



STS SDS: 080223

Safe Training Systems Ltd, Unit 33 Space Business Centre, Molly Millars Lane,
Wokingham, RG41 2PQ, UK
Telephone: +44 (0) 1189 799591

Product name: LS1 Simulated Source for use with STS 800 Series Simulators

ADVICE:

This package may contain liquid dispensers – these are non-pressurised pump action dispensers and are not aerosols.

Safe Training Systems Ltd – Unit 33 Space Business centre, Molly Millars Lane,
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Web: safetrainingsystems.com Registered in England No.2654899 VAT no. GB572853808



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Please refer to 3M Safety Data Sheet below

These materials are supplied as part of the Safe Training Systems Ltd radiation simulation system, and must not be used for any other purpose, nor be substituted by any other material. Such substitution will render any guarantee null and void. Accidental skin contact by either LS1 or SS4 is very unlikely to result in any irritation or other effect, but it is recommended that it is not deliberately applied to the skin, especially the face and eyes, and that accidental splashes are washed off immediately.

3M™ Fluorinert™ Electronic Liquid FC-40

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Safety Data Sheet

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Revision date: 14/07/2022 **Supersedes date:** 06/07/2021

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**

3M™ Fluorinert™ Electronic Liquid FC-40

REACH registration number CASRN EC Number Ingredient Name

01-2119980930-31-0000 939-511-7 Reaction mass of 1,1,2,2,3,3,4,4,4-

nonafluoro-N,Nbis(

nonafluorobutyl)butan-1-amine and

1,1,2,2,3,3,4,4,4-nonafluoro-N-[1,1,2,3,3-

hexafluoro-2-(trifluoromethyl)propyl]-N-

(1,1,2,2,3,3,4,4,4-nonafluorobutyl)butan-

1-amine

Product Identification Numbers

98-0211-3972-4 ZF-0002-1308-0 ZF-0002-1309-8

7100033547 7100099994 7100099992 7000148876

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

Not Intended for Use as a Medical Device or Drug. For Industrial Use Only, as Testing Fluid or Heat Transfer Fluid for Electronics.

Restrictions on Use

Fluorinert™ 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 Fluorinert solvent may remain on the parts. It is highly recommended that the supporting test results and protocol be cited during FDA registration. 3M Electronics Materials Solutions Division (EMSD) will not knowingly sample, support, or sell its products for incorporation in medical and pharmaceutical products and applications in which the 3M product will be temporarily or permanently implanted into humans or animals. The customer is responsible for evaluating and determining that a 3M EMSD product is suitable and appropriate for its particular use and intended application. The conditions of evaluation, selection, and use of a 3M product can vary

3M™ Fluorinert™ Electronic Liquid FC-40

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widely and affect the use and intended application of a 3M 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 3M 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: 3M United Kingdom PLC, 3M Centre, Cain Road, Bracknell, Berkshire, RG12 8HT.

Telephone: +44 (0)1344 858 000

E Mail: tox.uk@mmm.com

Website: www.3M.com/uk

1.4. Emergency telephone number

+44 (0)1344 858 000

SECTION 2: Hazard identification**2.1. Classification of the substance or mixture****CLP REGULATION (EC) No 1272/2008**

The health and environmental classifications of this material have been derived using the calculation method, except in cases where test data are available or the physical form impacts classification. Classification(s) based on test data or physical form are noted below, if applicable.

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 EC No. % by Wt

Reaction mass of 1,1,2,2,3,3,4,4,4-nonafluoro-N,Nbis(nonfluorobutyl)butan-1-amine and

1,1,2,2,3,3,4,4,4-nonafluoro-N-[1,1,2,3,3-hexafluoro-2-(trifluoromethyl)propyl]-N-(1,1,2,2,3,3,4,4,4-nonafluorobutyl)butan-1-amine

939-511-7 100

2.3. Other hazards

None known.

