 55387  
USA  
TF: +1 (800) 772-8179  
www.tmcindustries.com

**Contact person:** Nick Hansen  
**E-mail:** sales@tmcindustries.com  
**SDS date:** 1/3/2025  
**SDS Version:** 4.0  
**Date of previous version:** 11/13/2024 (3.0)

#### 1.4. ▼ Emergency telephone number:

VeolocityEHS 1-800-255-3924 (Contract#: MIS8157133) within the US, Canada, Puerto Rico and the U.S. Virgin Islands. If outside those areas, call 1-813-248-0585 (Contract#: MIS8157133).

### SECTION 2: HAZARD(S) IDENTIFICATION

#### 2.1. Classification of the substance or mixture:

Not classified according to HCS (29 CFR 1910.1200)

#### 2.2. Label elements:

**Hazard pictogram(s):** Not applicable.  
**Signal word:** Not applicable.  
**Hazard statement(s):**  
**Precautionary statement(s):**  
**General:** -  
**Prevention:** Avoid release to the environment. (P273)  
**Response:** Collect spillage. (P391)  
**Storage:** -  
**Disposal:** Refer to manufacturer or supplier for information on recovery or recycling. (P502)  
**Additional labelling:** Not applicable.

### 2.3. Other hazards:

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. Substances:

Product/substance	Identifiers	% w/w	Classification	Note
Perfluoro(2-methyl-3-pentanone)	CAS No.: 756-13-8	>99.9%		

### 3.2. Mixtures:

Not applicable. This product is a substance.

Where the concentration of an ingredient is expressed as a range the exact concentration has been withheld as a trade secret.

See full text of H-phrases in section 16. Occupational exposure limits are listed in section 8, if these are available.

### Other information:

-

## SECTION 4: FIRST-AID MEASURES

### 4.1. Description of first aid measures:

<b>General information:</b>	If breathing is irregular, drowsiness, loss of consciousness or cramps: Call 911 and give immediate treatment (first aid). Contact a doctor if in doubt about the injured person's condition or if the symptoms persist. Never give an unconscious person water or other drink.
<b>Inhalation:</b>	In case of discomfort: bring the person into fresh air.
<b>Skin contact:</b>	Upon irritation: rinse with water. In the event of continued irritation, seek medical assistance.
<b>Eye contact:</b>	Rinse gently with lukewarm water. Remove any contact lenses if this is easy to do. Continue rinsing. In case of persistent eye irritation or discomfort: Seek medical help.
<b>Ingestion:</b>	Rinse and flush mouth thoroughly and consume large quantities of water. In case of continued discomfort: seek medical assistance and bring this safety data sheet.
<b>Burns:</b>	Not applicable.

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

None known.

### 4.3. Indication of any immediate medical attention and special treatment needed:

Treat symptomatically.

### Information to medics:

Bring this safety data sheet or the label from this product.

## SECTION 5: FIRE-FIGHTING MEASURES

### 5.1. Extinguishing media:

Suitable extinguishing media: Alcohol-resistant foam, carbon dioxide, powder, water mist.

Unsuitable extinguishing media: Waterjets should not be used, since they can spread the fire.

## 5.2. Special hazards arising from the substance or mixture:

Fire will result in dense smoke. Exposure to combustion products may harm your health. Closed containers, which are exposed to fire, should be cooled with water. Do not allow fire-extinguishing water to enter the sewage system and nearby surface waters.

If the product is exposed to high temperatures, e.g. in the event of fire, dangerous decomposition compounds are produced. These are:

Halogenated compounds  
Carbon oxides (CO / CO<sub>2</sub>)

## 5.3. Advice for firefighters:

No specific requirements.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1. Personal precautions, protective equipment and emergency procedures:

Contaminated areas may be slippery.

### 6.2. Environmental precautions:

Avoid discharge to lakes, streams, sewers, etc.  
Keep unauthorized persons away from the spill

### 6.3. Methods and material for containment and cleaning up:

Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations.  
Wherever possible cleaning should be performed with normal cleaning agents. Avoid use of solvents.

### 6.4. Reference to other sections:

See section 13 "Disposal considerations" on handling of waste.  
See section 8 "Exposure controls/personal protection" for protective measures.

## SECTION 7: HANDLING AND STORAGE

### 7.1. Precautions for safe handling:

Smoking, drinking and consumption of food is not allowed in the work area.  
See section 8 "Exposure controls/personal protection" for information on personal protection.

