Safety Data Sheet

Document group: QD28-HFE7200 **Version number:** 24.00
Revision date: 29/08/2022 **Supersedes date:** 26/06/2020

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

Acota HFE 7200 Engineered Fluid

REACH registration number	CASRN	EC Number	Ingredient Name
01-0000017174-74-0003		425-340-0	Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3heptafluoropropane and 1-ethoxy1,1,2,2,3,3,4,4,4-nonafluoro-butane

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

Acota 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 Acota solvent may remain on the parts. It is highly recommended that the supporting test results and protocol be cited during FDA registration. Acota will not knowingly sample, support, or sell its products for incorporation in medical and pharmaceutical products and applications in which the Acota product will be temporarily or permanently implanted into humans or animals. The customer is responsible for evaluating and determining that a Acota product is suitable and appropriate for its particular use and intended application. The conditions of evaluation, selection, and use of a Acota product can vary widely and affect the use and intended application of a Acota 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 Acota 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: Maesbury Industrial Estate, Maes Y Clawdd, Oswestry SY10 8NN

Telephone: +44 (0)1743 466200
E Mail: sales@acota.co.uk
Website: www.acota.co.uk

1.4. Emergency telephone number

+44 (0)1743 466200

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:
Hazardous to the Aquatic Environment (Chronic), Category 4 - Aquatic Chronic 4; H413

For full text of H phrases, see Section 16.

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

Ingredients:

Ingredient	CAS Nbr	EC No.	% by Wt
Reaction Mass of 2-(ethoxydifluoromethyl)1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane		425-340-0	90 - 100

HAZARD STATEMENTS:

H413	May cause long lasting harmful effects to aquatic life.

SUPPLEMENTAL INFORMATION:

Supplemental Hazard Statements:

EUH018	In use, may form flammable/explosive vapour-air mixture.

Supplemental Precautionary Statements:
Provide ventilation adequate to maintain vapour concentration below lower explosive concentration.

Notes on labelling
Updated per Regulation (EC) No. 648/2004 on detergents.

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 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3heptafluoropropane and 1-ethoxy1,1,2,2,3,3,4,4,4-nonafluoro-butane	(EC-No.) 425-340-0	90 - 100	Aquatic Chronic 4, H413 EUH018

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
Wash with soap and water. If you feel unwell, get medical attention.

Eye contact
No need for first aid is anticipated.

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

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. No closed-cup flash point but flam/expl. vapour air mixture Material displays no closed-cup flash point but may form flammable/explosive vapor air mixture. **Hazardous**

Decomposition or By-Products

Substance	Condition
Carbon monoxide	During combustion.
Carbon dioxide.	During combustion.
Hydrogen Fluoride	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

Keep away from sparks/flames/extreme heat Keep away from sparks, flames, and extreme heat. Evacuate area. 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

Eliminate ignition sources when cleaning spill Eliminate all potential ignition sources when cleaning up spill. 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. 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.) 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. Keep away from sparks/flames/extreme heat Keep away from sparks, flames, and extreme heat.

7.2. Conditions for safe storage including any incompatibilities

Store away from acids. 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

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.

Ingredient	CAS Nbr	Agency	Limit type	Additional comments
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane	425-340-0	Manufacturer determined	TWA(as total isomers):200 ppm(2160 mg/m3)	

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)

Ingredient	Degradation Product	Population	Human exposure pattern	DNEL
Reaction Mass of 2(ethoxydifluoromethyl)-1,1,1,2,3,3,3heptafluoropropane and 1ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane		Worker	Inhalation, Long-term exposure (8 hours), Systemic effects	1,764 mg/m³

Predicted no effect concentrations (PNEC)

Ingredient	Degradation Product	Compartment	PNEC
Reaction Mass of 2(ethoxydifluoromethyl)-1,1,1,2,3,3,3heptafluoropropane and 1ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane		Agricultural soil	0.0041 mg/kg d.w.
Reaction Mass of 2(ethoxydifluoromethyl)-1,1,1,2,3,3,3heptafluoropropane and 1ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane		Freshwater	0.00237 mg/l
Reaction Mass of 2(ethoxydifluoromethyl)-1,1,1,2,3,3,3heptafluoropropane and 1ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane		Freshwater sediments	0.0393 mg/kg d.w.

