

BR-ONE

SAFETY DATA SHEET

1. Composition / information on ingredients

- Chemical nature
- Mixture of hydroflouroaklanes
 - R-125a- 55%- 1,1,1,2,2,- pentafluoroethane, CF_3CHF_2 , CAS No 354-33-6
 - R-134a- 32% - 1,1,1,2-tetrafluorethane, $\text{CF}_3.\text{CH}_2\text{F}$, CAS No 811-97-2
 - R-143a – 5% - 1,1,1- trifluoroethane , CH_3CF_3 , CAS No 420-46-2
 - R-227ea – 5% - 1,1,1,2,3,3,3-heptafluoropropane, $\text{CF}_3\text{CHF}_2\text{CF}_3$, CAS No 431-89-0

- Components presenting hazards
- R-600a, N-Butane– 3%, $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-CH}_3$, CAS No 106-97-8
 - EC Classification : F+ - R 12 EC N° :200-857-2

2 Hazards Identification

Most important hazards

- Adverse human health effect
- Contains a liquefied gas. Contact of liquid may cause forstbite and injury to cornea.
- Main symptoms
- May have a narcotic effect at high concentrations
- Fire or explosion
- Heating will cause a rise in pressure with a risk of busting. On combustion, toxic gases are released.
- Classification/
Specific hazards
- According to EC criteria, this product is not classified as “hazardous preparation”.

3. First-aid measures

Inhalation	<ul style="list-style-type: none">• Move the affected person away from the contaminated area and into the fresh air.• Make the affected person rest.• If breathing stops, give artificial respiration.• Call a doctor immediately.
Skin contact	<ul style="list-style-type: none">• Contact a liquid with skin.• Rinse immediately with plenty of warm water• Immediately remove contaminated clothing or footwear.• If it sticks, do not pull it off.• Cover the affected area with a sterile dressing.• Transfer to hospital immediately.
Eye contact	<ul style="list-style-type: none">• Contact of liquid with eyes:• Rinse with water whilst keeping the eyes wide open.• Consult an eye specialist immediately.
Ingestion	<ul style="list-style-type: none">• Not specifically applicable (gas)
Notes to the physician	<ul style="list-style-type: none">• Avoid administering adrenaline or any other similar products.

4. Fire-fighting measures

Extinguishing media	<ul style="list-style-type: none">• All extinguishing agents can be used.
Suitable	<ul style="list-style-type: none">• None, if there is a fire close by, use suitable extinguishing agents.
Not suitable	<ul style="list-style-type: none">• Pressurized container. On heating there is a risk of bursting due to internal pressure build-up.
Specific hazards	<ul style="list-style-type: none">• Not flammable. However, it may present a risk in the event of a fire• Toxic vapors (halogen compounds) are released.• Stay upwind.
Specific fire-fighting methods	<ul style="list-style-type: none">• Evacuate the personnel away from the fumes.• Cool down the container/equipment exposed to heat with a water-spray.• Self-contained breathing apparatus.

5. Accidental release measures

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| Personal precautions | <ul style="list-style-type: none">• Avoid contact with skin and eyes.• Do not breathe gas.• No naked flames.• Do NOT smoke.• For further information refer to section 7 "Exposure-controls/personal protection".• Heavy vapors. Shut off low-level openings in the vicinity (ventilation shafts, drains.....)• Prevent the product from entering cellars, basements or pits.• Ventilate spillage area.• Ventilate basements. |
| Environmental precautions | <ul style="list-style-type: none">• Prevent the product from spreading into the environment.• Contain the spilled material by bunding. |
| Recovery | <ul style="list-style-type: none">• Recover as much of the product as possible. |
| Cleaning/
Decontaminations | <ul style="list-style-type: none">• Allow residual product to evaporate. |
| Disposal | <ul style="list-style-type: none">• For disposal of contaminated materials refer to section 12:• "Disposal consideration". |

