



SAFETY DATA SHEET

RS-70

Revision: February 2014

Date 26.02.2014

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/ UNDERTAKING

1.1. Product Identifier

Mixture identification:

Trade name: **RS-70**

Product type and use: Refrigerant gas

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

Recommended use:

Refrigerant gas

1.3. Details of the supplier of the safety data sheet

Company:

GAS-SERVEI, S.A.

C/ Motores, 151-155 nave nº 9

08038 Barcelona

ESPAÑA

Tel: +34 (93) 2231377

Fax: +34 (93) 2231479

www.gas-servei.com

Competent person responsible for the safety data sheet:

gas-servei@gas-servei.com

1.4. Emergency telephone number

+ 34 609305378

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Directive criteria, 67/548/CE, 99/45/EC and following amendments thereof:

Properties / Symbols:

None.

EC regulation criteria 1272/2008 (CLP):



Warning: Liquef. Gas, Contains gas under pressure

Adverse physicochemical, human health and environmental effects:

No other hazards

2.2. Label elements

Symbols:



Warning

Hazard statements:

H280 Contains gas under pressure; may explode if heated.

Precautionary statements:

P410+P403 Protect from sunlight. Store in a well ventilated place.

Special Provisions: none

The preparation should not be considered as dangerous according to Directive 1999/45/EC.

2.3. Other hazards

vPvB Substances: None - PBT Substances: None

The product or equipment contains fluorinated greenhouse gases covered by the Kyoto Protocol.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

N.A.

3.2. Mixtures

Hazardous components within the meaning of EEC directive 67/548 and CLP regulation and corresponding classification:

Components	Conc. (% w/w)	N° CAS	N° CE	N° Index CEE	REACH n°	Clasificación	
						Reglament CE N°1272/2008	67/548/CE o 1999/45/CE
1,1,1,2-Tetrafluoroethane (R134a)	53,8	811-97-2	212-377-0	N/A	01-2119459374-33-0000	2.5 Press. Gas H280	N.A.
Difluoromethane (R32)	20,0	75-10-5	200-839-4	N/A	01-2119471312-47-0000	2.2/1 Flam. Gas 1 H220 2.5 Press. Gas H280	F+; R12;
1,1,1,2,2-Pentafluoroethane (R125)	20,0	354-33-6	206-557-8	N/A	01-2119485636-25-00000	2.5 Press. Gas H280	N.A.
1,1,1,2,3,3,3-Heptafluoropropane (R227ea)	5,0	431-89-0	207-079-2	N/A	01-2119485489-18-0000	2.5 Press. Gas H280	N.A.
Iso-pentane (R601a)	0,6	78-78-4	201-142-8	601-085-00-2	n/a	2.6/1 Flam. Liq. 1 H224 3.10/1 Asp. Tox. 1 H304 3.8/3 STOT SE 3 H336 4.1/C2 Aquatic Chronic 2 H411	F+, Xn, N; R12-51/53-65-66-67
N-butane (R600)	0,6	106-97-8	203-448-7	601-004-00-0	n/a	2.2/1 Flam. Gas 1 H220 2.5 Press. Gas H280	F+; R12;



4. FIRST AID MEASURES

4.1. Description of first aid measures

For liquid exposure, recommendations of first aid given for contact with skin, eyes and ingestion, are equally applicable. See also section 11.

In case of skin contact:

Wash frost-bitten areas with plenty of water. Do not remove clothing. Cover wound with sterile dressing.

In case of eyes contact:

Wash immediately and thoroughly with running water, keeping eyelids open for at least 10 minutes. Then, protect eyes with sterile gauze or a clean, dry, handkerchief. SEEK MEDICAL ATTENTION.

In case of Ingestion:

Ingestion is not considered a potential route of exposure.

In case of Inhalation:

Take the patient to fresh air and keep warm and at rest. If breathing has stopped or is laborious, give assisted respiration. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately. In case of shortness of breath, give oxygen.