This material does not contain any substances that are assessed to be a PBT or vPvB

SECTION 3: Composition/information on ingredients

3.1. Substances

Ingredient Identifier(s) % Classification according to Regulation (EC) No. 1272/2008 [CLP]

Reaction mass of 1,1,2,2,3,3,4,4,4-nonafluoro-N,Nbis(nonfluorobutyl)butan-1-amine and

1,1,2,2,3,3,4,4,4-nonafluoro-N-[1,1,2,3,3-

(EC-No.) 939-511-7 100 Substance not classified as hazardous

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hexafluoro-2-(trifluoromethyl)propyl]-N-

(1,1,2,2,3,3,4,4,4-nonafluorobutyl)butan-

1-amine

Any entry in the Identifier(s) column that begins with the numbers 6, 7, 8, or 9 are a Provisional List Number provided by ECHA pending publication of the official EC Inventory Number for the substance.

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

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation

No need for first aid is anticipated.

Skin contact

No need for first aid is anticipated.

Eye contact

No need for first aid is anticipated.

If swallowed

No need for first aid is anticipated.

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

No critical symptoms or effects. 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

Use a fire fighting agent suitable for the 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 Condition

Carbon monoxide During combustion.

Carbon dioxide. During combustion.

5.3. Advice for fire-fighters

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

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Ventilate the area with fresh air. Observe precautions from other sections.

6.2. Environmental precautions

Avoid release to the environment.

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. Remember, adding an absorbent material does not remove a physical, health, or environmental hazard. 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. For industrial/occupational use only. Not for consumer sale or use. Store work clothes separately from other clothing, food and tobacco products. Avoid release to the environment. 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

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. Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapours/spray. If ventilation is not adequate, use respiratory protection equipment.

8.2.2. Personal protective equipment (PPE)

Eye/face protection

None required.

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Skin/hand protection

Chemical protective gloves are not required under normal use conditions. However, when the product is subjected to extreme heat, HF may be formed. For those cases, neoprene gloves and apron are recommended.

Respiratory protection

For those situations where the material might be exposed to extreme overheating due to misuse or equipment failure, use a positive pressure supplied-air respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state Liquid.

Specific Physical Form: Liquid.

Colour Colourless

Odor Odourless

Odour threshold *No data available.*

Melting point/freezing point *Not applicable.*

Boiling point/boiling range 158 - 173 °C

Flammability (solid, gas) Not applicable.

Flammable Limits(LEL) None detected

Flammable Limits(UEL) None detected

Flash point No flash point [*Test Method:*Closed Cup] [*Details:*Tested according to ASTM Method D-3278-96 e-1]

Autoignition temperature *No data available.*

Decomposition temperature *No data available.*

pH *substance/mixture is non-soluble (in water)*

Kinematic Viscosity 2 mm²/sec

Water solubility Nil

Solubility- non-water *No data available.*

Partition coefficient: n-octanol/water *No data available.*

Vapour pressure 400 Pa [@ 25 °C] [*Details:*approximately]

Density 1.9 g/ml

Relative density 1.9 [*Ref Std:*WATER=1]

Relative Vapor Density 22.5 [@ 25 °C] [*Ref Std:*AIR=1]

9.2. Other information

9.2.2 Other safety characteristics

EU Volatile Organic Compounds 1,900 g/l

Evaporation rate < 1 Units not available or not applicable. [*Ref Std:*BUOAC=1]

Molecular weight *No data available.*

Percent volatile 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

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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

Substance Condition

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 internal hazard assessments.

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

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 known health effects.

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 1,1,2,2,3,3,4,4,4-nonafluoro-N,Nbis(nonafluorobutyl)butan-1-amine and 1,1,2,2,3,3,4,4,4-nonafluoro-N-[1,1,2,3,3-hexafluoro-2-(trifluoromethyl)propyl]-N-(1,1,2,2,3,3,4,4,4-nonafluorobutyl)butan-1-amine

Dermal Professional

judgement

LD50 estimated to be > 5,000 mg/kg

Reaction mass of 1,1,2,2,3,3,4,4,4-nonafluoro-N,Nbis(nonafluorobutyl)butan-1-amine and 1,1,2,2,3,3,4,4,4-nonafluoro-N-[1,1,2,3,3-hexafluoro-2-(trifluoromethyl)propyl]-N-(1,1,2,2,3,3,4,4,4-nonafluorobutyl)butan-1-amine

