

MATERIAL SAFETY DATA SHEET

INITIAL DATE :	Y. 2003 M. 02 D. 05
REVISION DATE :	Y. 2010 M. 01 D. 19
REVISION No. :	3

SECTION 1 : [CHEMICAL PRODUCT AND COMPANY IDENTIFICATION]

MSDS No. : SWB-1500-04E
 PRODUCT NAME : **MAKINO THERMAL STABILIZER**
 MANUFACTURER : SHOWA WATER INDUSTRIES CO.LTD.
 ADDRESS : 2-1 SOUDEN-HIGASHI-MACHI GIFU-CITY GIFU 502-0843, JAPAN
 DEPT. IN CHARGE : Technical team Brine & Auto Department
 TELEPHONE : 81(0) 58-232-1131
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SECTION 2 : [HAZARDS IDENTIFICATION]

MOST IMPORTANT HAZARDS :

INFLUENCE ON PERSON ; Harmful if swallowed. Cause eye irritation and damage to organs.

INFLUENCE ON ENVIRONMENT ; No information.

PHYSICAL & CHEMICAL DANGERS ; Highly flammable if water evaporates by heating.

GHS CLASSIFICATION :

Serious Eye Damage / Eye Irritation ; Category 2

Specific Target Organ Systemic Toxicity (Single Exposure) ; Category 1

Specific Target Organ Systemic Toxicity (Repeated Exposure) ; Category 1

GHS LABEL ELEMENTS :

PICTOGRAM ;



SIGNAL WORD ; **Danger**

HAZARD STATEMENT :

Cause eye irritation.

Cause damage to organs (nervous system, kidney, heart, respiratory organs).

Cause damage to organs (nervous system, respiratory organs, heart) through prolonged or repeated exposure.

PRECAUTIONARY STATEMENT :

A SAFETY MEASURE ;

Wash hands thoroughly after handling.

Wear eye/face protection.

Do not eat, drink or smoke when using this product.

Avoid breathing mist/vapours/spray.

FIRST-AID MEASURES ;

IF IN EYES : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists, get medical advice.

IF EXPOSED : Call a doctor.

Get medical attention/advice if you feel unwell.

STORAGE ;

Store locked up.

DISPOSAL ;

Waste must be disposed of according to applicable regulations.

SECTION 3 : [COMPOSITION / INFORMATION ON INGREDIENTS]**SUBSTANCE OR MIXTURE : Mixture**

Chemical Name	Concentration (mass%)	CAS No.	MITI No.	EINECS	Hazard Symbols	R phrases
WATER	59 ~ 63	7732-18-5	-	231-791-2	-	-
ETHYLENE GLYCOL	35 ~ 39	107-21-1	2-230	203-473-3	Xn	R22
BORON COMPOUNDS	1 >	1303-96-4	1-69	215-540-4	-	-
OTHERS	Rest	7631-95-0, etc	1-478, etc	231-551-7, etc	-	-

MITI No. ; Japanese Ministry of International Trade and Industry registration number

SECTION 4 : [FIRST AID MEASURES]

- INHALATION** : Immediately remove the victim to fresh air and keep him(her) quiet. If condition isn't restored, take a medical advice.
- SKIN CONTACT** : Take off polluted clothing and wash with plenty water and soap. If irritation persists, take a medical advice. Wash contaminated clothing before reuse.
- EYE CONTACT** : Immediately flush eyes with plenty water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Take a medical advice afterwards.
- INGESTION** : Immediately rinse his(her) mouth. Make him(her) drink plenty water and vomit it. Take a medical advice.

THE MOST IMPORTANT SYMPTOMS AND HAZARDOUS EFFECTS : No useful information.

SECTION 5 : [FIRE-FIGHTING MEASURES]**SUITABLE EXTINGUISHING MEDIA :**

Water spray, Carbon dioxide, Foam, Dry chemical, Dry sand, etc

INCOMPATIBLE EXTINGUISHING MEDIA : No useful information.

SPECIFIC HAZARDS MAY BE ENCOUNTERED DURING FIRE-FIGHTING : No useful information.

SPECIFIC FIRE-FIGHTING METHODS :

You should wear full protective equipment and extinguish the fire from the windward side.

Immediately remove the container to a safer area. If the removal is impossible, cool down the container and the surrounding area with water to prevent it from temperature rise.

