

SAFETY DATA SHEET - SDS

Product : POLYSORBATE 20

Review : 06

July 31th, 2015

1. IDENTIFICATION OF SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product	POLYSORBATE 20
Relevant recommended uses	Industrial uses.
Company	Silver Fern Chemical, Inc.
Address	2226 Queen Anne Avenue North, Suite C Seattle, WA 98109, USA
Phone number	1-866-282-3384
Business Contact	Info@silverfernchemical.com
Emergency Phone number	24 Hour Emergency Contact Infotrac 1-800-535-5053 (USA & Canada) Outside USA & Canada 1-352-323-3500

2. HAZARDS IDENTIFICATION

Classification No classification is assigned according to OSHA HCS 2012.

Label Elements

- **Hazard Pictograms** Not applicable.
- **Signal Word** Not applicable.
- **Hazard Statements** Not applicable.
- **Precautionary Statements** Not applicable.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Brand or Generic Chemical Name	Sorbitan Monolaurate 20 EO
Product Type	Substance.
Synonyms	Sorbitan, monododecanoate, poly(oxy-1,2-ethanediyl) derivs.; Polyoxyethylene sorbitan monolaurate; POLYSORBATE 20 (INCI Name).
CAS Number	9005-64-5.
Impurities which contribute to the classification of the substance	There are no impurities which contribute to the classification of the substance.

4. FIRST-AID MEASURES

Procedure in Case of:

- **Ingestion** Seek prompt medical attention.
Do not induce vomiting.
Vomiting should only be induced by medical personnel.
If vomiting occurs, keep the head lower than chest to avoid aspiration into the lungs.
Never give anything by mouth to an unconscious or convulsing person.
- **Inhalation** Seek prompt medical attention.
Remove victim to fresh air.
If breathing is difficult, give oxygen.
If not breathing, give artificial respiration.
- **Skin contact** Remove contaminated clothing and shoes. Wash affected areas with plenty of running water, preferably under a shower.
Seek prompt medical attention.
- **Eye contact** Immediately flush with plenty of running water for at least 15 minutes, keeping eyelids open.
Remove contact lenses if easy to do.
Seek prompt medical attention.

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Most important symptoms/effects, acute and delayed

Ingestion - High levels may cause diarrhea and other effects secondary to laxation. May cause intestinal obstruction.

Inhalation - Due to the low vapor pressure, no significant health hazard from inhalation is likely to occur at normal room temperatures. Mist or vapors produced from elevated temperatures may cause irritation of the mucous membranes and in high levels may cause a chemical pneumonitis.

Skin - Prolonged or repeated exposure may cause irritation of the skin by removing natural oils, causing redness and papular dermatitis.

Eyes - May cause minimal to moderate conjunctival irritation.

Information for doctor

There is not known any specific antidote.

Direct the treatment in accordance with the symptoms and clinical conditions of the patient.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

In case of fire, use:
Water spray.
Alcohol resistant foam.
Carbon dioxide (CO₂).
Dry chemical powder.

Specific Hazards

Product is not flammable.
In case of combustion it may generate carbon monoxide, besides CO₂.

Protective measures for fire-fighters

Water jets should not be used directly on igniting products because it may disperse the material and intensify the fire.
Self-contained breathing apparatus and protective clothing are required.
Cool the intact fire-exposed containers with water spray and remove them.

NFPA Rating

- Health 1
- Flammability 1
- Instability 0
- Special

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Isolate and signalize area.
Keep heat and/or ignition sources away.
Use personal protection equipment as indicated in Section 8, in order to avoid contact with spilled product.

Environmental Precautions

Prevent product from entering into soil and waterways.
Notify the competent authorities if the product has run into drainage systems or watercourse or has contaminated the ground or vegetation.

Methods and materials for containment and cleaning up

Stop if possible.
Contain and dike spilled product with earth or sand.
Eliminate ignition or heat sources.
Transfer to proper container.
Collect remnants with an appropriate absorbent material.
Wash the contaminated surface with water, which should be collected for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling

Use in a well-ventilated area.
Avoid inhalation and contact with eyes, skin or clothing through proper protection.
If occurs accidental contact, exposed area should be washed immediately.
Emergency eyewashes and showers shall be located in accessible locations.
Wash hands and face thoroughly after handling.
Wash contaminated clothing before reuse.

Conditions for safe storage

Store in a covered and well-ventilated area, away from sunlight and sources of heat or open flames.
Ensure that the storage location has adequate moisture, pressure and temperature.
Keep containers tightly closed when not in use.
The product can be stored, in liquid state, at temperatures slightly between 20 and 50°C, which, as recommended, is maintained at inert gas atmosphere.

