물질안전보건자료
(Material Safety Data Sheet)

SECTION 1 - IDENTIFICATION

a. product name	Trihydroxystearin
B. APPLICATION	
Usage of product	Not available
Limitations on use of the product	Not available
다. Information on manufacturer/supplier/distributor	
Supplier name	Happycall co .,Ltd
Address	142, Ilsan-ro, Ilsandong-gu, Goyang-si, Gyeonggi-do, Republic of Korea
Emergency contact	TEL : 031-905-2534 FAX : 031-908-2535

SECTION 2 - HAZARDS IDENTIFICATION

A.Hazard classification: Serious Eye Damage/Eye irritation : Category 2

B. Label elements including precautionary statements

Pictograms:

Signal words:	Warning
Hazard statement:	H319 Causes serious eye irritation
Prevention precautionary statements	
Prevention	P264 Wash … thoroughly after handing
	P280 Wear protective gloves/protective clothing/eye protection/face protection
Response	P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes.
	P337+P313 If eye irritation persists: Get medical advice/attention.
Storage	No data
Disposal	No data

C. Other hazards which do not result in classification.(NFPA)

Health Hazard	No data
Flammability	No data
Instability	No data

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	Trihydroxystearin
CAS Number	139-44-6
Content(%)	85.0 ~ 90.0 %
Chemical name	castor oil
CAS Number	8001-79-4
Content(%)	Max 15 %
Chemical name	Water
CAS Number	
Content(%)	Max 0.1 %

SECTION 4 - FIRST AID MEASURES

A. Eye Contact	Get medical attention, if you have eye irritation
	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at
B. Skin Contact	Get medical attention.
	Remove contaminated clothing and shoes and isolate contaminated areas.
	In case of contact, immediately flush eyes with plenty of water for at least 20 minutes.
	Prevent spread of contamination on skin contact
C. Inhalation	If inhaled, remove to fresh air
	Keep it warm and stable
	If breathing is difficult, give oxygen
	If not breathing, give artificial respiration
E. ingested:	Get medical attention.
F. General advise	Have medical personnel know about the material and take protective medicine

SECTION 5 - FIRE FIGHTING MEASURES

a. Suitable (unsuitable) Extinguishing Media	Suitable extinguishing media: Dry sand, dry chemical, alcohol-resistant foam, water mist / fog, regular foam, carbon dioxide
b. Specific hazards arising from the chemical:	Can be ignited by heat, spark, flame
	Container may explode on heating
	May cause irritation and poisonous gas in case of fire
	This material is non-flammable, the substance itself is not burned but decomposes on heating and may cause corrosive / toxic fumes
c. Special protective equipment and precautions for fire-fighters.	Wear protective gear for rescuers.
	Maintain safety distance and digest
	In the event of a large fire in a tank fire, use unmanned fire fighting equipment and allow it to retreat if it is not possible
	Get out of the flame tank when the tank fires.
	If there is a high sound level in the pressure relief device or a discoloration of the tank in the event of a tank fire, immediately withdraw it
	Cool containers with large amounts of water even after the fire has extinguished.
	Move container from fire area if it is not dangerous.
	Some can be transported at high temperatures
	For remained fire fighting water to make sure that it is not scattered.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

a. Measures required for personal protection and protective equipment	Do not touch exposed objects or walk around.
	Stop the leak if it is not dangerous.
	Remove all ignition sources.
	Wipe off any spills immediately and follow MSDS protective precautions.
	Note the substances and conditions to avoid
	Cover with plastic sheet to prevent diffusion
b. Measures required for environment protection	Waterways, sewers, basements, Prevent entry into confined spaces
c. Clean-up and removal method	Absorb spillage with inert material (eg dry sand or earth). Put in chemical waste containers. Absorb liquid, Flush contaminated area with detergent and water.

SECTION 7 - HANDLING AND STORAGE

a. Precautions for safe handling:	Follow MSDS and label precautions as they may remain after the container has been emptied.
	Note the substances and conditions to avoid

	Refer to engineering controls and personal protective equipment.
	Wash thoroughly after handling.
b. Conditions for safe storage:	Drain the empty drum completely. Put it back on the drum regulator or place it properly.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

a. Exposure limits of the chemical substance, biological exposure limits and etc

Local regulation	N.A
Permissible Exposure Limits(PELs)	N.A
Threshold Limit Values(TLVs)	N.A
b. Appropriate engineering controls	Install a cleaner and shower room for equipment storing or using this material.

