Material Safety Data Sheet

ORA100 Heat Transfer Fluid (RXSOL-81-1587-211)

1. Product and Company Identifaction

Porduct Name	ORA-100, Heat Transfer Fluid
Part Number	RXSOL-81-1587-211

Company Details:

RX MARINE INTERNATIONAL
105, A wing , BSEL , TECH PARK.
VASHI ,NEW BOMBAY 400703 INDIA

Branch : Kandla, Mumbai , Chennai, Vizag, Kolkata, UAE , OMAN , CANADA and KENYA

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2. Composition / informationon ingredients

Chemical name	Cas No	Concentration
Ethylene Glycol	107-21-1	>= 25.0 - = 96.0 %
Water	7732-18-5	= 75.0 %
Sebacic acid (decanedioic acid)	111-20-6	5.0 %
Sodium benzoate	532-32-1	3.5 %
Boron potassiium oxide (B4K2O7), tetrahydrate	12045-78-2	3.0 %
Sodium hydroxide	1310-73-2	2.0 %
Tolyl triazole	29385-43-1	>= 0.1 - 0.25 %
Proprietory Blend		

3. Hazards Identification

GHS Classification:	Acute toxicity - Category 4 - Oral. Skin corrosion/irritation - Category 2. Serious eye damage/eye irritation - Category 2A. Reproductive toxicity - Category 1B. Specific target organ toxicity - repeated exposure - Category 2 - Oral.
Signal Word:	Danger.
Hazard Statements:	Harmful if swallowed. Causes skin irritation. Causes serious eye irritation. May damage fertility or the unborn child. May cause damage to organs (Kidney) through prolonged or repeated exposure if swallowed.

Precautionary statements:	prevention	Obtain, read and follow all safety instructions before use. Do not breathe mist or vapours. Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection
Precautionary statements:	response	IF SWALLOWED: Get medical help. Rinse mouth. IF ON SKIN: Wash with plenty of water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned, get medical advice. If skin irritation occurs: Get medical help. If eye irritation persists: Get medical help.
Disposal:		Dispose of contents and/or container to an approved waste disposal plant.
Storage:		Store locked up.

4. First Aid Measures

General advice:	First Aid responders should pay attention to self?protection and must the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists, refer to Section 8 for specific personal protective equipment.
If inhaled:	Move person to fresh air and keep comfortable for breathing; consult a physician.
Eye Contact:	Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.
Swallowed:	Do not induce vomiting. Seek medical attention immediately. If person is fully conscious give 1 cup or 8 ounces (240 ml) of water. If medical advice is delayed and if an adult has swallowed several ounces of chemical, then give 3-4 ounces (1/3-1/2 Cup) (90-120 ml) of hard liquor such as 80 proof whiskey. For children, give proportionally less liquor at a dose of 0.3 ounce (1 1/2 tsp.) (8 ml) liquor for each 10 pounds of body weight, or 2 ml per kg body weight [e.g., 1.2 ounce (2 1/3 tbsp.) for a 40 pound child or 36 ml for an 18 kg child].
Skin Contact:	Immediately flush skin with water while removing contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Destroy contaminated leather items such as shoes, belts, and watchbands. Suitable emergency safety shower facility should be immediately available.
Note to physician:	Maintain adequate ventilation and oxygenation of the patient. If several ounces (60 - 100 ml) of ethylene glycol have been ingested, early administration of ethanol may counter the toxic effects (metabolic acidosis, renal damage). Consider hemodialysis or peritoneal dialysis & thiamine 100 mg plus pyridoxine 50 mg intravenously every 6 hours. If ethanol is used, a therapeutically effective blood concentration in the range of 100 - 150 mg/dl may be achieved by a rapid loading dose followed by a continuous intravenous infusion. Consult standard literature for details of treatment. 4-Methyl pyrazole (Antizol®) is an effective blocker of alcohol dehydrogenase and should be used in the treatment of ethylene glycol (EG), di- or triethylene glycol (DEG, TEG), ethylene glycol butyl ether (EGBE), or methanol intoxication if available. Fomepizole protocol (Brent, J. et al., New England Journal of Medicine, Feb. 8, 2001, 344:6, p. 424-9): loading dose 15 mg/kg intravenously, follow by bolus dose of 10 mg/kg every 12 hours; after 48 hours, increase bolus dose to 15 mg/kg every 12 hours. Continue fomepizole until serum methanol, EG, DEG, TEG or EGBE are undetectable. The signs and symptoms of poisoning include anion gap metabolic acidosis, CNS depression, renal tubular injury, and possible late stage cranial nerve involvement. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. In severe poisoning, respiratory support with mechanical ventilation and positive end expiratory pressure may be required. If burn is present, treat as any thermal burn, after decontamination. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

