



## 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

3M™ Novec™ 73DE Engineered Fluid

##### Product Identification Numbers

98-0212-4901-0	98-0212-4902-8	98-0212-4903-6
7100095234	7100095233	7100095235

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

##### Identified uses

For Industrial Use Only. See Limitations on Use for supplemental information on intended applications including Medical Device applications.

##### Restrictions on Use

Novec™ Engineered Fluids 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 Novec™ 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 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

<b>Address:</b>	3M United Kingdom PLC, 3M Centre, Cain Road, Bracknell, Berkshire, RG12 8HT.
<b>Telephone:</b>	+44 (0)1344 858 000
<b>E Mail:</b>	tox.uk@mmm.com
<b>Website:</b>	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****CLASSIFICATION:**

Serious Eye Damage/Eye Irritation, Category 2 - Eye Irrit. 2; H319

Specific Target Organ Toxicity-Single Exposure, Category 3 - STOT SE 3; H336

Hazardous to the Aquatic Environment (Chronic), Category 3 - Aquatic Chronic 3; H412

For full text of H phrases, see Section 16.

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

WARNING.

**Symbols:**

GHS07 (Exclamation mark) |

**Pictograms****Ingredients:**

Ingredient	CAS Nbr	EC No.	% by Wt
Trans-dichloroethylene	156-60-5	205-860-2	60 - 90

**HAZARD STATEMENTS:**

H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.
H412	Harmful to aquatic life with long lasting effects.

**PRECAUTIONARY STATEMENTS****Prevention:**

P261A	Avoid breathing vapours.
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**Response:**

P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
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**Disposal:**

P501	Dispose of contents/container in accordance with applicable local/regional/national/international regulations.
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**SUPPLEMENTAL INFORMATION:****Supplemental Hazard Statements:**

EUH018

In use, may form flammable/explosive vapour-air mixture.

**Notes on labelling**

H332 does not apply due to material level test data.

**2.3. Other hazards**

None known.

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

Ingredient	CAS Nbr	EC No.	REACH Registration No.	% by Wt	Classification
Trans-dichloroethylene	156-60-5	205-860-2	01- 2120093504- 55	60 - 90	Flam. Liq. 2, H225; Acute Tox. 4, H332; Aquatic Chronic 3, H412 - Nota C Eye Irrit. 2, H319; STOT SE 3, H336
Pentane, 1,1,1,2,2,3,4,5,5,5- decafluoro-3-methoxy-4- (trifluoromethyl)-	132182-92- 4	ELINCS 459-520-5	01- 0000019452- 72	10 - 40	Substance with a Community level exposure limit in the workplace

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**

Remove person to fresh air. If you feel unwell, get medical attention.

**Skin contact**

Wash with soap and water. If you feel unwell, 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**

Rinse mouth. If you feel unwell, get medical attention.

**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

Material will not burn. Use a fire fighting agent suitable for the surrounding fire.

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

None inherent in this product.

### 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

Evacuate area. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapours, in accordance with good industrial hygiene practice. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

### 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. 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. Avoid skin contact with hot material. For industrial/occupational use only. Not for consumer sale or use. Avoid breathing dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid release to the environment. Avoid contact with oxidising agents (eg. chlorine, chromic acid etc.)

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

Store in a well-ventilated place. Keep container tightly closed. Store away from strong bases. Store away from oxidising agents.

### 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

**3M™ Novec™ 73DE Engineered Fluid****Occupational exposure limits**

If a component is disclosed in section 3 but does not appear in the table below, an occupational exposure limit is not available for the component.