Reaction Mass of 2(ethoxydifluoromethyl)-1,1,1,2,3,3,3heptafluoropropane and 1ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane		Grassland average	0.0041 mg/kg d.w.
Reaction Mass of 2(ethoxydifluoromethyl)-1,1,1,2,3,3,3heptafluoropropane and 1ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane		Marine water	0.000237 mg/l
Reaction Mass of 2(ethoxydifluoromethyl)-1,1,1,2,3,3,3heptafluoropropane and 1ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane		Marine water sediments	0.00393 mg/kg d.w.

Recommended monitoring procedures: Information on recommended monitoring procedures can be obtained from UK HSC

8.2. Exposure controls

In addition, refer to the annex for more information.

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. Provide ventilation adequate to maintain vapor concentration below lower explosive concentration.

8.2.2. Personal protective equipment (PPE)

Eye/face protection
None required.

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:

Material	**Thickness (mm)**	**Breakthrough Time**
Neoprene.	No data available	=>8 hours

The glove data presented are based on the substance driving dermal toxicity and the conditions present at the time of testing. Breakthrough time may be altered when the glove is subjected to use conditions that place additional stress on the glove.

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

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.

8.2.3. Environmental exposure controls
Refer to Annex

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid
Specific Physical Form:	Liquid
Colour	Colourless
Odour	Faint Odour
Odour threshold	*No data available.*
Melting point/freezing point	-138 ºC
Boiling point/boiling range	76 ºC
Flammability (solid, gas)	Not applicable.
Flammable Limits(LEL)	210 g/m³ [*Details:*ASTM E681-94 Method]
Flammable Limits(UEL)	1,070 g/m³ [*Details:*ASTM E681-94 Method]
Flash point	No flash point
Autoignition temperature	375 ºC [*Details:*ASTM E659-78 Method]
Decomposition temperature	*Not applicable.*
pH	*substance/mixture is non-soluble (in water)*
Kinematic Viscosity	0.43 mm²/sec
Water solubility	Nil
Solubility- non-water	*No data available.*
Partition coefficient: n-octanol/water	4.2 [*Details:*at 30 °C]
Vapour pressure	14,532.1 Pa [@ 25 ºC]
Density	1.43 g/ml
Relative density	1.43 [*Ref Std:*WATER=1]
Relative Vapor Density	9.1 [*Ref Std:*AIR=1]

9.2. Other information

9.2.2 Other safety characteristics

EU Volatile Organic Compounds	1,430 g/l
Evaporation rate	33 [*Ref Std:*BUOAC=1]
Molecular weight	*No data available.*
Percent volatile	100 %

SECTION 10: Stability and reactivity

10.1 Reactivity
This material is considered to be non reactive under normal use conditions

10.2 Chemical stability
Stable.

10.3 Possibility of hazardous reactions
Hazardous polymerisation will not occur.

10.4 Conditions to avoid
Sparks and/or flames.

10.5 Incompatible materials
Strong acids.
Strong bases.
Strong oxidising agents.

10.6 Hazardous decomposition products

Substance	Condition
Carbon monoxide	At elevated temperatures. - extreme conditions of heat
Carbon dioxide.	At elevated temperatures. - extreme conditions of heat
Hydrogen Fluoride	At elevated temperatures. - extreme conditions of heat
Perfluoroisobutylene (PFIB).	At elevated temperatures. - extreme conditions of heat
Toxic vapour, gas, particulate.	At elevated temperatures. - extreme conditions of heat

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 be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labelling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

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
May be harmful in contact with skin. 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
May be harmful if swallowed.

