Material Safety Data Sheet
Hexamethylenetetramine

ACC# 96138

Section 1 - Chemical Product and Company Identification

MSDS Name: Hexamethylenetetramine
Catalog Numbers: AC120610010, AC120610025, AC120610040, AC120610050, AC120615000, AC232890010, AC232890025, H288-500, H290-500
Synonyms: Methenamine; Hexamine; HMTA; Aminoform; a heterocyclic ring structure; 1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane; 1,3,5,7-Tetraazaadamantane.
Company Identification:

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
100-97-0	Hexamethylenetetramine	>98.5	202-905-8

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white.
Warning! Flammable solid. May cause allergic respiratory and skin reaction. May cause eye, skin, and respiratory tract irritation.
Target Organs: Respiratory system, skin.

Potential Health Effects
Eye: May cause mild eye irritation.
Skin: May cause mild skin irritation. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material.
Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea.
Inhalation: May cause allergic respiratory reaction. Inhalation of dust may cause respiratory tract irritation.
Chronic: Repeated exposure may cause allergic respiratory reaction (asthma).

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for a t least 15 minutes. Get medical aid.
Skin: In case of contact, immediately flush skin with soap and plenty of water. Remove contaminated clothing and shoes. Get medical aid if symptoms occur. Wash clothing before reuse.
Ingestion: If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Containers may explode in the heat of a fire. Dust can be an explosion hazard when exposed to heat or flame. Flammable solid. May re-ignite after fire is extinguished. May be ignited by friction, heat, sparks, or flame.
Extinguishing Media: Use water fog, dry chemical, carbon dioxide, or regular foam. Cool containers with flooding quantities of water until well after fire is out.
Flash Point: 250 deg C (482.00 deg F)
Autoignition Temperature: 390 deg C (734.00 deg F)
Explosion Limits, Lower: Not available.
Upper: Not available.
NFPA Rating: (estimated) Health: 2; Flammability: 2; Instability: 2

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions. Remove all sources of ignition. Use a spark-proof tool.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Avoid ingestion and inhalation. Use with adequate ventilation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.
Storage: Keep away from heat, sparks, and flame. Store in a cool, dry place. Keep container closed when not in use. Keep away from strong acids.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Ventilation fans and other electrical service must be non-sparking and have an explosion-proof design. Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Hexamethylenetetramine	none listed	none listed	none listed

OSHA Vacated PELs: Hexamethylenetetramine: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: 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.

Section 9 - Physical and Chemical Properties

Physical State: Crystalline powder
Appearance: white
Odor: practically odorless
pH: 8.4 (0.2M aq soln)
Vapor Pressure: 0.0035 hPa @ 20 deg C
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: Not available.
Freezing/Melting Point:263 deg C (sublimes)
Decomposition Temperature:> 200 deg C
Solubility: Soluble.
Specific Gravity/Density:1.33 g/cm3
Molecular Formula:C6H12N4
Molecular Weight:140.19

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures. Hygroscopic: absorbs moisture or water from the air.
Conditions to Avoid: Dust generation, moisture.
Incompatibilities with Other Materials: Strong oxidizing agents, nitric acid.
Hazardous Decomposition Products: Hydrogen cyanide, nitrogen oxides, carbon monoxide, carbon dioxide, formaldehyde, ammonia.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 100-97-0: MN4725000
LD50/LC50:
CAS# 100-97-0:
Oral, mouse: LD50 = 569 mg/kg;
.
Oral rat LD50: 9200 mg/kg (Degussa).
Carcinogenicity:
CAS# 100-97-0: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No data available.
Teratogenicity: No data available.
Reproductive Effects: No data available.
Mutagenicity: Mutagenic effects have occurred in experimental animals.Mutagenic effects have occurred in humans.

Neurotoxicity: No data available.
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. Fish toxicity: LC50 (96 hr) Pimephales promelas = 49800 mg/l
Environmental: Nitrification inhibition: No inhibition of ammonia oxidation by Pseudomoas sp. at 100 mg/lDegradation studies: Completely degraded in the activated sludge process.BOD5 0.015mg/lO2 ; 0.026 mg/l O2 in normal sewage diluted by the standard technique.Abiotic removal: Hydrolysed by acids to release formaldehyde.[[The Dictionary of Substances and their Effects, 1992.]
Physical: No information available.
Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	HEXAMETHYLENETETRAMINE	HEXAMETHYLENETETRAMINE
Hazard Class:	4.1	4.1
UN Number:	UN1328	UN1328
Packing Group:	III	III

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 100-97-0 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 100-97-0: immediate, delayed, fire.
Section 313 No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 100-97-0 can be found on the following state right to know lists: New Jersey.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols:
XN F
Risk Phrases:
R 11 Highly flammable.
R 42/43 May cause sensitization by inhalation and skin contact.

Safety Phrases:
S 16 Keep away from sources of ignition - No smoking.

S 22 Do not breathe dust.
S 24 Avoid contact with skin.
S 37 Wear suitable gloves.

WGK (Water Danger/Protection)
CAS# 100-97-0: 1

Canada - DSL/NDSL
CAS# 100-97-0 is listed on Canada's DSL List.

Canada - WHMIS
This product has a WHMIS classification of B4, D2A, D2B.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List
CAS# 100-97-0 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 3/20/1998
Revision #5 Date: 11/16/2005