



## Safety Data Sheet

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This Safety Data Sheet has been prepared in accordance with the REACH Regulation (EC) 1907/2006 and its modifications.

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

#### 1.1. Product identifier

TMC Electronic Liquid FC-40

REACH registration number	CASRN	EC Number	Ingredient Name
01-2119980930-31-0000	1064698-37-8		Reaction mass of perfluorotri-n-butylamine and perfluoro isobutyl di-n-butylamine

#### Product Identification Numbers

ZF-0002-1308-0              ZF-0002-1309-8              95001  
7100033547              7100099994              7100003805              7100099992

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

##### Identified uses

For industrial use only. Not intended for use as a medical device or drug.

##### Restrictions on Use

TMC Electronic Liquids are used in a wide variety of applications, including but not limited to precision cleaning of medical devices and as lubricant deposition solvents for medical devices. When the product is used for applications where the finished device is implanted into the human body, no residual FC-40 solvent may remain on the parts. It is highly recommended that the supporting test results and protocol be cited during FDA registration.

TMC Industries will not knowingly sample, support, or sell its products for incorporation in medical and pharmaceutical products and applications in which the TMC product will be temporarily or permanently implanted into humans or animals. The customer is responsible for evaluating and determining that a TMC product is suitable and appropriate for its particular use and intended application. The conditions of evaluation, selection, and use of a TMC product can vary widely and affect the use and intended application of a TMC product. Because many of these conditions are uniquely within the user's knowledge and control, it is essential that the user evaluate and determine whether the TMC product is suitable and appropriate for a particular use and intended application, and complies with all local applicable laws, regulations, standards, and guidance.

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

Address: 1423 Mill Lane, Waconia, MN 55387

**TMC Electronic Liquid FC-40**

**Telephone:** 800-772-8179  
**Website:** <http://www.tmcindustries.com/index.html>

**1.4. Emergency telephone number** 800-772-8179

**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.

**2.2. Label elements****CLP REGULATION (EC) No 1272/2008**

Not applicable

**Ingredients:**

Ingredient	CAS Nbr	% by Wt
Reaction mass of perfluorotri-n-butylamine and perfluoro isobutyl di-n-butylamine	1064698-37-8	100

**2.3. Other hazards**

None known.

**SECTION 3: Composition/information on ingredients**

Ingredient	CAS Nbr	EC No.	REACH Registration No.	% by Wt	Classification
Reaction mass of perfluorotri-n-butylamine and perfluoro isobutyl di-n-butylamine	1064698-37-8			100	Substance not classified as hazardous

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

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****Inhalation**

No need for first aid is anticipated.

**Skin contact**

Wash with soap and water. If signs/symptoms develop, get medical attention.

**Eye contact**

Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get

medical attention.

**If swallowed**

No need for first aid is anticipated.

**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. Use a fire fighting agent 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**

**Substance**

Carbon monoxide.  
Carbon dioxide.

**Condition**

During combustion.  
During combustion.

**5.3. Advice 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, tunic and trousers (leggings), 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 area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice.

**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 an appropriate solvent selected by a qualified and authorised person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and Safety Data Sheet. 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**

Avoid inhalation of thermal decomposition products. Avoid skin contact with hot material. For industrial or professional

use only. Store work clothes separately from other clothing, food and tobacco products. No smoking: Smoking while using this product can result in contamination of the tobacco and/or smoke and lead to the formation of hazardous decomposition products.

**7.2. Conditions for safe storage including any incompatibilities**

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.

**Biological limit values**

No biological limit values exist for any of the components listed in Section 3 of this safety data sheet.

**8.2. Exposure controls**

**8.2.1. Engineering controls**

Provide appropriate local exhaust when product is heated.

**8.2.2. Personal protective equipment (PPE)**

**Eye/face protection**

None required.

**Skin/hand protection**

No chemical protective gloves are required.

**Respiratory protection**

Use a positive pressure supplied-air respirator if there is a potential for over exposure from an uncontrolled release, exposure levels are not known, or under any other circumstances where air-purifying respirators may not provide adequate protection. During heating:

Use a positive pressure supplied-air respirator if there is a potential for over exposure from an uncontrolled release, exposure levels are not known, or under any other circumstances where air-purifying respirators may not provide adequate protection.