Incompatibilities

Avoid contact with:
Oxidizing materials.

Packaging Material

Recommended:
Stainless steel.
Coated carbon steel with:
Vinyl ester resin.
Polyester resin reinforced with fiber glass.
Polyethylene.
Polypropylene.

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8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Control parameters

- **TLV-TWA (ACGIH)** 1,4-Dioxane: 20 ppm; 72 mg/m³ [Skin] [A3].
Ethylene oxide: 1 ppm; 1.8 mg/m³ [A2].
Skin - Danger of cutaneous absorption.
A2 - Suspected Human Carcinogen
A3 - Confirmed animal carcinogen with unknown relevance to humans.
- **PEL-TWA (OSHA)** 1,4-Dioxane: 100 ppm; 360 mg/m³ [Skin].
Ethylene oxide: 1 ppm.
Skin - Danger of cutaneous absorption.
- **TLV-STEL (ACGIH)** Not established.
- **LT(NR15)** Ethylene oxide: 39 ppm; 70 mg/m³.
- **Odor Threshold** Not available.
- **IDLH** 1,4-Dioxane: 500 ppm.
Ethylene oxide: 800 ppm.
- **Biological Exposure Indices (ACGIH)** Not established.

Engineering Control Measures

In closed environments, this product should be handled keeping proper exhaust (general diluter or local exhauster).

Individual Protection Measures

- **Eye Protection** Side shields or wide vision safety goggles.
- **Skin Protection** PVC apron.
It is recommended to adopt safety boots/shoes.
- **Hand Protection** Gloves made of:
Rubber.
PVC (Polyvinyl chloride).
- **Breathing equipment** In case of emergency or contact with high concentrations of the product, wear an air supplied mask or self contained breathing apparatus.
It is recommended to wear face mask with acid organic vapors cartridge in case of exposure to vapors/aerosols.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Liquid. Yellowish. Viscous. Bitter taste.
Odour and Odour threshold	Odorless.
pH	5.0 - 7.0 (5% w/w, 25°C).
Melting point/Freezing point	Not available.
Initial Boiling Point and Boiling Range	> 100 °C.
Flash point	> 150 °C (open cup).
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	Not available.
Vapour pressure	Not available.
Vapour density (air = 1)	Not available.
Relative density (water=1)	1100 kg/m ³ (25 °C).
Apparent density	Not applicable.
Solubility	Soluble in water. (20 °C for 1 hour/concentration of 0.5%).

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Partition Coefficient n-octanol/water Not available.
Auto-ignition temperature Not available.
Decomposition temperature Not available.
Viscosity c.a. 400 mPa.s (25 °C).

10. STABILITY AND REACTIVITY

Chemical stability Stable under normal conditions of use and storage.
Reactivity No hazardous reactivity is expected.
Possibility of Hazardous Reactions Not polymerize.
Conditions to avoid High temperatures, ignition sources and prolonged exposure to the air.
Incompatible materials Avoid contact with:
Oxidizing materials.
Hazardous decomposition products In case of combustion it may generate carbon monoxide, besides CO2.
Considerations on the use of the product Gelling may occurs at temperatures lower than 20 °C.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

- **Oral** LD50, rat: 36700 mg/kg.
- **Inhalation** LC50, rat: > 5.1 mg/L.
- **Dermal** LD50, guinea pig: > 3000 mg/kg.

Skin corrosion/irritation Mild irritation (patch test, rabbit).

Serious eye damage/eye irritation Draize eye irritation score was an 5.3 out of a possible 110.

Respiratory or skin sensitization Not sensitizing to humans.

Germ cell mutagenicity Negative for:
In vitro: Ames test, mammalian chromosome aberration test (peripheral human lymphocytes), mammalian cell gene mutation assay (mouse lymphoma cells).

Carcinogenicity Oral studies showed no evidence for carcinogenicity by this route.

Reproductive toxicity The maternal LOAEL in rats was 5000 mg/kg/day (based upon a 14% decrease in weight gain) and the maternal NOAEL was 500 mg/kg/day.
The developmental NOAEL was greater than 5000 mg/kg/day.

Specific target organ toxicity - Single exposure Not available.

Specific target organ toxicity - Repeated exposure LOAEL, rat: 25000 mg/kg/day (based on systemics effects).

Aspiration hazard Not expected to be an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicity Fish-
LC50, 96h, Oncorhynchus mykiss: 383 mg/L.