Inhalation-Vapour (4

Rat LC50 > maximum possible concentration

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nonafluoro-N-[1,1,2,3,3-hexafluoro-2-(trifluoromethyl)propyl]-N-(1,1,2,2,3,3,4,4,4-nonafluorobutyl)butan-1-amine

hours)

Reaction mass of 1,1,2,2,3,3,4,4,4-nonafluoro-N,Nbis(nonafluorobutyl)butan-1-amine and 1,1,2,2,3,3,4,4,4-nonafluoro-N-[1,1,2,3,3-hexafluoro-2-(trifluoromethyl)propyl]-N-(1,1,2,2,3,3,4,4,4-nonafluorobutyl)butan-1-amine

Inhalation-

Vapour (4

hours)

Rat LC50 > 9.5 mg/l

Reaction mass of 1,1,2,2,3,3,4,4,4-nonafluoro-N,Nbis(nonafluorobutyl)butan-1-amine and 1,1,2,2,3,3,4,4,4-nonafluoro-N-[1,1,2,3,3-hexafluoro-2-(trifluoromethyl)propyl]-N-(1,1,2,2,3,3,4,4,4-nonafluorobutyl)butan-1-amine

Ingestion Rat LD50 > 10,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name Species Value

Reaction mass of 1,1,2,2,3,3,4,4,4-nonafluoro-N,N-bis(nonafluorobutyl)butan-1-amine and 1,1,2,2,3,3,4,4,4-nonafluoro-N-[1,1,2,3,3-hexafluoro-2-(trifluoromethyl)propyl]-N-(1,1,2,2,3,3,4,4,4-nonafluorobutyl)butan-1-amine

Rabbit No significant irritation

Serious Eye Damage/Irritation

Name Species Value

Reaction mass of 1,1,2,2,3,3,4,4,4-nonafluoro-N,N-bis(nonafluorobutyl)butan-1-amine and 1,1,2,2,3,3,4,4,4-nonafluoro-N-[1,1,2,3,3-hexafluoro-2-(trifluoromethyl)propyl]-N-(1,1,2,2,3,3,4,4,4-nonafluorobutyl)butan-1-amine

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.

Germ Cell Mutagenicity

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

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

Name Route Value Species Test result Exposure

Duration

Reaction mass of 1,1,2,2,3,3,4,4,4-nonafluoro-N,N-bis(nonafluorobutyl)butan-1-amine and 1,1,2,2,3,3,4,4,4-nonafluoro-N-[1,1,2,3,3-hexafluoro-2-(trifluoromethyl)propyl]-N-(1,1,2,2,3,3,4,4,4-nonafluorobutyl)butan-1-

amine
 Ingestion Not classified for female reproduction Rat NOAEL
 1,288
 mg/kg/day
 pre-mating &
 during
 gestation
 Reaction mass of 1,1,2,2,3,3,4,4,4-
 nonafluoro-N,N-bis(nonafluorobutyl)butan-
 1-amine and 1,1,2,2,3,3,4,4,4-nonafluoro-
 N-[1,1,2,3,3-hexafluoro-2-
 (trifluoromethyl)propyl]-N-
 (1,1,2,2,3,3,4,4,4-nonafluorobutyl)butan-1-
 amine
 Ingestion Not classified for male reproduction Rat NOAEL
 1,288
 mg/kg/day
 28 days
 Reaction mass of 1,1,2,2,3,3,4,4,4-
 nonafluoro-N,N-bis(nonafluorobutyl)butan-
 1-amine and 1,1,2,2,3,3,4,4,4-nonafluoro-
 N-[1,1,2,3,3-hexafluoro-2-
 (trifluoromethyl)propyl]-N
 Ingestion
 Not classified for development Rat NOAEL
 1,288
 mg/kg/day
 during
 gestation
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(1,1,2,2,3,3,4,4,4-nonafluorobutyl)butan-1-
 amine

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
 1,1,2,2,3,3,4,4,4-
 nonafluoro-N,N-bis(
 nonafluorobutyl)butan-
 1-amine and
 1,1,2,2,3,3,4,4,4-
 nonafluoro-N-[1,1,2,3,3-
 hexafluoro-2-
 (trifluoromethyl)propyl]-
 N-(1,1,2,2,3,3,4,4,4-
 nonafluorobutyl)butan-1-
 amine
 Ingestion endocrine system |
 gastrointestinal tract
 | hematopoietic
 system | liver |
 immune system |
 nervous system |
 kidney and/or
 bladder | respiratory
 system
 Not classified Rat NOAEL
 1,545
 mg/kg/day
 13 weeks

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.

