



# Safety Data Sheet

## Freon 116 Refrigerant/Nitrous Oxide Blend 90/10

www.advancedspecialtygases.com

### Section 1: Product and Company Identification

**Advanced Specialty Gases**  
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Product Code: Freon 116 Refrigerant/Nitrous Oxide Blend 90/10

Part Number: Freon 116 Refrigerant/Nitrous Oxide Blend 90/10

**Synonyms:** Hexafluoroethane (D.O.T.), Halocarbon 116, Perfluoroethane. Nitrous oxide has no synonyms

**Recommended Use:**

**Usage Restrictions:**

### Section 2: Hazards Identification



## Warning

**Hazard Classification:**

Gases Under Pressure

**Hazard Statements:**

Contains gas under pressure; may explode if heated

**Precautionary Statements**

**Storage:**

Protect from sunlight.

Store in well-ventilated place.

### Section 3: Composition/Information on Ingredients

	CAS #	Concentration
Nitrous Oxide	10024-97-2	10%
HEXAFLUOROETHANE (R-116)	76-16-4	90%

	Chemical Substance	Chemical Family	Trade Names
<b>Nitrous Oxide</b>	NITROUS OXIDE	inorganic, gas	DINITROGEN MONOXIDE; FACTITIOUS AIR; LAUGHING GAS; HYPONITROUS ACID ANHYDRIDE; NITROGEN (I) OXIDE; NITROGEN OXIDE; STCC 4904340; UN 1070; NITROGEN OXIDE (N2O); DINITROGEN OXIDE; NITROUS OXIDE, COMPRESSED; N2O
<b>HEXAFLUOROETHANE (R-116)</b>	HEXAFLUOROETHANE (R-116)		CFC-116 Perfluoroethane

## Section 4: First Aid Measures

	Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
<b>Nitrous Oxide</b>	If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.	Flush eyes with plenty of water.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.
<b>HEXAFLUOROETHANE (R-116)</b>	Wash with plenty of water and soap.	Flush with plenty of water	Never give anything by mouth to an unconscious person. rinse mouth with water. consult a physician.	Move to fresh air. If not breathing, give artificial respiration. Consult physician.	Not available

## Section 5: Fire Fighting Measures

	Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters
<b>Nitrous Oxide</b>	Non-flammable. Use suitable extinguishing media for surrounding fire.	Non-flammable	<ul style="list-style-type: none"> <li>▪ Non-flammable</li> </ul>
<b>HEXAFLUOROETHANE (R-116)</b>	Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.	Carbon oxides, hydrogen fluoride	<ul style="list-style-type: none"> <li>▪ Not available</li> <li>▪ Not available</li> <li>▪ Not available</li> <li>▪ Wear self-contained breathing apparatus for firefighting</li> </ul>

## Section 6: Accidental Release Measures

	Personal Precautions	Environmental Precautions	Methods for Containment
<b>Nitrous Oxide</b>	Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. Avoid contact with combustible materials.	No adverse effects expected.	Stop leak if possible without personal risk.
<b>HEXAFLUOROETHANE (R-116)</b>	Avoid breathing vapors, mist or gas. Have adequate ventilation. Evacuate people from area.	Do not let product enter drain	Clean up promptly by sweeping or vacuum.

	Methods for Cleanup	Other Information
<b>Nitrous Oxide</b>	Stop leak, evacuate and ventilate area.	None
<b>HEXAFLUOROETHANE (R-116)</b>	Clean up promptly by sweeping or vacuum.	Not available

## Section 7: Handling and Storage

	Handling	Storage
<b>Nitrous Oxide</b>	Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.105.	Keep separated from incompatible substances.
<b>HEXAFLUOROETHANE (R-116)</b>	Keep container closed, dry, and in a well-ventilated place.	Normal measures for preventive fire protection

## Section 8: Exposure Controls/Personal Protection

	Exposure Guidelines
<b>Nitrous Oxide</b>	NITROUS OXIDE: 50 ppm ACGIH TWA 25 ppm (46 mg/m3) NIOSH recommended TWA (halogenated anesthetic gas)
<b>HEXAFLUOROETHANE (R-116)</b>	None

### Engineering Controls

Handle only in fully enclosed systems.

	Eye Protection	Skin Protection	Respiratory Protection
<b>Nitrous Oxide</b>	For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.	Non-flammable
<b>HEXAFLUOROETHANE (R-116)</b>	Use proper eye protection	Impervious clothing	Not available

### General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

## Section 9: Physical and Chemical Properties

	Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
<b>Nitrous Oxide</b>	Gas	Clear	Colorless	N/A	Gas	Sweet odor	Sweet taste
<b>HEXAFLUOROETHANE (R-116)</b>	Liquefied gas	Colorless	Colorless	N/a	Gas	Slight ethereal	N/a

	Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
<b>Nitrous Oxide</b>	Not flammable	Not available	Not available	Nonflammable	Nonflammable	Nonflammable
<b>HEXAFLUOROETHANE (R-116)</b>	Not available	Not available	Not available	Not available	None	None

	Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
<b>Nitrous Oxide</b>	-128 F (-89 C)	-132 F (-91 C)	760 mmHg @ -88 C	1.53 (Air=1)	Not applicable	59% @ 25 C	Not applicable	Not available	Not applicable	0.0145 cP @ 25 C
<b>HEXAFLUOROETHANE (R-116)</b>	-78 deg C (-108 deg F)	Not available	22.231 mm hg at 70F	4.8 (Air=1)	Not available	Not available	Not available	Not available	Not available	Not available

	Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
Nitrous Oxide	44.01	N2-O	1.8122 g/L @ 25 C	Not available	Not applicable	Not applicable	Soluble: Sulfuric acid, alcohol, alkali solutions, ether, oils
HEXAFLUOROETHANE (R-116)	138.01 g/mol	C2F6	Not available	Not available	Not available	100%	Not available

## Section 10: Stability and Reactivity

	Stability	Conditions to Avoid	Incompatible Materials
Nitrous Oxide	Stable at normal temperatures and pressure. Decomposes to nitrogen and oxygen at high temperatures	Stable at normal temperatures and pressure. Decomposes to nitrogen and oxygen at high temperatures	Combustible materials, metals, bases, reducing agents, peroxides, metal salts, metal oxides, hydrogen
HEXAFLUOROETHANE (R-116)	Stable under recommended storage conditions	Stable under recommended storage conditions	Incompatible with alkali or alkaline earth metals- powdered Al, Zn, Be, etc.