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 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane	Dermal		LD50 estimated to be 2,000 - 5,000 mg/kg
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane	InhalationVapour (4 hours)	Rat	LC50 > 989 mg/l
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane	Ingestion	Rat	> 2,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane	Rabbit	No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane	Rabbit	No significant irritation

Skin Sensitisation

Name	Species	Value
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane	Guinea pig	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
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane	In Vitro	Not mutagenic
Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane	In vivo	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
Reaction Mass of 2-(ethoxydifluoromethyl)1,1,1,2,3,3,3-heptafluoropropane and 1ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane	Inhalation	Not classified for development	Rat	NOAEL 260 mg/l	during gestation

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
Reaction Mass of 2(ethoxydifluoromethyl)-1,1,1,2,3,3,3heptafluoropropane and 1ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane	Inhalation	cardiac sensitisation	Some positive data exist, but the data are not sufficient for classification	Dog	NOAEL 204 mg/l	17 minutes
Reaction Mass of 2(ethoxydifluoromethyl)-1,1,1,2,3,3,3heptafluoropropane and 1ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane	Inhalation	respiratory irritation	Not classified	Rat	NOAEL 989 mg/l	4 hours

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
Reaction Mass of 2(ethoxydifluoromethyl)1,1,1,2,3,3,3-	Inhalation	liver | kidney and/or bladder | respiratory system | heart |	Not classified	Rat	NOAEL 263.4 mg/l	4 weeks

heptafluoropropane and 1ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane		endocrine system | gastrointestinal tract | bone marrow | hematopoietic system | immune system | nervous system				
Reaction Mass of 2(ethoxydifluoromethyl)-1,1,1,2,3,3,3heptafluoropropane and 1ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane	Ingestion	blood | liver | kidney and/or bladder | heart | endocrine system | bone marrow | hematopoietic system | immune system | nervous system | respiratory 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 Acota assessments.

12.1. Toxicity

No product test data available.

Material	CAS #	Organism	Type	Exposure	Test endpoint	Test result
Reaction Mass of 2(ethoxydifluoromethyl) -1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane	425-340-0	Fathead minnow	Analogous Compound	96 hours	No tox obs at lmt of water sol	>100 mg/l
Reaction Mass of 2(ethoxydifluoromethyl) -1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane	425-340-0	Green algae	Analogous Compound	72 hours	No tox obs at lmt of water sol	>100 mg/l
Reaction Mass of 2(ethoxydifluoromethyl) -1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane	425-340-0	Water flea	Analogous Compound	48 hours	No tox obs at lmt of water sol	>100 mg/l

Reaction Mass of 2(ethoxydifluoromethyl) -1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane	425-340-0	Green algae	Endpoint not reached	72 hours	EC50	>100 mg/l
Reaction Mass of 2(ethoxydifluoromethyl) -1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane	425-340-0	Fathead minnow	Experimental	96 hours	No tox obs at lmt of water sol	>100 mg/l
Reaction Mass of 2(ethoxydifluoromethyl) -1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane	425-340-0	Water flea	Experimental	48 hours	No tox obs at lmt of water sol	>100 mg/l
Reaction Mass of 2(ethoxydifluoromethyl) -1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane	425-340-0	Green algae	Analogous Compound	72 hours	EC10	2.37 mg/l
Reaction Mass of 2(ethoxydifluoromethyl) -1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane	425-340-0	Green algae	Experimental	72 hours	EC10	2.37 mg/l

12.2. Persistence and degradability

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
Reaction Mass of 2(ethoxydifluoromethyl)-1,1,1,2,3,3,3heptafluoropropane and 1ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane	425-340-0	Estimated Biodegradation	28 days	BOD	0 %BOD/ThOD	OECD 301D - Closed bottle test
Reaction Mass of 2(ethoxydifluoromethyl)-1,1,1,2,3,3,3heptafluoropropane and 1ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane	425-340-0	Analogous Compound Biodegradation	28 days	BOD	0 %BOD/ThOD	OECD 301D - Closed bottle test
Reaction Mass of 2(ethoxydifluoromethyl)-1,1,1,2,3,3,3heptafluoropropane and 1ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane	425-340-0	Estimated Photolysis		Photolytic half-life (in air)	0.55 years (t 1/2)	

12.3 : Bioaccumulative potential

Material	Cas No.	Test type	Duration	Study Type	Test result	Protocol
Reaction Mass of 2(ethoxydifluoromethyl)-1,1,1,2,3,3,3heptafluoropropane and 1ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane	425-340-0	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Reaction Mass of 2(ethoxydifluoromethyl)-1,1,1,2,3,3,3heptafluoropropane and 1ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane	425-340-0	Data not available or insufficient for classification	N/A	N/A	N/A	N/A

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 2(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4nonafluoro-butane	425-340-0	0	

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. 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 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 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 Acota, 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

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 Acota 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 Japan Chemical Substance Control Law. 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

List of relevant H statements

EUH018 In use, may form flammable/explosive vapour-air mixture. H413 May cause long lasting harmful effects to aquatic life.

