



MATERIAL SAFETY DATA SHEET.

HEXAMETHYLENE TETRAMINE

SECTION I : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: HEXAMETHYLENE TETRAMINE

Synonym: Hexamine, Methenamine

UN No: 1328

CAS#: 100-97-0

EINECS number: 202-905-8

Hazchem Code: 1Z

REACH Reg. No.: 01-2119474895-20-0003

Use: Fertilizer, Pharmaceutical , Explosive Industry

Contact Information:

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SECTION II : HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Flammable & moderately toxic. Mild poison by sub-cutaneous route. May be ignited by friction, heat or spark. Dust at sufficient concentration can form explosive mixture with air.

POTENTIAL HEALTH EFFECTS

Eye: Exposure to high concentrations causes irritation

Skin: May cause rashes to skin.

Inhalation: Inhaling can irritate nose, throat & lungs causing coughing, wheezing & shortness of breath. .

Classification: Flammable solids

Risk phrases

R 11 Highly flammable

R 43 May cause sensitization by skin contact

Safety phrases

S 16 Keep away from source of ignition- no smoking

S 22 Do not breathe dust

S 37 Wear suitable gloves

S 24 Avoid contact with skin

Symbols and Indication of Danger :



+F Highly Flammable



+Xi Irritant

GHS pictogram



Signal word : **WARNING**

Hazard Statements

H228 : Flammable Solid

H317 : May cause an allergic skin reaction

Precautionary Statements

P210 : Keep away from heat/sparks/open flame/hot surfaces.-No smoking.

P240 : Ground/Bond Container and receiving equipment.

P241 : Use explosion proof electrical/lighting/ventilating equipment.

P261 : Avoid breathing dust.

P272 : Contaminated work clothing should not be allowed out of the workplace.

P280 : Wear protective gloves/protective clothing/eye protection/face protection.

P302+P352 : IF ON SKIN Wash with plenty of soap and water

P363 : Wash contaminated clothing before reuse..

P333+ P313: If skin irritation or rash occurs: Get medical advice /attention.

P370+P378 : In case of fire use Water spray/foam/DCP for extinction.

P501 : Dispose of contents/container in accordance with local/regional/national International regulation.

SECTION III : COMPOSITION AND INFORMATION ON INGREDIENTS

Formula: $C_6H_{12}N_4$

Mol. Wt. : 140.22

Proportion: 98.2 % min (stab), 99.5% min (unstab)

Metal Content : N.T

SECTION IV : FIRST AID MEASURES

General Advice: In case of accident or if you feel unwell, seek medical advice immediately. (show the level where possible).

Eyes: Contact with eyes may produce irritation. Wash gently with clean water.

Skin: Contact with skin may cause rash. Wash affected skin with water.

Ingestion: If taken orally, make the victim drink large quantities of water or milk. Do not introduce vomiting without medical advice.

Inhalation: In case of inhalation move patient to fresh air. Begin rescue breathing & CPR in case of a complicated scenario. Transfer to a medical facility.

SECTION V : FIRE AND EXPLOSION DATA

Fire and Explosion Hazard: Flammable /combustible material. May be ignited by friction, heat, sparks or flame. Burns rapidly with flare burning effect. Powders, dust shavings, borings, turnings, or cutting may explode or burn with explosive violence. May re-ignite after fire is extinguished. Concentrated dust may form a cloud & produce an explosion.

Auto ignition Temperature: 390⁰C

Flash Point: 250⁰C

Flammable Limits, Lower: Not Available

Flammable Limits, Upper: Not Available

NFPA Rating (estimated) : Health: 2, Flammable: 1, Instability: 0

Extinguishing Media: Water spray, foam, dry chemical powder and carbon dioxide. Sand in presence of electrical equipment.

Fire fighting procedure: Keep containers cool by spraying water. Fire fighters should wear self-contained breathing apparatus and protective clothing.

SECTION VI : ACCIDENTAL RELEASE MEASURES

Evacuate personnel. Eliminate all ignition sources. To clean up spill, the OSHA hazardous waste operations & emergency response standard (29 CFR 1910.120) may apply. Do not wash into sewer or surface water.

