



Carbon Dioxide (DX) Gas Purifier Media

CHEMICAL SAFETY DATA SHEET

Environmental, Health, & Safety

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

Product Details

Product: Entegris Carbon Dioxide Gas Purifier Media
Product Identifier: Entegris (DX) Series Purifiers
Chemical name: Inorganic Oxide, Nickel Oxide
Product use: Entegris (DX) Series Purifiers remove moisture and other molecular impurities from Carbon Dioxide gas.

MSDS Number: 8008786
Issue Date: May 25, 2011
Rev. Date:
Revision:

Company Identification

Entegris, Inc.

10070 Willow Creek Road
San Diego, CA 92131
Information: 858-452-0124

CHEMTREC Emergency Telephone Numbers:

United States: 800-424-9300
International: 703-527-3887 (collect)

SECTION 2 – COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous components are a solid mixture contained inside the purifier stainless steel body.

<u>COMPONENT</u>	<u>CAS No.</u>	<u>PERCENT</u>
Inorganic Oxide	Trade Secret	60-80
Nickel Oxide	1313-99-1	20-40

Note: See Section 9 for Exposure Limits and Section 11 for Toxicological Information

SECTION 3 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Black Pellets and Tan Beads, Odorless
Specific Gravity (H₂O=1): 1.0 g/cc (Bulk Density)
Melting Point: Not Determined
Vapor Pressure (mm Hg): Not Applicable
Vapor Density (Air=1): Not Applicable
Evaporation Rate: Not Applicable
% Solubility in Water: Insoluble
pH: Not Determined

SECTION 4 – HAZARDS IDENTIFICATION

****NOTE**** In the unlikely event that the purifier media is liberated from the purifier housing (whether intentional or accidental), health hazards may arise from the inhalation, ingestion, and/or contact with the skin or eyes.

Health Hazards: Causes eye, skin and respiratory tract irritation. May cause allergic skin and respiratory reaction. Harmful if swallowed. May cause gastrointestinal irritation, headache, nausea, vomiting and diarrhea.

Physical Hazards: This product will remain stable when housed in the purifier body.

When the Inorganic Oxide is first wetted, the product can heat up to the boiling point of water. Flood with water to cool down. Repeated and prolonged inhalation of crystalline silica in the form of quartz from occupational sources may cause cancer.

Routes of Entry:

Eyes: YES Skin: YES Inhalation: YES Ingestion: YES

Potential Health Effects:

Eye Contact causes irritation.

Skin Contact causes irritation and may cause sensitization or allergic reactions which may be accentuated by heat and humidity.

Inhalation causes upper respiratory irritation. Prolonged or repeated overexposure to Inorganic Oxide may cause lung damage. Repeated and prolonged inhalation of crystalline silica in the form of quartz from occupational sources may cause cancer.

Ingestion is harmful. May cause nausea, abdominal discomfort, vomiting and diarrhea.

Carcinogenicity: Nickel

NTP: YES IARC: YES US OSHA: NO

Nickel has been classified by both the International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) as having sufficient evidence of carcinogenicity in experimental animals. In addition, IARC has determined that there is inadequate evidence of carcinogenicity in humans (Class 2B). The American Conference of Governmental Industrial Hygienists (ACGIH) has categorized nickel as A5 (not suspected as a human carcinogen). In evaluating nickel compounds, the International Agency for Research on Cancer (IARC) has determined that there is sufficient evidence of carcinogenicity to humans (Group 1). The National Toxicology Program (NTP) lists only certain nickel compounds as substances which may reasonably be anticipated to be carcinogenic. This product contains one of those nickel compounds specifically identified by NTP.

Risk of cancer depends on route, duration and level of exposure.

Carcinogenicity: Inorganic Oxide

NTP: YES IARC: YES OSHA: NO ACGIH: YES

An Inorganic Oxide has been classified by the International Agency for Research on Cancer (IARC) as Carcinogenic to Humans, by the National Toxicology Program (NTP) as Possible Carcinogenic to humans, and by the American Conference of Governmental Industrial Hygienists (ACGIH) as Carcinogenic to Humans.

NOTE: See Section 9 for Exposure Limits, Section 11 for Toxicological Information and Section 12 for Ecological Information.