6. Handling and storage

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| Handling:
Technical: Measures | <ul style="list-style-type: none">• Ventilation.• Use a closed system.• Avoid contact with hot surfaces• Avoid high temperatures.• Smoking is forbidden. |
| Storage:
Technical Measures | <ul style="list-style-type: none">• Storage facilities should be:• Equipped with ventilation at low level.• Take all necessary precautions to avoid the accidental release of the product outside, due to the rupture of containers or transfer system. |
| Storage condition
(recommended) | <ul style="list-style-type: none">• The container tightly closed and dry.• At temperatures not exceeding 45°C.• Away from any source of heat.• Away from any source of ignition.• "Disposal consideration". |
| Incompatible
Products | <ul style="list-style-type: none">• Refer to the detailed list of incompatible materials (section 10 "Stability/ Reactivity"). |

6. Handling and storage (continued)

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| Packaging materials (recommended) | <ul style="list-style-type: none">• Steel |
| Not suitable | <ul style="list-style-type: none">• Magnesium and its alloys.• Zinc and its alloys.• Aluminum alloys containing more than 2% magnesium. |

7. Exposure Controls/Personal Protection

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| Respiratory Protection | <ul style="list-style-type: none">• Ensure good ventilation of the work station.• In the event of insufficient ventilation: Self-contained breathing apparatus. |
| Hand protection | <ul style="list-style-type: none">• Protective gloves insulated against the cold. |
| Skin And Body Protection | <ul style="list-style-type: none">• Goggles.• Impermeable clothing. |
| Hygiene measures | <ul style="list-style-type: none">• Do NOT drink, eat or smoke in the workplace. |
| Occupational Exposure Limits | <ul style="list-style-type: none">• No specific limits |

8. Physical and chemical properties

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| Physical state | <ul style="list-style-type: none">• Compressed liquefied gas. |
| Color | <ul style="list-style-type: none">• Colorless. |
| Odor | <ul style="list-style-type: none">• Slightly ethereal. |
| pH | <ul style="list-style-type: none">• Not applicable. |
| Boiling | <ul style="list-style-type: none">• Boiling range: -46 - -42°C |
| Flash point | <ul style="list-style-type: none">• Not applicable. |
| Oxidizing Properties | <ul style="list-style-type: none">• Non oxidizing material according to EC criteria |
| Vapor pressure | <ul style="list-style-type: none">• 0.988 MPa, at 25°C. |
| Specific gravity | <ul style="list-style-type: none">• 1.141 |
| Solubility in water | <ul style="list-style-type: none">• Slightly soluble. |
| In organic solvents | <ul style="list-style-type: none">• Soluble in: common solvents. |

9. Stability and reactivity

Stability	<ul style="list-style-type: none">• Stable at ambient temperature and under normal conditions of use
Conditions to avoid	<ul style="list-style-type: none">• May decompose on contact with hot surfaces and flames.
Materials to avoid	<ul style="list-style-type: none">• Reacts violently with :<ul style="list-style-type: none">• alkali metals• Alkaline earth metals• magnesium• powdered metals
Hazardous Decomposition Products	<ul style="list-style-type: none">• On combustion or on thermal decomposition (pyrolysis) releases toxic gases.<ul style="list-style-type: none">• (Hydrofluoric acid)• (Fluorinated compounds).

10. Toxicological Information

Acute toxicity	<ul style="list-style-type: none">• According to the data on the components Not classified as harmful by inhalation• Pentafluoroethane: LC 50 inhalation, 4h :> 800000 ppm.(Ral)• 1,1,1,2- Tetrafluoroethane: LC 50 inhalation, 4h : > 500000 ppm (Ral)• 1,1,1- trifluoroethane ,LC50 > 591,000, No mortalities• 1,1,1,2,3,3,3-heptafluoropropane, LC50 inhalation, 4h> 789,000, No mortalities• N-butane, LC 50 inhalation, 4h: > 272,000 ppm, no mortalities, rat
Acute symptoms	<ul style="list-style-type: none">• Effects following level exposure:<ul style="list-style-type: none">• Headaches.• Dizziness• Loss of consciousness.• Possible effects following high level exposure:<ul style="list-style-type: none">• Cardiac disorders.• Possibility of cardiac arrest.
Local effects	<ul style="list-style-type: none">• Contact with liquefied gas causes frostbite.• Contact with liquefied gas causes injury to the cornea.
Repeated dose toxicity	<ul style="list-style-type: none">• In the tests done on the components of the preparation Pentafluoroethane:<ul style="list-style-type: none">• 1,1,1,2-tetrafluoroethane.• No observed effect level (NOEL) :50000 ppm• (published date)