PROTECTIVE EQUIPMENTS :

Be sure to wear appropriate protectors such as breathing apparatus, gloves and fire prevention clothes.

SECTION 6 : [ACCIDENTAL RELEASE MEASURES]**PERSONAL PRECAUTIONS :**

If necessary, restrict entry unto the surroundings of the spill by stretching ropes.

See section 8.

ENVIRONMENTAL PRECAUTIONS :

Prevent the leaked liquid from being released into waters such as rivers directly.

METHODS FOR CLEANING UP :

Wipe out leaked liquid with cloth or wastes as much as possible, and then wash away with plenty of water.

Dispose of the waste based on laws and ordinances concerned.

SECTION 7 : [HANDLING AND STORAGE]**HANDLING :**

TECHNICAL MEASURES ; Use suitable protective equipment. See section 8.

PRECAUTIONS ; Use only in well-ventilated areas. See section 8.

SAFE HANDLING PRECAUTIONS ;

Keep away from ignition sources such as heat/sparks/open flame.

Use only outdoors or in well-ventilated area.

Wash hands thoroughly after handling.

Do not eat, drink or smoke when using this product.

STORAGE :**STORAGE CONDITIONS ;**

Store container tightly closed in cool and well-ventilated place.

Keep locked up and out of the reach of children.

PACKING MATERIALS ; Use the following types of containers for storage : plastic, metal, glass, etc.

SECTION 8 : [EXPOSURE CONTROLS / PERSONAL PROTECTION]

CONTROLLED DENSITY : No information.

PERMISSION DENSITY : No information.

(The follows is mentioning about main raw materials for reference.)

Ethylene glycol(upper limit) ; C 100mg/m³ - ACGIH(2008)

FACILITY MEASURES : Install the adequate ventilator.

Install eye washer and washbowl near the areas where the substance is handled. Clearly indicate the location.

PROTECTIVE EQUIPMENTS :

RESPIRATORY PROTECTION ; Respiratory protection mask, Respirator for organic gas if necessary.

EYE PROTECTION ; Safety glasses with side-shields and goggles.

SKIN PROTECTION ; Protective gloves, Protective clothing, Protective aprons,
Safety boots

HYGIENE MEASURES : Wash hands thoroughly after handling. Take off contaminated clothing and wash before re-use.

SECTION 9 : [PHYSICAL AND CHEMICAL PROPERTIES]

APPEARANCE : Red clear liquid.

ODOR : Little

pH : 8.2 ~ 9.2

BOILING POINT : 104 ~ 110

FLASH POINT : None.(O.C.)

MELTING POINT : - 24 ~ - 20

DENSITY : 1054 ~ 1064 kg/m³(20)

SOLUBILITY (water) : Miscible.

SECTION 10 : [STABILITY AND REACTIVITY]

STABILITY : This product is stable in normal temperature.

POSSIBLE HAZARDOUS REACTIONS UNDER SPECIFIC CONDITIONS :

Not combustible but heating may cause flammability.

OXIDIZIBILITY ; None.

SELF REACTIVITY ; None.

EXPLOSIVITY ; None.

CONDITIONS TO AVOID : High temperature , Direct sunlight

MATERIALS TO AVOID : Oxidizing substances, Organic peroxide

HAZARDOUS DECOMPOSITION PRODUCTS :

Gives off irritating or toxic gases on combustion.

SECTION 11 : [TOXICOLOGICAL INFORMATION]

(INCLUDING BIOLOGICAL / EPIDEMIOLOGICAL INFORMATION)

ETHYLENE GLYCOL

ACUTE TOXICITY : LD₅₀ ; 4000 ~ 10200mg/kg (oral-rat)

SKIN CORROSION / IRRITATION : Based on the description in the report on rabbit and guinea pig skin irritation tests : "mild dermal irritation in rabbits and guinea pigs."

EYE DAMAGE / IRRITATION : Based on the description in the report on rabbit eye irritation tests : Short-term exposure to ethylene glycol (liquid or vapour) causes conjunctival irritation with no permanent damage to the cornea.

TOXIC TO REPRODUCTION : Based on the description in the report on mouse continuous breeding and rat teratogenicity tests : Malformations, retarded ossification and unossification are observed in offspring at dosing levels not toxic to dams.