Invertebrates-
NOEL, 21 days, Daphnia magna: 10 mg/L.

Algae-
NOEL, 72h, Pseudokirchnerella subcapitata: 3.16 mg/L.

Persistence and Degradability Readily biodegradable.
60% after 28 days.

Bioaccumulative Potential It is not expected to bioaccumulate in the environment.
BCF = 7.07.

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Mobility in soil It is expected to have high mobility in soil.
Koc = 1.73.

Other Adverse Effects Water hazard class 1: Slightly hazardous to water.

13. DISPOSAL CONSIDERATIONS

Recommended methods of disposal

- **Product** The preferred options for disposal include reuse, recycling, co-processing, finding a use for a by-product, incineration or other thermal destruction process at licensed facilities. All procedures must follow specific operation standards in order to reduce health, safety and environmental risks. Perform co-processing, incineration or other thermal destruction process at facilities capable of minimizing or reducing air pollution emissions. The disposal must comply with federal, state, and local laws and regulations in accordance with the environmental agencies.
- **Product Remains** Same method as indicated for product.
- **Packaging** Do not cut or pierce the packaging, nor do hot work near them. Do not remove labels until the product has been fully removed and the packaging cleaned. The preferred options for disposal include reuse, recycling or reclamation at licensed facilities. All procedures must follow specific operation standards in order to reduce health, safety and environmental risks. The disposal must comply with local legislation and in accordance with standards from local environmental agencies.

14. TRANSPORT INFORMATION

Land Transport ANTT Product not classified as hazardous in accordance with Resolution 420/2004 - Transport Ministry.

- **UN number** N/A
- **Proper Shipping Name** Not classified.
- **Hazard Class** Not classified.
- **Hazard Number** Not classified.
- **Packaging Group** Not classified.

Maritime Transport IMDG Product not classified as hazardous in accordance with IMDG Code - 2012 Edition - IMO (International Maritime Organization).

- **UN number** N/A
- **Proper Shipping Name** Not classified.
- **IMDG Class** Not classified.
- **Packaging Group** Not classified.
- **EmS** Not classified.

Air Transport ICAO-TI and IATA-DGR Product not classified as hazardous in accordance with Dangerous Goods Regulations - 56th Edition - IATA (International Air Transport Association).

- **UN number** N/A
- **Proper Shipping Name** Not classified.
- **ICAO/IATA Class** Not classified.
- **Label** Not classified.
- **Packaging Group** Not classified.

Land Transportation ADR/RID (cross-border) Product not classified as hazardous in accordance with Dangerous Goods by Road - Applicable from 1st January 2011 - Unece (United Nations Economic Commission for Europe).

- **UN number** N/A
- **Proper Shipping Name** Not classified.
- **ADR/RID class** Not classified.
- **Packaging Group** Not classified.

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• Danger code (Kemler)	Not classified.
• Restriction Code	Not classified.
# Land Transportation U.S DOT	Product not classified as hazardous in accordance with U.S. DOT (United States Department of Transportation) - 49 CFR 172.101.
# Packaging Type	Bulk and Non-bulk
# Proper Shipping Name	Not classified.
# Hazard Class or Division	Not classified.
# ID Number	Not classified.
# Packaging Group	Not classified.
# Remarks	Not classified.

