

## HARP® 365mfc

Revision: 1  
Revision date: December 2020

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

#### 1.1 Product identifier

Product name	R365mfc (1,1,1,3,3-pentafluorobutane)
REACH registration number	01-0000017653-68
CAS No.	406-58-6
EC No.	430-250-1
Index No.	602-102-00-6

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

Product use	Foaming agent, solvent
Restricted use	Consumer uses: Private households (= general public = consumers)
Description	Liquid

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

Company	Harp International Limited
Address	Gellihirion Industrial Estate Pontypridd Rhondda Cynon Taff CF37 5SX UK
Web	<a href="http://www.harpintl.com">www.harpintl.com</a>
Telephone	+44 (0) 1443 842 255
Fax	+44 (0) 1443 841 805
Email	<a href="mailto:harp@harpintl.com">harp@harpintl.com</a>
Email of competent person	<a href="mailto:safety@harpintl.com">safety@harpintl.com</a>

#### 1.4 Emergency telephone number

Emergency telephone number	+44 (0) 1270 502 891 24 hours
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### SECTION 2: Hazards identification

#### 2.1 Classification of the substance or mixture

Classification – EC 1272/2008	Flammable liquid category 2 Highly flammable liquid and vapour: H225
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#### 2.2 Label elements

Hazard pictograms	
Signal word	Danger
Hazard statement	H225 – Highly flammable liquid and vapour
Precautionary statement	P210 – Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P233 – Keep container tightly closed P303+P361+P353 – IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. P370+P378 – In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish P403+P235 – Store in a well-ventilated place. Keep cool.

#### 2.3 Other hazards

Other hazards	No data available
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### SECTION 3: Composition/information on ingredients

#### 3.1 Substances

EC 1272/2008

Chemical name	CAS No.	EC No.	REACH registration number	Concentration (%w/w)	Classification
Pentafluorobutane	406-58-6	430-250-1	01-0000017653-68	90-100%	Flam. Liq. 2: H225

The purity of the substance in this section is used for classification only and does not represent the actual purity of the substance as supplied.

### SECTION 4: First aid measures

#### 4.1 Description of first aid measures

Inhalation	Move the exposed person to fresh air. Oxygen or artificial respiration if needed.
Eye contact	Rinse immediately with plenty of water
Skin contact	Wash off with soap and water
Ingestion	Clean mouth with water and afterwards drink plenty of water

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

Inhalation	Narcosis. At high concentrations: asphyxiation
Eye contact	Slight irritation
Skin contact	Prolonged skin contact may defat the skin and produce dermatitis
Ingestion	May cause gastrointestinal irritation, nausea, vomiting and diarrhoea

#### 4.3 Indication of any immediate medical attention and special treatment needed

Inhalation	When symptoms persist, or in all cases of doubt, seek medical advice
Eye contact	When symptoms persist, or in all cases of doubt, seek medical advice
Skin contact	When symptoms persist, or in all cases of doubt, seek medical advice
Ingestion	When symptoms persist, or in all cases of doubt, seek medical advice

### SECTION 5: Firefighting measures

#### 5.1 Extinguishing media

	Powder, foam, aqueous film forming foam (AFFF), carbon dioxide
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#### 5.2 Special hazards arising from the substance or mixture

	Vapours are heavier than air and may spread along floors. Risk of ignition. Vapours may form explosive mixtures with air. Hazardous decomposition products formed under fire conditions.
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#### 5.3 Advice for firefighters

	Wear self-contained breathing apparatus and protective clothing. Full protective flameproof clothing. Wear chemical resistant oversuit. Keep product and empty container away from heat and sources of ignition.
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### SECTION 6: Accidental release measures

#### 6.1 Personal precautions, protective equipment and emergency procedures

	Prevent further leakage or spillage if safe to do so. Keep away from incompatible products. Evacuate personnel to a safe area. Keep people away from and upwind of spill/leak. Remove all sources of ignition. Wear self-contained breathing apparatus and protective suit. Cover the spreading liquid with foam in order to slow down evaporation. Ventilate the area.
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### 6.2 Environmental precautions

