Dinitrogen Tetroxide, Mixed Oxides of Nitrogen

Safety Data Sheet

Classified according to the UN-GHS as adopted in the US Hazard Communication Standard (HCS 2012), the Canada Hazardous Products Regulations (WHMIS 2015) and Mexico NOM-018-STPS-2015

Revision Date: 1 July 2021 Date of issue: 1 July 2021 Supersedes Date: 28 October 2015 Version: 6.0

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Name: Dinitrogen Tetroxide, Mixed Oxides of Nitrogen

Product Code: STCC: 4920174

Formula: N_2O_4

Synonyms: Nitrogen Oxide, Nitrogen Dioxide, Nitrogen Peroxide, Nitrogen Tetroxide, Dinitrogen Tetroxide, Tetra Oxide, NTO

1.2. Intended Use of the Product

Use of the substance/mixture: Fuel Oxidizer, Propellant, Sterilizer. Restrictions: Not for Consumer Use.

1.3. Name, Address, and Telephone of the Responsible Party

Company

CF Industries Sales, LLC
4 Parkway North, Suite 400
Deerfield, Illinois 60015-2590
847-405-2400
www.cfindustries.com

1.4. Emergency Telephone Number

Emergency Number : 800-424-9300
For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident, call CHEMTREC – Day or Night

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

Ox. Gas 1	H270
Liquefied gas	H280
Acute Tox. 1 (Inhalation:gas)	H330
Skin Corr. 1B	H314
Eye Dam. 1	H318
STOT RE 2	H373

Full text of H-phrases: see section 16

2.2. Label Elements

Hazard Pictograms :

GHS06 GHS03 GHS04 GHS05 GHS08

Signal Word : Danger

Hazard Statements : H270 - May cause fire or explosion; strong oxidizer.
H280 - Contains gas under pressure; may explode if heated.
H314 - Causes severe skin burns and eye damage.
H330 - Fatal if inhaled.
H373 - May cause damage to organs through prolonged or repeated exposure.

Precautionary Statements : P220 – Keep away from clothing and other combustible materials.
P244 - Keep reduction valves/valves and fittings free from oil and grease.
P260 - Do not breathe gas, vapors, spray, mist, fume.
P264 - Wash hands, forearms, and other exposed areas thoroughly after handling.
P271 - Use only outdoors or in a well-ventilated area.
P280 - Wear respiratory protection, eye protection, face shield, protective clothing, protective gloves.
P284 - [In case of inadequate ventilation] wear respiratory protection.
P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting.
P303+P361+P353 - water/shower and soap If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340 - If inhaled: Remove person to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 - Immediately call a poison center or doctor.

P314 - Get medical advice/attention if you feel unwell.
P320 - Specific treatment is urgent (see Section 4 on this SDS, Monitor for respiratory distress. Administer supplemental oxygen if trained to do so).
P363 - Wash contaminated clothing before reuse.
P370+P376 – In case of fire: Stop leak if safe to do so.
P370+P378 - In case of fire: Use appropriate media (see section 5) to extinguish.
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P405 - Store locked up.
P410+P403 - Protect from sunlight. Store in a well-ventilated place.
P501 - Dispose of contents/container in accordance with local, regional, national, territorial, provincial, and international regulations.

2.3. Other Hazards

Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions.

2.4. Unknown Acute Toxicity

No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance Not applicable

3.2. Mixture

Name	Product Identifier	%	GHS-US classification
Dinitrogen tetraoxide	(CAS No) 10544-72-6	74 - 100	Ox. Gas 1, H270 Liquefied gas, H280 Acute Tox. 1 (Inhalation:gas), H330 Skin Corr. 1B, H314 Eye Dam. 1, H318
Nitrogen monoxide	(CAS No) 10102-43-9	<= 25	Ox. Gas 1, H270 Compressed gas, H280 Acute Tox. 3 (Inhalation:gas), H331 Skin Corr. 1B, H314 Eye Dam. 1, H318 STOT RE 2, H373

Full text of H-phrases: see section 16

More than one of the ranges of concentration prescribed by the Controlled Products Regulations has been used where necessary, due to varying composition.

