SAFETY DATA SHEET



Nonflammable Gas Mixture: Nitrogen 90-99.9% / Trichlorofluoromethane (R-11)

1000ppm-10%

Section 1. Identification

GHS product identifier	: Nonflammable Gas Mixture: Nitrogen 90-99.9% / Trichlorofluoromethane (R-11) 1000ppm-10%
Other means of identification	: Not available.
Product type	: Gas.
Product use	: Synthetic/Analytical chemistry.
SDS #	: 002420
Supplier's details	: Airgas USA, LLC and its affiliates 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
24-hour telephone	: 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the	: GASES UNDER PRESSURE - Compressed gas
substance or mixture	HAZARDOUS TO THE OZONE LAYER - Category 1
GHS label elements	
Hazard pictograms	
Signal word	: Warning
Hazard statements	: Contains gas under pressure; may explode if heated.
	Harms public health and the environment by destroying ozone in the upper atmosphere.
	May displace oxygen and cause rapid suffocation.
Precautionary statements	
General	: Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use.
	Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction.
Prevention	: Not applicable.
Response	: Not applicable.
Storage	: Protect from sunlight. Store in a well-ventilated place.
Disposal	: Refer to manufacturer or supplier for information on recovery or recycling.
Hazards not otherwise	: In addition to any other important health or physical hazards, this product may displace
classified	oxygen and cause rapid suffocation.

Section 3. Composition/information on ingredients

Substance/mixture	: Mixture
Other means of	: Not available.
identification	
Product code	: 002420

Ingredient name	%	CAS number
5	90 - 99.9 0.1 - 10	7727-37-9 75-69-4

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	:	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.
Inhalation	:	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Skin contact	:	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	:	As this product is a gas, refer to the inhalation section.

<u>Most important symptoms/e</u> <u>Potential acute health effec</u>	
Eye contact	Contact with rapidly expanding gas may cause burns or frostbite.
Inhalation	: No known significant effects or critical hazards.
Skin contact	: Contact with rapidly expanding gas may cause burns or frostbite.
Frostbite	: Try to warm up the frozen tissues and seek medical attention.
Ingestion	: As this product is a gas, refer to the inhalation section.
Over-exposure signs/symp	i <u>toms</u>
Eye contact	: No specific data.
Inhalation	: No specific data.
Skin contact	: No specific data.
Ingestion	: No specific data.
ndication of immediate med	lical attention and special treatment needed, if necessary
Notes to physician	: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Specific treatments	: No specific treatment.
Protection of first-aiders	: No action shall be taken involving any personal risk or without suitable training. It may

Date of issue/Date of revision	: 3/4/2021	Date of previous issue	: 1/18/2018	Version : 1.01	2/11
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Section 4. First aid measures

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media	
Suitable extinguishing media	: Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: None known.
Specific hazards arising from the chemical	: Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode.
Hazardous thermal decomposition products	: Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides halogenated compounds carbonyl halides
Special protective actions for fire-fighters	: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
Special protective equipment for fire-fighters	: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protec	tiv	e equipment and emergency procedures
For non-emergency personnel	:	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders	:	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
Environmental precautions	:	Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). May be harmful to the environment if released in large quantities.
Methods and materials for co	nt	ainment and cleaning up
Small spill	:	Immediately contact emergency personnel. Stop leak if without risk.
Large spill	:	Immediately contact emergency personnel. Stop leak if without risk. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Section 7. Handling and storage

Protective measures	 Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid breathing gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement. Avoid release to the environment. Refer to special instructions/safety data sheet. Avoid contact with eyes, skin and clothing. Empty containers retain product residue and can be hazardous.
Advice on general occupational hygiene	: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
Conditions for safe storage, including any incompatibilities	: Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F). Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits ACGIH TLV (United States, 3/2019). Oxyge Depletion [Asphyxiant].		
Nitrogen			
Methane, trichlorofluoro-	ACGIH TLV (United States, 3/2019).		
	C: 5620 mg/m ³		
	C: 1000 ppm		
	NIOSH REL (United States, 10/2016).		
	CEIL: 5600 mg/m ³		
	CEIL: 1000 ppm		
	OSHA PEL (United States, 5/2018).		
	TWA: 5600 mg/m ³ 8 hours.		
	TWA: 1000 ppm 8 hours.		
	OSHA PEL 1989 (United States, 3/1989).		
	CEIL: 5600 mg/m ³		
	CEIL: 1000 ppm		

Appropriate engineering controls	:	Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
Environmental exposure controls	:	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
Individual protection meas	ures	
Hygiene measures	:	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 8. Exposure controls/personal protection

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Eye/face protection	: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
Skin protection	
Hand protection	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
Body protection	: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Other skin protection	: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Annearance

<u>Appearance</u>		
Physical state	1	Gas.
Color	:	Not available.
Odor	:	Not available.
Odor threshold	:	Not available.
рН	:	Not available.
Melting point	:	-210.01°C (-346°F) This is based on data for the following ingredient: nitrogen.
Boiling point	:	Not available.
Critical temperature	1	Lowest known value: -146.95°C (-232.5°F) (nitrogen).
Flash point	1	Not available.
Evaporation rate	:	Not available.
Flammability (solid, gas)	:	Not available.
Lower and upper explosive (flammable) limits	1	Not available.
Vapor pressure		Not available.
Vapor density	:	Highest known value: 0.97 (Air = 1) (nitrogen).
Gas Density (lb/ft ³)		Weighted average: 0.08
Relative density	÷	Not applicable.
Solubility	:	Not available.
Solubility in water	:	Not available.
Partition coefficient: n-	:	Not available.
octanol/water		
Auto-ignition temperature	÷	Not available.
Decomposition temperature	1	Not available.
Viscosity	3	Not applicable.
Flow time (ISO 2431)	1	Not available.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: No specific data.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity					
	Product/ingredient name	Result	Species	Dose	Exposure
	Methane, trichlorofluoro-	LC50 Inhalation Gas.	Rat	104800 ppm	1 hours

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely : Not available. routes of exposure

Potential acute health effects

Eye contact

: Contact with rapidly expanding gas may cause burns or frostbite.

