Ehsan International Gases

.

Hexafluoroethane

1. Product and company identification

Product form	: Substance
Name	: Hexafluoroethane (R116)
CAS No	: 76-16-4
Formula	: C2F6
Other means of identification	: Hexafluoroethane (R116), Halon-26, perfluoroethane, refrigerant gas R116

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

Use of the substance/mixture : Industrial use. Use as directed.

Manufacturer / Distributor:

Ehsan International Gases
40/9, Aurangabad, Nazimabad
#3, Karachi 74600, Pakistan.
+92 21 36612091 – 36612907
info@ehsan.com.pk
www.ehsan.com.pk

2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

Liquefied gas H280

Full text of H-phrases: see section 16

Signal word (GHS-US)	: Warning
Hazard statements (GHS-US)	: H280 - CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED OSHA-H01 - MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION. CGA-HG01 - MAY CAUSE FROSTBITE.
Precautionary statements (GHS-US)	: P202 - Do not handle until all safety precautions have been read and understood P262 - Do not get in eyes, on skin, or on clothing P271+P403 - Use and store only outdoors or in a well-ventilated place. CGA-PG05 - Use a back flow preventive device in the piping. CGA-PG06 - Close valve after each use and when empty. CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F).

Hexafluoroethane

2.2. Other hazards

Other hazards not contributing to the : Asphyxiant in high concentrations. Contact with liquid may cause cold burns/frostbite. classification

No data available

3.1. Substance

3: Composition/information on ingredients

Name : Hexafluoroethane (R116)
CAS No : 76-16-4

3.2. Mixture

Name	Product identifier	%
Hexafluoroethane (R116)	(CAS No) 76-16-4	100

4.1. Description of first aid measures

Not applicable

4: First aid measures

First-aid measures after inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

First-aid measures after skin contact : For exposure to liquid, immediately warm frostbite area with warm water not to exceed 105°F (41°C). Water temperature should be tolerable to normal skin. Maintain skin warming for at least 15 minutes or until normal coloring and sensation have returned to the affected area. In case of massive exposure, remove clothing while showering with warm water. Seek medical evaluation and treatment as soon as possible.

First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Get immediate medical attention.

First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

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

None.

5: Firefighting measures

Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

5.2. Special hazards arising from the substance or mixture

5.1. Extinguishing media

Reactivity : No reactivity hazard other than the effects described in sub-sections below.

5.3. Advice for firefighters

Firefighting instructions : Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with OSHA 29 CFR 1910.156 and applicable standards under 29 CFR 1910 Subpart L—Fire Protection.

Protection during firefighting : Compressed gas: asphyxiant. Suffocation hazard by lack of oxygen.

Special protective equipment for fire fighters : Use self-contained breathing apparatus. Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.

Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems. Stop flow of product if safe to do so. Use water spray or fog to knock down fire fumes if possible.

6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Try to stop release. Evacuate area. Ensure adequate air ventilation. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Stop leak if safe to do so.

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

6.2. Environmental precautions

No additional information available

Try to stop release.

6.3. Methods and material for containment and cleaning up

No additional information available

6.4. Reference to other sections

See also sections 8 and 13.

7.1. Precautions for safe handling

7: Handling and storage

Precautions for safe handling : Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a cool, well-ventilated place. Store and use with adequate ventilation. Store only where temperature will not exceed 125°F (52°C). Firmly secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods.

OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE: When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

7.3. Specific end use(s)

None.

8.1. Control parameters

8: Exposure controls/personal protection

8.2. Exposure controls

Hexafluoroethane (R116) (76-16-4)

ACGIH	Not established
USA OSHA	Not established

Hexafluoroethane (R116) (76-16-4)

Appropriate engineering controls : Ensure exposure is below occupational exposure limits (where available). Oxygen detectors should be used when asphyxiating gases may be released. Systems under pressure should be regularly checked for leakages. Provide adequate general and local exhaust ventilation. Consider work permit system e.g. for maintenance activities.