<b>Ingredient</b>	<b>CAS Nbr</b>	<b>Agency</b>	<b>Limit type</b>	<b>Additional comments</b>
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-trans-dichloroethylene	132182-92-4	Manufacturer determined	TWA:100 ppm	
	156-60-5	UK HSC	TWA:806 mg/m <sup>3</sup> (200 ppm);STEL:1010 mg/m <sup>3</sup> (250 ppm)	

UK HSC : UK Health and Safety Commission

TWA: Time-Weighted-Average

STEL: Short Term Exposure Limit

CEIL: Ceiling

**Biological limit values**

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

**Derived no effect level (DNEL)**

<b>Ingredient</b>	<b>Degradation Product</b>	<b>Population</b>	<b>Human exposure pattern</b>	<b>DNEL</b>
Trans-dichloroethylene		Consumer	Inhalation, Long-term exposure (24 hours), Systemic effects	198 mg/m <sup>3</sup>
Trans-dichloroethylene		Consumer	Oral, Long-term exposure (24 hours), Systemic effects	57 mg/kg bw/d
Trans-dichloroethylene		Worker	Inhalation, Long-term exposure (8 hours), Systemic effects	797 mg/m <sup>3</sup>

**Predicted no effect concentrations (PNEC)**

<b>Ingredient</b>	<b>Degradation Product</b>	<b>Compartment</b>	<b>PNEC</b>
Trans-dichloroethylene		Agricultural soil	0.0563 mg/kg d.w.
Trans-dichloroethylene		Freshwater	0.0364 mg/l
Trans-dichloroethylene		Freshwater sediments	0.5483 mg/kg d.w.
Trans-dichloroethylene		Grassland average	0.0563 mg/kg d.w.
Trans-dichloroethylene		Intermittent releases to water	0.3636 mg/l
Trans-dichloroethylene		Marine water	0.0036 mg/l
Trans-dichloroethylene		Marine water sediments	0.0548 mg/kg d.w.
Trans-dichloroethylene		Sewage Treatment Plant	17 mg/l

**8.2. Exposure controls**

In addition, refer to the annex for more information.

**8.2.1. Engineering controls**

Provide appropriate local exhaust when product is heated. 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**

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:

Indirect vented goggles.

*Applicable Norms/Standards*

Use eye protection conforming to EN 166

**Skin/hand protection**

Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing.

Gloves made from the following material(s) are recommended:

<b>Material</b>	<b>Thickness (mm)</b>	<b>Breakthrough Time</b>
Neoprene.	No data available	No data available

*Applicable Norms/Standards*

Use gloves tested to EN 374

If this product is used in a manner that presents a higher potential for exposure (eg. spraying, high splash potential etc.), then use of protective coveralls may be necessary. Select and use body protection to prevent contact based on the results of an exposure assessment. The following protective clothing material(s) are recommended: Neoprene apron.

**Respiratory protection**

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:

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.

Half facepiece or full facepiece air-purifying respirator suitable for organic vapours

For questions about suitability for a specific application, consult with your respirator manufacturer.

*Applicable Norms/Standards*

Use a respirator conforming to EN 140 or EN 136: filter type A

**Thermal hazards**

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

*Applicable Norms/Standards*

Use gloves tested to EN 407

**8.2.3. Environmental exposure controls**

Refer to Annex

## **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/Odour</b>	Clear colourless liquid with slight odour
<b>Odour threshold</b>	<i>No data available.</i>
<b>pH</b>	<i>Not applicable.</i>
<b>Boiling point/boiling range</b>	47.6 °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 [ <i>Details:</i> Tested according to ASTM Method D-3278-96 e-1]
<b>Autoignition temperature</b>	427 °C
<b>Flammable Limits(LEL)</b>	7.5 % volume [ <i>Details:</i> Tested according to ASTM Method E681-15 (Per Annex A1)]
<b>Flammable Limits(UEL)</b>	15 % volume [ <i>Details:</i> Tested according to ASTM Method E681-15 (Per Annex A1)]
<b>Vapour pressure</b>	35,063.7 Pa [ <i>@ 20 °C</i> ]
<b>Relative density</b>	1.2808 [ <i>Ref Std: WATER=1</i> ]
<b>Water solubility</b>	< 10 ppm
<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>	<i>No data available.</i>
<b>Vapour density</b>	5.2
<b>Decomposition temperature</b>	<i>No data available.</i>
<b>Viscosity</b>	0.384 mPa-s [ <i>@ 25 °C</i> ]
<b>Density</b>	1.2808 g/ml
<b>9.2. Other information</b>	
EU Volatile Organic Compounds	1,280.8 g/l
Molecular weight	<i>Not applicable.</i>
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

Hazardous polymerisation will not occur.

