Safety Data Sheet

Document group: QD28-HFE71DA **Version number:** 28.00
Revision date: 19/06/2020 **Supersedes date:** 26/04/2019
Transportation version number: 1.00 (13/04/2011)

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 71DA Engineered Fluid

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

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 an Acota product is suitable and appropriate for its particular use and intended application. The conditions of evaluation, selection, and use of an Acota product can vary widely and affect the use and intended application of an 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 substance or mixture

Address: Acota Limited, Centrepoint, Knights Way, Shrewsbury SY1 3BF. UK

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:
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	40 - 50

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.

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.

Disposal:

P501	Dispose of contents/container in accordance with applicable local/regional/national/international regulations

SUPPLEMENTAL INFORMATION:

Supplemental Hazard Statements:

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

Supplemental Precautionary Statements:

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

2.3. Other hazards

None known.

SECTION 3: Composition/information on ingredients

Ingredient	CAS Nbr	EC No.	REACH Registration No.	% by Wt	Classification
Reaction Mass of 1,1,2,3,3,3hexafluoro-1-methoxy-2(trifluoromethyl)propane and 1,1,2,2,3,3,4,4,4-nonafluoro-1methoxybutane		422-270-2		30 - 70	Substance not classified as hazardous
trans-dichloroethylene	156-60-5	205-860-2	01-212009350455	40 - 50	Flam. Liq. 2, H225; Acute Tox. 4, H332; Aquatic Chronic 3, H412 - Nota C Eye Irrit. 2, H319; STOT SE 3, H336
ethanol	64-17-5	200-578-6	01-211945761043	1 - 5	Flam. Liq. 2, H225 Eye Irrit. 2, H319

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
Immediately flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. 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
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. vapor 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 Chloride	During combustion.
Hydrogen Fluoride	During combustion.

5.3. Advice for fire-fighters
When fire fighting conditions are severe and total thermal decomposition of the product is possible, wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, tunic and trousers (leggings),bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Keep away from sparks/flames/extreme heat Keep away from sparks, flames, and extreme heat. 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
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
Contents may be under pressure, open carefully. Avoid inhalation of thermal decomposition products. Avoid skin contact with hot material. For industrial/occupational use only. Not for consumer sale or use. Store work clothes separately from other clothing, food and tobacco products. 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.) 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 in a well-ventilated place. Keep container tightly closed. Store at temperatures not exceeding 38C/100F 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
trans-dichloroethylene	156-60-5	UK HSC	TWA:806mg/m3(200 ppm);STEL:1010mg/m3(250 ppm)	
ethanol	64-17-5	UK HSC	TWA:1920 mg/m³(1000 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)

Ingredient	Degradation Product	Population	Human exposure pattern	DNEL
trans-dichloroethylene		Consumer	Inhalation, Long-term exposure (24 hours), Systemic effects	198 mg/m³
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/m³
ethanol		Worker	Dermal, Long-term exposure (8 hours), Systemic effects	343 mg/kg bw/d
ethanol		Worker	Inhalation, Long-term	950 mg/m³
			exposure (8 hours), Systemic effects	

Predicted no effect concentrations (PNEC)

Ingredient	Degradation Product	Compartment	PNEC
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
ethanol		Agricultural soil	0.63 mg/kg d.w.
ethanol		Concentration in marine fish for secondary poisoning	380 mg/kg w.w.
ethanol		Freshwater	0.96 mg/l

ethanol		Freshwater sediments	3.6 mg/kg d.w.
ethanol		Intermittent releases to water	2.75 mg/l
ethanol		Marine water	0.79 mg/l
ethanol		Marine water sediments	2.9 mg/kg d.w.
ethanol		Sewage Treatment Plant	580 mg/l

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

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

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

Chemical protective gloves not required under normal conditions 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

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
Organic vapour respirators may have short service life.