### 7.2. Conditions for safe storage, including any incompatibilities:

**Recommended storage material:** Always store in containers of the same material as the original container.

**Storage conditions:** Keep container tightly closed  
Dry, cool and well ventilated  
Use only in a chemical fume hood

**Incompatible materials:** Strong acids, strong bases, and strong oxidizing agents.

### 7.3. Specific end use(s):

This product should only be used for applications quoted in section 1.2.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters:

No substances are listed with a permissible exposure limit (ref: 29 CFR 1910.1000 TABLE Z-1)

### 8.2. Exposure controls:

Apply general control to prevent unnecessary exposure


**General recommendations:** Smoking, drinking and consumption of food is not allowed in the work area.

**Exposure scenarios:** There are no exposure scenarios implemented for this product.  
**Exposure limits:** Occupational exposure limits have not been defined for the substances in this product.  
**Appropriate technical measures:** Apply standard precautions during use of the product. Avoid inhalation of vapours.  
**Hygiene measures:** Wash hands after use.  
**Measures to avoid environmental exposure:** No specific requirements.


**Individual protection measures, such as personal protective equipment:**

**Generally:** Use only protective equipment with a recognized certification mark, e.g. the UL mark.


**Respiratory Equipment:**

Work situation	Type	Class	Colour	Standards	
if the situation requires.	Positive pressure supplied air respirator.				


**Skin protection:**

Recommended	Type/Category	Standards	
Use proper protective clothing	Use proper protective clothing		
Chemical resistant boots			

**Hand protection:**

Material	Glove thickness (mm)	Breakthrough time (min.)	Standards	
Chemical Resistant gloves				

**Eye protection:**

Type	Standards	
Safety glasses	EN166	

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

**9.1. Information on basic physical and chemical properties:**

**Physical state:** Liquid  
**Color:** Clear, Colourless  
**Odor:** Low odor  
**Odor threshold (ppm):** No data available  
**pH:** Not applicable  
**Density (g/cm<sup>3</sup>):** 1.6  
**Kinematic viscosity:** 0.6 cPs (77 °F)  
**Particle characteristics:** No data available

**Phase changes:**

**Melting point/freezing point (°F):** -162.4

<b>Melting point/freezing point (°C):</b>	-108
<b>Softening point/range (°F):</b>	Does not apply to liquids.
<b>Boiling point (°F):</b>	120.6
<b>Boiling point (°C):</b>	49.2
<b>Vapor pressure:</b>	244 mmHg (68 °F)
<b>Relative vapor density:</b>	(Water = 1):1.6
<b>Decomposition temperature (°F):</b>	No data available

**Data on fire and explosion hazards:**

<b>Flash point (°F):</b>	No flash point
<b>Flammability (°F):</b>	Not applicable
<b>Auto-ignition temperature (°F):</b>	Not applicable
<b>Explosion limits (% v/v):</b>	No data available

**Solubility:**

<b>Solubility in water:</b>	<0.001% by weight
<b>n-octanol/water coefficient (LogKow):</b>	No data available
<b>Solubility in fat (g/L):</b>	Not determined

**9.2. Other information:**

<b>Thermal stability:</b>	Stable under normal conditions.
<b>Evaporation rate (n-butylacetate = 100):</b>	>1
<b>Other physical and chemical parameters:</b>	No data available.
<b>Molecular Weight (g/mol):</b>	316
<b>Oxidizing properties:</b>	Not an oxidizer

**SECTION 10: STABILITY AND REACTIVITY**

**10.1. Reactivity:**

No data available.

**10.2. Chemical stability:**

The product is stable under the conditions, noted in section 7 "Handling and storage".

**10.3. Possibility of hazardous reactions, including those associated with foreseeable emergencies:**

None known.

**10.4. Conditions to avoid:**

Sunlight  
Ultraviolet Light.

**10.5. Incompatible materials:**

Strong acids, strong bases, and strong oxidizing agents.

