



MATHESON

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Safety Data Sheet

Material Name: CYANOGEN

SDS ID: MAT05780

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name

CYANOGEN

Synonyms

MTG MSDS 24; CYANOGEN GAS; ETHANEDINITRILE; DICYANOGEN; DICYAN; OXALIC ACID DINITRILE; OXALONITRILE; OXALODINITRILE; UN 1026

Chemical Family

inorganic, Gas

Product Use

Industrial and Specialty Gas Applications.

Restrictions on Use

None known.

Details of the supplier of the safety data sheet

MATHESON TRI-GAS, INC.

150 Allen Road, Suite 302

Basking Ridge, NJ 07920

General Information: 1-800-416-2505

Emergency #: 1-800-424-9300 (CHEMTREC)

Outside the US: 703-527-3887 (Call collect)

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with paragraph (d) of 29 CFR 1910.1200.

Flammable Gases - Category 1

Gases Under Pressure - Liquefied gas

Acute Toxicity - Inhalation - Gas - Category 2

Serious Eye Damage/Eye Irritation - Category 2A

Specific target organ toxicity - Single exposure - Category 1

Specific target organ toxicity - Single exposure - Category 3

Specific target organ toxicity - Repeated exposure - Category 2

Hazardous to the Aquatic Environment - Acute - Category 1

Hazardous to the Aquatic Environment - Chronic - Category 1

GHS Label Elements

Symbol(s)



Signal Word

Danger

Hazard Statement(s)

Extremely flammable gas.

Contains gas under pressure; may explode if heated.

Fatal if inhaled.

Causes serious eye irritation.

Causes damage to central nervous system.



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May cause respiratory irritation.

May cause damage to organs through prolonged or repeated exposure. (central nervous system)

Very toxic to aquatic life with long lasting effects.

Precautionary Statement(s)**Prevention**

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Do not breathe gas.

Use only outdoors or in a well-ventilated area.

Wear respiratory protection.

Wash thoroughly after handling.

Wear eye protection/face protection.

Do not eat, drink or smoke when using this product.

Avoid release to the environment.

Response

Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

Eliminate all ignition sources if safe to do so.

If exposed: Call a POISON CENTER or doctor/physician.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Immediately call a POISON CENTER or doctor/physician.

Specific treatment is urgent, see first aid section of Safety Data Sheet.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.

If eye irritation persists: Get medical advice/attention.

Collect spillage.

Storage

Protect from sunlight.

Store in a well-ventilated place.

Keep container tightly closed.

Store locked up.

Disposal

Dispose in accordance with all applicable regulations.

Statement(s) of Unknown Acute Toxicity

Inhalation 0% of the mixture consists of ingredient(s) of unknown acute toxicity.

Statement(s) of Unknown Aquatic Toxicity

0% of the mixture consists of ingredient(s) of unknown acute aquatic toxicity.

0% of the mixture consists of ingredient(s) of unknown chronic aquatic toxicity.

Other Hazards

May cause frostbite upon sudden release of liquefied gas.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component Name	Percent
460-19-5	CYANOGEN	100

Section 4 - FIRST AID MEASURES**Inhalation**

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

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If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115°F; 41-46°C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.

Eyes

Flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Then get immediate medical attention.

Ingestion

If swallowed, get medical attention.

Most Important Symptoms/Effects**Acute**

frostbite, respiratory tract irritation, eye irritation, central nervous system depression, central nervous system damage

Delayed

nervous system damage

Note to Physicians

For inhalation, consider oxygen.

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media**Suitable Extinguishing Media**

Use dry chemical, carbon dioxide, alcohol-resistant foam or water spray. Large fires: water spray or fog, alcohol-resistant foam

Unsuitable Extinguishing Media

Do not direct water at source of leak or safety devices; icing may occur.

Special Hazards Arising from the Chemical

Severe fire hazard. Gas/air mixtures are explosive. The gas is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Containers may rupture or explode if exposed to heat.

Hazardous Combustion Products

hydrogen cyanide, oxides of nitrogen, Oxides of carbon

Fire Fighting Measures

Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Damaged cylinders should be handled only by specialists. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Evacuation radius: 800 meters (1/2 mile). Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Stop flow of gas.

Special Protective Equipment and Precautions for Firefighters

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Wear personal protective clothing and equipment, see Section 8.

