SAFETY DATA SHEET

Prepared: Febuary 17, 2012
Revised: November 20, 2017

TREHALOSE

1. Identification of the Product and the Company

Product Identifier

Product Name : TREHALOSE 100

Synonym(s) : Trehalose

Company identification

Company Name : Hayashibara Co., Ltd

Address : 1-1-3 Shimoishii, Kita-ku, Okayama 700-0907, JAPAN

Customer Service Desk (Contact in Emergency)

Responsible Department : Business Planning Office,
Functional Saccharides Business Center

Address : Nihon-Seimei Okayama Bldg. II Shinkan
1-1-3 Shimoishii, Kita-ku, Okayama 700-0907, JAPAN

Telephone : +81-86-224-4312 (9:00 a.m. - 5:30 p.m. Japan time)

Fax : +81-86-233-2265

Recommended Use : Cosmetic ingredient

2. Hazards Identification

GHS Classification

Physical Hazards : Not applicable

Others : Not applicable, classification not possible, or not classified

GHS Label Elements

Symbols : None

Signal Words : None

Hazard Statements : None

Precautionary Statements : None

Other Hazards which do not result in classification : None

3. Composition and Information on Ingredients

Substance/Mixture : Substance

Purity : Not less than 99.0% (on the anhydrous basis)

TREHALOSE

Chemical Identity	: α-D-Glucopyranosyl α-D-glucopyranoside dihydrate
Chemical Formula	: $C_{12}H_{22}O_{11} \cdot 2H_2O$
CAS RN®	: 6138-23-4 (dihydrate) 99-20-7 (anhydrous)

4. First Aid Measures

Inhalation	: Move to fresh air and keep at rest in a position comfortable for breathing.
Skin Contact	: Immediately take off all contaminated clothing. Wash areas thoroughly with plenty of water and soap.
Eye Contact	: Immediately flush eyes with a sufficient amount of water. Remove contact lenses if easy to do so, and continue rinsing.
Ingestion	: Immediately rinse mouth.

Consult a doctor, if symptoms develop or persist after taking the measures above.

5. Fire Fighting Measures

Clear fire area of all non-emergency personnel.

Extinguish Media

Small fire	: Carbon dioxide, powder fire-extinguisher, sprinkling of water
Massive fire	: Sprinkling of water, mist water, foam fire-extinguisher
Unsuitable Extinguishing Media	: No information
Other Hazardous Information	: The product might emit irritating, toxic and/or corrosive gases by fire.
Special Fire Fighting	: Move containers out of hazard area if safe to do so. Keep the containers cool by spraying water if exposed to heat or fire. Cool containers with plenty of water well also after extinguishing a fire.
Protection for Fire Fighter	: Wear an appropriate protective mask, an appropriate protective clothing, etc. to prevent contact with skin and eyes.

6. Accidental Release Measures

Avoid contact with spilled or released material. See Chapter 13 for information on disposal. Observe the relevant local and international regulations.

Personal Precautions : Immediately create restricted area to keep a suitable distance spilled or released material, and prohibit all non-emergency personnel to enter.
Use personal protections recommended in Chapter 8. Avoid breathing mist and contact with skin and eyes.
Position upwind. Away from lower zone.

Environment Procedures : Be careful not to affect the environment with leakage of spilled or released material to river, lake, sea, etc. and not to leak polluted drainage to the environment without any suitable effluent treatment.

Collection/Neutralization : Sweep up the solid spillage and collect in a container. Prevent scatter of the dust.
Absorb a small spilled amount of liquid with sand or an inert absorbent material, and collect in a sealed container.
Fence a large spilled amount of liquid with embankment not to leak, attract to a safe area, and collect.

Containment and Cleanup : Stop leaking if not dangerous.

Preventive Measures Against Second Disaster : Immediately take all the release sources away (Prohibit smoking, firework, etc. near the accident.).

7. Handling and Storage

Handling : Use in a well ventilated place. If necessary, use personal protection recommended in Chapter 8. Wash thoroughly after handling. During handling, do not eat, drink or smoke. Coloration and decomposition may occur by moisture absorption.

Storage : Store appropriately following "Caution for storage" described on the product label/package.

8. Exposure Controls and Personal Protection

Standard Control Concentration : No information

Permissible Concentration (Exposure Limit Value/Biological Exposure Index)

Permissible Concentration : No information

[Recommendation of Occupational Exposure Limits (2017 - 2018) The Japan Society for Occupational Health]

Exposure Controls : In case of handling and storage, install a device for hand- and face-wash, and display the location.