**10.6. Hazardous decomposition products:**

Under normal conditions of storage and use, hazardous decomposition products should not be produced

**SECTION 11: TOXICOLOGICAL INFORMATION**

## 11.1. Information on toxicological effects:

### Acute toxicity:

Product/substance Perfluoro(2-methly-3-pentanone)  
Species: Professional judgement  
Route of exposure: Dermal  
Test: LD50  
Result: >5000 mg/kg

Product/substance Perfluoro(2-methly-3-pentanone)  
Species: Professional judgement  
Route of exposure: Oral  
Test: LD50  
Result: >5000 mg/kg

Product/substance Perfluoro(2-methly-3-pentanone)  
Species: Rat  
Route of exposure: Inhalation  
Test: LC50  
Result: >1227 mg/L

### Skin corrosion/irritation:

Product/substance Perfluoro(2-methly-3-pentanone)  
Species: Rabbit  
Result: No adverse effect observed (Not irritating)

### Serious eye damage/irritation:

Product/substance Perfluoro(2-methly-3-pentanone)  
Species: Rabbit  
Result: No adverse effect observed (Not irritating)

### Respiratory sensitisation:

Product/substance Perfluoro(2-methly-3-pentanone)  
Result: For the components(s), either no data are available or the data are not sufficient for the classification.

### Skin sensitisation:

Product/substance Perfluoro(2-methly-3-pentanone)  
Species: Guinea pig  
Result: For the components(s), either no data are available or the data are not sufficient for the classification.

### Germ cell mutagenicity:

Product/substance Perfluoro(2-methly-3-pentanone)  
Conclusion: No data available or the data not sufficient for classification.

### Carcinogenicity:

Product/substance Perfluoro(2-methly-3-pentanone)  
Conclusion: No data available or the data not sufficient for classification.

### Reproductive toxicity:

Product/substance Perfluoro(2-methly-3-pentanone)  
Species: Rat  
Duration: During gestation  
Test: NOAEL  
Result: 38.7 mg/L

Conclusion: Not Classified

Product/substance Perfluoro(2-methly-3-pentanone)  
Species: Rabbit  
Duration: During gestation  
Test: LOAEL  
Result: 38.7 mg/L  
Conclusion: Toxic to development

**STOT-single exposure:**

Product/substance Perfluoro(2-methly-3-pentanone)  
Species: Rat  
Route of exposure: Inhalation  
Target organ: Central nervous system  
Duration: 2 hours  
Test: NOAEL  
Result: 100000 ppm  
Conclusion: Not Classified

Product/substance Perfluoro(2-methly-3-pentanone)  
Species: Dog  
Route of exposure: Inhalation  
Target organ: Cardiac sensitization  
Duration: 17 minutes  
Conclusion: No adverse effect observed

**STOT-repeated exposure:**

Product/substance Perfluoro(2-methly-3-pentanone)  
Species: Rat  
Route of exposure: Inhalation  
Target organ: Endocrine system, liver, heart, hematopoietic system, immune system, nervous system, kidney/bladder  
Duration: 90 days  
Test: NOAEL  
Result: 38.6 mg/L  
Conclusion: Not Classified

**Aspiration hazard:**

Product/substance Perfluoro(2-methly-3-pentanone)  
Conclusion: No data available or the data is not sufficient for classification.

**Long term effects:**

None known.

**Other information:**

None known.

**SECTION 12: ECOLOGICAL INFORMATION**

**12.1. Toxicity:**

Product/substance Perfluoro(2-methly-3-pentanone)  
Other information: None known.

**12.2. Persistence and degradability:**

Product/substance Perfluoro(2-methly-3-pentanone)  
Conclusion: No Data Available

**12.3. Bioaccumulative potential:**

Product/substance      Perfluoro(2-methyl-3-pentanone)  
Conclusion:                No Data Available

**12.4. Mobility in soil:**

No data available.

**12.5. Results of PBT and vPvB assessment:**

This mixture/product does not contain any substances known to fulfil the criteria for PBT and vPvB classification.

**12.6. Other adverse effects:**

None known.

**SECTION 13: DISPOSAL CONSIDERATIONS**

**Waste treatment methods:**

This material can be reclaimed by TMC Industries. Contact TMC for more information.

**RCRA Hazardous waste ("P" and "U" list) (40 CFR 261):**

None of the components are listed

**Specific labelling:**

**Contaminated packing:**

Packaging containing residues of the product must be disposed of similarly to the product.