### 10.4 Conditions to avoid

None known.

### 10.5 Incompatible materials

Strong bases.

Strong oxidising agents.

### 10.6 Hazardous decomposition products

#### Substance

Carbon monoxide.

#### Condition

At elevated temperatures. - extreme conditions of

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Carbon dioxide.	heat At elevated temperatures. - extreme conditions of heat
Hydrogen Fluoride	heat At elevated temperatures. - extreme conditions of heat
Toxic vapour, gas, particulate.	heat At elevated temperatures. - extreme conditions of heat

Extreme heat arising from situations such as misuse or equipment failure can generate hydrogen fluoride as a decomposition product.

## 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 3M 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

Respiratory tract irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. May cause additional health effects (see below).

##### Skin contact

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

##### Eye contact

Moderate eye irritation: Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

##### Ingestion

Gastrointestinal irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhoea. May cause additional health effects (see below).

#### Additional Health Effects:

##### Single exposure may cause target organ effects:

Central nervous system (CNS) depression: Signs/symptoms may include headache, dizziness, drowsiness, incoordination, nausea, slowed reaction time, slurred speech, giddiness, and unconsciousness.

#### 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
Overall product	Ingestion		No data available; calculated ATE >5,000 mg/kg
Overall product	Inhalation-Vapour (4 hours)	Rat	LC50 > 22.1 mg/l
Trans-dichloroethylene	Dermal	Rabbit	LD50 > 5,000 mg/kg
Trans-dichloroethylene	Inhalation-	Rat	LC50 95.6 mg/l



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	Vapour (4 hours)		
Trans-dichloroethylene	Ingestion	Rat	LD50 7,902 mg/kg
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-	Dermal	Rat	LD50 > 2,000 mg/kg
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-	Inhalation-Vapour (4 hours)	Rat	LC50 > 430 mg/l
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-	Ingestion	Rat	LD50 > 2,000 mg/kg

ATE = acute toxicity estimate

**Skin Corrosion/Irritation**

Name	Species	Value
Trans-dichloroethylene	Rabbit	Minimal irritation
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-	Rabbit	No significant irritation

**Serious Eye Damage/Irritation**

Name	Species	Value
Trans-dichloroethylene	Rabbit	Moderate irritant
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-	Rabbit	No significant irritation

**Skin Sensitisation**

Name	Species	Value
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-	Mouse	Not classified

**Respiratory Sensitisation**

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

**Germ Cell Mutagenicity**

Name	Route	Value
Trans-dichloroethylene	In Vitro	Not mutagenic
Trans-dichloroethylene	In vivo	Not mutagenic
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-	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**

Name	Route	Value	Species	Test result	Exposure Duration
Trans-dichloroethylene	Inhalation	Not classified for development	Rat	NOAEL 24 mg/l	during organogenesis
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-	Inhalation	Not classified for reproduction and/or development		NOEL 10,000 ppm	
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-	Ingestion	Not classified for female reproduction	Rat	NOAEL 1,000 mg/kg/day	28 days

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

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
Trans-dichloroethylene	Inhalation	central nervous	Some positive data exist, but the	Human	NOAEL Not	occupational

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		system depression	data are not sufficient for classification		available	exposure
Trans-dichloroethylene	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification		NOAEL Not available	
Trans-dichloroethylene	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Rat	LOAEL 4,500 mg/kg	not applicable

**Specific Target Organ Toxicity - repeated exposure**

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
Trans-dichloroethylene	Inhalation	endocrine system   liver   kidney and/or bladder   respiratory system	Not classified	Rat	NOAEL 16 mg/l	90 days
Trans-dichloroethylene	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 2,000 mg/kg/day	14 weeks
Trans-dichloroethylene	Ingestion	blood   liver	Not classified	Rat	NOAEL 125 mg/kg/day	14 weeks
Trans-dichloroethylene	Ingestion	heart   immune system   respiratory system	Not classified	Rat	NOAEL 2,000 mg/kg/day	14 weeks
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-	Inhalation	hematopoietic system   liver   kidney and/or bladder   respiratory system	Not classified	Rat	NOAEL 143 mg/l	5 days
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-	Ingestion	liver   kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 150 mg/kg/day	28 days
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-	Ingestion	endocrine system   bone, teeth, nails, and/or hair   hematopoietic system   heart   immune system   nervous system	Not classified	Rat	NOAEL 1,000 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 3M assessments.

