## **SAFETY DATA SHEET**



Nonflammable Gas Mixture: Carbon Dioxide / Carbon Monoxide / Nitrogen

#### Section 1. Identification

**GHS** product identifier

: Nonflammable Gas Mixture: Carbon Dioxide / Carbon Monoxide / Nitrogen

Other means of identification

: Not available.

**Product type** 

: Gas.

**Product use** 

: Synthetic/Analytical chemistry.

SDS#

: 013750

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 substance or mixture

: GASES UNDER PRESSURE - Compressed gas TOXIC TO REPRODUCTION (Fertility) - Category 1 TOXIC TO REPRODUCTION (Unborn child) - Category 1

**GHS** label elements

Hazard pictograms





Signal word

: Danger

**Hazard statements** 

Contains gas under pressure; may explode if heated.
 May displace oxygen and cause rapid suffocation.
 May damage fertility or the unborn child.

May damage fertility or the unborn child. May increase respiration and heart rate.

#### **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** 

: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves. Wear eye or face protection. Wear protective clothing.

Response Storage

**Disposal** 

- : IF exposed or concerned: Get medical attention.
- : Store locked up. Protect from sunlight. Store in a well-ventilated place.

: Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise

classified

: In addition to any other important health or physical hazards, this product may displace oxygen and cause rapid suffocation.

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## Section 3. Composition/information on ingredients

Substance/mixture

: Mixture

Other means of identification

: Not available.

**Product code** 

: 013750

Ingredient name	%	CAS number
Carbon Dioxide	2 - 98.9	124-38-9
Nitrogen	1 - 97.9	7727-37-9
carbon monoxide	0.1 - 0.9999	630-08-0

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.

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 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. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion

: As this product is a gas, refer to the inhalation section.

#### Most important symptoms/effects, acute and delayed

#### Potential acute health effects

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

**Inhalation** : No known significant effects or critical hazards.

Skin contactContact with rapidly expanding gas may cause burns or frostbite.FrostbiteTry 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/symptoms

Eye contact : No specific data.

**Inhalation** : Adverse symptoms may include the following:, reduced fetal weight, increase in fetal

deaths, skeletal malformations

Skin contact : Adverse symptoms may include the following:, reduced fetal weight, increase in fetal

deaths, skeletal malformations

Ingestion : Adverse symptoms may include the following:, reduced fetal weight, increase in fetal

deaths, skeletal malformations

#### Indication of immediate medical 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.

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#### Section 4. First aid measures

**Specific treatments Protection of first-aiders** 

- : No specific treatment.
- : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

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

**Hazardous thermal** decomposition products : Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

: Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides

**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, protective 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 nonemergency 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).

#### Methods and materials for containment 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.

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## Section 7. Handling and storage

#### **Precautions for safe handling**

#### **Protective measures**

: Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Do not get in eyes or on skin or clothing. 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.

Empty containers retain product residue and can be hazardous. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid exposure during pregnancy.

## 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). Store locked up. 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
Carbon Dioxide	ACGIH TLV (United States, 3/2017). Oxygen Depletion [Asphyxiant].  STEL: 54000 mg/m³ 15 minutes.  STEL: 30000 ppm 15 minutes.  TWA: 9000 mg/m³ 8 hours.  TWA: 5000 ppm 8 hours.  NIOSH REL (United States, 10/2016).  STEL: 54000 mg/m³ 15 minutes.  STEL: 30000 ppm 15 minutes.  TWA: 9000 mg/m³ 10 hours.  TWA: 5000 ppm 10 hours.  OSHA PEL (United States, 6/2016).  TWA: 9000 mg/m³ 8 hours.  TWA: 5000 ppm 8 hours.  OSHA PEL 1989 (United States, 3/1989).  STEL: 54000 mg/m³ 15 minutes.  STEL: 30000 ppm 15 minutes.  TWA: 18000 mg/m³ 8 hours.  TWA: 18000 mg/m³ 8 hours.
Nitrogen carbon monoxide	ACGIH TLV (United States, 3/2017). Oxygen Depletion [Asphyxiant]. California PEL for Chemical Contaminants ( Table AC-1) (United States). PEL: 25 ppm 8 hours. CEIL: 200 ppm ACGIH TLV (United States, 3/2017). TWA: 25 ppm 8 hours. TWA: 29 mg/m³ 8 hours. OSHA PEL 1989 (United States, 3/1989). TWA: 35 ppm 8 hours.

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## Section 8. Exposure controls/personal protection

TWA: 40 mg/m<sup>3</sup> 8 hours.

CEIL: 200 ppm CEIL: 229 mg/m<sup>3</sup>

NIOSH REL (United States, 10/2016).

TWA: 35 ppm 10 hours. TWA: 40 mg/m³ 10 hours.

CEIL: 200 ppm CEIL: 229 mg/m<sup>3</sup>

OSHA PEL (United States, 6/2016).

TWA: 50 ppm 8 hours. TWA: 55 mg/m³ 8 hours.

## Appropriate engineering controls

: If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

## **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 measures**

**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.

#### **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 sideshields.

## 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.

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## Section 9. Physical and chemical properties

**Appearance** 

**Physical state** Gas.

Color : Not available. Odor : Not available. **Odor threshold** Not available. pН : Not available.