SECTION 5 – FIRST AID MEASURES

In the unlikely event that the purifier media is liberated from the purifier body, these health hazards may arise from inhalation, ingestion, and or/contact with the skin and/or eyes

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, keeping eyelids open. Seek medical attention.

Skin Contact: Immediately wash skin with soap and plenty of water. If irritation persists, seek medical attention.

Inhalation: Remove to fresh air. If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician.

Ingestion: Get medical attention! If vomiting occurs, keep head lower than hips to prevent aspiration.

***NOTE:** Inorganic Oxide is a desiccant and generates heat as it absorbs water. The used product can contain material of hazardous nature.

SECTION 6 – FIRE-FIGHTING MEASURES

Flash Point: Not Determined
Auto-Ignition: Not Applicable
LEL: Not Applicable
UEL: Not Applicable

NFPA Hazard Classification: Inorganic Oxide:	Health: 0	Flammable: 0	Reactivity: 1
HMIS Hazard Classification: Inorganic Oxide:	Health: 1*	Flammable: 0	Reactivity: 1

NFPA Hazard Classification: Nickel Oxide:	Health: 1	Flammable: 2	Reactivity: 0
HMIS Hazard Classification: Nickel Oxide:	Health: 2*	Flammable: 2	Reactivity: 0

* Indicates the possibility of chronic health effects. See Chronic Health Hazards in Section 4 for more information

****Note**** The media within the housing will remain stable when exposed to external ambient air temperatures below 79°C (175°F). At external ambient temperatures above 79°C (175°F) oxidation will occur. When media within housing is exposed to air and moisture, the oxidation process may generate temperatures high enough to cause combustion. Exposure to atmospheres containing hydrogen and temperatures above 150°C (300°F) will render media pyrophoric. Exposure of the pyrophoric product to air at room temperature will cause ignition.

Extinguishing Media: Use water mist, carbon dioxide, dry chemical or foam.

Special Fire-Fighting Procedures: Wear NIOSH-certified positive-pressure self-contained breathing apparatus and protective clothing as specified in country regulations (US OSHA 29 CFR 1910, Subpart I).

Unusual Fire and Explosion Hazards: This product will remain stable when housed in the purifier body. Toxic emissions are possible in a fire situation.

SECTION 7 – ACCIDENTAL RELEASE MEASURES

Inorganic Oxide is a desiccant and generates heat as it absorbs water. **Allow media to cool before taking any action.**

Contain spillage and scoop up or vacuum. Avoid dusting. Refer to applicable country, state and local regulations for current response information.

It is recommended that each user establish an emergency response plan as specified in country regulations. Such plan should include procedures applicable to proper storage, control and clean up of spills, including reuse or disposal as appropriate (see Section 13: Disposal Consideration).

****Note**** In the unlikely event that the purifier media is liberated from the purifier body the above procedures should be followed. Additionally, proper exposure controls and personal protection equipment should be used (see Section 9: Exposure Control/Personal Protection), and disposal of the material should be in accordance with Section 13: Disposal Considerations.

SECTION 8 - HANDLING AND STORAGE

****Note**** In the unlikely event that the purifier media is liberated from the purifier body the following procedures should be observed.

Notify Safety personnel. **Allow media to cool before taking any action.** Wash thoroughly after handling media. Keep container closed. Avoid breathing dust.

Keep away from sunlight, heat or fire. Store in cool, dry location away from incompatible materials.

SECTION 9 – EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits Ingredients:	PEL-US OSHA	TLV-ACGIH
Inorganic Oxide CAS NO.: Trade Secret	10mg/m ³ (Total Dust) 5mg/m ³ (Respirable Dust)	10mg/m ³ (Total Dust)
Nickel Oxide CAS NO.: 1313-99-1	1 mg/m ³ (as Ni, insoluble compounds)	0.2 mg/m ³ (as Ni, Inhalable fraction)

Unless otherwise noted, all values are reported as 8-hour Time-Weighted Averages (TWAs) and total dust (particulates only).

Respiratory Protection: A NIOSH-certified respirator recommended for dust if media is liberated from purifier body.

Ventilation: Use general ventilation; local exhaust ventilation as necessary to control any air contaminants to within their PELs or TLVs during exposure to media

Protective Equipment: Chemical goggles as needed to prevent irritation. Rubber or neoprene gloves. Body protection as necessary to prevent skin contact.

SECTION 10 – STABILITY AND REACTIVITY

Stability: Generally considered stable housed inside purifier body or when properly installed in Non-Reactive Gas Systems. Purifier may heat up if used with corrosive gases or exposed to oxygen.

Avoid: Heat and humidity.

Incompatibility (Materials to Avoid): Air, oxygen, strong acids, strong oxidizing agents and mineral acids.

Hazardous Decomposition or By-Products: Toxic emissions may be released in a fire situation. Mineral acids will react with the nickel content to liberate flammable hydrogen gas. Thermal decomposition may produce oxides of Inorganic Oxide.

Polymerization: Polymerization is not expected to occur.

SECTION 11- TOXICOLOGICAL INFORMATION

Chemical Name	%Wt.	Acute Toxicity (Dermal)	Acute Toxicity (Oral)
Inorganic Oxide CAS NO.: Trade Secret	60-80	Not Available	5000mg/kg (rat)
Nickel Oxide CAS NO.: 1313-99-1	20-40	50mg/kg Mouse, subcutaneous	Not Available

*The toxicological data has been taken from products of similar composition.

NOTE: See Section 4, 9 and 12 for additional information.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity: No data available.

Environmental Fate: No data available.

SECTION 13 – DISPOSAL CONSIDERATIONS

Country, state, and local disposal laws and regulations will determine the proper waste disposal/recycling/reclamation procedure. All waste materials should be reviewed to determine the applicable hazards (testing may be necessary). Disposal requirements are dependent on the hazard classification and will vary by location and the type of disposal selected.

****NOTE**** Chemical additions, processing or otherwise altering this material may make the waste management information presented above incomplete, inaccurate or otherwise inappropriate.

As local regulations may vary; all waste must be disposed/recycled/reclaimed in accordance with country, state, and local environmental control regulations.

SECTION 14 – TRANSPORT INFORMATION**INTERNATIONAL (IATA)**

UN Number: 3190
Class/Division: 4.2
Proper Shipping Name: Self Heating Solid, Inorganic, N.O.S. (Nickel mixture)
Packing Group: II

UNITED STATES (DOT)

Identification Number: UN3190
DOT Classification: 4.2 Spontaneously combustible material
DOT Proper Shipping Name: Self Heating Solid, Inorganic, N.O.S. (Nickel mixture)
Packing Group: II

CANADA

PIN Number: UN3190
TDG Class: 4.2 Spontaneously combustible material
EC DGL: Spontaneously combustible substance

SECTION 15 – REGULATORY INFORMATION**US FEDERAL REGULATIONS**

TSCA: All materials are listed.

SARA 311 and 312 Hazard Categories

Immediate (Acute) Health Hazard:	Yes
Delayed (Chronic) Health Hazard:	Yes
Fire Hazard:	No
Reactivity Hazard:	No
Sudden Release of Pressure:	No

SARA Section 313 Notification: This product does not contain toxic chemicals 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.

OZONE DEPLETING SUBSTANCES (ODS): This product neither contains nor is manufactured with an ozone depleting substance subject to the labeling requirements of the Clean Air Act Amendments 1990 and 40 CFR Part 82.

VOLATILE ORGANIC COMPOUNDS (VOC): None

US STATE REGULATIONS

CALIFORNIA (Prop65): The State of California has a regulation (Proposition 65) which identifies specific chemicals known to the State of California to cause cancer or birth defects. Proposition 65 requires a disclosure for products sold within the State of California containing an identified chemical. The following information is required by the State of California for this product:

***WARNING:** This product contains chemicals known to the State of California to cause cancer.

CANADIAN REGULATIONS**DSL/NDSL:**

DSL

WHMIS Classification:

Class D Division 2 Subdivision A

Class D Division 2 Subdivision B

EUROPEAN REGULATIONS**EINECS:**

Yes

OTHER REGULATIONS**MITI (Japan):**

Yes

AICS (AUSTRALIA):

Yes

SECTION 16 – OTHER INFORMATION

The chemical, physical and toxicological properties of this material have not been thoroughly investigated. Exercise due care.

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