11.2. Information on other hazards

This material does not contain any substances that are assessed to be an endocrine disruptor for human health.

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 3M assessments.

12.1. Toxicity

No product test data available.

Material CAS # Organism Type Exposure Test endpoint Test result

Reaction mass of
1,1,2,2,3,3,4,4,4-
nonafluoro-N,Nbis(
nonafluorobutyl)but
an-1-amine and
1,1,2,2,3,3,4,4,4-
nonafluoro-N-
[1,1,2,3,3-hexafluoro-2-
(trifluoromethyl)propyl
]-N-(1,1,2,2,3,3,4,4,4-
nonafluorobutyl)butan-
1-amine
939-511-7 Activated sludge Estimated 3 hours EC50 >1,000 mg/l

Reaction mass of
1,1,2,2,3,3,4,4,4-
nonafluoro-N,N-
939-511-7 Green algae Estimated 72 hours No tox obs at lmt
of water sol
>100 mg/l

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bis(nonafluorobutyl)but
an-1-amine and
1,1,2,2,3,3,4,4,4-
nonafluoro-N-
[1,1,2,3,3-hexafluoro-2-
(trifluoromethyl)propyl
]-N-(1,1,2,2,3,3,4,4,4-
nonafluorobutyl)butan-
1-amine

Reaction mass of
1,1,2,2,3,3,4,4,4-
nonafluoro-N,Nbis(
nonafluorobutyl)but
an-1-amine and
1,1,2,2,3,3,4,4,4-
nonafluoro-N-
[1,1,2,3,3-hexafluoro-2-
(trifluoromethyl)propyl
]-N-(1,1,2,2,3,3,4,4,4-
nonafluorobutyl)butan-
1-amine
939-511-7 Zebra Fish Estimated 96 hours No tox obs at lmt
of water sol
>100 mg/l

Reaction mass of
1,1,2,2,3,3,4,4,4-
nonafluoro-N,Nbis(
nonafluorobutyl)but
an-1-amine and
1,1,2,2,3,3,4,4,4-
nonafluoro-N-
[1,1,2,3,3-hexafluoro-2-
(trifluoromethyl)propyl
]-N-(1,1,2,2,3,3,4,4,4-
nonafluorobutyl)butan-
1-amine
939-511-7 Fathead minnow Experimental 96 hours LC50 >100 mg/l

Reaction mass of
1,1,2,2,3,3,4,4,4-
nonafluoro-N,Nbis(
nonafluorobutyl)but
an-1-amine and
1,1,2,2,3,3,4,4,4-
nonafluoro-N-
[1,1,2,3,3-hexafluoro-2-
(trifluoromethyl)propyl
]-N-(1,1,2,2,3,3,4,4,4-
nonafluorobutyl)butan-