c. Personal protective equipment

Respiratory protection	Wear protective gloves certified by the Occupational Safety and Health Administration in accordance with the physicochemical properties of the material.
Eye protection:	No data
Hand protection:	No data
Body protection:	No data

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

a. Appearance

Physical state	Flake
Color	white ~ light yellow
b. Odor	No data
c. Odor threshold	No data
d. pH	No data
e. Melting point/freezing point	80-90 (℃)
f. Acid Value (mg KOH/g)	MAX 2.00
g. Saponification Value (mg KOH/g)	176.0 - 186.0
h. Hydroxy Value (mg KOH/g)	Min 155.0
i. Iodine Value (g I2/100g)	MAX 3.00
j. Upper/lower flammable or explosive limits	- / -
k. Vapor pressure	No data
n. Specific gravity	No data
o. N-octanol/water partition coefficient	19.73 ※ Reference :Ecological Structure Activity Relationships(ECOSAR)
p. Auto-ignition temperature	No data
q. Decomposition temperature	No data
r. Viscosity	No data
s. Solubility	0.00000000000000001208 ㎎/ℓ ※Reference : Ecological Structure Activity Relationships(ECOSAR)

SECTION 10 - STABILITY AND REACTIVITY

a. Chemical stability, Possibility of hazardous reactions	Container may explode on heating
	Some can burn but not easily ignite May cause irritation and poisonous gas in case of fire
	May cause irritation and poisonous gas in case of fire
b. Conditions to avoid	Heat, flames, sparks and other sources of ignition.
c. Materials to avoid	Combustible material
d. Hazardous materials generated during decomposition	May cause irritation and poisonous gas in case of fire

SECTION 11 - TOXICOLOGICAL INFORMATION

a. Information on the likely routes of exposure	No data
b. Health Hazard Information	
Acute toxicity	
Oral	No data
Dermal	No data
Inhalation	No data
Skin corrosion/irritation	Probability of MOD/SEV = 0.000
Serious eye damage/eye irritation	Prob. of SEV Ocular Irritancy = 0.000
Respiratory sensitisers	No data
Skin sensitisers	No data
Carcinogenicity	
IARC	No data
OSHA	No data
ACGIH	No data
NTP	No data
EU CLP	No data
Germ cell mutagens	Computed Probability of Mutagenicy = 0.000
Reproductive toxicants	No data
Specific target organ toxicity (single exposure)	No data
Specific target organ toxicity (Repeated exposure)	No data
Aspiration toxicity	No data

SECTION 12 - ECOLOGICAL INFORMATION

a. Ecotoxicity	
Fish	No data
Crustacea	No data
Algae	No data
b. Persistence and degradation	
Persistence	log Kow 19.73
Degradation	No data
c. Bioaccumulation	
Accumulation	BCF 3.162
Biodegradation	(Cut-off value=0.9963(BIOWIN 6))
d. Soil mobility	No data
e. Other adverse effects	No data

SECTION 13 - DISPOSAL CONSIDERATIONS

Disposal methods	Dispose of this product, please follow up with local regulation & law.
Precautions for disposal	Dispose of this product, please follow up with local regulation & law.

SECTION 14 - TRANSPORT INFORMATION

ROAD UN NO.	N/A
AIR UN NO.	N/A
SEA UN NO.	N/A
MARINE POLLUTANT	N/A

SECTION 15 - ADDITIONAL REGULATORY INFORMATION

OSHA	N/A

CERCLA	N/A
EPCRA 302	N/A
EPCRA 304	N/A
EPCRA 313	N/A
LABEL FOR SUPPLY	N/A
RISK PHRASES	N/A
SAFETY PHRASES	N/A

SECTION 16 - OTHER INFORMATION

a. Sources of reference materials:

Ecological Structure Activity Relationships(ECOSAR)(타. 용해도)

Ecological Structure Activity Relationships(ECOSAR)(거. n-옥탄올/물분배계수)

TOPKAT;Skin Irritation(피부부식성 또는 자극성)

TOPKAT;Ocular Irritancy SEV vs MOD(심한 눈손상 또는 자극성)

TOPKAT;Ames Mutagenicity(생식세포변이원성)

Ecological Structure Activity Relationships(ECOSAR)(잔류성)

Ecological Structure Activity Relationships(ECOSAR)(농축성)

EPI Suite(생분해성)

Quantitative Structure Activity Relation(QSAR)(라. 토양이동성)

b. The first date of preparation: 2015-10-28

c. Number of revision times and the latest revision date

Revision number	0
Update revision date	0

d. Others

The material safety data are prepared by referring to the MSDS provided by Korea Occupational Safety and Health Agency.