Most important symptoms and effects, both acute and delayed:	Harmful if swallowed. Causes skin irritation. Causes serious eye irritation. May damage fertility or the unborn child. May cause damage to organs through prolonged or repeated exposure if swallowed

5. Fire-fighting Measures

Hazardous combustion products:	During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide, Carbon dioxide.
Unusual Fire and Explosion Hazards:	Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.. Liquid mist of this product can burn. Flammable concentrations of vapor can accumulate at temperatures above flash point.
Suitable extinguishing media:	Water fog or fine spray.. Dry chemical fire extinguishers.. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.
Unsuitable extinguishing media:	Do not use direct water stream. May spread fire.
Special fire fighting procedures:	Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire.. Move container from fire area if this is possible withouthazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.
Special protective equipment for firefighters:	Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with selfcontained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, see Section 8 of the safety data sheet.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures:	Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.
Enviromental Precaution:	Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information
Containment and cean up measures:	Small spills: Absorb with materials such as: Cat litter. Sawdust. Vermiculite. Zorb-all. Collect in suitable and properly labeled containers. Large spills: Dike area to contain spill. See Section 13, Disposal Considerations, for additional information.

7. Handling and Storage

Precautions for safe handling:	Do not swallow. Avoid contact with eyes. Wash thoroughly after handling. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.
Precaution for Storage:	Do not store in: Galvanized steel. Opened or unlabeled containers. Store in the following material(s): Carbon steel. Stainless steel. Store in original unopened container. Store away from direct sunlight. Store in tightly closed container. Use only with adequate ventilation. See Section 10 for more specific information. Additional storage and handling information on this product may be obtained by calling your sales or customer service contact.

8. Exposure controls and personal protection

Engineering controls:	Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.
Eye/face protection:	Use safety glasses (with side shields). If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles. If exposure causes eye discomfort, use a full-face respirator.
Skin protection:	Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Use gloves with insulation for thermal protection, when needed. If hands are cut or scratched, use gloves chemically resistant to this material even for brief exposures. Examples of preferred glove barrier materials include: Natural rubber ("latex"). Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Polyvinyl chloride ("PVC" or "vinyl"). Examples of acceptable glove barrier materials include: Neoprene. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier. Other protection: When prolonged or frequently repeated contact could occur, use protective clothing chemically resistant to this material. Selection of specific items such as faceshield, boots, apron, or full-body suit will depend on the task. When handling hot material, protect skin from thermal burns as well as from skin absorption.
Respiratory protection:	Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions, no respiratory protection should be needed; however, if material is heated or sprayed, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. Physical and chemical properties

Physical state:	Liquid.
Colour:	Color is variable
Odour:	Characteristic
Odor Threshold:	No data available.
pH:	7.6 - 8.2
Melting Point:	Not available
Freezing point:	-51-14 °C
Boiling Point:	170 °C
Flash Point:	120 °C at 760 mmHg
Evaporation Rate:	0.5
Flammability (solid, gas)	Non?Combustible
Explosive limits	No data Available.
Decomposition temperature	No data available.
Vapour pressure:	3 mbar at 20 °C
Viscosity:	10 - 30 mm2/s at 20 °C
Relative Density:	1.044 - 1.134 at 20 °C / 20 °C
Specific Gravity:	No data available.
Partition coefficient:	No data available.
Explosive properties:	3.2 % vol Liquid.
Solubility:	completely miscible
Ignition temperature:	435 °C
Oxidizing properties:	No data available.
Particle characteristics:	No data available.
Vapor density:	0.670