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

Direct contact with the liquid can provoke frostbite.

Direct contact with eyes can cause irritation, tearing, and risk of burns by freezing.

Inhalation of high concentrations may cause narcosis, heart rhythm disturbances, asphyxia by lack of oxygen, vertigo and nausea.

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

Treatment:

Symptomatic treatment and therapy of support, as it may be indicated.

After an exposure, the administration of adrenaline or other sympathomimetic drugs must be avoided, since they can produce cardiac arrhythmia with a possible heart failure.

5. FIRE-FIGHTING MEASURES

Generally

In normal conditions of temperature and pressure, this gas is not inflammable in air but certain mixtures with air under pressure can turn out to be inflammable, thus these must be avoided. Certain mixtures of HFC and chlorine can be inflammable or reactive in certain conditions.

The thermal decomposition detaches very toxic and corrosive steams (fluoride of hydrogen).

The packing can burst if overheated.

5.1. Extinguishing media

Suitable extinguishing media:

Water

Carbon dioxide (CO₂)

Extinguishing media which must not be used for safety reasons:

None in particular



5.2. Special hazards arising from the substance or mixture

Do not inhale explosion and combustion gases.

5.3. Advice for fire-fighters

Use suitable breathing apparatus.

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Wear personal protection equipment.

Evacuate persons to safe areas.

See protective measures under point 7 and 8.

6.2. Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Retain contaminated washing water and dispose it.

In the event of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

Suitable material for taking up: absorbing material, organic, sand

6.3. Methods and material for containment and cleaning up

Wash with plenty of water.

6.4. Reference to other sections

See also section 8 and 13

7. HANDLING AND STORAGE

7.1. Precautions for safe handling

Only experienced and properly instructed persons should handle liquefied gases liquids. Protect the containers from physical damage; do not drag, roll, slide or drop.

Avoid contact with skin and eyes, inhalation of vapours and mists.

Do not eat or drink while working.

See also section 8 for recommended protective equipment.

7.2. Conditions for safe storage, including any incompatibilities

Keep away from food, drink and food.

Incompatible materials: none in particular.

Instructions as regards storage premises: in adequately ventilated premises.

7.3. Specific end use(s)

Subject to the regulation of the State Members, the uses in which it is possible to apply are the following ones:

Refrigerant gas.

Safety classification A1/A1 Group L1

7.4 Risks of the process

The transfer of liquid refrigerant from the containers to and from the systems can cause the generation of static electricity. Make sure that there is a suitable ground connection.

Certain mixtures of HFCs with chlorine can be inflammable or reactive in certain conditions.

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Attention must be paid to mitigating the risk of developing high pressures in systems due to a temperature increase when the liquid remains caught in closed valves or in cases in which the containers have been filled in excess.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

Butane [1] - CAS: 106-97-8

TLV TWA - 1000 ppm - 0 mg/m³
1,1,1,2- Tetrafluoroethane (R134a) - CAS: 811-97-2
TLV TWA - 1.000 ppm (WEEL-AIHA)

Isopentane - CAS: 78-78-4

ACGIH - LTE: 3000 mg/m³, 1000 ppm - STE: N.A. N.A. - Result: N.A. - Note: N.A.
VLE 8h - N.A.
VLE short - N.A.

8.2. Exposure controls

Eye protection:

Safety glasses recommended when handling packages.

Protection for skin:

Safety shoes are recommended when handling packages.

Protection for hands:

Sturdy work gloves are recommended for handling packages.

Respiratory protection:

Self contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmosphere.

Air purifying respirators will not provide protection. Users of breathing apparatus must be trained.