SECTION 4: FIRST AID MEASURES

4.1. Description of First Aid Measures

First-aid Measures General: Never give anything by mouth to an unconscious person. Seek medical attention immediately.

First-aid Measures After Inhalation: First, take proper precautions to ensure your own safety before attempting rescue (e.g. wear appropriate respiratory protective equipment, use the buddy system), then remove the exposed person to fresh air. Keep at rest in a position comfortable for breathing. Seek immediate medical advice. Monitor for respiratory distress. Administer supplemental oxygen if trained to do so.

First-aid Measures After Skin Contact: Immediately flush skin with plenty of water for at least 60 minutes. Remove/Take off immediately all contaminated clothing. Immediately call a POISON CENTER or doctor.

First-aid Measures After Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing for at least 60 minutes. Immediately call a POISON CENTER or doctor/physician.

First-aid Measures After Ingestion: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/Injuries: Fatal if inhaled. Causes severe skin burns and eye damage. May cause damage to organs through prolonged or repeated exposure.

Symptoms/Injuries After Inhalation: Fatal if inhaled. Symptoms may be delayed. A single acute exposure may cause death. Repeat exposure to small amounts of nitrogen oxides may cause lung damage.

Symptoms/Injuries After Skin Contact: Corrosive. Causes burns. Symptoms may include: Redness. Pain. Serious skin burns. Blisters.

Symptoms/Injuries After Eye Contact: Causes permanent damage to the cornea, iris, or conjunctiva. Symptoms may include: Redness. Pain. Blurred vision. Severe burns. Blindness.

Symptoms/Injuries After Ingestion: Abdominal pain. Burns in mouth and throat. Burning sensation in the throat and chest. Nausea. Vomiting. Shock or collapse.

Chronic Symptoms: May cause pulmonary edema.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

Seek medical attention immediately. Acute respiratory effects, including pulmonary edema, may be delayed.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media

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

Unsuitable Extinguishing Media: Do not intentionally add water directly into the vessel containing dinitrogen tetroxide as this can lead to an overpressure event. Do not use a heavy water stream but rather use a water fog to contain NOx fume from spreading. Be aware that fogged water and dinitrogen tetroxide vapor will condense into liquid nitric acid.

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: Strong oxidizer: increases the burning rate of combustible materials..

Explosion Hazard: The substance is a strong oxidant and reacts with combustible and reducing materials, causing fire and explosion hazard. Explosions may occur on contact with ammonia, boron trichloride, carbon disulfide, cyclohexane, fluorine, formaldehyde, hydrazine, nitrobenzene, toluene, incompletely halogenated hydrocarbons, propylene, alcohols, and ozone. May be corrosive to metals (Aluminum, zinc, tin) when wet and may produce explosive hydrogen gas.

Reactivity: 'Oxidizing': substances and preparations which exhibit highly exothermic reactions when in contact with other substances, particularly flammable substances.

5.3. Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire. Under fire conditions closed containers may rupture or explode. In presence of moisture, the material is corrosive to aluminum, zinc and tin producing highly flammable hydrogen gas.

Firefighting Instructions: Contain fire and let burn. If fire must be fought, water spray or fog is recommended. Flood fire area with water from a distance. Do not add water directly into containers of dinitrogen tetroxide as this may lead to an overpressure event. Do not direct water at spill or source of the leak. Move containers from the fire area if you can do it without risk. Do not move cargo or vehicle if cargo has been exposed to heat. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Apply cooling water to outsides of containers that are exposed to flames until well after fire is out. Stay away from ends of tanks due to exploding potential when tanks are involved in a fire. If tank, rail car or truck is involved in a fire, isolate for 1/2 mile in all directions; also, consider initial evacuation for 1/2 mile in all directions. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Keep away from open flames, hot surfaces and sources of ignition. No smoking. Do not allow contact with incompatible materials (see section 10). Do not breathe gas, vapors, mist, spray, or fumes. Do not get in eyes, on skin, or on clothing. Eliminate every possible source of ignition. Isolate 500 feet in all directions. Protect persons downwind 1.0 mile (day) or 2.5 miles (night).

6.1.1. For Non-emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Isolate 500 feet in all directions. Protect persons downwind 1.0 mile (day) or 2.5 miles (night). Evacuate unnecessary personnel and move upwind at least 500 feet. Eliminate ignition sources.

6.1.2. For Emergency Responders

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Upon arrival at the scene a first responder is expected to protect oneself and the public, secure the area, and call for the assistance of trained personnel as conditions permit.

6.2. Environmental Precautions

Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Contact competent authorities after a spill.

6.3. Methods and Material for Containment and Cleaning Up

For Containment: As an immediate precautionary measure, isolate spill or leak area in all directions.

Methods for Cleaning Up: Contact competent authorities after a spill.

6.4. Reference to Other Sections

See heading 8, Exposure Controls and Personal Protection. See Section 13, Disposal Considerations.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Additional Hazards When Processed: When heated to decomposition, emits toxic fumes. Do NOT breathe (dust, vapor, mist, gas). Do not get in eyes, on skin, or on clothing. Do not handle until all safety precautions have been read and understood. Do not pressurize, cut, or weld containers. Do not store near or around flammable materials.

Precautions for Safe Handling: Use only outdoors or in a well-ventilated area. Avoid all eye and skin contact and do not breathe vapor and mist.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Wash contaminated clothing before reuse.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Any proposed use of this product in elevated-temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. Comply with applicable regulations.

Storage Conditions: Store in a dry, cool and well-ventilated place. Keep in fireproof place. Store locked up. Keep/Store away from combustible and organic materials and all ignition sources. Do not use zinc or copper (brass, bronze, etc.) alloys due to incompatibility. Also, cast iron, malleable iron, or ductile iron are susceptible to corrosion.

Incompatible Products: Alkaline products. Combustible materials. Organic materials. Copper. Aluminum. Explosions may occur on contact with ammonia, boron trichloride, carbon disulfide, cyclohexane, fluorine, formaldehyde, hydrazine, nitrobenzene, toluene, incompletely halogenated hydrocarbons, propylene, alcohols, and ozone.

7.3. Specific End Use(s) Fuel Oxidizer, Propellant, Sterilizer

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters

For substances listed in section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), NIOSH (REL), or OSHA (PEL).

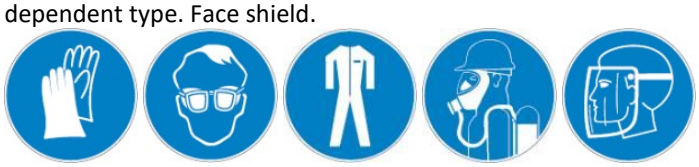
Nitrogen monoxide (10102-43-9)		
Mexico	OEL TWA (mg/m³)	45 mg/m³
Mexico	OEL TWA (ppm)	35 ppm
Mexico	OEL STEL (mg/m³)	30 mg/m³
Mexico	OEL STEL (ppm)	25 ppm
USA ACGIH	ACGIH TWA (ppm)	25 ppm
USA NIOSH	NIOSH REL (TWA) (mg/m³)	30 mg/m³
USA NIOSH	NIOSH REL (TWA) (ppm)	25 ppm
USA IDLH	US IDLH (ppm)	100 ppm
USA OSHA	OSHA PEL (TWA) (mg/m³)	30 mg/m³
USA OSHA	OSHA PEL (TWA) (ppm)	25 ppm
Alberta	OEL TWA (mg/m³)	31 mg/m³
Alberta	OEL TWA (ppm)	25 ppm
British Columbia	OEL TWA (ppm)	25 ppm
Manitoba	OEL TWA (ppm)	25 ppm
New Brunswick	OEL TWA (mg/m³)	31 mg/m³
New Brunswick	OEL TWA (ppm)	25 ppm
Newfoundland & Labrador	OEL TWA (ppm)	25 ppm
Northwest Territories	OEL TWA (ppm)	25 ppm
Northwest Territories	OEL STEL (ppm)	38 ppm
Nova Scotia	OEL TWA (ppm)	25 ppm
Nunavut	OEL STEL (ppm)	38 ppm
Nunavut	OEL TWA (ppm)	25 ppm

Ontario	OEL TWA (ppm)	25 ppm
Prince Edward Island	OEL TWA (ppm)	25 ppm
Québec	OEL TWA (ppm)	25 ppm
Québec	OEL TWA (mg/m³)	31 mg/m³
Saskatchewan	OEL STEL (ppm)	38 ppm
Saskatchewan	OEL TWA (ppm)	25 ppm
Yukon	OEL STEL (mg/m³)	45 mg/m³
Yukon	OEL STEL (ppm)	35 ppm
Yukon	OEL TWA (mg/m³)	30 mg/m³
Yukon	OEL TWA (ppm)	25 ppm

8.2. Exposure Controls

Appropriate Engineering Controls : Gas detectors should be used when toxic gases may be released. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure all national/local regulations are observed. Provide sufficient ventilation to keep nitrogen monoxide vapors below the permissible exposure limit. Product to be handled in a closed system and under strictly controlled conditions. Smoking, open flames, and unauthorized sparking or flame-producing devices is prohibited.

Personal Protective Equipment : Gloves. Protective goggles. Protective clothing. Respiratory protection of the dependent type. Face shield.



Materials for Protective Clothing : Acid-resistant clothing.

Hand Protection : Acid-resistant protective gloves.

Eye Protection : Chemical safety goggles and face shield.

Skin and Body Protection : Acid-resistant clothing. Rubber apron, boots.

Respiratory Protection : A NIOSH-approved self-contained breathing apparatus (SCBA) operated in a pressure demand or other positive pressure mode or equivalent respirator should be used in that approach the threshold limit PEL of 5 ppm.

Other Information : When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Physical State : Gas

Appearance : Reddish-brown to Green, depending on % NO

Odor : Pungent acidic odor

Odor Threshold : 1 ppm

pH : Not applicable

Evaporation Rate : No data available

Melting Point : Not available

Freezing Point : -69 - 12 °F (-56 - -11 °C)

Boiling Point : > 16 - 70 °F (> -9 - 21 °C)

Flash Point : Not applicable

Auto-ignition Temperature : Not applicable

Decomposition Temperature : > 320 °F (160 °C)

Flammability (solid, gas) : Not flammable

Vapor Pressure : 32.193 - 90.699 psia @ 77 °F (25 °C)

Relative Vapor Density at 20 °C : 1.58

Specific Gravity : 1.380 - 1.431 @77 °F (25 °C)

Density : 12.07 lb/gal

Solubility : No data available

Partition Coefficient: N-Octanol/Water : No data available

Viscosity : No data available

Viscosity, Dynamic : 0.00028 lb/(ft•s) @ 20 °C (68 °F)

Lower Flammable Limit : Not applicable

Upper Flammable Limit : Not applicable

Critical Pressure : 100 atm

9.2. Other Information

VOC content : 100 %

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity: 'Oxidizing': substances and preparations which exhibit highly exothermic reactions when in contact with other substances, particularly flammable substances.

10.2. Chemical Stability: The substance is a strong oxidant and reacts with combustible and reducing materials, causing fire and explosion hazard.

10.3. Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

10.4. Conditions to Avoid: Open flame. Heat. Sparks. combustible materials. Incompatible materials. Extremely high temperatures.

10.5. Incompatible Materials: Alkaline substances. Combustible materials. Organic materials. Copper. Aluminum. Explosions may occur on contact with ammonia, boron trichloride, carbon disulfide, cyclohexane, fluorine, formaldehyde, hydrazine, nitrobenzene, toluene, incompletely halogenated hydrocarbons, propylene, alcohols, and ozone.

10.6. Hazardous Decomposition Products: Nitrogen oxides. Toxic vapors.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information On Toxicological Effects

Acute Toxicity: Inhalation:gas: Fatal if inhaled.

Dinitrogen Tetroxide, Mixed Oxides of Nitrogen	
LC50 Inhalation Rat	138 ppm (0.5 h)
ATE (Gases)	25.54 ppmV/4h
Dinitrogen tetraoxide (10544-72-6)	
LC50 Inhalation Rat	88 ppm/4h
Nitrogen monoxide (10102-43-9)	
LC50 Inhalation Rat	780 ppm/4h

Skin Corrosion/Irritation: Causes severe skin burns and eye damage.

Serious Eye Damage/Irritation: Causes serious eye damage.

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): May cause damage to organs (lungs) through prolonged or repeated exposure.

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: Fatal if inhaled. Symptoms may be delayed. A single acute exposure may cause death. Repeat exposure to small amounts of nitrogen oxides may cause lung damage.

Symptoms/Injuries After Skin Contact: Corrosive. Causes burns. Symptoms may include: Redness. Pain. Serious skin burns. Blisters.

Symptoms/Injuries After Eye Contact: Causes permanent damage to the cornea, iris, or conjunctiva. Symptoms may include: Redness. Pain. Blurred vision. Severe burns.

Symptoms/Injuries After Ingestion: Abdominal pain. Burns in mouth and throat. Burning sensation in the throat and chest. Nausea. Vomiting. Shock or collapse.

Chronic Symptoms: May cause pulmonary edema.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecology - General : Harmful to aquatic life.

12.2. Persistence and Degradability Not established

12.3. Bioaccumulative Potential

Dinitrogen Tetroxide, Mixed Oxides of Nitrogen	
Log Pow	-1.14
Bioaccumulative Potential	Not established.

Dinitrogen tetraoxide (10544-72-6)	
BCF fish 1	(no bioaccumulation)

12.4. Mobility in Soil

No additional information available

12.5. Other Adverse Effects

None known

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Sewage Disposal Recommendations: Do not empty into drains; dispose of this material and its container in a safe way.

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

SECTION 14: TRANSPORT INFORMATION

In Accordance with DOT

Proper Shipping Name : DINITROGEN TETROXIDE
Hazard Class : 2.3
Identification Number : UN1067
Label Codes : 2.3, 5.1, 8
ERG Number : 124

In Accordance with IMDG

Proper Shipping Name : DINITROGEN TETROXIDE (NITROGEN DIOXIDE)
Hazard Class : 2
Division : 2.3
Subsidiary Risk(s) : 5.1, 8
Identification Number : UN1067
Label Codes : 2.3, 5.1, 8
EmS-No. (Fire) : F-C
EmS-No. (Spillage) : S-W

In Accordance with IATA

Proper Shipping Name : DINITROGEN TETROXIDE
Identification Number : UN1067
Hazard Class : 2
Label Codes : 2.3, 5.1, 8
Division : 2.3
Subsidiary Risk(s) : 5.1, 8
ERG Code (IATA) : 2PX

In Accordance with MX-SCT

Proper Shipping Name : DINITROGEN TETROXIDE
Identification Number : UN1067
Hazard Class : 2
Label Codes : 2.3, 5.1, 8

SECTION 15: REGULATORY INFORMATION

15.1 US Federal Regulations

Dinitrogen Tetroxide, Mixed Oxides of Nitrogen	
SARA Section 311/312 Hazard Classes	Fire hazard Immediate (acute) health hazard Reactive hazard

Dinitrogen tetraoxide (10544-72-6)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
CERCLA Reportable Quatitiy (RQ)	10lbs

Nitrogen monoxide (10102-43-9)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on the United States SARA Section 302	
SARA Section 302 Threshold Planning Quantity (TPQ)	100lbs
SARA Section 304 EHS Reportable Quantity (RQ)	10lbs
CERCLA Reportable Quatitiy (RQ)	10lbs