1-amine

939-511-7 Water flea Experimental 48 hours EC50 >100 mg/l

Reaction mass of

1,1,2,2,3,3,4,4,4-
nonafluoro-N,Nbis(
nonafluorobutyl)but

an-1-amine and

1,1,2,2,3,3,4,4,4-
nonafluoro-N-

[1,1,2,3,3-hexafluoro-2-

(trifluoromethyl)propyl

]N-(1,1,2,2,3,3,4,4,4-

nonafluorobutyl)butan-

1-amine

939-511-7 Water flea Experimental 48 hours No tox obs at lmt

of water sol

>100 mg/l

Reaction mass of

1,1,2,2,3,3,4,4,4-
nonafluoro-N,Nbis(
nonafluorobutyl)but

an-1-amine and

1,1,2,2,3,3,4,4,4-
nonafluoro-N-

[1,1,2,3,3-hexafluoro-2-

(trifluoromethyl)propyl

]N-(1,1,2,2,3,3,4,4,4-

nonafluorobutyl)butan-

1-amine

939-511-7 Green algae Estimated 72 hours No tox obs at lmt

of water sol

>100 mg/l

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Reaction mass of

1,1,2,2,3,3,4,4,4-
nonafluoro-N,Nbis(
nonafluorobutyl)but

an-1-amine and

1,1,2,2,3,3,4,4,4-
nonafluoro-N-

[1,1,2,3,3-hexafluoro-2-

(trifluoromethyl)propyl

]N-(1,1,2,2,3,3,4,4,4-

nonafluorobutyl)butan-

1-amine

939-511-7 Water flea Experimental 21 days No tox obs at lmt

of water sol

>100 mg/l

Reaction mass of

1,1,2,2,3,3,4,4,4-
nonafluoro-N,Nbis(
nonafluorobutyl)but

an-1-amine and

1,1,2,2,3,3,4,4,4-
nonafluoro-N-

[1,1,2,3,3-hexafluoro-2-

(trifluoromethyl)propyl

]N-(1,1,2,2,3,3,4,4,4-

nonafluorobutyl)butan-

1-amine

939-511-7 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

1,1,2,2,3,3,4,4,4-
nonafluoro-N,Nbis(
nonafluorobutyl)butan-

1-amine and

1,1,2,2,3,3,4,4,4-
nonafluoro-N-[1,1,2,3,3-

hexafluoro-2-

(trifluoromethyl)propyl]-N-

(1,1,2,2,3,3,4,4,4-

nonafluorobutyl)butan-1-

amine
 939-511-7 Estimated
 Photolysis
 Photolytic half-life
 (in air)
 100-210 years
 (t 1/2)
 Non-standard method
 Reaction mass of
 1,1,2,2,3,3,4,4,4-
 nonafluoro-N,Nbis(
 nonafluorobutyl)butan-
 1-amine and
 1,1,2,2,3,3,4,4,4-
 nonafluoro-N-[1,1,2,3,3-
 hexafluoro-2-
 (trifluoromethyl)propyl]-N-
 (1,1,2,2,3,3,4,4,4-
 nonafluorobutyl)butan-1-
 amine
 939-511-7 Estimated
 Biodegradation
 28 days CO2 evolution 0 %CO2
 evolution/THC
 O2 evolution
 OECD 310 CO2 Headspace

12.3 : Bioaccumulative potential

Material Cas No. Test type Duration Study Type Test result Protocol

Reaction mass of
 1,1,2,2,3,3,4,4,4-
 nonafluoro-N,Nbis(
 nonafluorobutyl)butan-
 1-amine and
 1,1,2,2,3,3,4,4,4-
 nonafluoro-N-[1,1,2,3,3-
 hexafluoro-2-
 (trifluoromethyl)propyl]-N-
 (1,1,2,2,3,3,4,4,4-
 nonafluorobutyl)butan-1-
 939-511-7 Data not available
 or insufficient for
 classification
 N/A N/A N/A N/A

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amine
 Reaction mass of
 1,1,2,2,3,3,4,4,4-
 nonafluoro-N,Nbis(
 nonafluorobutyl)butan-
 1-amine and
 1,1,2,2,3,3,4,4,4-
 nonafluoro-N-[1,1,2,3,3-
 hexafluoro-2-
 (trifluoromethyl)propyl]-N-
 (1,1,2,2,3,3,4,4,4-
 nonafluorobutyl)butan-1-
 amine
 939-511-7 Experimental
 Bioconcentration
 Log Kow 6.1 Non-standard method

12.4. Mobility in soil

No test data available.

12.5. Results of the PBT and vPvB assessment

This material does not contain any substances that are assessed to be a PBT or vPvB

12.6. Endocrine disrupting properties

This material does not contain any substances that are assessed to be an endocrine disruptor for environmental effects

12.7. Other adverse effects

Material CAS Nbr Ozone Depletion Potential Global Warming Potential

reaction mass of 1,1,2,2,3,3,4,4,4-
 nonafluoro-n,nbis(
 nonafluorobutyl)butan-1-amine
 and 1,1,2,2,3,3,4,4,4-nonafluoro-n-

[1,1,2,3,3-hexafluoro-2-(trifluoromethyl)propyl]-n-(1,1,2,2,3,3,4,4,4-nonafluorobutyl)butan-1-amine
939-511-7 0

SECTION 13: Disposal considerations

13.1 Waste treatment methods

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

Prior to disposal, consult all applicable authorities and regulations to insure proper classification. Dispose of waste product in a permitted industrial waste facility. As a disposal alternative, incinerate in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Combustion products will include HF.