Thermal Hazards:

Use gloves thermos insulating

Environmental exposure controls:

Ensure adequate ventilation, especially in confined areas.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance and colour:	Liquefied, colourless gas
Odour:	Very faint, ether like
Odour threshold:	N.A.
pH:	neutral
Melting / freezing point:	N.A.
Boiling point/range:	-42,5 °C
Flammability:	N.A.
Flash point:	N.A.
Vapour pressure:	11,3 bar (25°C)
Liquid density:	1.132 kg/m ³ at 25 °C
Water solubility:	Insoluble
Lipid solubility:	N.A.

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Partition coefficient (noctanol/water):	N.A.
Auto-ignition temperature:	N.A.
Viscosity:	N.A.
Explosive properties:	N.A.
Oxidising properties:	N.A.

Other information

Miscibility:	N.A.
Conductivity:	N.A.
Substance groups relevant properties	N.A.
Critical temperature:	87,5 °C
Critical Pressure:	45,7 bar

10. STABILITY AND REACTIVITY

10.1. Reactivity

Stable under normal conditions

10.2. Chemical stability

Stable under normal conditions. No decomposition if stored and applied if directed.

10.3. Possibility of hazardous reactions

Halides of hydrogen dioxide of carbon, monoxide of carbon, hydrocarbons fluorides and halides of carbonyl.

10.4. Conditions to avoid

Fire and sources of heat.

10.5. Incompatible materials

Strong oxidizing agents, alkali metals and alkaline earth metals, aluminium powder, zinc, etc.

10.6. Hazardous decomposition products

Fluoride of hydrogen by thermal decomposition and hydrolysis.

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Inhalation

Tetrafluoroethane (R134a):	LC 50 /4h / rat:> 500,000 ppm
Pentafluoroethane (R125):	LC50 / 4h / rat:> 800,000 ppm
Difluoromethane (R-32):	LC50 / 4h / rat:> 520,000 ppm
Heptafluoropropane (R227ea):	LC50 /4h / rat:> 800,000 ppm
Butane (R600):	LC50 / 4h / rat:> 658,000 ppm
Isobutane (R600A):	LC50 / 4h / rat:> 4100 ppm, 12300mg/m ³

12. ECOLOGICAL INFORMATION

12.1. Toxicity

Adopt good working practices, so that the product is not released into the environment.

Acute toxicity:

R-134a: LC 50 / 96h / Rainbow trout: 450 mg / l
R-134a: EC 50 / 48h / Daphnia: 980 mg / l
R-125: LC 50 / 96h / Rainbow trout: >81,8 mg / l
R-125: EC 50 / 48h / Daphnia : >200 mg / l
R-32: EC 50 / 96h / Fish : 1507 mg / l
R-32: EC 50 / 48h / Daphnia : 652 mg / l
R-227: LC 50 / 96h / Rainbow trout: >81,8 mg / l
R-227: EC 50 / 48h / Daphnia: >200 mg / l

12.2. Persistence and degradability

Air, photolysis, (ODP) = 0.

Result: absence of effect on the stratospheric ozone.

Global Warming Potential (GWP): 1664 (relative to the value 1 of the carbon dioxide in 100 years) according to IPCC - AR4 (Fourth Assessment Report of the Intergovernmental Panel on Climate Change) - 2007

The product persists in the air, atmospheric lifetime of the components:

R134a: 14 years
R125: 29 years
R32: 4,9 years
R227ea: 34,2 years
Butane: approx. 10 years
Iso-butane: approx. 10 years

12.3. Bioaccumulation potential

None

12.4. Mobility in soil

N.A.

12.5. Results of PBT and vPvB assessment

vPvB Substances: None - PBT Substances: None

12.6. Other adverse effects

None

12.7. Other information

Containing fluorinated greenhouse gases covered by the Kyoto Protocol.

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Recover and recycle. Should this not be possible, disposal must be carried out in appropriate facilities equipped and authorised for this purpose.