Hand protection : Wear working gloves when handling gas containers.

Eye protection : Wear safety glasses with side shields or goggles when transfilling or breaking transfer connections. Wear safety glasses with side shields. Wear goggles and a face shield when transfilling or breaking transfer connections.

Respiratory protection : When workplace conditions warrant respirator use, follow a respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable). Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure (e.g., an organic vapor cartridge). For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).

.

Thermal hazard protection : Wear cold insulating gloves when transfilling or breaking transfer connections. None necessary.

Environmental exposure controls : Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

Other information : Wear safety shoes while handling containers.

9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Gas

Molecular mass : 138 g/mol
Color : Colorless.

Odor : No data available

Odor threshold : Odor threshold is subjective and inadequate to warn for overexposure.
pH : Not applicable.

Relative evaporation rate (butyl acetate=1) : No data available

Relative evaporation rate (ether=1) : Not applicable.
Melting point : -101 °C

Freezing point : No data available

Boiling point : -78.2 °C

Flash point : Not applicable.

Critical temperature : 19.7 °C
Auto-ignition temperature : Not applicable.

Decomposition temperature : No data available

Flammability (solid, gas) : No data available

Vapor pressure : 3000 kPa

Critical pressure : 3060 kPa
Relative vapor density at 20 °C : No data available

Relative density : 1.23

Relative gas density : 4.8
Solubility : Water: No data available

Log Pow : 2

Log Kow : Not applicable.

Viscosity, kinematic : Not applicable.

Viscosity, dynamic : Not applicable.

Explosive properties : Not applicable.

Oxidizing properties : None.

Explosive limits : Non flammable.

9.2. Other information

Gas group : Liquefied gas

Additional information : Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground level.

10.1. Reactivity

10: Stability and reactivity

No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

10.3. Possibility of hazardous reactions

Stable under normal conditions.

10.4. Conditions to avoid

None.

10.5. Incompatible materials

Heat.

Polystyrene. Alloys with >2% magnesium in the presence of water.

10.6. Hazardous decomposition products

Thermal decomposition may produce : Toxic fumes. Fluorides.

11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Skin corrosion/irritation : Not classified pH: Not applicable.

Serious eye damage/irritation : Not classified pH: Not applicable.

Respiratory or skin sensitization : Not classified Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : Not classified No known effects from this product.

Aspiration hazard : Not classified

Not applicable.

Hexafluoroethane

12: Ecological information

12.1. Toxicity

12.a2. Persistence and degradability

Ecology - general : No data available. No ecological damage caused by this product.

12.3. Bioaccumulative potential

Hexafluoroethane (R116) (76-16-4)

Persistence and degradability	No ecological damage caused by this product.

Hexafluoroethane (R116) (76-16-4)

Persistence and degradability	No data available.

Hexafluoroethane (R116) (76-16-4)

Log Pow	2
Log Kow	Not applicable.
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.

Hexafluoroethane (R116) (76-16-4)

Log Pow	2

Hexafluoroethane (R116) (76-16-4)

Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.

Hexafluoroethane (R116) (76-16-4)

Mobility in soil	No data available.
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.

12.5. Other adverse effects

Hexafluoroethane (R116) (76-16-4)

Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.

Effect on ozone layer : None.
Global warming potential [CO2=1] : 12200

Effect on the global warming : Contains fluorinated greenhouse gases covered by the Kyoto protocol.
Calculated GWP of mixture : 12200
For quantities refer to cylinder label.

Effect on the global warming : Contains Fluorinated greenhouse gases covered by the Kyoto protocol.

13.1. Waste treatment methods

Hexafluoroethane

13: Disposal considerations

Waste disposal recommendations : Do not attempt to dispose of residual or unused quantities. Return container to supplier.