**Thermal hazards**

Wear heat insulating gloves when handling hot material to prevent thermal burns.

**SECTION 9: Physical and chemical properties**

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

<b>Physical state</b>	Liquid.
<b>Specific Physical Form:</b>	Liquid.
<b>Appearance/Odor</b>	Colorless, odorless liquid.
<b>Odor threshold</b>	<i>No data available.</i>

<b>pH</b>	<i>Not applicable.</i>
<b>Boiling point/boiling range</b>	158 - 173 °C
<b>Melting point</b>	<i>Not applicable.</i>
<b>Flammability (solid, gas)</b>	Not applicable.
<b>Explosive properties</b>	Not classified
<b>Oxidising properties</b>	Not classified
<b>Flash point</b>	No flash point
<b>Autoignition temperature</b>	<i>No data available.</i>
<b>Flammable Limits(LEL)</b>	None detected
<b>Flammable Limits(UEL)</b>	None detected
<b>Vapour pressure</b>	400 Pa [ @ 25 °C ]
<b>Relative density</b>	1.9 [Ref Std:WATER=1]
<b>Water solubility</b>	Nil
<b>Solubility- non-water</b>	<i>No data available.</i>
<b>Partition coefficient: n-octanol/water</b>	<i>No data available.</i>
<b>Evaporation rate</b>	< 1 [Ref Std:BUOAC=1]
<b>Vapour density</b>	22.5 [ @ 25 °C ] [Ref Std:AIR=1]
<b>Decomposition temperature</b>	<i>No data available.</i>
<b>Viscosity</b>	2 mm <sup>2</sup> /sec [ @ 25 °C ]
<b>Density</b>	1.9 g/ml

**9.2. Other information**

<b>EU Volatile Organic Compounds</b>	1,900 g/l
<b>Molecular weight</b>	<i>No data available.</i>
<b>Percent volatile</b>	100 %

**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**

Hazardous polymerisation will not occur.

**10.4 Conditions to avoid**

Heat.

**10.5 Incompatible materials**

Finely divided active metals  
Alkali and alkaline earth metals.

**10.6 Hazardous decomposition products**

<u>Substance</u>	<u>Condition</u>
Hydrogen Fluoride	At elevated temperatures. - greater than 200 °C
Perfluoroisobutylene (PFIB).	At elevated temperatures. - greater than 200 °C

Refer to section 5.2 for hazardous decomposition products during combustion.

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 agree with the EU material classification in Section 2 and/or the ingredient classifications in Section 3 if specific ingredient classifications are mandated by a competent authority. In addition, statements and data presented in Section 11 are based on UN GHS calculation rules and classifications derived from TMC assessments.

### 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:

#### Inhalation

No health effects are expected.

#### Skin contact

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

#### Eye contact

Contact with the eyes during product use is not expected 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 a table below, either no data are available for that endpoint or the data are not sufficient for classification.

#### Acute Toxicity

Name	Route	Species	Value
Reaction mass of perfluorotri-n-butylamine and perfluoro isobutyl di-n-butylamine	Dermal		LD50 estimated to be > 5,000 mg/kg
Reaction mass of perfluorotri-n-butylamine and perfluoro isobutyl di-n-butylamine	Inhalation-Vapour (4 hours)	Rat	LC50 > 41 mg/l
Reaction mass of perfluorotri-n-butylamine and perfluoro isobutyl di-n-butylamine	Ingestion	Rat	LD50 > 10,000 mg/kg

ATE = acute toxicity estimate

#### Skin Corrosion/Irritation

Name	Species	Value
Reaction mass of perfluorotri-n-butylamine and perfluoro isobutyl di-n-butylamine	Rabbit	No significant irritation

#### Serious Eye Damage/Irritation

Name	Species	Value
Reaction mass of perfluorotri-n-butylamine and perfluoro isobutyl di-n-butylamine	Rabbit	No significant irritation

#### Skin Sensitisation

For the component/components, either no data is currently available or the data is not sufficient for classification.