	Should not be released into the environment. If the product contaminates rivers and lakes or drains, inform respective authorities.
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### 6.3 Methods and material for containment and clean up

	Dam up. Soak up with inert absorbant material. Prevent product from entering sewage system. Keep in properly labelled containers. Keep in suitable closed containers for disposal.
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### 6.4 Reference to other sections

	See section 8 Exposure controls / personal protection See section 13 Disposal considerations
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## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

	Use in closed system. Use only in well-ventilated areas. Keep away from heat and sources of ignition. Heating can release vapours which can be ignited. To avoid ignition of vapours by static electricity discharge, all metal parts of the equipment must be grounded. When transferring from one container to another, apply earthing measures and use conductive hose material. Preferably transfer by pump or gravity. Do not use sparking tools. Keep away from incompatible products.
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### 7.2 Conditions for safe storage, including any incompatibilities

	Store in original container. Keep container closed. Keep in a cool, well-ventilated place. Keep in a bunded area. Keep away from heat/sparks/open flames/hot surfaces. No smoking. Ensure all equipment is electrically grounded before beginning transfer operations. Take measures to prevent the build-up of electrostatic charge. Keep away from incompatible products.
Suitable packaging	Glass, stainless steel, coated steel.

### 7.3 Specific end use(s)

	See section 1.2 Relevant identified uses of the substance or mixture and uses advised against for further information.
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## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters – exposure limit values

Component	CAS No.	Value type (form of exposure)	Exposure limit values	Source
Pentafluorobutane	406-58-6		Not listed in EH40	

### 8.2 Exposure controls

Appropriate engineering controls	Provide appropriate exhaust ventilation at machinery. Apply technical measures to comply with the occupational exposure limits.
Individual protection measures	Use respirator when performing operations involving potential exposure to vapours. Respirator with a filter (EN 141). Recommended filter type: AX. Self-contained breathing apparatus in confined spaces/insufficient oxygen/ in case of large uncontrolled emissions/in all circumstances when the mask and cartridge do not give adequate protection. Wear suitable gloves. Take note of the information given by the producer concerning permeability and break through times and of special workplace conditions (mechanical strain, duration of contact). Suitable material: Fluoroelastomer.

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<b>Eye/face protection</b>	Chemical resistant goggles must be worn. If splashes are likely to occur wear face shield.
<b>Skin &amp; body protection</b>	Flame resistant clothing. If splashes are likely to occur, wear apron, boots, butyl-rubber. Gloves, overalls and boots must be double layered (protection against cold temperature).
<b>Environmental exposure controls</b>	Dispose of rinse water in accordance with local and national regulations.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

<b>Appearance - Physical state</b>	Liquid
<b>Appearance - Form</b>	Volatile
<b>Colour</b>	Colourless
<b>Odour</b>	Ether-like
<b>Odour threshold</b>	No data available
<b>pH</b>	6
<b>Melting point</b>	<-20°C
<b>Boiling point / range</b>	40.1°C
<b>Flash point</b>	<= -27°C
<b>Evaporation rate</b>	No data available
<b>Flammability</b>	3.6%(V) – 13.3 %(V)
<b>Vapour pressure</b>	433 hPa (20°C)
<b>Vapour density</b>	>5
<b>Relative density</b>	1.27 (20°C)
<b>Solubility(ies)</b>	
<b>Water solubility</b>	1.7 g/l (21.2°C)
<b>Partition coefficient:</b>	
<b>n-octanol/water</b>	1.61 log Pow (20°C)
<b>Auto-ignition temperature</b>	580°C
<b>Decomposition temperature</b>	No data available
<b>Viscosity</b>	
<b>Viscosity, dynamic</b>	0.4 mPa.s (25°C)

### 9.2 Other information

<b>Molecular weight</b>	148 g/mol (C <sub>4</sub> H <sub>5</sub> F <sub>5</sub> )
<b>Surface tension</b>	73.8 mN/m (20°C)

