Material Safety Data Sheet

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Version 1.5
According to 91/155/EEC

Classified as Hazardous according to the criteria of EU Annex 1 and NOHSC.

1 - Product and Company Information

Product Name	HYDRAZINE SULFATE, 99.999%
Product Number	455865
Company	Sigma-Aldrich Pty. Ltd. 12 Anella Avenue Castle Hill NSW 2154
Technical Phone #	+61 2 9841 0555 (1800 800 097)
Fax	+61 2 9841 0500 (1800 800 096)
Emergency Phone #	+44 8701906777 (1800 448 465)

2 - Composition/Information on Ingredients

Product Name	CAS #	EC no	Annex I Index Number
HYDRAZINE SULFATE	10034-93-2	233-110-4	007-014-00-6

Formula	H2NNH2.H2SO4
Molecular Weight	130.12 AMU
Synonyms	Hydrazine monosulfate * Hydrazine sulphate * Hydrazinium sulfate * Hydrazonium sulfate * Idrazina solfato (Italian) * NSC-150014 * Siran hydrazinu (Czech)

3 - Hazards Identification

SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT

May cause cancer. Also toxic by inhalation, in contact with skin and if swallowed. May cause sensitization by skin contact. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Carc. Cat.2

4 - First Aid Measures

AFTER INHALATION

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

AFTER SKIN CONTACT

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

AFTER EYE CONTACT

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

AFTER INGESTION
If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.

5 - Fire Fighting Measures

CONDITIONS OF FLAMMABILITY
Under fire conditions, material may decompose to form flammable and/or explosive mixtures in air.

EXTINGUISHING MEDIA
Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

SPECIAL RISKS
Specific Hazard(s): Emits toxic fumes under fire conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS
Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

6 - Accidental Release Measures

PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL
Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP
Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

7 - Handling and Storage

HANDLING
Directions for Safe Handling: Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

STORAGE
Conditions of Storage: Keep tightly closed.

8 - Exposure Controls / Personal Protection

ENGINEERING CONTROLS
Use only in a chemical fume hood. Safety shower and eye bath.

GENERAL HYGIENE MEASURES
Wash contaminated clothing before reuse. Discard contaminated shoes. Wash thoroughly after handling.

PERSONAL PROTECTIVE EQUIPMENT
Respiratory Protection: Government approved respirator.
Hand Protection: Compatible chemical-resistant gloves.
Eye Protection: Chemical safety goggles.

9 - Physical and Chemical Properties

Appearance Physical State: Solid

Property	Value	At Temperature or Pressure
pH	1.3	Concentration: 52 g/l
BP/BP Range	N/A	
MP/MP Range	254 °C	
Flash Point	N/A	
Flammability	N/A	
Autoignition Temp	N/A	
Oxidizing Properties	N/A	
Explosive Properties	N/A	
Explosion Limits	N/A	
Vapor Pressure	N/A	
SG/Density	1.37 g/cm3	
Partition Coefficient	N/A	
Viscosity	N/A	
Vapor Density	N/A	
Saturated Vapor Conc.	N/A	
Evaporation Rate	N/A	
Bulk Density	N/A	
Decomposition Temp.	N/A	
Solvent Content	N/A	
Water Content	N/A	
Surface Tension	N/A	
Conductivity	N/A	
Miscellaneous Data	N/A	
Solubility	N/A	

10 - Stability and Reactivity

STABILITY
Stable: Stable.
Conditions to Avoid: Can violently decompose at elevated temperatures
Materials to Avoid: Oxidizing agents, Bases.

HAZARDOUS DECOMPOSITION PRODUCTS
Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide, Nitrogen oxides, Sulfur oxides.

HAZARDOUS POLYMERIZATION
Hazardous Polymerization: Will not occur

11 - Toxicological Information

RTECS NUMBER: MV9625000

ACUTE TOXICITY

LD50
Oral
Rat
601 mg/kg

LD50
Intraperitoneal
Rat
230 MG/KG

LD50
Oral
Mouse

434 mg/kg

LD50
Intraperitoneal
Mouse
152 MG/KG
Remarks: Liver:Hepatitis (hepatocellular necrosis), diffuse. Kidney, Ureter, Bladder:Changes in tubules (including acute renal failure, acute tubular necrosis).

LD50
Subcutaneous
Mouse
455 MG/KG

IRRITATION DATA

Eyes
Rabbit
20 mg
24H
Remarks: Moderate irritation effect

SENSITIZATION
Skin: May cause allergic skin reaction.

SIGNS AND SYMPTOMS OF EXPOSURE
Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Inhalation may result in spasm, inflammation and edema of the larynxand bronchi, chemical pneumonitis, and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. Exposure can cause: Damage to the liver. Damage to the kidneys. Damage to the lungs.

ROUTE OF EXPOSURE
Skin Contact: Causes burns.
Skin Absorption: Toxic if absorbed through skin.
Eye Contact: Causes burns.
Inhalation: Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Ingestion: Toxic if swallowed.

TARGET ORGAN INFORMATION
Nerves. Blood. Liver. Kidneys. Lungs.