Revision information:
EU Section 09: pH information information was added.
Industrial Handling of Heat Transfer, Cooling, and Dielectric Fluid: Section 16: Annex information was modified.
Industrial Laboratory Use: Section 16: Annex information was modified.
Industrial Use as a Solvent: Section 16: Annex information was modified.
Industrial Use in Vapour Degreasing Systems: Section 16: Annex information was deleted.
Professional Handling of Heat Transfer Fluid: Section 16: Annex information was modified.
Professional Laboratory Use: Section 16: Annex information was modified.
Professional Use as a Solvent: Section 16: Annex information was modified.
Section 1: Product identification numbers information was modified.

Section 01: SAP Material Numbers information was modified.
Section 1: Restrictions on use information information was modified.
CLP: Ingredient table information was modified.
Label: CLP Precautionary - Disposal information was deleted.
Label: CLP Supplemental Precautionary Statements information was deleted.
Section 02: SDS Elements: CLP Supplemental Precautionary Statements information was added.
Section 03: Composition table % Column heading information was added.
Section 3: Composition/ Information of ingredients table information was modified.
Section 03: Mixture not applicable information was added.
Section 04: Information on toxicological effects information was modified.
Section 5: Fire - Advice for fire fighters information information was modified.
Section 5: Fire - Special hazards information information was modified.
Section 6: Accidental release clean-up information information was modified.
Section 6: Accidental release personal 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 added.
Section 8: glove data value information was modified.
Section 8: Occupational exposure limit table information was added.
Section 8: Occupational exposure limit table information was modified.
OEL Reg Agency Desc information was added.
Section 8: Personal Protection - Respiratory Information information was modified.
Section 8: Personal Protection - Thermal hazards information information was deleted.
Section 8: STEL key information was added.
Section 8: TWA key information was added.
Section 9: Evaporation Rate information information was deleted.
Section 9: Explosive properties information information was deleted.
Section 09: Kinematic Viscosity information information was added.
Section 9: Melting point information information was modified.
Section 9: Oxidising properties information information was deleted.
Section 9: pH information information was deleted.
Section 9: Property description for optional properties information was modified.
Section 9: Vapour density value information was added.
Section 9: Vapour density value information was deleted.
Section 9: Viscosity information information was deleted.
Section 11: Classification disclaimer information was added.
Section 11: Classification disclaimer information was deleted.
Section 11: Health Effects - Skin information information was modified.
Section 11: Reproductive and/or Developmental Effects text information was added.
Section 12: 12.6. Endocrine Disrupting Properties information was added.
Section 12: 12.7. Other adverse effects information was modified.
Section 12: Component ecotoxicity information information was modified.
Section 12: Contact manufacturer for more detail. information was deleted.
Section 12: No Data text for mobility in soil information was added.
Section 12: No endocrine disruptor information available warning information was added.
Section 12: Persistence and Degradability information information was modified.
Section 12:Bioccumulative potential information information was modified.
Section 14 Classification Code – Main Heading information was added.
Section 14 Classification Code – Regulation Data information was added.
Section 14 Control Temperature – Main Heading information was added.