10. Stability and reactivity

Reactivity:	No data available.
Chemical stability:	Thermally stable at typical use temperatures.
Possibility of hazardous reactions:	Polymerization will not occur.
Conditions to avoid:	Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.
Incompatible materials:	Avoid contact with: Strong acids. Strong bases. Strong oxidizers
Hazardous decomposition products:	Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Aldehydes, Alcohols, Ethers.

11. Toxicological information

Information on likely routes of exposure:	Ingestion, Inhalation, Skin contact, Eye contact.
Acute Toxicity Endpoints:	Harmful if swallowed. Acute oral toxicity Information for the Product: Oral toxicity is expected to be moderate in humans due to ethylene glycol even though tests with animals show a lower degree of toxicity. Ingestion of quantities (approximately 65 mL (2 oz.) for diethylene glycol or 100 mL (3 oz.) for ethylene glycol) has caused death in humans. Excessive exposure may cause central nervous system effects, cardiopulmonary effects (metabolic acidosis), and kidney failure. May cause nausea and vomiting. May cause abdominal discomfort or diarrhea. For Ethylene glycol: Lethal Dose, Human, adult, 100 ml For Ethylene glycol: LD50, Rat, 6,000 - 13,000 mg/kg Information for components: Ethylene glycol: In humans, expected to be moderately toxic if swallowed even though oral toxicity was low when tested in animals. Ingestion of quantities (approximately 65 mL (2 oz.) for diethylene glycol or 100 mL (3 oz.) for ethylene glycol) has caused death in humans. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. May cause nausea and vomiting. May cause abdominal discomfort or diarrhea. Excessive exposure may cause central nervous system effects, cardiopulmonary effects (metabolic acidosis), and kidney failure. Lethal Dose, Human, adult, 100 ml Estimated. Sebacic acid (decanedioic acid): LD50, Rat, male and female, > 5,000 mg/kg Sodium benzoate: LD50, Rat, male and female, 2,100 - 3,450 mg/kg Estimated. Boron potassiium oxide (B4K2O7), tetrahydrate: Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Typical for this family of materials. LD50, Rat, male, 3,690 mg/kg Sodium hydroxide: Single dose oral LD50 has not been determined. Tolyl triazole: LD50, Rat, male and female, 720 mg/kg OECD Test Guideline 401