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

Appearance	
Physical state	Liquid.
Colour	Colourless
Specific Physical Form:	Liquid.
Odor	Slight Odor
Odour threshold	*No data available.*
pH	*Not applicable.*
Boiling point/boiling range	40 ºC
Melting point	*Not applicable.*
Flammability (solid, gas)	Not applicable.
Explosive properties	Not classified
Oxidising properties	Not classified
Flash point	No flash point [*Details:*Tested according to ASTM Method D 5687]
Autoignition temperature	420 ºC
Flammable Limits(LEL)	5.1 % volume [*Details:*Tested according to ASTM Method E68194]
Flammable Limits(UEL)	12.7 % volume [*Details:*Tested according to ASTM Method E681-94]
Vapour pressure	55,062 Pa [@ 25 ºC]
Relative density	1.33 [*Ref Std:*WATER=1]
Water solubility	Slight (less than 10%)
Solubility- non-water	*No data available.*
Partition coefficient: n-octanol/water	*No data available.*
Evaporation rate	66 [*Ref Std:*BUOAC=1]
Vapour density	4.8 [@ 20 ºC] [*Ref Std:*AIR=1]
Decomposition temperature	*Not applicable.*
Viscosity	0.45 mPa-s
Density	1.33 g/ml

9.2. Other information

EU Volatile Organic Compounds	1,330 g/l
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
Hazardous polymerisation will not occur.

10.4 Conditions to avoid
Sparks and/or flames.

10.5 Incompatible materials
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 Chloride	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 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 Acota 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
Severe eye irritation: Signs/symptoms may include significant redness, swelling, pain, tearing, cloudy appearance of the cornea, and impaired 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.

Additional information:
This product contains ethanol. Alcoholic beverages and ethanol in alcoholic beverages have been classified by the International Agency for Research on Cancer as carcinogenic to humans. There are also data associating human consumption of alcoholic beverages with developmental toxicity and liver toxicity. Exposure to ethanol during the foreseeable use of this product is not expected to cause cancer, developmental toxicity, or liver toxicity.

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	InhalationVapour(4 hr)		No data available; calculated ATE >50 mg/l
Overall product	Ingestion		No data available; calculated ATE >5,000 mg/kg
Reaction Mass of 1,1,2,3,3,3-hexafluoro-1-methoxy-2(trifluoromethyl)propane and 1,1,2,2,3,3,4,4,4-nonafluoro-1methoxybutane	Dermal		LD50 estimated to be > 5,000 mg/kg
Reaction Mass of 1,1,2,3,3,3-hexafluoro-1-methoxy-2(trifluoromethyl)propane and 1,1,2,2,3,3,4,4,4-nonafluoro-1methoxybutane	InhalationVapour (4 hours)	Rat	LC50 > 1,000 mg/l
Reaction Mass of 1,1,2,3,3,3-hexafluoro-1-methoxy-2(trifluoromethyl)propane and 1,1,2,2,3,3,4,4,4-nonafluoro-1methoxybutane	Ingestion	Rat	LD50 > 5,000 mg/kg
trans-dichloroethylene	Dermal	Rabbit	LD50 > 5,000 mg/kg
trans-dichloroethylene	InhalationVapour (4 hours)	Rat	LC50 95.6 mg/l
trans-dichloroethylene	Ingestion	Rat	LD50 7,902 mg/kg
ethanol	Dermal	Rabbit	LD50 > 15,800 mg/kg
ethanol	InhalationVapour (4 hours)	Rat	LC50 124.7 mg/l
ethanol	Ingestion	Rat	LD50 17,800 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Reaction Mass of 1,1,2,3,3,3-hexafluoro-1-methoxy-2-(trifluoromethyl)propane and 1,1,2,2,3,3,4,4,4-nonafluoro-1-methoxybutane	Rabbit	No significant irritation
trans-dichloroethylene	Rabbit	Minimal irritation
ethanol	Rabbit	No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
Reaction Mass of 1,1,2,3,3,3-hexafluoro-1-methoxy-2-(trifluoromethyl)propane and 1,1,2,2,3,3,4,4,4-nonafluoro-1-methoxybutane	Rabbit	No significant irritation
trans-dichloroethylene	Rabbit	Moderate irritant
ethanol	Rabbit	Severe irritant

Skin Sensitisation

Name	Species	Value
Reaction Mass of 1,1,2,3,3,3-hexafluoro-1-methoxy-2-(trifluoromethyl)propane and 1,1,2,2,3,3,4,4,4-nonafluoro-1-methoxybutane	Guinea pig	Not classified
ethanol	Human	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 1,1,2,3,3,3-hexafluoro-1-methoxy-2-(trifluoromethyl)propane and 1,1,2,2,3,3,4,4,4-nonafluoro-1-methoxybutane	In Vitro	Not mutagenic
Reaction Mass of 1,1,2,3,3,3-hexafluoro-1-methoxy-2-(trifluoromethyl)propane and 1,1,2,2,3,3,4,4,4-nonafluoro-1-methoxybutane	In vivo	Not mutagenic
trans-dichloroethylene	In Vitro	Not mutagenic
trans-dichloroethylene	In vivo	Not mutagenic
ethanol	In Vitro	Some positive data exist, but the data are not sufficient for classification
ethanol	In vivo	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
ethanol	Ingestion	Multiple animal species	Some positive data exist, but the data are not sufficient for classification

