MATERIAL SAFETY DATA SHEET

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1- Chemical Product Information and Company Identification.

Product Name: : Pyrrolidine GC reference standard, AnStan®.
Synonym: : Tetramethyleneimine.
Product code: : BS14097.
CAS Number: : 123-75-1.
Company Name: : Briti Scientific.
Company Address: : Plot No:78/B/13, SY-79,Phase-VI, Jeedimetla,Hyderabad-500 055. Telangana, India.

Section 2- Composition / Information on Ingredients.

CAS No.	Chemical Name	Mol. Formula
123-75-1.	Tetramethyleneimine.	C_4H_9N.

Section 3- Hazards Identification.

Classification

Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids: Category 2
Acute oral toxicity: Category 4
Acute Inhalation Toxicity – Vapors: Category 4
Skin Corrosion/Irritation: Category 1 A
Serious Eye Damage/Eye Irritation: Category 1

Label Elements

Signal Word: Danger

Hazard Statements

Highly flammable liquid and vapour.
Causes severe skin burns and eye damage.
Harmful if swallowed or if inhaled.

Precautionary Statements

Prevention:

Wash face, hands and any exposed skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Do not breathe dust/fume/gas/mist/vapors/spray.
Wear protective gloves/protective clothing/eye protection/face protection.
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.

Response: Immediately call a POISON CENTER or doctor/physician.

Inhalation

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

Skin

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse.

Eyes

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

Ingestion

Rinse mouth
Do NOT induce vomiting.

Fire

In case of fire: Use CO2, dry chemical, or foam for extinction.

Storage: Store locked up.
Store in a well-ventilated place. Keep cool

Disposal:

Dispose of contents/container to an approved

Hazards not otherwise classified (HNOC)

None identified

Section 4- First Aid Measures.

Eye Contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention if symptoms occur.

Skin Contact: Wash off immediately with plenty of water for at least 15 minutes. Get medical attention if symptoms occur.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.
Ingestion: Do NOT induce vomiting. Get medical attention.
Most important symptoms and effects: Causes burns by all exposure routes. Difficulty in breathing. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.
Notes to Physician: Treat symptomatically

Section 5- Fire Fighting Measures.

Suitable Extinguishing Media: Water spray, Carbon dioxide (CO_2). Dry chemical. Water mist may be used to cool closed containers. Chemical foam. Water mist may be used to cool closed containers.
Unsuitable Extinguishing Media: No information available.
Flash Point: 3 °C / 37.4 °F.
Method - No information available
Autoignition Temperature: 345 °C / 653 °F.
Explosion Limits
Upper 10.6%
Lower 1.6%
Sensitivity to Mechanical Impact: No information available
Sensitivity to Static Discharge: No information available
Specific Hazards Arising from the Chemical: Flammable. Vapors may travel to source of ignition and flash back. Containers may explode when heated. Vapors may form explosive mixtures with air
Hazardous Combustion Products:
Nitrogen oxides (NOx). Carbon monoxide (CO). Carbon dioxide (CO_2).
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.
NFPA

Health	Flammability	Instability	Physical hazards
3	3	0	N/A

Section 6- Accidental Release Measures.

Personal Precautions: Remove all sources of ignition. Take precautionary measures against static discharges.
Environmental Precautions: See Section 12 for additional Ecological Information.
Methods for Containment and Clean Up: Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

Section 7- Handling and Storage.

Handling: Do not breathe dust. Do not breathe mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Take precautionary measures against static discharges. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Handle product only in closed system or provide appropriate exhaust ventilation. Uses park-proof tools and explosion-proof equipment. Use only non-sparking tools. Keep away from open flames, hot surfaces and sources of ignition. Protection. Avoid contact with skin, eyes or clothing. Avoid ingestion and inhalation. Avoid dust formation.

Storage: Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Keep away from heat, sparks and flame. Protect from direct sunlight. Flammables area. Keep under nitrogen. Incompatible Materials. Acids, Strong oxidizing agents, Acid anhydrides, Acid chlorides, Metals, copper. Carbon dioxide (CO_2).

Section 8- Exposure Control/Personal Protection.

Exposure Guidelines: This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Engineering Measures: Use explosion-proof electrical/ventilating/lighting equipment. Ensure that eye wash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or EuropeanStandardEN166.