**12.1. Toxicity**

No product test data available.

Material	CAS #	Organism	Type	Exposure	Test endpoint	Test result
Trans-dichloroethylene	156-60-5	Water flea	Experimental	48 hours	LC50	220 mg/l
Trans-dichloroethylene	156-60-5	Green Algae	Experimental	48 hours	EC50	36.36 mg/l

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Trans-dichloroethylene	156-60-5	Bluegill	Estimated	96 hours	LC50	140 mg/l
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-	132182-92-4	Green algae	Experimental	72 hours	EC50	>100 mg/l
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-	132182-92-4	Water flea	Experimental	48 hours	EC50	>100 mg/l
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-	132182-92-4	Ricefish	Experimental	96 hours	LC50	>100 mg/l

**12.2. Persistence and degradability**

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
Trans-dichloroethylene	156-60-5	Experimental Photolysis		Photolytic half-life (in air)	13 days (t 1/2)	Other methods
Trans-dichloroethylene	156-60-5	Experimental Biodegradation	28 days	BOD	8 % weight	OECD 301D - Closed bottle test
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-	132182-92-4	Experimental Photolysis		Photolytic half-life (in air)	2.63 years (t 1/2)	Other methods
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-	132182-92-4	Experimental Biodegradation	28 days	BOD	0 % weight	OECD 301D - Closed bottle test

**12.3 : Bioaccumulative potential**

Material	Cas No.	Test type	Duration	Study Type	Test result	Protocol
Trans-dichloroethylene	156-60-5	Experimental Bioconcentration		Log Kow	2.09	Other methods
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-	132182-92-4	Experimental Bioconcentration		Log Kow	4.3	Estimated: Octanol-water partition coefficient

**12.4. Mobility in soil**

Please contact manufacturer for more details

**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. Other adverse effects**

Material	CAS Nbr	Ozone Depletion Potential	Global Warming Potential
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-(trifluoromethyl)-	132182-92-4	0	310

**SECTION 13: Disposal considerations****13.1 Waste treatment methods**

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

Dispose of waste product in a permitted industrial waste facility. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable

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waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

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

## 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. One or more of the components of this product have been notified to ELINCS (European List of Notified or New Chemical Substances). Certain restrictions apply. Contact the selling division for additional 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 Japan Chemical Substance Control Law. Certain restrictions may apply. Contact the selling division for additional information. 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.

### 15.2. Chemical Safety Assessment

A chemical safety assessment has not been carried out for this mixture. Chemical safety assessments for the contained substances may have been carried out by the registrants of the substances in accordance with Regulation (EC) No 1907/2006, as amended.

## SECTION 16: Other information

### List of relevant H statements

H225	Highly flammable liquid and vapour.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H336	May cause drowsiness or dizziness.
H412	Harmful to aquatic life with long lasting effects.

### Revision information:

Section 3: Composition/ Information of ingredients table information was modified.

Section 12: Component ecotoxicity information information was modified.

## Annex

**3M™ Novec™ 73DE Engineered Fluid**

<b>1. Title</b>	
<b>Substance identification</b>	Trans-dichloroethylene; EC No. 205-860-2; CAS Nbr 156-60-5;
<b>Exposure Scenario Name</b>	Industrial Laboratory Use
<b>Lifecycle Stage</b>	Widespread use by professional workers
<b>Contributing activities</b>	PROC 15 -Use a laboratory reagent ERC 08a -Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
<b>Processes, tasks and activities covered</b>	Use as a laboratory reagent.
<b>2. Operational conditions and risk management measures</b>	
<b>Operating Conditions</b>	<b>Physical state:</b> Liquid. <b>General operating conditions:</b> Duration of use; Indoors with LEV and good general ventilation;
<b>Risk management measures</b>	Under the operational conditions described above the following risk management measures apply: <b>General risk management measures:</b> <b>Human health:</b> None needed; <b>Environmental:</b> None needed;
<b>Waste management measures</b>	No use-specific waste management measures are required for this product. Refer to Section 13 of main SDS for disposal instructions:
<b>3. Prediction of exposure</b>	
<b>Prediction of exposure</b>	Human and environmental exposures are not expected to exceed the DNELs and PNECs when the identified risk management measures are adopted.