	Hazardous Decomposition Products	Possibility of Hazardous Reactions
Nitrous Oxide	Oxides of nitrogen	Will not polymerize.
HEXAFLUOROETHANE (R-116)	Products formed under fire conditions: carbon oxides, hydrogen fluoride	Will not occur

## Section 11: Toxicology Information

### Acute Effects

	Oral LD50	Dermal LD50	Inhalation
Nitrous Oxide	Not available	Not available	Nausea, vomiting, symptoms of drunkenness, hyperactivity or drowsiness, hearing loss, suffocation, death
HEXAFLUOROETHANE (R-116)	Not available	Not available	May be harmful if inhaled. may cause respiratory tract irritation.

	Eye Irritation	Skin Irritation	Sensitization
Nitrous Oxide	Liquid: frostbite, blurred vision	Liquid: blisters, frostbite	Potentially fatal if inhaled, central nervous system depression, difficulty breathing TERATOGEN/EMBRYOTOXIN - can harm the unborn child, based on human information.
HEXAFLUOROETHANE (R-116)	Can cause eye irritation	May be harmful if absorbed through skin. may cause irritation.	Avoid inhalation of vapors, can cause heart irregularities, unconsciousness, or death. Liquid contact can cause frostbite. Vapor reduces available oxygen.

### Chronic Effects

	Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
Nitrous Oxide	IARC: Human Inadequate Evidence, Animal Inadequate Evidence, Group 3 (Anesthetics, volatile); ACGIH: A4 -Not Classifiable as a Human Carcinogen	Available.	Available.	No data
HEXAFLUOROETHANE (R-116)	IARC: no component present at levels greater than or equal to .1% is identified as human carcinogen by IARC	Not available	Not available	No data

## Section 12: Ecological Information

### Fate and Transport

	Eco toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environment
Nitrous Oxide	Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available	Not available	Not available	Not available

	Phyto toxicity: Not available Other toxicity: Not available			
HEXAFLUOROETHANE (R-116)	Fish toxicity: not available Invertebrate toxicity: not available Algal toxicity: not available Phyto toxicity: not available Other toxicity: not available	Not available	Not available	Not available

## Section 13: Disposal Considerations

Nitrous Oxide	Dispose in accordance with all applicable regulations.
HEXAFLUOROETHANE (R-116)	Comply with federal, state, and local regulations

## Section 14: Transportation Information

### U.S. DOT 49 CFR 172.101

#### DOT Information For This Mixture

Shipping Name	Compressed gas, n.o.s. (HEXAFLUOROETHANE (R-116), Nitrous Oxide)
UN Number	UN1956
Hazard Class	2.2
Hazard Information	Non-Flammable Gas

#### Individual Component Information

	Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
Nitrous Oxide	Nitrous oxide	UN1070	2.2	Not applicable	2.2; 5.1	N/A	N/A	N/A
HEXAFLUOROETHANE (R-116)	Hexafluoroethane	UN2193	2.2	Not available	Nonflammable gas	Not available	Not available	Not available

#### Canadian Transportation of Dangerous Goods

	Shipping Name	UN Number	Class	Packing Group / Risk Group
Nitrous Oxide	Nitrous oxide	UN1070	2.2; 5.1	Not applicable
HEXAFLUOROETHANE (R-116)	Hexfluoroethane	Un2193	2.2	Not available

## Section 15: Regulatory Information

### U.S. Regulations

	CERCLA Sections	SARA 355.30	SARA 355.40
Nitrous Oxide	Not regulated.	Not regulated.	Not regulated.
HEXAFLUOROETHANE (R-116)	Not available	Not available	Not available

### SARA 370.21

	Acute	Chronic	Fire	Reactive	Sudden Release
Nitrous Oxide	Yes	No	No	No	Yes
HEXAFLUOROETHANE (R-116)	Yes	No	No	No	Yes

### SARA 372.65

Nitrous Oxide	Not regulated.
HEXAFLUOROETHANE (R-116)	Not available

### OSHA Process Safety

Nitrous Oxide	Not regulated.
HEXAFLUOROETHANE (R-116)	Not available

### State Regulations

	<b>CA Proposition 65</b>
Nitrous Oxide	Not regulated.
HEXAFLUOROETHANE (R-116)	Not available

### Canadian Regulations

	<b>WHMIS Classification</b>
Nitrous Oxide	A,C
HEXAFLUOROETHANE (R-116)	Not available

### National Inventory Status

	US Inventory (TSCA)	TSCA 12b Export Notification	Canada Inventory (DSL/NDSL)
Nitrous Oxide	Listed on inventory.	Not listed.	Not determined.
HEXAFLUOROETHANE (R-116)	Listed	Not available	Not available

## Section 16: Other Information

	<b>NFPA Rating</b>
Nitrous Oxide	HEALTH=1 FIRE=0 REACTIVITY=0
HEXAFLUOROETHANE (R-116)	Health:1, flammability-0, reactivity-1

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard