SAFETY DATA SHEETS

According to Globally Harmonized System of Classification and Labelling of Chemicals (GHS) - Sixth revised edition

Version: 1.0

Creation Date: Aug 18, 2017

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1.Identification

1.1GHS Product identifier

Product name	Mannitol

1.2Other means of identification

Product number	-
Other names	MANNITOL USP

1.3Recommended use of the chemical and restrictions on use

Identified uses	For industry use only. Food Additives: BULKING_AGENT; HUMECTANT; STABILIZER; SWEETENER; TEXTURIZER; THICKENER
Uses advised against	no data available

2.Hazard identification

2.1Classification of the substance or mixture

Not classified.

2.2GHS 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

2.3Other hazards which do not result in classification

none

3.Composition/information on ingredients

3.1Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Mannitol	Mannitol	87-78-5	none	100%

4.First-aid measures

4.1Description of necessary first-aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2Most important symptoms/effects, acute and delayed

SYMPTOMS: Symptoms of exposure to this compound include nausea, vomiting, headache, chills, chest pain and pulmonary edema. It may cause irritation of the skin, eyes and respiratory tract. Other symptoms may include lethargy, confusion, heart failure and death. Exposure has caused an electrolyte and fluid imbalance, hypersensitivity reactions, diarrhea, thirst, fever, tachycardia, hyponatremia, urinary retention, dehydration, blurred vision, convulsions, urticaria, hypotension and hypertension. It has also caused hyperglycemia and glycosuria. Coughing may result from inhalation. Ingestion may cause gastric irritation. Skin contact may cause discoloration of sensitive skin. Eye contact may cause redness and pain. Intravenous use has led to blood pressure elevation and bladder tubule changes. ACUTE/CHRONIC HAZARDS: This compound may cause irritation of the skin, eyes and respiratory tract. When heated to decomposition it emits acrid smoke and toxic fumes of carbon monoxide and carbon dioxide.

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

SIX PATIENTS WITH SEVERE MANNITOL INTOXICATION WERE TREATED WITH HEMODIALYSIS & ONE WITH PERITONEAL DIALYSIS. MANNITOL

HAD HALF-LIFE OF APPROX 36 HR DURING INTERVALS WITHOUT TREATMENT. IDEAL TREATMENT IS HEMODIALYSIS WHICH RAPIDLY REMOVES MANNITOL (HALF-LIFE, 6 HR) & REPLACES IT WITH SODIUM; PERITONEAL DIALYSIS REMOVED MANNITOL SLOWLY (HALF-LIFE, 21 HR).

5.Fire-fighting measures

5.1Extinguishing media

Suitable extinguishing media

Fires involving this material can be controlled with a dry chemical, carbon dioxide or Halon extinguisher. A water spray may also be used.

5.2Specific hazards arising from the chemical

This chemical is probably combustible.

5.3Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

6.Accidental release measures

6.1Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3Methods and materials for containment and cleaning up

Pick up and arrange disposal. Sweep up and shovel. Keep in suitable, closed containers for disposal.

7.Handling and storage

7.1Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Avoid exposure - obtain special instructions before use.Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

7.2Conditions for safe storage, including any incompatibilities

Mannitol solutions should be stored at room temperature and protected from freezing.

8.Exposure controls/personal protection

8.1Control parameters

Occupational Exposure limit values

no data available

Biological limit values

no data available

8.2Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

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

Eye/face protection

Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Wear impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique(without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Respiratory protection

Wear dust mask when handling large quantities.

Thermal hazards

no data available

9.Physical and chemical properties

Physical state	White fine powder
Colour	Orthorhombic needles from alc
Odour	Odorless
Melting point/ freezing point	166-168ºC
Boiling point or initial boiling point and boiling range	494.9ºC at 760 mmHg
Flammability	no data available

Lower and upper explosion limit / flammability limit	no data available
Flash point	292.5ºC
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	greater than or equal to 100 mg/mL at 20°C
Partition coefficient n-octanol/water (log value)	no data available
Vapour pressure	no data available
Density and/or relative density	1.596 g/cm3
Relative vapour density	no data available
Particle characteristics	no data available

10.Stability and reactivity

10.1Reactivity

no data available

10.2Chemical stability

Mannitol 25% (Invenex) was chemically and physically stable after five autoclavings at 250 deg F for 15 min.

10.3Possibility of hazardous reactions

A sugar alcohol. More closely related to carbohydrates than to other polyhydric alcohols [Noller]. Flammable and/or toxic gases are generated by the combination with alkali metals, nitrides, strong reducing agents and strong oxidizing agents.

10.4Conditions to avoid

no data available

10.5Incompatible materials

It has been stated that mannitol is incompatible in strongly acidic and alkaline solutions.

10.6Hazardous decomposition products

When heated to decomposition it emits acrid smoke and fumes.

11.Toxicological information

Acute toxicity

- Oral: LD50 Rat oral 13,500 mg/kg

- Inhalation: no data available
- Dermal: no data available

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

no data available

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

12.Ecological information

12.1Toxicity

- Toxicity to fish: no data available
- Toxicity to daphnia and other aquatic invertebrates: no data available
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

12.2Persistence and degradability

D-Mannitol is a simple sugar alcohol and should be readily biodegraded in the environment. (SRC)

12.3Bioaccumulative potential

An estimated BCF of 1 was calculated for D-mannitol(SRC), using a water solubility of 2.16X10+5 mg/l(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).

12.4Mobility in soil

The Koc of D-mannitol is estimated as approximately 5(SRC), using a water solubility of 2.16X10+5 mg/l(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that D-mannitol is expected to have very high mobility in soil(SRC).

12.5Other adverse effects

no data available

13.Disposal considerations

13.1Disposal 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.

14.Transport information

14.1UN Number

ADR/RID: no data available IMDG: no data available IATA: no data available

14.2UN Proper Shipping Name

ADR/RID: no data available
IMDG: no data available
IATA: no data available

14.3Transport hazard class(es)

ADR/RID: no data available IMDG: no data available IATA: no data available

14.4Packing group, if applicable

ADR/RID: no data available IMDG: no data available IATA: no data available

14.5Environmental hazards

ADR/RID: no IMDG: no IATA: no

14.6Special precautions for user

no data available

14.7Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

no data available

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
Mannitol	Mannitol	87-78-5	none
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			Not Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.

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
- 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/