15. REGULATORY INFORMATION

# Applicable standards	Resolution 420 / 2004 – Transport Ministry. IMDG Code - 2012 Edition - IMO (International Maritime Organization). Dangerous Goods by Road (ADR) – Available from January 1st, 2011 – Unece (United Nations Economic Commission for Europe). Dangerous Goods Regulations - 56th Edition - IATA (International Air Transport Association). U.S.A Department of Transportation – DOT – 49 CFR 172.101.
# OSHA Hazard Communication Standard	This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
# SARA Title III - Sections 311 / 312 (40 CFR 370 Subparts B and C)	Immediate (Acute) Health Hazard: No. Delayed (Chronic) Health Hazard: No. Fire Hazard: No. Sudden Release of Pressure Hazard: No. Reactive Hazard: No.
# SARA Title III - Section 313 (40 CFR 372.65)	This product does not contain a chemical which is listed in Section 313 at or above de minimis concentrations.
# SARA Title III - Section 302 (40 CFR 355 Appendix A)	Ethylene oxide (CAS 75-21-8): 1 ppm. TPQ: 1000 lbs.
# CERCLA (40 CFR 302.4) / SARA 304	1,4-Dioxane (CAS 123-91-1): 10 ppm. RQ: 100 lbs. Ethylene oxide (CAS 75-21-8): 1 ppm. RQ 10 lbs. Reportable Quantity (RQ) of this product is 10000000 pounds based upon 1,4-Dioxane / Ethylene oxide which yielded the lowest resultant RQ according to the following formula: CERCLA ingredient RQ/ % of that ingredient in the product.
# New Jersey Hazardous Substance List	1,4-Dioxane: Substance# 0789 (Special Health Hazard Code: CA – Carcinogen; F3 – Flammable 3rd degree). Ethylene oxide: Substance# 0882 (Special Health Hazard Code: CA – Carcinogen; MU – Mutagen; TE – Teratogen; F4 – Flammable 4th degree; R3 – Reactive 3rd degree).
# California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act)	 WARNING! This product may expose you to 1,4-Dioxane and Ethylene oxide, which are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.com .  WARNING! This product contains Ethylene oxide, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.com .
# Pennsylvania Hazardous Substance List	1,4-Dioxane (CAS 123-91-1) and Ethylene oxide (CAS 75-21-8): Listed also as an environmental hazard and as a special hazardous substance.
# Inventory Status	United States & Puerto Rico – Toxic Substances Control Act (TSCA) Inventory: Yes Canada – Domestic Substances List (DSL): Yes Canada – Non-Domestic Substances List (NDSL): No Europe – European Inventory of Existing Commercial Chemical Substances (EINECS): No Europe – European List of Notified Chemical Substances (ELINCS): No Australia – Australian Inventory of Chemical Substances (AICS): Yes Philippines – Philippine Inventory of Chemicals and Chemical Substances (PICCS): Yes Japan – Inventory of Existing and New Chemical Substances (ENCS): Yes Korea – Existing Chemicals List (ECL): Yes China – Inventory of Existing Chemical Substances in China (IECSC): Yes New Zealand – New Zealand Inventory: Yes *A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s).

16. OTHER INFORMATION

# Remarks	Not applicable.
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Sources

2015 Guide to Occupational Exposure Values – ACGIH.
eChemPortal - The Global Portal to Information on Chemical Substances.
2015 TLVs and BEIs – Based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices – ACGIH.
LOLI - ChemADVISOR's Regulatory Database.
European Chemicals Agency - <http://echa.europa.eu/>.
HSDB - Hazardous Substances Data Bank.
NTP - National Toxicity Program, National Institute of Environmental Health (EUA).

Abbreviations and acronyms

ACGIH: American Conference of Governmental Industrial Hygienists (USA).
ADR: European agreement concerning the international carriage of dangerous goods by road.
CAS: Chemical Abstracts Service (American Chemical Society - EUA).
EC50: Average concentration for 50% of maximum response.
LC: Lethal Concentration - substance concentration in the environment that leads to death after a certain period of exposure.
LC50: Lethal concentration for 50% of the test animals.
BOD: Biochemical Oxygen Demand.
LD50: Lethal Dose for 50% of the test animals.
LDLo: Lethal Dose Low - minimal amount of a chemical lethal to animals in testing.
EINECS: European Inventory of Existing Commercial Chemical Substances.
GHS: Globally Harmonized System of Classification and Labelling of Chemicals.
IARC: International Agency for Research on Cancer.
IATA: International Air Transport Association.
IATA-DGR: Dangerous Goods by Regulations by the IATA
ICAO: International Civil Aviation Organization
ICAO-TI: Technical Instructions by the ICAO.
IMDG: International Maritime Code for Dangerous Goods.
IDLH - Immediately Dangerous To Life or Health Concentrations.
Kow: Octanol/water partition coefficient.
LT (NR 15): Exposure limits of the standard number 15 - Unhealthy Operations and Activities from the Ministry of Labour and Employment of Brazil.
LOAEL: Lowest Adverse Effect Level
LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database
NLP: No Longer Polymers.
NIOSH: National Institute for Occupational Safety and Health.
NOAEL: No Observed Adverse Effect Level
NTP: National Toxicology Program.
OSHA: Occupational Safety and Health Administration (EUA).
PEL-TWA: Exposure Limit Allowed – time-weighted average.
RID: Regulations concerning the international transport of dangerous goods by rail.
TLV-STEL: Tolerance Limit - short period of time (15 minutes, maximum).
TLV-TWA: Tolerance Limit – time weighted average.
WGK: Wassergefährdungsklasse (Germany) - Water Hazard Class.

DISCLAIMER OF RESPONSIBILITY

The information on this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with handling, storage, use, or disposal of this product. If the product is used as a component in another product, this SDS information may not be applicable.

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