15.2 US State Regulations

Dinitrogen tetraoxide (10544-72-6)
U.S. - Delaware - Pollutant Discharge Requirements - Reportable Quantities
U.S. - Louisiana - Reportable Quantity List for Pollutants
U.S. - Massachusetts - Oil & Hazardous Material List - Groundwater Reportable Concentration - Reporting Category 1
U.S. - Massachusetts - Oil & Hazardous Material List - Groundwater Reportable Concentration - Reporting Category 2
U.S. - Massachusetts - Oil & Hazardous Material List - Reportable Quantity
U.S. - Massachusetts - Oil & Hazardous Material List - Soil Reportable Concentration - Reporting Category 1
U.S. - Massachusetts - Oil & Hazardous Material List - Soil Reportable Concentration - Reporting Category 2
RTK - U.S. - Massachusetts - Right To Know List
U.S. - Massachusetts - Toxics Use Reduction Act
U.S. - Michigan - Polluting Materials List
U.S. - Michigan - Process Safety Management Highly Hazardous Chemicals
U.S. - New Jersey - Discharge Prevention - List of Hazardous Substances
RTK - U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - New Jersey - TCPA - Extraordinarily Hazardous Substances (EHS)
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances
RTK - U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
RTK - U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - Texas - Effects Screening Levels - Long Term
U.S. - Texas - Effects Screening Levels - Short Term
U.S. - Wyoming - Process Safety Management - Highly Hazardous Chemicals

Nitrogen monoxide (10102-43-9)
U.S. - Colorado - Hazardous Wastes - Discarded Chemical Products, Off-Specification Species, Container and Spill Residues
U.S. - Connecticut - Hazardous Air Pollutants - HLVs (30 min)
U.S. - Connecticut - Hazardous Air Pollutants - HLVs (8 hr)
U.S. - Delaware - Accidental Release Prevention Regulations - Sufficient Quantities
U.S. - Delaware - Accidental Release Prevention Regulations - Threshold Quantities
U.S. - Delaware - Accidental Release Prevention Regulations - Toxic Endpoints
U.S. - Delaware - Pollutant Discharge Requirements - Reportable Quantities
U.S. - Idaho - Occupational Exposure Limits - TWAs
U.S. - Louisiana - Reportable Quantity List for Pollutants
U.S. - Massachusetts - Oil & Hazardous Material List - Groundwater Reportable Concentration - Reporting Category 1
U.S. - Massachusetts - Oil & Hazardous Material List - Groundwater Reportable Concentration - Reporting Category 2
U.S. - Massachusetts - Oil & Hazardous Material List - Reportable Quantity
U.S. - Massachusetts - Oil & Hazardous Material List - Soil Reportable Concentration - Reporting Category 1
U.S. - Massachusetts - Oil & Hazardous Material List - Soil Reportable Concentration - Reporting Category 2
RTK - U.S. - Massachusetts - Right To Know List
U.S. - Massachusetts - Toxics Use Reduction Act
U.S. - Michigan - Occupational Exposure Limits - TWAs
U.S. - Michigan - Polluting Materials List
U.S. - Michigan - Process Safety Management Highly Hazardous Chemicals
U.S. - Minnesota - Hazardous Substance List
U.S. - Minnesota - Permissible Exposure Limits - TWAs
U.S. - Nebraska - ''P'' Listed Hazardous Wastes
U.S. - New Hampshire - Regulated Toxic Air Pollutants - Ambient Air Levels (AALs) - 24-Hour