10. Toxicological Information (continued)

Specific effects Mutagenicity	<ul style="list-style-type: none">• According to the data on the components products is not considered to be genotoxic• 1,1,1,2-tetraflouroethane.• No observed effect level (NOEL) : 50000 ppm• (published date)
Reproductive toxicity	<ul style="list-style-type: none">• In the test done on the components of the preparation Fertility and developmental toxicity, test did not reveal any affect on reproduction. (< 50000 ppm)
Further information	<ul style="list-style-type: none">• (Published data).• Not classified as hazardous according to EEC criteria.

11 Ecological information

Volatility Expected behavior of the product	<ul style="list-style-type: none">• Product is volatile when in aqueous solution.• Ultimate destination of the product: AIR.
BIODEGRADABILITY - Ultimate aerobic biodegradability	<ul style="list-style-type: none">• Not really biodegradable.• (Evaluation by structure-activity relationship)
BIOACCUMULATION Bioconcentration factor	<ul style="list-style-type: none">• No information available.
ECOTOXICITY Effects on the aquatic environment	<ul style="list-style-type: none">• No information available.

12. Disposal considerations

Waste from Residues: Prohibition Destruction/Disposal	<ul style="list-style-type: none">• Do not allow the product to be released into the environment.• Consult the manufacturer or supplier for information regarding recovery or recycling of the product.• If recovery is not possible:• Incinerate at a licensed installation.
Decontamination/cleaning	<ul style="list-style-type: none">• De-gas.
Destruction/Disposal	<ul style="list-style-type: none">• Re-usable containers: Return to the supplier.• Disposable containers: Dispose of at an authorized land fill site.
Note	<ul style="list-style-type: none">• The user's attention is drawn to the possible existence of local regulations regarding disposal.

13. Transport Information

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| International Regulations
Rail/road (RID/ADR) | <ul style="list-style-type: none">• UN number : 3163• Class: 2.2.• Hazard identification number: 20.• Labeling: 2.2. |
| Sea (IMO/IMDG) | <ul style="list-style-type: none">• Class: 2.2.• UN number: 3163.• Labeling: 2 NON-FLAMMABLE GAS.• Main pollutant: No.• Emergency schedule (EmS): F-C, S-V. (*) |
| Air (ICAO-IATA) | <ul style="list-style-type: none">• Class: 2.2.• UN number: 3163.• Labeling: 2 NON-FLAMMABLE GAS.• Cargo aircraft: Packing instruction: 200 Quantity: 150 kg.• Passenger aircraft: Packing instruction: 200 Quantity: 75 Kg. |
| Note | <ul style="list-style-type: none">• The above regulatory prescriptions are those valid on the date of publication of this sheet.• Given the possible evolution of transport regulations for hazardous materials, it would be advisable to check their validity with your sales office. |

14. Regulatory information - Labels

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| EC regulations | <ul style="list-style-type: none">• Mandatory labeling (self-classification) of hazardous preparations: NOT APPLICABLE |
| R phrases | <ul style="list-style-type: none">• No R Phrases. |
| S phrases | <ul style="list-style-type: none">• No S phrases. |
| NOTE | <ul style="list-style-type: none">• The regulatory information given above only indicated the principal regulations specifically applicable to the product described in the Safety Data Sheet. The user's attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions. |

This safety data sheet should be used in conjunction with technical sheet. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products. This information is not exhaustive. This does not exonerate the user from ensuring that legal obligations, other than those mentioned, relating to the use and storage of the product, do not exist. This is solely his responsibility.