SECTION VII : HANDLING AND STORAGE

Storage containers: Polypropylene woven bags with loose inner Polyethylene liner: 25 Kgs, 500 kgs & 1000 kgs net.

Storage recommendations & precautions: As it is sensitive to moisture it should be stored in dry cool and well-ventilated area (relative humidity below 60%). Keep away from any ignition sources, moisture, combustible & incompatible material. Smoking is strictly prohibited in storage area. Use only non sparking tools & equipment.

SECTION VIII: EXPOSURE CONTROL /PERSONAL PROTECTION

Engineering Measures: Ensure adequate ventilation, especially in confined areas.

Personal Protection

Hand: PVC disposable gloves.

Eyes: Safety goggles or face shield.

Skin & Body: Impervious long sleeved clothing.

Respirators: Wear dust mask or respirator .If > 30 mg/m³, use SCBA.

Exposure limits

PAC-1=30mg/m³ (mild health effect)

PAC-2=50mg/m³ (serious health effect)

PAC-3=500mg/m³(life threatening health effect)

SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Odor : White crystalline Powder & slight odor of amine

pH of 10% aq. solution : 8 – 9

Vapor Pressure : 0.0035 mbar @20°C

Bulk Density : 700-800 gm/liter

Solubility in water : Soluble

Specific gravity : 1.33 at 20° C

SECTION X : STABILITY AND REACTIVITY

Stability: Stable

Hazardous Decomposition Products: Nitrogen Oxides(NOX) / Ammonia / CN- Formaldehyde

Incompatibility(Materials to avoid): React with oxidizing materials, explosive reaction with Acetic Acid + Acetic Unhydride + Ammonium nitrate + Nitric Acid. Reaction with nitric Acid + Acetic Unhydride forms the military explosives RDX & HMX. Reacts violently with Na₂O₂, strong oxidizing agents.

Conditions to Avoid: Avoid direct heat and naked flames. Ensure that equipment is earthed. Do not expose to air or moisture over prolonged period.

Recommended Material for Equipment: Stainless Steel

SECTION XI : TOXICOLOGICAL INFORMATION

Acute Toxicity : RTECS Number : MN4725000

Oral, LD 50 Mouse : 569 mg / kg

Chronic Toxicity : Chronic exposure may cause nausea & vomiting, higher exposure causes unconsciousness.

Local effect : Symptoms of overexposure may be headache, dizziness, tiredness, nausea & vomiting.

Carcinogenic effect : No data available

Mutagenic effect : No data available

Reproductive toxicity: No data available. May be harmful in case of pregnancy

SECTION XII: ECOLOGICAL INFORMATION

Mobility: No data available

Bio accumulation: No data available

Eco Toxicity Effect: No data available

Aquatic Toxicity: May cause long term adverse effects in the aquatic environment

SECTION XIII : DISPOSAL CONSIDERATION

Any waste or contaminated spills should be collected and disposed off in accordance with local and statutory regulations using a registered waste disposal contractor. Waste disposal is possible by total incineration. Do not reuse empty containers.

SECTION XIV : TRANSPORT INFORMATION

Proper Shipping Name: Hexamethylene Tetramine

Packaging: Polypropylene sacks with liner.

Transport classification: Flammable solid.

DOT number: UN 1328

IMO class: 4.1 flammable solids.

IMDG code (page no): 4150

Packing group: III

Emergency action code (Hazchem code): 1 Z

SECTION XV : REGULATORY INFORMATION

HMIS

Health Hazard: 2

Fire Hazard: 1

Reactivity: 0

Personal Protection: E

Health Hazard	2
Fire Hazard	1
Physical Hazard	0
Personal Protection	E

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):

Health : 2

Flammability: 1

Reactivity: 0

Specific Hazard:

OSHA : Hazardous by definition of hazard communication standard (29CFR1910.1200)

WHMIS (CANADA) : Class B-4 Flammable solid

Class D-2B material causing other toxic effect(TOXIC)

EU EINECS List: 202-905-8

AICS (Australia): Present

Inventory (China): Present

KECL (Korea): KE-18615

PICCS (Philippines): Present

SECTION XVI : OTHER INFORMATION

References: Not available.

Other Special considerations: Not available.

Date Approved: August 2014.

Information Contact: Technical Services Department.

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