CHRONIC EXPOSURE - CARCINOGEN
Result: This product is or contains a component that has been reported to be probably carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.

Rat
Route of Application: Oral
Exposure Time: 85W
Result: Tumorigenic:Carcinogenic by RTECS criteria. Lungs, Thorax, or Respiration:Tumors. Liver:Tumors.

Mouse
Route of Application: Oral
Result: Tumorigenic:Carcinogenic by RTECS criteria. Tumorigenic

Effects: Uterine tumors. Lungs, Thorax, or Respiration:Tumors.

Mouse
Route of Application: Oral
Exposure Time: 61W
Result: Tumorigenic:Carcinogenic by RTECS criteria. Lungs, Thorax, or Respiration:Tumors. Liver:Tumors.

Mouse
Route of Application: Intraperitoneal
Exposure Time: 8W
Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Lungs, Thorax, or Respiration:Tumors.

Hamster
Route of Application: Oral
Exposure Time: 2Y
Result: Tumorigenic:Carcinogenic by RTECS criteria. Liver:Tumors.

Rat
Route of Application: Oral
Exposure Time: 68W
Result: Tumorigenic:Neoplastic by RTECS criteria. Lungs, Thorax, or Respiration:Tumors. Liver:Tumors.

Mouse
Route of Application: Oral
Exposure Time: 8W
Result: Tumorigenic:Neoplastic by RTECS criteria. Lungs, Thorax, or Respiration:Tumors.

Mouse
Route of Application: Oral
Exposure Time: 4W
Result: Tumorigenic:Neoplastic by RTECS criteria. Lungs, Thorax, or Respiration:Tumors. Liver:Tumors.

Mouse
Route of Application: Oral
Exposure Time: 46W
Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Lungs, Thorax, or Respiration:Tumors.

Mouse
Route of Application: Intraperitoneal
Exposure Time: 10W
Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Lungs, Thorax, or Respiration:Tumors.

Mouse
Route of Application: Intraperitoneal
Exposure Time: 5W
Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Lungs, Thorax, or Respiration:Tumors.

Mouse
Route of Application: Oral
Exposure Time: 64W
Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Lungs, Thorax, or Respiration:Tumors. Liver:Tumors.

Mouse

Route of Application: Oral
Exposure Time: 84W
Result: Tumorigenic:Carcinogenic by RTECS criteria. Lungs, Thorax, or Respiration:Tumors.

Mouse
Route of Application: Oral
Exposure Time: 84W
Result: Tumorigenic:Neoplastic by RTECS criteria. Lungs, Thorax, or Respiration:Tumors.

Mouse
Route of Application: Oral
Result: Tumorigenic:Neoplastic by RTECS criteria. Lungs, Thorax, or Respiration:Tumors.

CHRONIC EXPOSURE - MUTAGEN

Human
1 MG/L
Cell Type: fibroblast
Unscheduled DNA synthesis

Rat
1 MMOL/L
Cell Type: liver
DNA damage

Mouse
10 UMOL/L
Cell Type: liver
DNA repair

Mouse
180 MG/KG
Intraperitoneal
DNA inhibition

Mouse
3100 UG/KG
Cell Type: S. typhimurium
Host-mediated assay

Hamster
1 GM/L
Cell Type: Embryo
Morphological transformation.

Hamster
2500 UG/L
Cell Type: kidney
Morphological transformation.

Hamster
1035 MG/KG
Oral
9W
DNA

Hamster
1167 MG/L
Cell Type: ovary

Cytogenetic analysis

Hamster
100 NMOL/L
Cell Type: lung
Sister chromatid exchange
CMR CAT.: Carc. Cat.2

12 - Ecological Information

No data available.

13 - Disposal Considerations

SUBSTANCE DISPOSAL
Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

14 - Transport Information

RID/ADR
UN#: 2923
Class: 8
PG: III
Proper Shipping Name: Corrosive solid, toxic, n.o.s.

IMDG
UN#: 2923
Class: 8
PG: III
Subrisk: 6.1
Proper Shipping Name: Corrosive solid, toxic, n.o.s.
Marine Pollutant: No
Severe Marine Pollutant: No
Technical Name: Required

IATA
UN#: 2923
Class: 8
PG: III
Subrisk: 6.1
Proper Shipping Name: Corrosive solid, toxic, n.o.s.
Inhalation Packing Group I: No
Technical Name: Required

15 - Regulatory Information

CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES
ANNEX I INDEX NUMBER: 007-014-00-6
NOTA: A,E
INDICATION OF DANGER: T N
Toxic. Dangerous for the environment.
R-PHRASES: 45 23/24/25 43 50/53
May cause cancer. Also toxic by inhalation, in contact with skin and if swallowed. May cause sensitization by skin contact. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S-PHRASES: 53 45 60 61
Restricted to professional users. Attention - Avoid exposure -

obtain special instructions before use. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). This material and its container must be disposed of as hazardous waste. Avoid release to the environment. Refer to special instructions/safety data sheets.

COUNTRY SPECIFIC INFORMATION

Germany
WGK: 3

SWITZERLAND
SWISS POISON CLASS: 1*

16 - Other Information

WARRANTY
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

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