Skin and body protection: Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures:

Handle in accordance with good industrial hygiene and safety practice.

Section 9- Physical and Chemical Properties.

Appearance: Colorless to Almost colorless clear liquid.
Odor: Rotten-egg like.
Odor Threshold: No information available
Ph: 12.9 1000 g/l aq.sol.
Melting Point/Range: -63°C.
Boiling Point/Range: 88°C.
Flash Point: 3°C / 37.4°F.
Evaporation Rate: No information available.

Flammability (solid,gas): Not applicable.
Flammability or explosive limits
Upper 10.6%
Lower 1.6%
Vapor Pressure: 65 mbar @ 20 °C.
Density: 1.6613
Solubility: Soluble in Chloroform.
Partition coefficient; n-octanol/water: No data available.
Autoignition Temperature: 345 °C / 653 °F
Decomposition Temperature: 400 °C
Viscosity: 0.94 mPa s at 20 °C
Molecular formula: C_4H_9N.
Molecular Weight: 71.12 g/mol.

Section 10- Stability and Reactivity.

Reactive Hazard: None known, based on information available
Stability: Stable under normal conditions.
Conditions to Avoid: Burning produces obnoxious and toxic fumes. Heat, flames and sparks. Keep away from open flames, hot surfaces and sources of ignition. Exposure to light. Incompatible products.
Incompatible Materials: Acids, Strong oxidizing agents, Acid anhydrides, Acid chlorides, Metals, copper, Carbondioxide (CO_2).
Hazardous Decomposition Products: Nitrogen oxides (NOx), Carbon monoxide (CO), Carbon dioxide (CO_2).
Hazardous Polymerization: Hazardous polymerization does not occur.
Hazardous Reactions: None under normal processing.

Section 11- Toxicological Information.

Acute Toxicity
Product Information: No acute toxicity information is available for this product.
Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Pyrrolidine	300 mg/kg (Rat), 430 mg/kg (Rat)	Not listed	11.7 mg/L/4h (Rat)

Toxicologically Synergistic Products: No information available.
Delayed and immediate effects as well as chronic effects from short and long-term exposure
Irritation: No information available.
Sensitization: No information available.
Mutagenic Effects: No information available.

Reproductive Effects: No information available.
Developmental Effects: No information available.
Teratogenicity: No information available.
STOT - single exposure: None known
STOT - repeated exposure: None known
Aspiration hazard: No information available.
Symptoms / effects, both acute and delayed: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.
Endocrine Disruptor Information: No information available.
Other Adverse Effects: The toxicological properties have not been fully investigated. See actual entry in RTECS for complete information.

Section 12- Ecological Information.

Ecotoxicity: Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Do not empty into drains.
Persistence and Degradability: Persistence is unlikely based on information available.
Bioaccumulation/ Accumulation: No information available.
Mobility: Will likely be mobile in the environment due to its water solubility.

Section 13- Disposal Considerations.

Waste Disposal Methods: Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Section 14- Transport Information.

DOT:
UN-No: UN2524
Proper Shipping Name: ETHYL ORTHOFORMATE
Hazard Class: 3
Packing Group: III
TDG:
UN-No: UN2524
Proper Shipping Name: ETHYL ORTHOFORMATE
Hazard Class: 3
Packing Group: III

IATA Not:
UN-No: UN2524
Proper Shipping Name: ETHYL ORTHOFORMATE
Hazard Class: 3
Packing Group: III
IMDG/IMO:
UN-No: UN2524
Proper Shipping Name: ETHYL ORTHOFORMATE
Hazard Class: 3
Packing Group: III

Section 15- Regulatory Information.

Legend:
TSCA - Toxic Substances Control Act, (40 CFR Part 710).
X - Listed
'-' - Not Listed
TSCA 12(b) - Notices of Export Not applicable.
U.S. Federal Regulations
SARA 313: Not applicable.
SARA 311/312 Hazard Categories See section 2 for more information.
CWA (Clean Water Act) Not applicable.
Clean Air Act: Not applicable.
OSHA - Occupational Safety and
Health Administration: Not applicable.
CERCLA: Not applicable
California Proposition 65: This product does not contain any Proposition 65 chemicals.

Section 16- Other Information.

Briti Scientific provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.