



MATERIAL SAFETY DATA SHEET

According to the UN GHS revision 9

Version: 1.0

Creation Date: July 15, 2019

Revision Date: July 15, 2019

SECTION 1: Identification

1.1 GHS Product identifier

Product name Melamine

1.2 Other means of identification

Product number -

Other names Theoharn; Teoharn; 2,4,6-Triamino-s-triazine

1.3 Recommended use of the chemical and restrictions on use

Identified uses Industrial and scientific research use.

Uses advised against no data available

1.4 Supplier's details

Company Shandong Yili-Spring Chemical Industry Co., Ltd.

Address 1016, Xinyue Fortune Center, Zouping County, Binzhou City, Shandong

Telephone 86-543-4865599

1.5 Emergency phone number

Emergency phone number +86 15505433527

Service hours Monday to Friday, 8am-5pm (Standard time zone: UTC/GMT +8 hours).

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Not classified.

2.2 GHS label elements, including precautionary statements

Pictogram(s) No symbol.

Signal word No signal word

Hazard statement(s) none

**Precautionary statement(s)**

Prevention	none
Response	none
Storage	none
Disposal	none

2.3 Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients**3.1 Substances**

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Melamine	Melamine	108-78-1	203-615-4	100%

SECTION 4: First-aid measures**4.1 Description of necessary first-aid measures****If inhaled**

Fresh air, rest.

Following skin contact

Rinse and then wash skin with water and soap.

Following eye contact

Rinse with plenty of water for several minutes (remove contact lenses if easily possible).

Following ingestion

Rinse mouth.

4.2 Most important symptoms/effects, acute and delayed

SYMPTOMS: Symptoms of exposure to this compound may include irritation of the skin, eyes and mucous membranes. It may also cause irritation of the upper respiratory tract. Other symptoms may include urinary bladder stones, diuresis and crystalluria. Dermatitis has been reported. Kidney injury may occur.

ACUTE/CHRONIC HAZARDS: This compound is toxic by ingestion. It may be harmful by inhalation or skin absorption. It is an irritant of the skin, eyes, mucous membranes and upper respiratory tract. When heated to decomposition it emits toxic fumes of carbon monoxide, carbon dioxide and nitrogen oxides. It also emits highly toxic fumes of cyanides. (NTP, 1992)

4.3 Indication of immediate medical attention and special treatment needed, if necessary



Basic treatment: Establish a patent airway (oropharyngeal or nasopharyngeal airway, if needed). Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if needed. Administer oxygen by nonrebreather mask at 10 to 15 L/min. Monitor for pulmonary edema and treat if necessary. Monitor for shock and treat if necessary. Anticipate seizures and treat if necessary. For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with 0.9% saline (NS) during transport. Do not use emetics. For ingestion, rinse mouth and administer 5 ml/kg up to 200 ml of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool. Cover skin burns with dry sterile dressings after decontamination. Poisons A and B

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Powder, water spray, foam, carbon dioxide.

5.2 Specific hazards arising from the chemical

Literature sources indicate that this compound is nonflammable. (NTP, 1992)

5.3 Special protective actions for fire-fighters

Use water spray, powder, foam, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Sweep spilled substance into sealable containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

6.2 Environmental precautions

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Sweep spilled substance into sealable containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

6.3 Methods and materials for containment and cleaning up

Evacuate persons not wearing protective equipment from area of spill or leak until clean-up is complete. Remove all ignition sources. Use HEPA vacuum or wet method to reduce dust during clean-up. Do not dry sweep. Collect powdered material in the most convenient and safe manner and deposit in sealed containers. Ventilate area after clean-up is complete. It may be necessary to contain and dispose of this chemical as a hazardous waste. If material or contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Contact your Department of Environmental Protection or your regional office of the federal EPA for specific recommendations. If employees are required to clean-up spills, they must be properly trained and equipped. OSHA 1910.120(q) may be applicable.



SECTION 7: Handling and storage

7.1 Precautions for safe handling

NO open flames. Closed system, dust explosion-proof electrical equipment and lighting. Prevent deposition of dust. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

7.2 Conditions for safe storage, including any incompatibilities

Store in tightly closed containers in a cool, well vented area away from strong oxidizers and strong acids. Where possible, automatically pump liquid from drums or other storage containers to process containers. A regulated, marked area should be established where this chemical is handled, used, or stored in compliance with OSHA standard 1910.1045.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

no data available

Biological limit values

no data available

8.2 Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear safety spectacles.

Skin protection

Protective gloves.

Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics



Physical state	Solid. Powder.
Colour	White.
Odour	no data available
Melting point/freezing point	361 °C.
Boiling point or initial boiling point and boiling range	329.8 °C. Atm. press.:1 atm.
Flammability	Combustible under specific conditions. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit/flammability limit	no data available
Flash point	> 280 °C.
Auto-ignition temperature	> 400 °C. Remarks:At atm. press. of 1.0 atm.
Decomposition temperature	345°C
pH	7.5 - 9.5. Remarks:10 % aqueous suspension.
Kinematic viscosity	no data available
Solubility	less than 1 mg/mL at 72° F (NTP, 1992)
Partition coefficient n-octanol/water	log Pow = -1.22. Temperature:22 °C.
Vapour pressure	0 Pa. Temperature:20 °C. Remarks:Extrapolated from the temperature range of 144 - 341 °C.;0 Pa. Temperature:25 °C. Remarks:Extrapolated from the temperature range of 144 - 341 °C.
Density and/or relative density	1.57. Temperature:20 °C.
Relative vapour density	4.34 (NTP, 1992) (Relative to Air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Decomposes on heating and on burning. This produces toxic and irritating fumes including hydrogen cyanide, nitrogen oxides and ammonia.

10.2 Chemical stability

no data available

10.3 Possibility of hazardous reactions

Dust explosion possible if in powder or granular form, mixed with air. MELAMINE is incompatible with strong oxidizing agents and strong acids (NTP, 1992). Neutralizes acids in exothermic reactions to form salts plus water. May be incompatible with isocyanates, halogenated organics, peroxides, phenols (acidic), epoxides, anhydrides, and acid halides. Flammable gaseous hydrogen may be generated in combination with strong reducing agents, such as hydrides.



10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Strong oxidizers, strong acids.

10.6 Hazardous decomposition products

Dangerous; when heated to decomp, emits highly toxic fumes of /nitrogen oxides and hydrogen cyanide/.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Mouse oral 4550 mg/kg
- Inhalation: LC50 - rat (male/female) - > 5 190 mg/m³ air.
- Dermal: LD50 - rabbit - > 1 000 mg/kg bw.

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

Cancer Classification: Group D Not Classifiable as to Human Carcinogenicity

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard



A nuisance-causing concentration of airborne particles can be reached quickly when dispersed, especially if powdered.

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: LC50 - *Poecilia reticulata* - > 4.59 g/L - 96 h.
- Toxicity to daphnia and other aquatic invertebrates: EC50 - *Daphnia magna* - 200 mg/L - 48 h. Remarks: And behaviour.
- Toxicity to algae: EC50 - *Pseudokirchneriella subcapitata* (previous names: *Raphidocelis subcapitata*, *Selenastrum capricornutum*) - 325 mg/L - 96 h.
- Toxicity to microorganisms: EC10 - *Pseudomonas putida* - > 10 g/L - 30 min. Remarks: Respiration rate.

12.2 Persistence and degradability

AEROBIC: A standard 5 day BOD test of melamine resulted in almost no biochemical oxygen demand(1,2). Based on the five day BOD data, the author considered melamine to be non biodegradable(2). However, pure culture studies using *Pseudomonas* strain A and 3 mM melamine indicate the degradation pathway of melamine involves the conversion of melamine to ammeline and eventually cyanuric acid(3).

12.3 Bioaccumulative potential

An estimated BCF of 3 was calculated in fish for melamine(SRC), using a log Kow of -1.37(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

12.4 Mobility in soil

The Koc of melamine is estimated as 50(SRC), using a log Kow of -1.37(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that melamine is expected to have very high mobility in soil. Aromatic amines may bind strongly to humus or organic matter in soils due to the high reactivity of the aromatic amino group(4,5), suggesting that mobility may be much lower in some soils(SRC). Adsorption of melamine to suspended clay sediment was reported from pH 1 to 6.5, with a maximum absorption of 500×10^{-6} mols/g at pH 4.0(6).

12.5 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 Disposal methods

Product



The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

14.1UN Number

ADR/RID: Not dangerous goods. (For IMDG: Not dangerous goods. (For IATA: Not dangerous goods. (For reference only, please check.) reference only, please check.) reference only, please check.)

14.2UN Proper Shipping Name

ADR/RID: Not dangerous goods. (For IMDG: Not dangerous goods. (For IATA: Not dangerous goods. (For reference only, please check.) reference only, please check.) reference only, please check.)

14.3Transport hazard class(es)

ADR/RID: Not dangerous goods. (For IMDG: Not dangerous goods. (For IATA: Not dangerous goods. (For reference only, please check.) reference only, please check.) reference only, please check.)

14.4Packing group, if applicable

ADR/RID: Not dangerous goods. (For IMDG: Not dangerous goods. (For IATA: Not dangerous goods. (For reference only, please check.) reference only, please check.) reference only, please check.)

14.5Environmental hazards

ADR/RID: No IMDG: No IATA: No

14.6Special precautions for user

no data available

14.7Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

15.1Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
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Melamine	Melamine	108-78-1	203-615-4
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Not Listed.
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.
Korea Existing Chemicals List (KECL)			Listed.

SECTION 16: Other information

Information on revision

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Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

References

- IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>



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- Germany GESTIS-database on hazard substance, website:
<http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
 - ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

Other Information

Ingestion in large amounts may cause effects on the kidneys and bladder. This may result in stone formation.

Disclaimer: 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. We as supplier shall not be held liable for any damage resulting from handling or from contact with the above product.