Section 14 Control Temperature – Regulation Data information was added.
Section 14 Disclaimer Information information was added.
Section 14 Emergency Temperature – Main Heading information was added.
Section 14 Emergency Temperature – Regulation Data information was added.
Section 14 Hazard Class + Sub Risk – Main Heading information was added.
Section 14 Hazard Class + Sub Risk – Regulation Data information was added.
Section 14 Hazardous/Not Hazardous for Transportation information was added.
Section 14 Other Dangerous Goods – Main Heading information was added.
Section 14 Other Dangerous Goods – Regulation Data information was added.
Section 14 Packing Group – Main Heading information was added.
Section 14 Packing Group – Regulation Data information was added.
Section 14 Proper Shipping Name information was added.
Section 14 Regulations – Main Headings information was added.
Section 14 Segregation – Regulation Data information was added.
Section 14 Segregation Code – Main Heading information was added.
Section 14 Special Precautions – Main Heading information was added.
Section 14 Special Precautions – Regulation Data information was added.
Section 14 Transport in bulk – Regulation Data information was added.
Section 14 Marine transport in bulk according to IMO instruments – Main Heading information was added.
Section 14 UN Number Column data information was added.
Section 14 UN Number information was added.
Section 15: Regulations - Inventories information was added.
Section 2: No PBT/vPvB information available warning information was added.
Widespread Use in Cooling Applications: Section 16: Annex information was modified.

Annex

1. Title	
Substance identification	Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane; EC No. 425-340-0;
Exposure Scenario Name	Industrial Handling of Heat Transfer, Cooling, and Dielectric Fluid
Lifecycle Stage	Use at industrial sites
Contributing activities	PROC 01 -Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions. PROC 08a -Transfer of substance or mixture (charging and discharging) at nondedicated facilities PROC 08b -Transfer of substance or mixture (charging and discharging) at dedicated facilities ERC 07 -Use of functional fluid at industrial site
Processes, tasks and activities covered	Draining process equipment. Transfers with dedicated controls, including loading, filling, dumping, bagging. Transfers without dedicated controls, including loading, filling, dumping, bagging. Use as heat transfer fluids.
2. Operational conditions and risk management measures	

Operating Conditions	**Physical state:** Liquid. **General operating conditions:** Continuous process; Discharge volume of sewage treatment plant: <= 2,000,000 liters per day; Emission days per year: 365 days/year; Flow rate of receiving surface water:: <= 18,000 cubic meters per day; Fraction of applied product lost from process/use to solid waste in percent: 99.95 %; Fraction of applied product lost from process/use to waste: 0.0001 ; Fraction of applied product lost from process/use to waste gas: 0.0001 ; Fraction of applied product lost from process/use to waste water: 0 ; Fraction of product consumed in process/use: 0 ; Local freshwater dilution factor: 10 ; Local marine water dilution factor: 100 ;
Risk management measures	Under the operational conditions described above the following risk management measures apply: **General risk management measures:** **Human health:** None needed; **Environmental:** None needed;
Waste management measures	Incinerate in a facility capable of handling halogenated waste;
3. Prediction of exposure	
Prediction of exposure	Human and environmental exposures are not expected to exceed the DNELs and PNECs when the identified risk management measures are adopted. Contact Acota at the address or phone number listed on the first page of the SDS for information on exposure estimation.
1. Title	
Substance identification	Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane; EC No. 425-340-0;
Exposure Scenario Name	Industrial Laboratory Use
Lifecycle Stage	Use at industrial sites
Contributing activities	PROC 15 -Use a laboratory reagent ERC 04 -Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
Processes, tasks and activities covered	Use as a laboratory reagent.

2. Operational conditions and risk management measures	
Operating Conditions	**Physical state:** Liquid. **General operating conditions:** Discharge volume of sewage treatment plant: <= 2,000,000 liters per day; Emission days per year: 300 days/year; Flow rate of receiving surface water:: <= 18,000 cubic meters per day; Fraction of applied product lost from process/use to solid waste in percent: 50 %; Fraction of applied product lost from process/use to waste: 1 ; Fraction of applied product lost from process/use to waste gas: 0.5 ; Fraction of applied product lost from process/use to waste water: 0 ; Fraction of product consumed in process/use: 0 ; Local freshwater dilution factor: 10 ; Local marine water dilution factor: 100 ;