: -210.01°C (-346°F) This is based on data for the following ingredient: nitrogen. **Melting point** 

**Boiling point** : Not available.

**Critical temperature** : Lowest known value: -146.95°C (-232.5°F) (nitrogen).

Flash point : Not available. **Evaporation rate** Not available. Flammability (solid, gas) : Not available. Lower and upper explosive : Not available.

(flammable) limits

: Not available. Vapor pressure

Vapor density : Highest known value: 1.5 (Air = 1) (Carbon dioxide). Weighted average: 1.24 (Air = 1)

Gas Density (lb/ft 3) : Weighted average: 0.09

**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** : Not available. **Viscosity** : Not applicable. Flow time (ISO 2431) : Not available.

## Section 10. Stability and reactivity

: No specific test data related to reactivity available for this product or its ingredients. Reactivity

**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.

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## **Section 11. Toxicological information**

#### **Information on toxicological effects**

#### **Acute toxicity**

Product/ingredient name	Result	Species	Dose	Exposure
carbon monoxide	LC50 Inhalation Gas.	Rat	3760 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)

Name		Route of exposure	Target organs
carbon monoxide	Category 1	Not determined	Not determined

#### **Aspiration hazard**

Not available.

## Information on the likely

routes of exposure

: Not available.

#### Potential acute health effects

**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.

Ingestion : As this product is a gas, refer to the inhalation section.

#### Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.

Inhalation : Adverse symptoms may include the following:, reduced fetal weight, increase in fetal

deaths, skeletal malformations

Skin contact : Adverse symptoms may include the following:, reduced fetal weight, increase in fetal

deaths, skeletal malformations

Ingestion : Adverse symptoms may include the following:, reduced fetal weight, increase in fetal

deaths, skeletal malformations

#### Delayed and immediate effects and also chronic effects from short and long term exposure

**Short term exposure** 

Potential immediate : Not available.

effects

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### Section 11. Toxicological information

Potential delayed effects : Not available.

Long term exposure

Potential immediate :

effects

: Not available.

Potential delayed effects : Not available.

Potential chronic health effects

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**: May damage the unborn child.

**Developmental effects**: No known significant effects or critical hazards.

Fertility effects : May damage fertility.

#### **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
Carbon Dioxide	0.83	-	low
Nitrogen	0.67	-	low

#### **Mobility in soil**

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.

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## **Section 14. Transport information**

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

<sup>&</sup>quot;Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

#### **Additional information**

**TDG Classification** 

: Product classified as per the following sections of the Transportation of Dangerous

Goods Regulations: 2.13-2.17 (Class 2).

**Explosive Limit and Limited Quantity Index** 0.125

Passenger Carrying Road or Rail Index 75

Special precautions for user : Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the

event of an accident or spillage.

Transport in bulk according: Not available. to Annex II of MARPOL and

the IBC Code

## **Section 15. Regulatory information**

: TSCA 8(a) CDR Exempt/Partial exemption: Not determined U.S. Federal regulations

Clean Air Act Section 112

(b) Hazardous Air **Pollutants (HAPs)**  : Not listed

**Clean Air Act Section 602** 

: Not listed

**Class I Substances** 

**Clean Air Act Section 602** 

: Not listed

**Class II Substances** 

**DEA List I Chemicals** (Precursor Chemicals) : Not listed

**DEA List II Chemicals** (Essential Chemicals) : Not listed

#### **SARA 302/304**

**Composition/information on ingredients** 

No products were found.

**SARA 304 RQ** : Not applicable.

**SARA 311/312** 

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## Section 15. Regulatory information

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

State regulations

**Massachusetts** : The following components are listed: CARBON DIOXIDE; NITROGEN; NITROGEN

(LIQUIFIED)

**New York** : None of the components are listed.

: The following components are listed: CARBON DIOXIDE; CARBONIC ACID GAS; **New Jersey** 

**Pennsylvania** : The following components are listed: CARBON DIOXIDE; NITROGEN

#### California Prop. 65

MARNING: This product can expose you to Carbon monoxide, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

		Maximum acceptable dosage level
Carbon monoxide	-	-

#### International regulations

#### Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

#### Montreal Protocol (Annexes A, B, C, E)

Not listed.

#### 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**

Not listed.

#### **Inventory list**

**Australia** : All components are listed or exempted. Canada : All components are listed or exempted. China : All components are listed or exempted. **Europe** : All components are listed or exempted. : Japan inventory (ENCS): Not determined. **Japan** Japan inventory (ISHL): Not determined.

Malaysia : Not determined.

**New Zealand** : All components are listed or exempted. **Philippines** : All components are listed or exempted. Republic of Korea : All components are listed or exempted. **Taiwan** : All components are listed or exempted.

**Thailand** : Not determined. **Turkey** : Not determined.

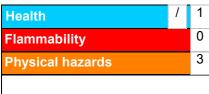
**United States** : All components are listed or exempted.

**Viet Nam** : Not determined.

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### 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
GASES UNDER PRESSURE - Compressed gas	On basis of test data
TOXIC TO REPRODUCTION (Fertility) - Category 1	Calculation method
TOXIC TO REPRODUCTION (Unborn child) - Category 1	Calculation method

#### **History**

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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 = Intermediate 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.

**Notice to reader** 

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### **Section 16. Other information**

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.

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