<b>1. Title</b>	
<b>Substance identification</b>	Trans-dichloroethylene; EC No. 205-860-2; CAS Nbr 156-60-5;
<b>Exposure Scenario Name</b>	Industrial Use as a Solvent
<b>Lifecycle Stage</b>	Use at industrial sites
<b>Contributing activities</b>	PROC 07 -Industrial spraying PROC 08a -Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC 08b -Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC 10 -Roller application or brushing PROC 13 -Treatment of articles by dipping and pouring ERC 04 -Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ERC 07 -Use of functional fluid at industrial site
<b>Processes, tasks and activities covered</b>	Cleaning process equipment and parts. Cleaning surfaces by wiping, brushing. Spraying of substances/mixtures. Transfer of substance/mixture with dedicated engineering controls. Transfer of substances/mixtures into small containers e.g. tubes , bottles or small reservoirs.
<b>2. Operational conditions and risk management measures</b>	
<b>Operating Conditions</b>	<b>Physical state:</b> Liquid. <b>General operating conditions:</b> Discharge volume of sewage treatment plant: 2,000,000 liters per day; Emission days per year: 365 days per year; Flow rate of receiving surface water:: 18,000 cubic meters per day; Indoors with enhanced general ventilation; Indoors with good general ventilation;

	<p>Large factory building (&gt; 500 m<sup>3</sup>); Local freshwater dilution factor: 10 ; Local marine water dilution factor: 100 ;</p> <p><b>Task: Spraying;</b> Duration of use: 4 hours/day;</p> <p><b>Task: Transferring Material;</b> Duration of use: 4 hours/day;</p> <p><b>Task: Wiping Surfaces;</b> Duration of use: 4 hours/day;</p>
<b>Risk management measures</b>	<p>Under the operational conditions described above the following risk management measures apply:</p> <p><b>General risk management measures:</b> <b>Human health:</b> None needed; <b>Environmental:</b> None needed;</p>
<b>Waste management measures</b>	No use-specific waste management measures are required for this product. Refer to Section 13 of main SDS for disposal instructions:
<b>3. Prediction of exposure</b>	
<b>Prediction of exposure</b>	Human and environmental exposures are not expected to exceed the DNELs and PNECs when the identified risk management measures are adopted.

<b>1. Title</b>	
<b>Substance identification</b>	<p>Trans-dichloroethylene; EC No. 205-860-2; CAS Nbr 156-60-5;</p>
<b>Exposure Scenario Name</b>	Industrial Use in Vapour Degreasing Systems
<b>Lifecycle Stage</b>	Use at industrial sites
<b>Contributing activities</b>	<p>PROC 04 -Chemical production where opportunity for exposure arises PROC 08b -Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC 13 -Treatment of articles by dipping and pouring ERC 04 -Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ERC 07 -Use of functional fluid at industrial site</p>
<b>Processes, tasks and activities covered</b>	Draining process equipment. Transfer of substance/mixture with dedicated engineering controls. Vapour Degreasing
<b>2. Operational conditions and risk management measures</b>	
<b>Operating Conditions</b>	<p><b>Physical state:</b>Liquid. <b>General operating conditions:</b> Discharge volume of sewage treatment plant: 2,000,000 liters per day; Duration of use: 8 hours/day; Emission days per year: 300 days per year; Flow rate of receiving surface water:: 18,000 cubic meters per day; Indoor use without Local Exhaust Ventilation; Local freshwater dilution factor: 10 ; Local marine water dilution factor: 100 ; Medium sized room or workshop ( 100 m<sup>3</sup> - 500 m<sup>3</sup>); Partially open and partially closed process;</p>
<b>Risk management measures</b>	<p>Under the operational conditions described above the following risk management measures apply:</p> <p><b>General risk management measures:</b> <b>Human health:</b> None needed;</p>