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Section 11 Toxicological information

Inhalation	: No known significant effects or critical hazards.
Skin contact	: Contact with rapidly expanding gas may cause burns or frostbite.
Ingestion	: As this product is a gas, refer to the inhalation section.
Symptoms related to the phy	sical, chemical and toxicological characteristics
Eye contact	: No specific data.
Inhalation	: No specific data.
Skin contact	: No specific data.
Ingestion	: No specific data.
Delayed and immediate effec	ts and also chronic effects from short and long term exposure
<u>Short term exposure</u>	
Potential immediate effects	: Not available.
Potential delayed effects	: Not available.
<u>Long term exposure</u>	
Potential immediate effects	: Not available.
Potential delayed effects	: Not available.
Potential chronic health effe	ects
Not available.	
General	: No known significant effects or critical hazards.
Carcinogenicity	: No known significant effects or critical hazards.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	LogPow	BCF	Potential
Nitrogen	0.67	-	low
Methane, trichlorofluoro-	2.53		low

Mobility in soil

Section 12. Ecological information

Soil/water partition : coefficient (Koc)

: Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

United States - RCRA Toxic hazardous waste "U" List

Ingredient	CAS #		Reference number
Trichloromonofluoromethane; Methane, trichlorofluoro-	75-69-4	Listed	U121

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	ΙΑΤΑ
UN number	UN1956	UN1956	UN1956	UN1956	UN1956
UN proper shipping name	COMPRESSED GAS, N.O.S. (Nitrogen, Trichlorofluoromethane)				
Transport hazard class(es)	2.2	2.2	2.2	2.2	2.2
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Additional information

TDG Classification	Goods Re <u>Explosive</u>	assified as per the followin gulations: 2.13-2.17 (Class Limit and Limited Quan Carrying Road or Rail I	s 2). tity Index 0.125	nsportation of I	Dangerous	
Special precautions for user	upright an	t within user's premises: d secure. Ensure that pers n accident or spillage.				the
Transport in bulk according to IMO instruments	: Not availa	ble.				
Date of issue/Date of revision	: 3/4/2021	Date of previous issue	: 1/18/2018	Version	: 1.01	8/11

Section 15. Regulatory information

U.S. Federal regulations	: TSCA 8(a) CDR Exempt/Partia	al exemption: Not determined	
Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)	2 : Not listed		
Clean Air Act Section 602 Class I Substances	: Listed		
Clean Air Act Section 602 Class II Substances	: Not listed		
DEA List I Chemicals (Precursor Chemicals)	: Not listed		
DEA List II Chemicals (Essential Chemicals)	: Not listed		
<u>SARA 302/304</u>			
Composition/information	<u>n on ingredients</u>		
No products were found.			
SARA 304 RQ	: Not applicable.		
SARA 311/312			
Classification	: Refer to Section 2: Hazards Ider	ntification of this SDS for classifica	tion of substance.
<u>SARA 313</u>			
	Product name	CAS number	%
Form R - Reporting	trichlorofluoromethane	75-69-4	0.1 - 10

	requirements			
	Supplier notification	trichlorofluoromethane	75-69-4	0.1 - 10
SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall inclu				SDS shall include

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts	 The following components are listed: NITROGEN; NITROGEN (LIQUIFIED); TRICHLOROFLUOROMETHANE; FLUOROCARBON 11
New York	 The following components are listed: Trichloromonofluoromethane; Fluorotrichloromethane
New Jersey	 The following components are listed: NITROGEN; TRICHLOROFLUOROMETHANE; FLUOROTRICHLOROMETHANE
Pennsylvania California Prop. 65	: The following components are listed: NITROGEN; METHANE, TRICHLOROFLUORO-

This product does not require a Safe Harbor warning under California Prop. 65.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals Not listed.

Montreal Protocol

Ingredient name	Status
CFC-11	Annex A, Group I
Stockholm Convention on Persistent Organic Pollutants	

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

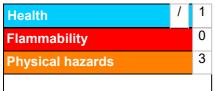
Section 15. Regulatory information

Not listed.

Inventory list		
Australia	1	All components are listed or exempted.
Canada	1	All components are listed or exempted.
China	4	All components are listed or exempted.
Europe	4	All components are listed or exempted.
Japan	1	Japan inventory (ENCS): Not determined. Japan inventory (ISHL): Not determined.
New Zealand	1	All components are listed or exempted.
Philippines	1	All components are listed or exempted.
Republic of Korea	1	All components are listed or exempted.
Taiwan	4	All components are listed or exempted.
Thailand	1	Not determined.
Turkey	1	Not determined.
United States	4	All components are active or exempted.
Viet Nam	1	All components are listed or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
1 5	On basis of test data Calculation method

History

Section 16. Other information

Date of printing	: 3/4/2021
Date of issue/Date of revision	: 3/4/2021
Date of previous issue	: 1/18/2018
Version	: 1.01
Key to abbreviations	 ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Internediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) UN = United Nations
References	: Not available.
Other special considerations	 WARNING: Contains, R11 TRICHLOROFLUOROMETHANE, a substance that harms public health and environment by destroying ozone in the upper atmosphere.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.