Methods and Materials for Containment and Cleaning Up

Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Avoid heat, flames, sparks and other sources of ignition. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Stop leak if possible without personal risk. Reduce vapors with water spray. Keep unnecessary people



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away, isolate hazard area and deny entry. Remove sources of ignition. Ventilate closed spaces before entering. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

Environmental Precautions

Avoid release to the environment. Collect spillage.

Section 7 - HANDLING AND STORAGE**Precautions for Safe Handling**

Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not breathe gas. Use only outdoors or in a well-ventilated area. Wear respiratory protection. Wash hands thoroughly after handling. Wear eye/face protection. Do not eat, drink, or smoke when using this product.

Conditions for Safe Storage, Including any Incompatibilities

Protect from sunlight.

Store in a well-ventilated place.

Keep container tightly closed.

Store locked up.

Store and handle in accordance with all current regulations and standards. Avoid heat, flames, sparks and other sources of ignition. Protect from physical damage. Avoid shock or friction. Store in a well-ventilated area. Store in a cool, dry place. Protect from sunlight. Store outside or in a detached building. Keep container tightly closed. Keep locked up. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Keep separated from incompatible substances.

Incompatible Materials

oxidizing materials, halogens, Acids

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION**Component Exposure Limits**

CYANOGEN	460-19-5
ACGIH:	5 ppm Ceiling
NIOSH:	10 ppm TWA ; 20 mg/m ³ TWA
	25 mg/m ³ IDLH (except Hydrogen cyanide) asCN (related to Cyanide compounds)
OSHA (US):	5 mg/m ³ TWA asCN (related to Cyanide compounds)
	prevent or reduce skin absorption (as CN) (related to Cyanide compounds)
Mexico:	10 ppm TWA VLE-PPT ; 20 mg/m ³ TWA VLE-PPT

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)

There are no biological limit values for any of this product's components.

Engineering Controls

Provide local exhaust or process enclosure ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.

Individual Protection Measures, such as Personal Protective Equipment**Eye/face protection**

Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area. Contact lenses should not be worn.



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For the gas: Wear appropriate chemical resistant clothing. For the liquid: Wear appropriate protective, cold insulating clothing.

Respiratory Protection

Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use. Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode. Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode. Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Glove Recommendations

For the gas: Wear appropriate chemical resistant gloves. For the liquid: Wear insulated gloves.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance	colorless gas	Physical State	gas
Odor	pungent odor	Color	colorless
Odor Threshold	1 ppm	pH	Not available
Melting Point	-27.9 °C (-18 °F)	Boiling Point	-21 °C (-6 °F)
Boiling Point Range	Not available	Freezing point	Not available
Evaporation Rate	Not available	Flammability (solid, gas)	Not available
Autoignition Temperature	Not available	Flash Point	(Flammable)
Lower Explosive Limit	6.6 %	Decomposition temperature	Not available
Upper Explosive Limit	32 %	Vapor Pressure	760 mmHg @ -21 °C
Vapor Density (air=1)	1.8	Specific Gravity (water=1)	0.954 at -21 °C
Water Solubility	(Soluble)	Partition coefficient: n-octanol/water	Not available
Viscosity	Not available	Kinematic viscosity	Not available
Solubility (Other)	Not available	Density	Not available
KOC	8.3 (Estimate)	Log KOW	0.07
Physical Form	gas	Molecular Formula	C ₂ -N ₂
Molecular Weight	52.04		

Solvent Solubility



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alcohol, ether

Section 10 - STABILITY AND REACTIVITY

Chemical Stability

Contact with water or moist air may form flammable and/or toxic gases or vapors.

Possibility of Hazardous Reactions

May polymerize violently or explosively.

Conditions to Avoid

Avoid heat, flames, sparks and other sources of ignition. Minimize contact with material. Avoid inhalation of material or combustion by-products. Keep out of water supplies and sewers.

Incompatible Materials

oxidizing materials, halogens, Acids

Hazardous decomposition products

hydrogen cyanide, oxides of nitrogen, Oxides of carbon

Water/Moisture/Acids

Cyanides

Section 11 - TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure**Inhalation**

irritation, nausea, vomiting, headache, drowsiness, dizziness, bluish skin color, suffocation, lung congestion, convulsions, coma

Skin Contact

frostbite

Eye Contact

irritation, frostbite

Ingestion

ingestion of a gas is unlikely

Acute and Chronic Toxicity**Component Analysis - LD50/LC50**

The components of this material have been reviewed in various sources and the following selected endpoints are published:

CYANOGEN (460-19-5)

Inhalation LC50 Rat 350 ppm 1 h

Product Toxicity Data**Acute Toxicity Estimate**

No data available.

