



Perfluorobutane

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Date of issue: 02/01/2018 Revision date: 15/12/2017 Version: 4.0

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

1.1. Product identifier

Product form : Substance
Substance name : Perfluorobutane
IUPAC name : 1,1,1,2,2,3,3,3,4,4,4-Decafluorobutane
EC-No. : 206-580-3
CAS-No. : 355-25-9
Formula : C4F10

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

1.2.1. Relevant identified uses

Main use category : Industrial use, Professional use

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Manufacturer

F2 Chemicals Ltd
Lea Lane
Lea Town
PR4 0RZ Preston - UK
T +44 (0) 1772 775800
safety@f2chemicals.com

1.4. Emergency telephone number

Emergency number : +44 (0) 1772 775833 (24 hr)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Press. Gas (Liq.) H280

Full text of hazard classes and H-statements : see section 16

Adverse physicochemical, human health and environmental effects

Contains gas under pressure; may explode if heated.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



GHS04

Signal word (CLP) : Warning

Hazard statements (CLP) : H280 - Contains gas under pressure; may explode if heated.

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance type : Mono-constituent

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Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Perfluorobutane	(CAS-No.) 355-25-9 (EC-No.) 206-580-3	100	Press. Gas (Liq.), H280

Full text of H-statements: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact : Wash skin with plenty of water.
First-aid measures after eye contact : Rinse eyes with water as a precaution.
First-aid measures after ingestion : Call a poison center or a doctor if you feel unwell.

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

No additional information available

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Water spray. Dry powder. Foam.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products in case of fire : Toxic fumes may be released.

5.3. Advice for firefighters

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Ventilate spillage area.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment.
Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Protect from sunlight. Store in a well-ventilated place. Keep cool.

7.3. Specific end use(s)

No additional information available

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SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

Appropriate engineering controls:

Ensure good ventilation of the work station.

Hand protection:

Protective gloves

Eye protection:

Safety glasses

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment

Environmental exposure controls:

Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Gas
Appearance	: Clear, colorless gas.
Molecular mass	: ≈ 238 g/mol
Colour	: Colourless.
Odour	: Odourless.
Odour threshold	: Not applicable
pH	: Not applicable
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: ≈ -94.5 °C
Boiling point	: ≈ -1.6 °C
Flash point	: Not applicable (non-flammable gas)
Critical temperature	: ≈ 113.2 °C
Auto-ignition temperature	: Not applicable (non-flammable gas)
Decomposition temperature	: ≈ 400 °C
Flammability (solid, gas)	: Non flammable.
Vapour pressure	: ≈ 380 kPa
Critical pressure	: \approx bar
Relative vapour density at 20 °C	: No data available
Relative density	: ≈ 1.517
Relative gas density	: ≈ 19
Solubility	: No data available
Log Pow	: No data available
Viscosity, kinematic	: ≈ 0.31 mm ² /s
Viscosity, dynamic	: ≈ 0.465 mPa.s
Explosive properties	: None.
Oxidising properties	: None.
Explosive limits	: Not applicable (non-flammable gas)

9.2. Other information

Refractive index : \approx

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

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10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Not classified
Skin corrosion/irritation	: Not classified pH: Not applicable
Serious eye damage/irritation	: Not classified pH: Not applicable
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
STOT-single exposure	: Not classified
STOT-repeated exposure	: Not classified
Aspiration hazard	: Not classified

Perfluorobutane (355-25-9)

Viscosity, kinematic	≈ 0.31 mm ² /s
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SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.
Acute aquatic toxicity	: Not classified
Chronic aquatic toxicity	: Not classified

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
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SECTION 14: Transport information

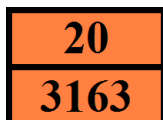
In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
3163	3163	3163	3163	3163
14.2. UN proper shipping name				
LIQUEFIED GAS, N.O.S.	LIQUEFIED GAS, N.O.S.	Liquefied gas, n.o.s.	LIQUEFIED GAS, N.O.S.	LIQUEFIED GAS, N.O.S.
Transport document description				
UN 3163 LIQUEFIED GAS, N.O.S., 2.2, (C/E)	UN 3163 LIQUEFIED GAS, N.O.S., 2.2	UN 3163 Liquefied gas, n.o.s., 2.2	UN 3163 LIQUEFIED GAS, N.O.S., 2.2	UN 3163 LIQUEFIED GAS, N.O.S., 2.2
14.3. Transport hazard class(es)				
2.2	2.2	2.2	2.2	2.2
				
14.4. Packing group				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards				
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No
No supplementary information available				

14.6. Special precautions for user

- Overland transport

Classification code (ADR) : 2A
Special provisions (ADR) : 274, 662
Limited quantities (ADR) : 120ml
Excepted quantities (ADR) : E1
Packing instructions (ADR) : P200
Mixed packing provisions (ADR) : MP9
Portable tank and bulk container instructions (ADR) : (M), T50
Tank code (ADR) : PxBN(M)
Tank special provisions (ADR) : TA4, TT9
Vehicle for tank carriage : AT
Transport category (ADR) : 3
Special provisions for carriage - Loading, unloading and handling (ADR) : CV9, CV10, CV36
Hazard identification number (Kemler No.) : 20
Orange plates :



Tunnel restriction code (ADR) : C/E
EAC code : 2TE

- Transport by sea

Special provisions (IMDG) : 274
Packing instructions (IMDG) : P200
Tank instructions (IMDG) : T50
EmS-No. (Fire) : F-C
EmS-No. (Spillage) : S-V
Stowage category (IMDG) : A

- Air transport

PCA Excepted quantities (IATA) : E1
PCA Limited quantities (IATA) : Forbidden

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PCA limited quantity max net quantity (IATA)	: Forbidden
PCA packing instructions (IATA)	: 200
PCA max net quantity (IATA)	: 75kg
CAO packing instructions (IATA)	: 200
CAO max net quantity (IATA)	: 150kg
ERG code (IATA)	: 2L

- Inland waterway transport

Classification code (ADN)	: 2A
Special provisions (ADN)	: 274, 662
Limited quantities (ADN)	: 120 ml
Excepted quantities (ADN)	: E1
Equipment required (ADN)	: PP
Number of blue cones/lights (ADN)	: 0

- Rail transport

Special provisions (RID)	: 274, 662
Excepted quantities (RID)	: E1
Packing instructions (RID)	: P200
Mixed packing provisions (RID)	: MP9
Portable tank and bulk container instructions (RID)	: T50(M)
Special provisions for RID tanks (RID)	: TA4, TT9, TM6
Transport category (RID)	: 3
Special provisions for carriage - Loading, unloading and handling (RID)	: CW9, CW10, CW36
Colis express (express parcels) (RID)	: CE3
Hazard identification number (RID)	: 20

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

No REACH Annex XVII restrictions
Perfluorobutane is not on the REACH Candidate List
Perfluorobutane is not on the REACH Annex XIV List

15.1.2. National regulations

No additional information available

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

Full text of H- and EUH-statements:

Press. Gas (Liq.)	Gases under pressure : Liquefied gas
H280	Contains gas under pressure; may explode if heated.

F2 template (no freezing point)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product