14: Transport information

In accordance with DOT
Transport document description : UN2193 Hexafluoroethane, 2.2
UN-No.(DOT) : UN2193
Proper Shipping Name (DOT) : Hexafluoroethane
Department of Transportation (DOT) Hazard Classes : 2.2 - Class 2.2 - Non-flammable compressed gas 49 CFR 173.115

Hazard labels (DOT) : 2.2 - Non-flammable gas

Additional information

Emergency Response Guide (ERG) Number : 126
Other information : No supplementary information available.

Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers: - Ensure there is adequate ventilation. - Ensure that containers are firmly secured. - Ensure cylinder valve is closed and not leaking. - Ensure valve outlet cap nut or plug (where provided) is correctly fitted. - Ensure valve protection device (where provided) is correctly fitted.

Transport by sea

UN-No. (IMDG) : 2193
Proper Shipping Name (IMDG) : HEXAFLUOROETHANE (REFRIGERANT GAS R 116)
Class (IMDG) : 2 - Gases
MFAG-No : 126

Air transport

UN-No.(IATA) : 2193
Proper Shipping Name (IATA) : HEXAFLUOROETHANE
Class (IATA) : 2
Civil Aeronautics Law : Gases under pressure/Gases nonflammable nontoxic under pressure

Hexafluoroethane

15: Regulatory information

Hexafluoroethane (R116) (76-16-4)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

SARA Section 311/312 Hazard Classes — Immediate (acute) health hazard; Sudden release of pressure hazard

All components of this product are listed on the Toxic Substances Control Act (TSCA) inventory

15.1. US Federal regulations

This product or mixture does not contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

15.2. International regulations

CANADA

Hexafluoroethane (R116) (76-16-4)

Listed on the Canadian DSL (Domestic Substances List)

WHMIS Classification — Class A - Compressed Gas

Hexafluoroethane (R116) (76-16-4)

Listed on the Canadian DSL (Domestic Substances List)

WHMIS Classification — Class A - Compressed Gas

EU-Regulations

Hexafluoroethane (R116) (76-16-4)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Classification according to Regulation (EC) No. 1272/2008 [CLP] Liquefied gas H280

Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD] Not classified

15.2.2. National regulations

15.3. US State regulations

Hexafluoroethane (R116)(76-16-4)	
U.S. - California - Proposition 65 - Carcinogens List	No
U.S. - California - Proposition 65 - Developmental Toxicity	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Female	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No
State or local regulations	U.S. - New Jersey - Right to Know Hazardous Substance List

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer

Hexafluoroethane (R116) (76-16-4)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

and/or reproductive harm

Hexafluoroethane (R116) (76-16-4)

U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
No	No	No	No	

Hexafluoroethane (R116) (76-16-4)

U.S. - New Jersey - Right to Know Hazardous Substance List

16: Other information

Revision date : 10/1/2014 12:00:00 AM

Other information : When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product.

Praxair asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Praxair, Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Praxair, Inc., it is the user's obligation to determine the conditions of safe use of the product.

Hexafluoroethane

Praxair SDSs are furnished on sale or delivery by Praxair or the independent distributors and suppliers who package and sell our products. To obtain current SDSs for these products, contact your Praxair sales representative, local distributor, or supplier, or download from www.praxair.com. If you have questions regarding Praxair SDSs, would like the document number and date of the latest SDS, or would like the names of the Praxair suppliers in your area, phone or write the Praxair Call Center (Phone: 1-800-PRAXAIR/1-800-772-9247; Address: Praxair Call Center, Praxair, Inc., P.O. Box 44, Tonawanda, NY 14151-0044).

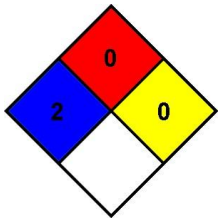
Full text of H-phrases:

------	Liquefied gas	Gases under pressure Liquefied gas
------	H280	CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED

NFPA health hazard : 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard : 0 - Materials that will not burn.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health	: 1 Slight Hazard - Irritation or minor reversible injury possible
Flammability	: 0 Minimal Hazard
Physical	: 0 Minimal Hazard

SDS US (GHS HazCom 2012) - Praxair

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.