SPECIFIC TARGET ORGAN SYSTEMIC TOXICITY - SINGLE EXPOSURE :

Based on the human evidence including: "consciousness disorder, convulsions and stupor (after 34 days of accidental ingestion); an increase in urea nitrogen, creatinine and uric acid concentrations (blood examination); albuminuria, hematuria and nephropathy (urine examination); degeneration of convoluted tubules (renal biopsy); mild pulmonary congestion," "acute effects are observed in four stages: effects on the central nervous system (after 0.5-12 hours of exposure); effects on the heart-lung system (after 12-36 hours of exposure); nephropathy in specimens surviving from Stage 1 and 2 (exposure to ethylene glycol); degeneration of the central nervous system".

SPECIFIC TARGET ORGAN SYSTEMIC TOXICITY - REPEATED EXPOSURE :

Based on human evidence including "loss of consciousness and nystagmus," "mild headache and backache, upper respiratory tract irritation", and the evidence from animal studies including "inflammatory degeneration of the lung and heart".

BORON COMPOUNDS

ACUTE TOXICITY : LD₅₀ ; 4450mg/kg (oral-rat)

SKIN CORROSION / IRRITATION : Based on the description in the report on animal skin irritation tests : "mild to moderate skin irritation". Also based on the description of the human health effects (ACGIH): "dermatitis was observed following exposure to borax."

EYE DAMAGE / IRRITATION : Based on the description in the report on eye irritation tests in rabbits and rats : "The substance induced clouding of the conjunctiva with hyperplasia and blister formation. Corneal irritation was noted, with the effects healing within days 8-21," "eye inflammation." Also based on the human evidence of eye irritation of unknown degree.

REPRODUCTIVE TOXICITY : Based on the evidence of adverse effects on sperm production, described in ATSDR.

SPECIFIC TARGET ORGAN SYSTEMIC TOXICITY - SINGLE EXPOSURE :

Based on the human evidence including "kidney damage, suppression of the central nervous system and vascular collapse", "respiratory/pulmonary diseases, abnormalities detected by chest X ray, respiratory irritation".

SPECIFIC TARGET ORGAN SYSTEMIC TOXICITY - REPEATED EXPOSURE :

Based on the human evidence including "general and topical crossed motor seizure, irritability,

clouding/swelling/granular degeneration of renal tubules", "respiratory/pulmonary diseases, abnormalities detected by chest X ray and chronic bronchitis", and the evidence from animal studies including "atrophy of the testes". The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 2.

SECTION 12 : [ECOLOGICAL INFORMATION]

PRODUCT

No information.

MAIN RAW MATERIAL (ETHYLENE GLYCOL)

HAZARDOUS TO THE AQUATIC ENVIRONMENT -ACUTE HAZARD :

It carried out the outside of Category from 96-hour LC₅₀>100mg/L of fishes (*Oryzias latipes*)

HAZARDOUS TO THE AQUATIC ENVIRONMENT -CHRONIC HAZARD :

Since not water-insoluble (water solubility=1.00 × 106mg/L) and acute toxicity is low.

SECTION 13 : [DISPOSAL CONSIDERATIONS]

DISPOSAL OF THE PRODUCT :

Ask professional industrial waste disposer for management.

Must not drain the liquid away to rivers, ponds or lakes directly.

Disposal methods must be in compliance with all regulations.

DISPOSAL OF CONTAMINATED CONTAINER AND PACKAGING :

Dispose of the container after using contents.

SECTION 14 : [TRANSPORT INFORMATION]

Implement all the required measures for prevention of fall or collision.

Follow all regulations in your country.

UN NO. : Not applicable.

UN CLASSIFICATION : Not applicable.

PACKING GROUP : Not applicable.

SECTION 15 : [REGULATORY INFORMATION]

TSCA : All components listed.

R-phrases : R22 ; Harmful if swallowed.

: R36 ; Irritating to eyes.

S-phrases : (S1) ; Keep locked up.

: S20/21 ; When using do not eat, drink or smoke.

: S23 ; Do not breathe fumes/vapour/spray.

: S26 ; In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S36/37/39 ; Wear suitable protective clothing, gloves and eye/face protection.

SECTION 16 : [OTHER INFORMATION]

This information is based upon technical information believed to be reliable. But hazard identification and toxicological information are not comprehensive. So be careful enough about handling.

The data on this sheet relates only to the specific product designated herein. Manufacturer assumes no legal responsibility for the use of these data.