#### Respiratory Sensitisation

For the component/components, either no data is currently available or the data is not sufficient for classification.

**TMC Electronic Liquid FC-40****Germ Cell Mutagenicity**

Name	Route	Value
Reaction mass of perfluorotri-n-butylamine and perfluoro isobutyl di-n-butylamine	In Vitro	Not mutagenic

**Carcinogenicity**

For the component/components, either no data is currently available or the data is not sufficient for classification.

**Reproductive Toxicity****Reproductive and/or Developmental Effects**

For the component/components, either no data is currently available or the data is not sufficient for classification.

**Target Organ(s)****Specific Target Organ Toxicity - single exposure**

For the component/components, either no data is currently available or the data is not sufficient for classification.

**Specific Target Organ Toxicity - repeated exposure**

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
Reaction mass of perfluorotri-n-butylamine and perfluoro isobutyl di-n-butylamine	Inhalation	hematopoietic system   liver   respiratory system	Not classified	Rat	NOAEL 13.7 mg/l	30 days
Reaction mass of perfluorotri-n-butylamine and perfluoro isobutyl di-n-butylamine	Ingestion	heart   endocrine system   hematopoietic system   liver   nervous system   kidney and/or bladder   respiratory system	Not classified	Rat	NOAEL 1,682 mg/kg/day	28 days

**Aspiration Hazard**

For the component/components, either no data is currently available or the data is not sufficient for classification.

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 agree with the EU material classification in Section 2 and/or the ingredient classifications in Section 3 if specific ingredient classifications are mandated by a competent authority. In addition, statements and data presented in Section 12 are based on UN GHS calculation rules and classifications derived from TMC assessments.

**12.1. Toxicity**

No product test data available.

Material	CAS Nbr	Organism	Type	Exposure	Test endpoint	Test result
Reaction mass of perfluorotri-n-butylamine and perfluoro	1064698-37-8	Water flea	Experimental	48 hours	EC50	>100 mg/l

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isobutyl di-n-butylamine						
Reaction mass of perfluorotri-n-butylamine and perfluoro isobutyl di-n-butylamine	1064698-37-8	Fathead minnow	Experimental	96 hours	LC50	>100 mg/l
Reaction mass of perfluorotri-n-butylamine and perfluoro isobutyl di-n-butylamine	1064698-37-8	Water flea	Experimental	21 days	NOEC	>100 mg/l

**12.2. Persistence and degradability**

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
Reaction mass of perfluorotri-n-butylamine and perfluoro isobutyl di-n-butylamine	1064698-37-8	Estimated Photolysis		Photolytic half-life (in air)	100-210 years (t 1/2)	Other methods

**12.3 : Bioaccumulative potential**

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
Reaction mass of perfluorotri-n-butylamine and perfluoro isobutyl di-n-butylamine	1064698-37-8	Data not available or insufficient for classification	N/A	N/A	N/A	N/A

**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**

See Section 11.1 Information on toxicological effects

Dispose of waste product in a permitted industrial waste facility. Combustion products will include HF. Facility must be capable of handling halogenated materials. Empty and clean product containers may be disposed as non-hazardous waste. Consult your specific regulations and service providers to determine available options and requirements.



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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, 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

ZF-0002-1308-0,    ZF-0002-1309-8

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 for more information. The components of this material are in compliance with the provisions of the Korea Chemical Control Act. 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 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. This product complies with Measures on Environmental Management of New Chemical Substances. All ingredients are listed on or exempt from on China IECSC inventory.

### 15.2. Chemical Safety Assessment

Not applicable

## SECTION 16: Other information

**DISCLAIMER:** The information on this Safety Data Sheet is based on our experience and is correct to the best of our knowledge at the date of publication, but we do not accept any liability for any loss, damage or injury resulting from its use (except as required by law). The information may not be valid for any use not referred to in this Data Sheet or use of the product in combination with other materials. For these reasons, it is important that customers carry out their own test to satisfy themselves as to the suitability of the product for their own intended applications.