U.S. - New Hampshire - Regulated Toxic Air Pollutants - Ambient Air Levels (AALs) - Annual
U.S. - New Jersey - Discharge Prevention - List of Hazardous Substances
U.S. - New Jersey - Environmental Hazardous Substances List
RTK - U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - New Jersey - Special Health Hazards Substances List
U.S. - New Jersey - TCPA - Extraordinarily Hazardous Substances (EHS)
U.S. - New York - Occupational Exposure Limits - TWAs
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances
U.S. - North Dakota - Air Pollutants - Guideline Concentrations - 8-Hour
U.S. - North Dakota - Hazardous Wastes - Discarded Chemical Products, Off-Specification Species, Container and Spill Residues
U.S. - Ohio - Accidental Release Prevention - Threshold Quantities
U.S. - Ohio - Extremely Hazardous Substances - Threshold Quantities
U.S. - Oregon - Permissible Exposure Limits - TWAs
RTK - U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
RTK - U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - Tennessee - Occupational Exposure Limits - TWAs
U.S. - Texas - Effects Screening Levels - Long Term
U.S. - Texas - Effects Screening Levels - Short Term
U.S. - Vermont - Hazardous Waste - Acutely Hazardous Wastes
U.S. - Vermont - Hazardous Waste - Hazardous Constituents
U.S. - Vermont - Permissible Exposure Limits - TWAs
U.S. - Washington - Dangerous Waste - Dangerous Waste Constituents List
U.S. - Washington - Dangerous Waste - Discarded Chemical Products List
U.S. - Washington - Permissible Exposure Limits - STELs
U.S. - Washington - Permissible Exposure Limits - TWAs
U.S. - Wyoming - Process Safety Management - Highly Hazardous Chemicals

15.3. Canadian Regulations

Nitrogen monoxide (10102-43-9)	
Listed on the Canadian DSL (Domestic Substances List)	
CEPA - Schedule I - List of Toxic Substances	
Environmental Emergencies - Part 2 Substances - Substances Hazardous When Inhaled	10 % Minimum mixture concentration (anhydrous, by weight) 4.5 tonnes Minimum quantity
WHMIS Classification	Gases under pressure - Liquefied gas H280 Oxidizing gas - Category 1 H270

Dinitrogen tetraoxide (10544-72-6)
Listed on the Canadian NDSL (Non-Domestic Substances List)

15.4 Mexico Regulations

Nitrogen monoxide (10102-43-9)
National Inventory of Chemical Substances (INSQ)
Workplace Threshold Quantities of Hazardous Chemicals: 120 kg
Dinitrogen tetraoxide (10544-72-6)
National Inventory of Chemical Substances (INSQ)
Workplace Threshold Quantities of Hazardous Chemicals: 120 kg

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision Date : 1 July 2021

GHS Full Text Phrases:

Acute Tox. 1 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 1
Acute Tox. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3
Compressed gas	Gases under pressure Compressed gas
Eye Dam. 1	Serious eye damage/eye irritation Category 1

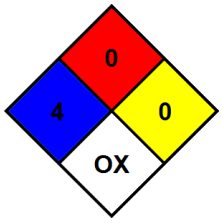
Liquefied gas	Gases under pressure Liquefied gas
Ox. Gas 1	Oxidizing gases Category 1
Ox. Liq. 1	Oxidizing liquids Category 1
Skin Corr. 1B	Skin corrosion/irritation Category 1B
STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
H270	May cause or intensify fire; oxidizer
H271	May cause fire or explosion; strong oxidizer
H280	Contains gas under pressure; may explode if heated
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H330	Fatal if inhaled
H331	Toxic if inhaled
H373	May cause damage to organs through prolonged or repeated exposure

NFPA Health Hazard : 4 - Very short exposure could cause death or serious residual injury even though prompt medical attention was 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.

NFPA Specific Hazard : OX - This denotes an oxidizer, a chemical which can greatly increase the rate of combustion/fire.



HMIS III Rating

Health : 4 Severe Hazard - Life-threatening, major or permanent damage may result from single or repeated overexposures

Flammability : 0 Minimal Hazard

Physical : 0 Minimal Hazard

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.

CF believes the information contained herein is accurate; however, CF makes no guarantees or warranties with respect to such accuracy and assumes no liability in connection with the use of the information contained herein by any party. The provision of the information contained herein by CF is not intended to be and should not be construed as legal advice or as ensuring compliance by other parties. Judgments as to the suitability of the information contained herein for the party's own use or purposes are solely the responsibility of that party. Any party handling, transferring, transporting, storing, applying or otherwise using this product should review thoroughly all applicable laws, rules, regulations, standards and good engineering practices. Such thorough review should occur before the party handles, transfers, transports, stores, applies or otherwise uses this product.