Personal Protective Equipments and Materials (if necessary)

Respiratory Protection : If ventilation is not sufficient, wear an appropriate protector, such as a protective mask for breathing or a gas mask.

Hand Protection : Wear an appropriate protector, such as impervious gloves.

Eye/Face Protection : Wear an appropriate protector, such as safety glasses or a face mask.

Skin Protection : Wear an appropriate protector, such as an impervious apron and/or protective shoes.

Hygiene Measure : Do not eat, drink and smoke during handling. Wash hands well after handling. Do not take the polluted cloths out from the work area.

9. Physical and Chemical Properties

Appearance : Whitish crystalline powder

Odor : Odorless

pH : 4.5 - 6.5 [10% (w/v) water solution]

Melting Point : No data available

Boiling Point : No data available

Flash Point : No data available

Evaporation Rate : No data available

Flammability : No data available

Explosive Properties : No data available
[Reference data:
Minimum explosible concentration: Not Ignited*
Explosion riskiness: Very Low*]

Vapour Pressure : No data available

Vapour Density : No data available

Relative Density : No data available

Solubility : No data available
[Reference data: Freely soluble in water
Slightly soluble in methanol

Slightly soluble in ethanol (99.5)**]

Log P_{OW} (*n*-octanol/water)	: No data available
Auto-Ignition Temperature	: No data available
Decomposition Temperature	: No data available
Viscosity	: No data available

*: A similar product (food grade) was used for the test. The test was performed in accordance with JIS Z 8818 (Test method for minimum explosible concentration of combustible dusts).
**: A similar product (pharmaceutical grade) was used for the tests.

10. Stability and Reactivity

Reactivity	: No data available
Chemical Stability	: No data available
Possibility of Hazardous Reactions	: No data available
Conditions to Avoid	: No data available
Materials to Avoid	: No data available
Hazardous Decomposition Products	: In case of fire, the product might emit carbon monoxide and/or toxic gases.

11. Toxicological Information

Acute Oral Toxicity	: No data available [Reference data: LD_{50} > 16 g/kg (rats)*]
Skin Corrosion/Irritation	: No evidence of irritation (human, RIPT) [Reference data: No dermal irritation (0.5 g, rabbits)**]
Serious Eye Damage/Irritation	: No data available [Reference data: No irritation (0.1 mL, rabbits) It elicited transient, very slight to well-defined irritation, resolving completely by two days after treatment.**]
Respiratory Sensitization	: No data available
Skin Sensitization	: No evidence of sensitization (human, RIPT)
Germ Cell Mutagenicity	: No data available [Reference data: Meets the criteria for a negative response (mouse micronucleus)*, Elicits a negative response (chromosomal aberration assays)*, No evidence of mutagenic activity (AMES assay)*]
Carcinogenicity	: No data available
Reproductive Toxicity	: No data available [Reference data: No effect on any reproduction in both generations (rats) [NOAEL: 7.09

	(males premating), 7.61 (females premating), 6.16 (gestation) and 14.09 (lactation) g/kg-bw/day]*, No maternal or developmental toxicity (rats, rabbits)*]
STOT-Single Exposure	: No data available
STOT-Repeated Exposure	: No data available
Aspiration Hazard	: No data available

***** A similar product (food grade) was used for the tests.
****** A similar product (pharmaceutical grade) was used for the tests.

12. Ecological Information

Toxicity	: No data available
Persistence & Degradability	
Biodegradability	: Readily biodegradable
Bioaccumulative Potential	: No data available
Mobility in Soil	: No data available
Hazardous to The Ozone Layer	: No data available
Other Adverse Effects	: No data available

13. Disposal Considerations

Be careful not to affect the environment with leakage of spilled or released material to river, lake, sea, etc. and not to leak polluted drainage to the environment without any suitable effluent treatment.
Before disposal of an empty container, completely remove the content.

Comply with each local regulation.

14. Transport Information

UN Number	: None
UN Proper Shipping Name	: None
UN Transport Hazard Class(es)	: Not classified
Environmental Hazards	: None
Special Precautions for Users	: Confirm no leakage from the container. Embark the shipment without any upset, dropping and damage, and prevent collapse of the shipment robustly. Comply with each local regulation.

15. Regulatory Information

Please refer to all relevant regulations in each country.

16. Other Information

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