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

	Risk of violent reaction. Risk of explosion.
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### 10.2 Chemical stability

	Stable under recommended storage conditions
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### 10.3 Possibility of hazardous reactions

	Strong oxidizers, alkali metals and alkaline earth metals may cause fires or explosions.
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### 10.4 Conditions to avoid

	Heat, sparks, flames.
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### 10.5 Incompatible materials

	Powdered metals, strong oxidizing agents, light and/or alkaline metals, alkaline earth metals.
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### 10.6 Hazardous decomposition products

	Gaseous hydrogen fluoride (HF), Carbon Monoxide.
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### SECTION 11: Toxicological information

#### 11.1 Information on toxicological effects

<b>Acute toxicity</b>	Not classified as hazardous for acute oral and inhalation toxicity according to GHS criteria
<b>Skin corrosion/irritation</b>	No evidence of skin irritation
<b>Serious eye damage/irritation</b>	No evidence of eye irritation
<b>Respiratory or skin sensitisation</b>	No evidence of skin sensitisation
<b>Germ cell mutagenicity</b>	No evidence of mutagenic effects
<b>Carcinogenicity</b>	No data available
<b>Reproductive toxicity</b>	No data available
<b>STOT single exposure</b>	Not classified as specific target organ toxicant according to GHS criteria
<b>STOT repeated exposure</b>	Not classified as specific target organ toxicant according to GHS criteria
<b>Aspiration hazard</b>	No data available
<b>Repeated or prolonged exposure</b>	No data available

### SECTION 12: Ecological information

#### 12.1 Toxicity

	No data available
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#### 12.2 Persistence and degradability

	No data available
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#### 12.3 Bioaccumulative potential

	Does not bioaccumulate
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#### 12.4 Mobility in soil

	No data available
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#### 12.5 Results of PBT and vPvB assessment

	Not considered to be PBT or vPvB
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#### 12.6 Other adverse effects

	Contains fluorinated greenhouse gases. Global warming potential: 794 No effect on stratospheric ozone. Ozone depleting potential: 0 No acute environmental hazard identified No chronic environmental hazard identified
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### SECTION 13: Disposal considerations

#### 13.1 Waste treatment methods

	In accordance with local and national regulations. Refer to manufacturer/supplier for information on recovery/recycling. Must be incinerated in a permitted plant equipped with a system for neutralizing or recovery of HF. EWC code: 14 06 01* Chlorofluorocarbons, HCFC, HFC
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### SECTION 14: Transport information

#### Hazard pictograms



#### 14.1 UN number

UN 1993

#### 14.2 UN proper shipping name

FLAMMABLE LIQUID N.O.S.

#### 14.3 Transport hazard class(es)

ADR/RID	
Class	3
Labels	3
Classification code	F1
Hazard identification number	33
Tunnel category	(D/E)
IMDG	
Class	3
EmS No.	F-E, S-E
IATA	
Class	3

#### 14.4 Packing group

II

#### 14.5 Environmental hazards

Environmental hazards	Not applicable
Marine pollutant	Not classified as a marine pollutant

#### 14.6 Special precautions for user

	Ensure containers are firmly secured. Ensure compliance with applicable regulations.
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#### 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

### SECTION 15: Regulatory information

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

Regulations	REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.
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#### 15.2 Chemical safety assessment

A CSA does not need to be carried out for this product

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### SECTION 16: Other information

#### Other information

<b>Text of Hazard Statements in Section 3</b>	H225: Highly flammable liquid and vapour
<b>Reference materials</b>	HSE publication EH40/2005 Workplace exposure limits (latest edition)
<b>Changes from previous versions</b>	-

#### Further information

	<p>The information supplied in this safety data sheet is designed only as guidance for the safe use, storage and handling of the product. This information is correct to the best of our knowledge and belief at the date of publication however no guarantee is made of its accuracy. This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any other process. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the material in the user's end product, if applicable.</p>
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