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test result	Exposure Duration
Reaction Mass of 1,1,2,3,3,3-hexafluoro-1methoxy-2-(trifluoromethyl)propane and	Inhalation	Not classified for female reproduction	Rat	NOAEL 129 mg/l	1 generation
1,1,2,2,3,3,4,4,4-nonafluoro-1methoxybutane					
Reaction Mass of 1,1,2,3,3,3-hexafluoro-1methoxy-2-(trifluoromethyl)propane and 1,1,2,2,3,3,4,4,4-nonafluoro-1methoxybutane	Inhalation	Not classified for male reproduction	Rat	NOAEL 129 mg/l	1 generation
Reaction Mass of 1,1,2,3,3,3-hexafluoro-1methoxy-2-(trifluoromethyl)propane and 1,1,2,2,3,3,4,4,4-nonafluoro-1methoxybutane	Inhalation	Not classified for development	Rat	NOAEL 307 mg/l	during gestation
trans-dichloroethylene	Inhalation	Not classified for development	Rat	NOAEL 24 mg/l	during organogenesis
ethanol	Inhalation	Not classified for development	Rat	NOAEL 38 mg/l	during gestation
ethanol	Ingestion	Not classified for development	Rat	NOAEL 5,200 mg/kg/day	premating & 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 1,1,2,3,3,3-hexafluoro-1methoxy-2-(trifluoromethyl)propane and 1,1,2,2,3,3,4,4,4nonafluoro-1methoxybutane	Inhalation	nervous system	Not classified	Dog	LOAEL 913 mg/l	10 minutes
Reaction Mass of 1,1,2,3,3,3-hexafluoro-1methoxy-2-(trifluoromethyl)propane and 1,1,2,2,3,3,4,4,4nonafluoro-1methoxybutane	Inhalation	cardiac sensitisation	Not classified	Dog	NOAEL 913 mg/l	10 minutes
trans-dichloroethylene	Inhalation	central nervous system depression	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	occupational 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
ethanol	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	LOAEL 2.6 mg/l	30 minutes
ethanol	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Human	LOAEL 9.4 mg/l	not available
ethanol	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Multiple animal species	NOAEL not available	
ethanol	Ingestion	kidney and/or bladder	Not classified	Dog	NOAEL 3,000 mg/kg	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
Reaction Mass of 1,1,2,3,3,3-hexafluoro-1methoxy-2-(trifluoromethyl)propane and 1,1,2,2,3,3,4,4,4nonafluoro-1methoxybutane	Inhalation	liver	Not classified	Rat	NOAEL 155 mg/l	13 weeks
Reaction Mass of	Inhalation	bone, teeth, nails,	Not classified	Rat	NOAEL 129	11 weeks
1,1,2,3,3,3-hexafluoro-1methoxy-2-(trifluoromethyl)propane and 1,1,2,2,3,3,4,4,4nonafluoro-1methoxybutane		and/or hair			mg/l	
Reaction Mass of 1,1,2,3,3,3-hexafluoro-1methoxy-2-(trifluoromethyl)propane and 1,1,2,2,3,3,4,4,4nonafluoro-1methoxybutane	Inhalation	heart | skin | endocrine system | gastrointestinal tract | hematopoietic system | immune system | muscles | nervous system | eyes | kidney and/or bladder | respiratory system	Not classified	Rat	NOAEL 155 mg/l	13 weeks
Reaction Mass of 1,1,2,3,3,3-hexafluoro-1methoxy-2-(trifluoromethyl)propane and 1,1,2,2,3,3,4,4,4nonafluoro-1methoxybutane	Ingestion	endocrine system | liver | heart | hematopoietic system | immune system | nervous system | eyes | kidney and/or bladder | respiratory system	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
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
ethanol	Inhalation	liver	Some positive data exist, but the data are not sufficient for classification	Rabbit	LOAEL 124 mg/l	365 days
ethanol	Inhalation	hematopoietic system | immune system	Not classified	Rat	NOAEL 25 mg/l	14 days
ethanol	Ingestion	liver	Some positive data exist, but the data are not sufficient for classification	Rat	LOAEL 8,000 mg/kg/day	4 months
ethanol	Ingestion	kidney and/or bladder	Not classified	Dog	NOAEL 3,000 mg/kg/day	7 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 1,1,2,3,3,3-hexafluoro-1-methoxy-2-(trifluoromethyl)propan e and 1,1,2,2,3,3,4,4,4nonafluoro-1methoxybutane	422-270-2	Fathead minnow	Endpoint not reached	96 hours	LC50	>100 mg/l
Reaction Mass of 1,1,2,3,3,3-hexafluoro-1-methoxy-2-(trifluoromethyl)propan e and 1,1,2,2,3,3,4,4,4nonafluoro-1methoxybutane	422-270-2	Green algae	Experimental	72 hours	EC50	>100 mg/l
Reaction Mass of 1,1,2,3,3,3-hexafluoro-1-methoxy-2-(trifluoromethyl)propan e and 1,1,2,2,3,3,4,4,4nonafluoro-1methoxybutane	422-270-2	Water flea	Experimental	48 hours	EC50	>100 mg/l
Reaction Mass of 1,1,2,3,3,3-hexafluoro-1-methoxy-2-(trifluoromethyl)propan e and 1,1,2,2,3,3,4,4,4nonafluoro-1methoxybutane	422-270-2	Green algae	Experimental	72 hours	NOEC	>100 mg/l
trans-dichloroethylene	156-60-5	Bluegill	Estimated	96 hours	LC50	140 mg/l
trans-dichloroethylene	156-60-5	Green Algae	Experimental	48 hours	EC50	36.36 mg/l
trans-dichloroethylene	156-60-5	Water flea	Experimental	48 hours	LC50	220 mg/l
ethanol	64-17-5	Rainbow trout	Experimental	96 hours	LC50	42 mg/l
ethanol	64-17-5	Water flea	Experimental	48 hours	LC50	5,012 mg/l
ethanol	64-17-5	Algae other	Experimental	96 hours	NOEC	1,580 mg/l
ethanol	64-17-5	Water flea	Experimental	10 days	NOEC	9.6 mg/l