Risk management measures	Under the operational conditions described above the following risk management measures apply: **General risk management measures:** **Human health:** None needed; **Environmental:** None needed;
Waste management measures	Incinerate in a facility capable of handling halogenated waste;
3. Prediction of exposure	
Prediction of exposure	Human and environmental exposures are not expected to exceed the DNELs and PNECs when the identified risk management measures are adopted.Contact Acota at the address or phone number listed on the first page of the SDS for information on exposure estimation.
1. Title	
Substance identification	Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane; EC No. 425-340-0;
Exposure Scenario Name	Industrial Use as a Solvent
Lifecycle Stage	Use at industrial sites
Contributing activities	PROC 07 -Industrial spraying PROC 08a -Transfer of substance or mixture (charging and discharging) at nondedicated 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)
Processes, tasks and activities covered	Mixing operations (open systems). Transfer of substance/mixture with dedicated engineering controls. Transfer of substances/mixtures into small containers e.g. tubes , bottles or small reservoirs.
2. Operational conditions and risk management measures	
Operating Conditions	**Physical state:** Liquid. **General operating conditions:** Discharge volume of sewage treatment plant: <= 2,000,000 liters per day; Emission days per year: 20 days per year; Flow rate of receiving surface water:: <= 18,000 cubic meters per day; Fraction of applied product leaving the site with products: 0 ; Fraction of applied product lost from process/use to solid waste in percent: 0 %; Fraction of applied product lost from process/use to waste: 1 ; Fraction of applied product lost from process/use to waste gas: 1 ; Fraction of applied product lost from process/use to waste water: 0 ; Fraction of product consumed in process/use: 0 ;

	Local freshwater dilution factor: 10 ; Local marine water dilution factor: 100 ;

Risk management measures	Under the operational conditions described above the following risk management measures apply: **General risk management measures:** **Human health:** None needed; **Environmental:** None needed;
Waste management measures	Incinerate in a facility capable of handling halogenated waste;
3. Prediction of exposure	
Prediction of exposure	Human and environmental exposures are not expected to exceed the DNELs and PNECs when the identified risk management measures are adopted. Contact Acota at the address or phone number listed on the first page of the SDS for information on exposure estimation.
1. Title	
Substance identification	Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane; EC No. 425-340-0;
Exposure Scenario Name	Professional Handling of Heat Transfer Fluid
Lifecycle Stage	Widespread use by professional workers
Contributing activities	PROC 08a -Transfer of substance or mixture (charging and discharging) at nondedicated facilities ERC 09a -Widespread use of functional fluid (indoor)
Processes, tasks and activities covered	Transfers without dedicated controls, including loading, filling, dumping, bagging.
2. Operational conditions and risk management measures	
Operating Conditions	**Physical state:** Liquid. **General operating conditions:** Continuous release; Discharge volume of sewage treatment plant: <= 2,000,000 litres per day; Emission days per year: 365 days/year; Flow rate of receiving surface water:: <= 18,000 cubic meters per day; Fraction of applied product lost from process/use to solid waste in percent: 99.95 %; Fraction of applied product lost from process/use to waste: 0.0001 ; Fraction of applied product lost from process/use to waste gas: 0.0001 ; Fraction of applied product lost from process/use to waste water: 0 ; Fraction of product consumed in process/use: 0 ; Local freshwater dilution factor: 10 ; Local marine water dilution factor: 100 ;
Risk management measures	Under the operational conditions described above the following risk management measures apply: **General risk management measures:** **Human health:** None needed; **Environmental:** None needed;
Waste management measures	Incinerate in a facility capable of handling halogenated waste;
3. Prediction of exposure	

Prediction of exposure	Human and environmental exposures are not expected to exceed the DNELs and PNECs when the identified risk management measures are adopted. Contact Acota at the address or phone number listed on the first page of the SDS for information on