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	<b>Environmental:</b> None needed;
<b>Waste management measures</b>	Incinerate in a facility capable of handling halogenated waste;
<b>3. Prediction of exposure</b>	
<b>Prediction of exposure</b>	Human and environmental exposures are not expected to exceed the DNELs and PNECs when the identified risk management measures are adopted.

<b>1. Title</b>	
<b>Substance identification</b>	Trans-dichloroethylene; EC No. 205-860-2; CAS Nbr 156-60-5;
<b>Exposure Scenario Name</b>	Professional Laboratory Use
<b>Lifecycle Stage</b>	Use at industrial sites
<b>Contributing activities</b>	PROC 15 -Use a laboratory reagent ERC 04 -Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
<b>Processes, tasks and activities covered</b>	Use as a laboratory reagent.
<b>2. Operational conditions and risk management measures</b>	
<b>Operating Conditions</b>	<b>Physical state:</b> Liquid. <b>General operating conditions:</b> Discharge volume of sewage treatment plant: 2,000,000 liters per day; Duration of use: 8 hours/day; Flow rate of receiving surface water:: 18,000 cubic meters per day; Indoors with LEV and good general ventilation; Local freshwater dilution factor: 10 ; Local marine water dilution factor: 100 ;
<b>Risk management measures</b>	Under the operational conditions described above the following risk management measures apply: <b>General risk management measures:</b> <b>Human health:</b> None needed; <b>Environmental:</b> None needed;
<b>Waste management measures</b>	Incinerate in a facility capable of handling halogenated waste;
<b>3. Prediction of exposure</b>	
<b>Prediction of exposure</b>	Human and environmental exposures are not expected to exceed the DNELs and PNECs when the identified risk management measures are adopted.

<b>1. Title</b>	
<b>Substance identification</b>	Trans-dichloroethylene; EC No. 205-860-2; CAS Nbr 156-60-5;
<b>Exposure Scenario Name</b>	Professional Use as a Solvent
<b>Lifecycle Stage</b>	Widespread use by professional workers
<b>Contributing activities</b>	PROC 08a -Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC 08b -Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC 10 -Roller application or brushing PROC 11 -Non industrial spraying PROC 13 -Treatment of articles by dipping and pouring ERC 08a -Widespread use of non-reactive processing aid (no inclusion into or

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	onto article, indoor) ERC 09a -Widespread use of functional fluid (indoor)
<b>Processes, tasks and activities covered</b>	Cleaning process equipment and parts. Cleaning surfaces by wiping, brushing. Spraying of substances/mixtures. Transfer of substance/mixture with dedicated engineering controls. Transfer of substances/mixtures into small containers e.g. tubes , bottles or small reservoirs.
<b>2. Operational conditions and risk management measures</b>	
<b>Operating Conditions</b>	<b>Physical state:</b> Liquid. <b>General operating conditions:</b> Indoors with good general ventilation; Medium sized room or workshop ( 100 m <sup>3</sup> - 500 m <sup>3</sup> );  <b>Task: Pouring Material - Liquids;</b> Duration of use: 15 min - 1 hour task;  <b>Task: Spraying;</b> Duration of use: 15 min - 1 hour task;  <b>Task: Wiping Surfaces;</b> Duration of use: 15 min - 1 hour task;
<b>Risk management measures</b>	Under the operational conditions described above the following risk management measures apply: <b>General risk management measures:</b> <b>Human health:</b> None needed; <b>Environmental:</b> None needed;
<b>Waste management measures</b>	No use-specific waste management measures are required for this product. Refer to Section 13 of main SDS for disposal instructions:
<b>3. Prediction of exposure</b>	
<b>Prediction of exposure</b>	Human and environmental exposures are not expected to exceed the DNELs and PNECs when the identified risk management measures are adopted.

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