12.2. Persistence and degradability

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
Reaction Mass of 1,1,2,3,3,3-hexafluoro-1methoxy-2-(trifluoromethyl)propane and 1,1,2,2,3,3,4,4,4nonafluoro-1methoxybutane	422-270-2	Experimental Photolysis		Photolytic half-life (in air)	2.9 years (t 1/2)	Other methods
Reaction Mass of 1,1,2,3,3,3-hexafluoro-1methoxy-2-(trifluoromethyl)propane and 1,1,2,2,3,3,4,4,4nonafluoro-1methoxybutane	422-270-2	Experimental Biodegradation	28 days	BOD	22 % BOD/ThBOD	OECD 301D - Closed bottle test
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
ethanol	64-17-5	Experimental Biodegradation	14 days	BOD	89 % BOD/ThBOD	OECD 301C - MITI test (I)

12.3 : Bioaccumulative potential

Material	Cas No.	Test type	Duration	Study Type	Test result	Protocol
Reaction Mass of 1,1,2,3,3,3-hexafluoro-1methoxy-2-(trifluoromethyl)propane and 1,1,2,2,3,3,4,4,4nonafluoro-1methoxybutane	422-270-2	Experimental Bioconcentration		Log Kow	4.0	Other methods
trans-dichloroethylene	156-60-5	Experimental Bioconcentration		Log Kow	2.09	Other methods
ethanol	64-17-5	Experimental Bioconcentration		Log Kow	-0.35	Other methods

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 No information available.

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 halogen acid (HCl/HF/HBr). 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

Acota 71DA Engineered Fluid

Not hazardous for transportation

SECTION 15: Regulatory information

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

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:

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 modified.
Industrial Use of Cleaners: 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.
CLP: Ingredient table information was modified.
Label: CLP Precautionary - Prevention information was modified.
Section 3: Composition/ Information of ingredients table information was modified.
Section 5: Fire - Special hazards information :information was modified.