14. TRANSPORT INFORMATION

14.1. UN number

ADR-UN number: 1078
IATA-UN number: 1078
IMDG-UN number: 1078

14.2. UN proper shipping name

ADR-Shipping Name: REFRIGERANT GAS, N.O.S RS-70
(Tetrafluoroethane / Difluoromethane / Pentafluoroethane /
/Heptafluoropropane/ Butane / Iso-pentane)

IATA-Technical name: REFRIGERANT GAS, N.O.S RS-70
(Tetrafluoroethane / Difluoromethane / Pentafluoroethane /
/Heptafluoropropane/ Butane / Iso-pentane)

IMDG-Technical name: REFRIGERANT GAS, N.O.S RS-70
(Tetrafluoroethane / Difluoromethane / Pentafluoroethane /
/Heptafluoropropane/ Butane / Iso-pentane)

14.3. Transport hazard class(es)

ADR-Class: 2
ADR-Label: 2.2
ADR-Upper number: 20
IATA-Class: 2.2
IATA-Label: 2.2
IMDG-Class: 2.2
IMDG-Label: 2.2



14.4. Packing Group

N.A.

14.5. Environmental hazards

Marine pollutant: No

14.6. Special Precautions for User

ADR-Tunnel Restriction Code: (C/E)
Rail (RID): 1078
IMDG-EMS: F-C, S-V

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

N.A.

15. REGULATORY INFORMATION

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

Directive 67/548/EEC (Classification, packaging and labelling of dangerous substances).
Directive 99/45/EEC (Classification, packaging and labelling of dangerous preparations).
Directive 98/24/EC (Risks related to chemical agents at work).
Directive 2000/39/EC (Occupational exposure limit values).
Directive 2006/8/CE. Regulation (CE) N° 1907/2006 (REACH), Regulation (CE) N° 1272/2008 (CLP), Regulation (CE) N° 790/2009.

Where applicable, refer to the following regulatory provisions :
Directive 82/501/EEC ('Activities linked to risks of serious accidents') and subsequent amendments.
Regulation (EC) N° 648/2004 (detergents)
1999/13/EC (VOC directive)

Special restrictions

The fluorinated greenhouse gas RS-70 must be supplied in returnable containers (cans / cylinders), containing fluorinated greenhouse gases covered by the Kyoto Protocol which cannot be released to the atmosphere.

(EC) N° 842/2006 of the European Parliament and of the Council of 17 May 2006 on certain fluorinated greenhouse gases.

(EC) N° 1005/2009 of the European Parliament and of the Council of 16 September 2009 on substances that deplete the ozone layer.

(EC) N° 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No. 842/2006.

15.2. Chemical Safety Assessment

No

16. OTHER INFORMATION

Text of phrases referred to under heading 3:

R12: Extremely flammable.
H220: Extremely flammable gas.
H280: Containing gas under pressure; may explode if heated.

This document was prepared by a competent person who has received appropriate training.

Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities
SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold
CCNL - Appendix 1

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.

It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.

This MSDS cancels and replaces any preceding release.

This safety data sheet has been completely updated in compliance to Regulation 453/2010/EU.

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We advise be sent to the regulations:

(EC) No 1005/2009 of the European Parliament and of the Council of 16 September 2009 on substances that deplete the ozone layer

(EC) No 842/2006 of the European Parliament and of the Council of 17 May 2006 on certain fluorinated greenhouse gases

(EC) No 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No. 842/2006.

The enumeration of the risks, legal, regulation and administrative texts they are not exhaustive, since responsible only one will correspond (fit) to the addressee or user of the product to be sent to the official regulations of storage, manipulation and utilization of these products.

GLOSSARY

TLV: Threshold Limit Value of the ACGIH

TLV-C: Threshold Limit Value - ceiling of the ACGIH

WEL: The Manufacturer has for aim control the exhibition in the place of work at the level of the standard of the United Kingdom

COM: The Manufacturer has for aim control the exhibition in his places of work to this one limit.

VLA-ED: Value environmental limit daily exhibition.