Facility must be capable of handling halogenated materials. Empty and clean product containers may be disposed as nonhazardous waste. Consult your specific regulations and service providers to determine available options and requirements.

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 3M, 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

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Not hazardous for transportation.

Ground Transport

(ADR)

Air Transport (IATA) Marine Transport

(IMDG)

14.1 UN number or ID

number

No data available. No data available. No data available.

14.2 UN proper shipping

name

No data available. No data available. No data available.

14.3 Transport hazard

class(es)

No data available. No data available. No data available.

14.4 Packing group No data available. No data available. No data available.

14.5 Environmental hazards No data available. No data available. No data available.

14.6 Special precautions for

user

Please refer to the other sections of the SDS for further information.

Please refer to the other sections of the SDS for further information.

Please refer to the other sections of the SDS for further information.

14.7 Marine Transport in

bulk according to IMO

instruments

No data available. No data available. No data available.

Control Temperature No data available. No data available. No data available.

Emergency Temperature No data available. No data available. No data available.

ADR Classification Code No data available. No data available. No data available.

IMDG Segregation Code No data available. No data available. No data available.

Please contact the address or phone number listed on the first page of the SDS for additional information on the transport/shipment of the material by rail (RID) or inland waterways (ADN).

SECTION 15: Regulatory information

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

Contact 3M 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 **3M™ Fluorinert™ Electronic Liquid FC-40**

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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. This product complies with Measures on Environmental Management of New Chemical Substances. All ingredients are listed on or exempt from on China IECSC inventory. The components of this product are in compliance with the chemical notification requirements of TSCA. All required components of this product are listed on the active portion of the TSCA Inventory.

DIRECTIVE 2012/18/EU

Seveso hazard categories, Annex 1, Part 1

None

Seveso named dangerous substances, Annex 1, Part 2

None

Regulation (EU) No 649/2012

No chemicals listed

15.2. Chemical Safety Assessment

A chemical safety assessment has been carried out for this substance/mixture in accordance with Regulation (EC) No 1907/2006, as amended.

SECTION 16: Other information**Revision information:**

Section 5: Fire - Advice for fire fighters information information was modified.

Section 7: Precautions safe handling information information was modified.

Section 8: Appropriate Engineering controls information information was modified.

Section 8: glove data value information was deleted.

Section 8: Personal Protection - Respiratory Information information was modified.

Section 8: Personal Protection - Skin/body information information was deleted.

Section 8: Personal Protection - Skin/hand information information was modified.

Section 8: Skin protection - protective clothing information information was deleted.

Section 8: Skin protection - recommended gloves text information was deleted.

Section 11: Reproductive Toxicity Table information was modified.

Section 11: Target Organs - Repeated Table information was added.

Section 11: Target Organs - Repeated Table information was deleted.

Section 12: Component ecotoxicity information information was modified.

Section 14 Multiplier – Main Heading information was deleted.

Section 14 Multiplier – Regulation Data information was deleted.

Section 14 Transport Category – Main Heading information was deleted.

Section 14 Transport Category – Regulation Data information was deleted.

Section 14 Marine transport in bulk according to IMO instruments – Main Heading information was modified.

Section 14 Tunnel Code – Main Heading information was deleted.

Section 14 Tunnel Code – Regulation Data information was deleted.

Section 14 UN Number information was modified.

Section 2: No PBT/vPvB information available warning information was added.

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. In addition, this SDS is being provided to convey health and safety information. If you are the importer of record of this product into the European Union, **3M™ Fluorinert™ Electronic Liquid FC-40**

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you are responsible for all regulatory requirements, including, but not limited to, product registrations/notifications, substance volume tracking, and potential substance registration.

3M United Kingdom MSDSs are available at www.3M.com/uk