Section 5: Hazardous combustion products table 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: DNEL table row information was modified.
Section 8: glove data value information was deleted.
Section 8: Occupational exposure limit table 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: PNEC table row information was modified.
Section 8: Skin protection - protective clothing information: information was deleted.
Section 8: Skin protection - recommended gloves text information was deleted.
Section 09: Colour information was added.
Section 09: Odour information was added.
Sections 3 and 9: Odour, colour, grade information: information was deleted.
Section 10: Conditions to avoid physical property information was modified.
Section 10: Hazardous decomposition or by-products table information was modified.
Section 11: Acute Toxicity table information was modified.
Section 11: Carcinogenicity Table information was modified.
Section 11: Germ Cell Mutagenicity Table information was modified.
Section 11: Reproductive Toxicity Table information was modified.
Section 11: Serious Eye Damage/Irritation Table information was modified.
Section 11: Skin Corrosion/Irritation Table information was modified.
Section 11: Skin Sensitization Table information was modified.
Section 11: Target Organs - Repeated Table information was modified.
Section 11: Target Organs - Single Table information was modified.
Section 12: Component ecotoxicity information :information was modified.
Section 12: Persistence and Degradability information: information was modified.
Section 12:Bioccumulative potential information: information was modified.
Section 15: Regulations - Inventories information was deleted.
Section 16: UK disclaimer information was deleted.

Annex

1. Title	
Substance identification	trans-dichloroethylene; EC No. 205-860-2; CAS Nbr 156-60-5;
Exposure Scenario Name	Industrial 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:** Duration of use; Indoors with LEV and good general ventilation;

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.
1. Title	
Substance identification	trans-dichloroethylene; EC No. 205-860-2; CAS Nbr 156-60-5;
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) ERC 07 -Use of functional fluid at industrial site
Processes, tasks and activities covered	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.
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 per year; Flow rate of receiving surface water:: 18,000 cubic meters per day; Indoors with enhanced general ventilation; Indoors with good general ventilation; Large factory building (> 500 m^3); Local freshwater dilution factor: 10 ; Local marine water dilution factor: 100 ; **Task: Spraying**; Duration of use: 4 hours/day; **Task: Transferring Material**; Duration of use: 4 hours/day; **Task: Wiping Surfaces**; Duration of use: 4 hours/day;

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.
1. Title	
Substance identification	trans-dichloroethylene; EC No. 205-860-2; CAS Nbr 156-60-5;
Exposure Scenario Name	Industrial Use in Vapour Degreasing Systems
Lifecycle Stage	Use at industrial sites
Contributing activities	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
Processes, tasks and activities covered	Draining process equipment. Transfer of substance/mixture with dedicated engineering controls. Vapour Degreasing
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;

	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^3 - 500 m^3); Partially open and partially closed process;
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.

1. Title	
Substance identification	ethanol; EC No. 200-578-6; CAS Nbr 64-17-5;
Exposure Scenario Name	Industrial Use of Cleaners
Lifecycle Stage	Use at industrial sites
Contributing activities	PROC 04 -Chemical production where opportunity for exposure arises PROC 08b -Transfer of substance or mixture (charging and discharging) at dedicated facilities ERC 04 -Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
Processes, tasks and activities covered	Batch manufacture of a chemical substance or formulation (including polymerisation reactions). Transfer of substance/mixture with dedicated engineering controls.
2. Operational conditions and risk management measures	
Operating Conditions	**Physical state:**Liquid. **General operating conditions:** Assumes use at not more than 20°C above ambient temperature; Continuous release; Duration of use: 8 hours/day; Emission days per year: 300 days/year; Indoor use;
Risk management measures	Under the operational conditions described above the following risk management measures apply: **General risk management measures:** **Human health:** Goggles - Chemical resistant; **Environmental:** Air abatement; Industrial Sewage Treatment Plant;
Waste management measures	Incinerate in a permitted hazardous waste incinerator;
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.
1. Title	
Substance identification	trans-dichloroethylene; EC No. 205-860-2; CAS Nbr 156-60-5;
Exposure Scenario Name	Professional 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; 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 ;
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.
1. Title	
Substance identification	trans-dichloroethylene; EC No. 205-860-2; CAS Nbr 156-60-5;
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) ERC 09a -Widespread use of functional fluid (indoor)
Processes, tasks and activities covered	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.
2. Operational conditions and risk management measures	
Operating Conditions	**Physical state:** Liquid.
	General operating conditions: Indoors with good general ventilation; Medium sized room or workshop (100 m^3 - 500 m^3); **Task: Pouring Material - Liquids**; Duration of use: 15 min - 1 hour task; **Task: Spraying**; Duration of use: 15 min - 1 hour task; **Task: Wiping Surfaces**; Duration of use: 15 min - 1 hour task;

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.

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.

Acota United Kingdom SDSs are available at www.acota.uk