**SECTION 14: TRANSPORT INFORMATION**

	14.1 UN / ID	14.2 UN proper shipping name	14.3 Hazard class(es)	14.4 PG*	14.5 Env**	Other information:
DOT	-	-	-	-	-	-
IMDG	-	-	-	-	-	-
IATA	-	-	-	-	-	-

\* Packing group

\*\* Environmental hazards

**Additional information:**

Not dangerous goods according to DOT, IATA and IMDG.

**14.6. Special precautions for user:**

Not applicable.

**14.7. Transport in bulk according to IMO instruments:**

No data available.

**SECTION 15: REGULATORY INFORMATION**

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

**15.2. U.S. Federal regulations:**

**TSCA (the non-confidential portion):**      Perfluoro(2-methyl-3-pentanone) is listed



<b>Clean Air Act:</b>	None of the components are listed
<b>EPCRA Section 302:</b>	None of the components are listed
<b>EPCRA Section 304:</b>	None of the components are listed
<b>EPCRA section 313:</b>	None of the components are listed
<b>CERCLA:</b>	None of the components are listed
<b>Hazardous chemical inventory reporting:</b>	This product is not subject to Tier II reporting.

#### State regulations:

<b>California / Prop. 65:</b>	None of the components are listed
<b>Massachusetts / Right To Know Act:</b>	None of the components are listed
<b>New Jersey / Right To Know Act:</b>	None of the components are listed
<b>New York / Right To Know Act:</b>	None of the components are listed
<b>Pennsylvania / Right To Know Act:</b>	None of the components are listed

#### NFPA:

Health hazard: 3  
Fire hazard: 1  
Instability hazard: 0  
Specific hazard: None

#### 15.4. Restrictions for application:

Restricted to professional users.

#### 15.5. Demands for specific education:

No specific requirements.

#### 15.6. Additional information:

Not applicable.

#### 15.7. Chemical safety assessment:

No

#### 15.8. Sources:

OSHA Hazard Communication Standard (29 CFR 1910.1200)

### SECTION 16: OTHER INFORMATION

#### The full text of identified uses as mentioned in section 1:

None known.

#### Abbreviations and acronyms:

ACGIH = American Conference of Governmental Industrial Hygienists  
ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway  
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road  
ATE = Acute Toxicity Estimate  
BCF = Bioconcentration Factor  
CAS = Chemical Abstracts Service  
CERCLA = Comprehensive Environmental Response Compensation and Liability Act  
DOT = Department of Transportation  
EINECS = European Inventory of Existing Commercial chemical Substances  
EPCRA = Emergency Planning and Community Right-To-Know Act  
GHS = Globally Harmonized System of Classification and Labelling of Chemicals  
HCIS = Hazardous Chemical Information System

HNOC = Hazards Not Otherwise Classified  
IARC = International Agency for Research on Cancer  
IATA = International Air Transport Association  
IMDG = International Maritime Dangerous Goods  
LogPow = logarithm of the octanol/water partition coefficient  
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)  
NFPA = National Fire Protection Association  
NIOSH = National Institute for Occupational Safety and Health  
OECD = Organisation for Economic Co-operation and Development  
OSHA = Occupational Safety and Health Administration  
PBT = Persistent, Bioaccumulative and Toxic  
RCRA = Resource Conservation and Recovery Act  
RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail  
RRN = REACH Registration Number  
SARA = Superfund Amendments and Reauthorization Act  
SCL = A specific concentration limit.  
STEL = Short-term exposure limits  
STOT-RE = Specific Target Organ Toxicity - Repeated Exposure  
STOT-SE = Specific Target Organ Toxicity - Single Exposure  
TSCA = The Toxic Substances Control Act  
TWA = Time weighted average  
UN = United Nations  
UVBC = Unknown or variable composition, complex reaction products or of biological materials  
VOC = Volatile Organic Compound  
vPvB = Very Persistent and Very Bioaccumulative

**Additional information:**

In accordance with HCS (29 CFR 1910.1200(g)), a safety data sheet is not required for this product. This safety data sheet has been created on a voluntary basis to distribute relevant information.

**The safety data sheet is validated by:**

TMC Industries, Inc. - QC Department

**Other:**

A change (in proportion to the last essential change (first cipher in SDS version, see section 1)) is marked with a triangle. The information in this safety data sheet applies only to this specific product (mentioned in section 1) and is not necessarily correct for use with other chemicals/products.

It is recommended to hand over this safety data sheet to the actual user of the product. Information in this safety data sheet cannot be used as a product specification.

Country-language: US-en