	exposure estimation.
1. Title	
Substance identification	Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane; EC No. 425-340-0;
Exposure Scenario Name	Professional Laboratory Use
Lifecycle Stage	Widespread use by professional workers
Contributing activities	PROC 15 -Use a laboratory reagent ERC 08a -Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
Processes, tasks and activities covered	Use as a laboratory reagent.
2. Operational conditions and risk management measures	
Operating Conditions	**Physical state:** Liquid. **General operating conditions:** Discharge volume of sewage treatment plant: <= 2,000,000 litres per day; Emission days per year: 300 days/year; Flow rate of receiving surface water:: <= 18,000 cubic meters per day; Fraction of applied product lost from process/use to solid waste in percent: 50 %; Fraction of applied product lost from process/use to waste: 1 ; Fraction of applied product lost from process/use to waste gas: 0.5 ; Fraction of applied product lost from process/use to waste water: 0 ; Fraction of product consumed in process/use: 0 ; Local freshwater dilution factor: 10 ; Local marine water dilution factor: 100 ;
Risk management measures	Under the operational conditions described above the following risk management measures apply: **General risk management measures:** **Human health:** None needed; **Environmental:** None needed;
Waste management measures	Incinerate in a facility capable of handling halogenated waste;
3. Prediction of exposure	
Prediction of exposure	Human and environmental exposures are not expected to exceed the DNELs and PNECs when the identified risk management measures are adopted. Contact Acota at the address or phone number listed on the first page of the SDS for information on exposure estimation.
1. Title	
Substance identification	Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane; EC No. 425-340-0;
Exposure Scenario Name	Professional Use as a Solvent
Lifecycle Stage	Widespread use by professional workers

Contributing activities	PROC 08a -Transfer of substance or mixture (charging and discharging) at nondedicated 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 onto article, indoor)
Processes, tasks and activities covered	Cleaning surfaces by wiping, brushing. Immersion operations. 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.
2. Operational conditions and risk management measures	
Operating Conditions	**Physical state:** Liquid. **General operating conditions:** Discharge volume of sewage treatment plant: <= 2,000,000 litres per day; Emission days per year: 20 days per year; Flow rate of receiving surface water:: <= 18,000 cubic meters per day; Fraction of applied product leaving the site with products: 0 ; Fraction of applied product lost from process/use to solid waste in percent: 0 %; Fraction of applied product lost from process/use to waste: 1 ; Fraction of applied product lost from process/use to waste gas: 1 ; Fraction of applied product lost from process/use to waste water: 0 ; Fraction of product consumed in process/use: 0 ; Local freshwater dilution factor: 10 ; Local marine water dilution factor: 100 ;
Risk management measures	Under the operational conditions described above the following risk management measures apply: **General risk management measures:** **Human health:** None needed; **Environmental:** None needed;
Waste management measures	Incinerate in a facility capable of handling halogenated waste;
3. Prediction of exposure	
Prediction of exposure	Human and environmental exposures are not expected to exceed the DNELs and PNECs when the identified risk management measures are adopted.Contact Acota at the address or phone number listed on the first page of the SDS for information on exposure estimation.
1. Title	
Substance identification	Reaction Mass of 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane and 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluoro-butane; EC No. 425-340-0;
Exposure Scenario Name	Widespread Use in Cooling Applications
Lifecycle Stage	Service Life
Contributing activities	PROC 0 -Other Process or activity ERC 10a -Widespread use of articles with low release (outdoor) ERC 11a -Widespread use of articles with low release (indoor)
Processes, tasks and activities covered	Passive system losses to environment. Use as heat transfer fluids.
2. Operational conditions and risk management measures	

Operating Conditions	**Physical state:** Liquid. **General operating conditions:** Discharge volume of sewage treatment plant: 2,000,000 liters per day; Emission days per year: 365 days/year; Flow rate of receiving surface water:: 18,000 cubic meters per day; Fraction of applied product leaving the site with products: 0.95 ; Fraction of applied product lost from process/use to solid waste in percent: 0 ; Fraction of applied product lost from process/use to waste: 0 ; Fraction of applied product lost from process/use to waste gas: 0.05 ; Fraction of applied product lost from process/use to waste water: 0.05 ; Fraction of product consumed in process/use: 0 ; Local freshwater dilution factor: 10 ; Local marine water dilution factor: 100 ;
Risk management measures	Under the operational conditions described above the following risk management measures apply: **General risk management measures:** **Human health:** None needed; **Environmental:** None needed;
Waste management measures	No use-specific waste management measures are required for this product. Refer to Section 13 of main SDS for disposal instructions:
3. Prediction of exposure	
Prediction of exposure	Human and environmental exposures are not expected to exceed the DNELs and PNECs when the identified risk management measures are adopted. Contact Acota at the address or phone number listed on the first page of the SDS for information on exposure estimation.

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