Immediate Effects

frostbite, respiratory tract irritation, eye irritation, central nervous system depression, central nervous system damage

Delayed Effects

nervous system damage

Irritation/Corrosivity Data

respiratory tract irritation, eye irritation

Respiratory Sensitization

No data available.

Dermal Sensitization

No data available.

Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, NTP, DFG or OSHA



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Material Name: CYANOGEN**SDS ID: MAT05780****Germ Cell Mutagenicity**

No data available.

Tumorigenic Data

No data available

Reproductive Toxicity

No data available.

Specific Target Organ Toxicity - Single Exposure

central nervous system, respiratory tract

Specific Target Organ Toxicity - Repeated Exposure

nervous system

Aspiration hazard

Not applicable.

Medical Conditions Aggravated by Exposure

No data available.

Section 12 - ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life with long lasting effects. There is no data for the substance itself, however, it has been classified a Category 1 to the aquatic environment by EU.

Component Analysis - Aquatic Toxicity

No LOLI ecotoxicity data are available for this product's components.

Persistence and Degradability

No data available.

Bioaccumulative Potential

Bioconcentration potential in aquatic organisms is low based on a BCF value of 3.2.

Mobility

Expected to have high mobility in soil.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose in accordance with all applicable regulations.

Component Waste Numbers**CYANOGEN**

waste number P031

Section 14 - TRANSPORT INFORMATION

US DOT Information:**Shipping Name:** CYANOGEN**Hazard Class:** 2.3**UN/NA #:** UN1026**Required Label(s):** 2.3 2.1

Marine pollutant

IMDG Information:**Shipping Name:** CYANOGEN**Hazard Class:** 2.3**UN#:** UN1026**Required Label(s):** 2.3 2.1

Marine pollutant

International Bulk Chemical Code



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This material does not contain any chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

Section 15 - REGULATORY INFORMATION

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

CYANOGEN	460-19-5
SARA 313:	1 % de minimis concentration (X+CN- where X=H+ or any other group where a formal dissociation can be made, for example, KCN or Ca(CN) ₂) (related to Cyanide compounds)
CERCLA:	100 lb final RQ ; 45.4 kg final RQ
OSHA (safety):	2500 lb TQ

SARA Section 311/312 (40 CFR 370 Subparts B and C) reporting categories

Flammable; Gas Under Pressure; Acute toxicity; Serious Eye Damage/Eye Irritation; Specific Target Organ Toxicity

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
CYANOGEN	460-19-5	Yes	Yes	Yes	Yes	Yes

Not listed under California Proposition 65

Canada Regulations

Canadian WHMIS Ingredient Disclosure List (IDL)

Components of this material have been checked against the Canadian WHMIS Ingredients Disclosure List. The List is composed of chemicals which must be identified on MSDSs if they are included in products which meet WHMIS criteria specified in the Controlled Products Regulations and are present above the threshold limits listed on the IDL

CYANOGEN	460-19-5
	1 %

WHMIS Classification

ABD1

Component Analysis - Inventory

CYANOGEN (460-19-5)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN - NCI (Draft)
Yes	DSL	EIN	No	Yes	No	No	Yes	No	No	No	Yes	Yes	No	No

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Section 16 - OTHER INFORMATION

NFPA Ratings

Health: 4 Fire: 4 Reactivity: 2

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Summary of Changes

Updated: 05/01/2015

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania*; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CFR - Code of Federal Regulations (US); CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EC - European Commission; EEC - European Economic Community; EIN - European Inventory of (Existing Commercial Chemical Substances); EINECS - European Inventory of Existing Commercial Chemical Substances; ENCS - Japan Existing and New Chemical Substance Inventory; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; ISHL - Japan Industrial Safety and Health Law; IUCLID - International Uniform Chemical Information Database; JP - Japan; Kow - Octanol/water partition coefficient; KR KECI Annex 1 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR KECI Annex 2 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL) , KR - Korea; LD50/LC50 - Lethal Dose/ Lethal Concentration; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX - Mexico; NDSL - Non-Domestic Substance List (Canada); NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PEL - Permissible Exposure Limit; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH - Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TCCA - Korea Toxic Chemicals Control Act; TDG - Transportation of Dangerous Goods; TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TW - Taiwan; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; VLE - Exposure Limit Value (Mexico); VN NCI (Draft) - Vietnam National Chemicals Inventory (NCI) (Draft); WHMIS - Workplace Hazardous Materials Information System (Canada) .

Other Information**Disclaimer:**

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