Acute dermal toxicity	Information for the Product: Prolonged skin contact is unlikely to result in absorption of harmful amounts. Repeated skin exposure to large quantities may result in absorption of harmful amounts. Massive contact with damaged skin or of material sufficiently hot to burn skin may result in absorption of potentially lethal amounts. For Ethylene glycol: LD50, Rabbit, > 22,270 mg/kg Information for components: Ethylene glycol: LD50, Rabbit, > 10,600 mg/kg LD50, Mouse, male and female, > 3,500 mg/kg Sebacic acid (decanedioic acid): LD50, Rat, > 2,000 mg/kg OECD 402 or equivalent No deaths occurred at this concentration. Sodium benzoate: The dermal LD50 has not been determined. Boron potassiium oxide (B4K2O7), tetrahydrate: Prolonged skin contact is unlikely to result in absorption of harmful amounts. Typical for this family of materials. LD50, Rat, male and female, > 2,000 mg/kg No deaths occurred at this concentration. Sodium hydroxide: The dermal LD50 has not been determined. Tolyl triazole Product name: LD50, Rabbit, > 5,000 mg/kg
Acute inhalation toxicity	Information for the Product: At room temperature, exposure to vapor is minimal due to low volatility. With good ventilation, single exposure is not expected to cause adverse effects. If material is heated or areas are poorly ventilated, vapor/mist may accumulate and cause respiratory irritation and symptoms such as headache and nausea. As product: The LC50 has not been determined. Information for components: Ethylene glycol: LC50, Rat, male and female, 6 Hour, dust/mist, > 2.5 mg/l Sebacic acid (decanedioic acid): The LC50 has not been determined. Sodium benzoate: The LC50 has not been determined. Boron potassiium oxide (B4K2O7), tetrahydrate: No adverse effects are anticipated from single exposure to dust. Dust may cause irritation to upper respiratory tract (nose and throat). Typical for this family of materials. LC50, Rat, male and female, 4 Hour, dust/mist, > 2.03 mg/l OECD Test Guideline 403 No deaths occurred at this concentration. Sodium hydroxide The LC50 has not been determined. Tolyl triazole: The LC50 has not been determined.
Eye and skin contact:	Causes skin irritation. Information for the Product: Based on information for component(s): Brief contact is essentially nonirritating to skin. Prolonged contact may cause slight skin irritation with local redness. Repeated contact may cause slight skin irritation with local redness. Information for components: Ethylene glycol Brief contact is essentially nonirritating to skin. Prolonged contact may cause slight skin irritation with local redness. Repeated contact may cause skin irritation with local redness. Sebacic acid (decanedioic acid): Brief contact is essentially nonirritating to skin. Sodium benzoate: Brief contact is essentially nonirritating to skin. Boron potassiium oxide (B4K2O7), tetrahydrate: Brief contact is essentially nonirritating to skin. Sodium hydroxide: Brief contact may cause severe skin burns. Symptoms may include pain, severe local redness and tissue damage. Tolyl triazole: Based on product testing: Brief contact is essentially nonirritating to skin.

Serious eye damage/eye irritation	Causes serious eye irritation. Information for the Product: Based on information for component(s): May cause slight eye irritation. Corneal injury is unlikely. Vapor or mist may cause eye irritation. Information for components: Ethylene glycol May cause slight eye irritation. Corneal injury is unlikely. Vapor or mist may cause eye irritation. Sebacic acid (decanedioic acid) May cause slight eye irritation. Corneal injury is unlikely. Sodium benzoate May cause severe eye irritation. Corneal injury is unlikely. Boron potassiium oxide (B4K2O7), tetrahydrate May cause slight eye irritation. Corneal injury is unlikely. Sodium hydroxide May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur. Dust may irritate eyes. Tolyl triazole Product: Based on product testing: May cause slight eye irritation.
Sensitization	Information for the Product: For skin sensitization: Contains component(s) which did not cause allergic skin sensitization in guinea pigs. Information for components: Ethylene glycol: Did not cause allergic skin reactions when tested in guinea pigs. For respiratory sensitization: No relevant data found. Sebacic acid (decanedioic acid) Skin contact may cause an allergic skin reaction in a small proportion of individuals. Sodium benzoate: Skin contact may cause an allergic skin reaction in a small proportion of individuals. Boron potassiium oxide (B4K2O7), tetrahydrate: For this family of materials, sensitization studies done in guinea pigs have been negative. Sodium hydroxide: Did not cause allergic skin reactions when tested in humans. For respiratory sensitization: No relevant data found. Tolyl triazole Did not cause allergic skin reactions when tested in guinea pigs.
Specific Target Organ Systemic Toxicity (Single Exposure)	Information for components: Ethylene glycol: Evaluation of available data suggests that this material is not an STOT-SE toxicant. Sebacic acid (decanedioic acid) Available data are inadequate to determine single exposure specific target organ toxicity. Sodium benzoate: Available data are inadequate to determine single exposure specific target organ toxicity. Boron potassiium oxide (B4K2O7), tetrahydrate Evaluation of available data suggests that this material is not an STOT-SE toxicant. Sodium hydroxide: Material is corrosive. Material is not classified as a respiratory irritant; however, upper respiratory tract irritation or corrosivity may be expected. Tolyl triazole: Evaluation of available data suggests that this material is not an STOT-SE toxicant.
Aspiration Hazard	Information for the Product: Based on physical properties, not likely to be an aspiration hazard. Information for components: Ethylene glycol: Based on physical properties, not likely to be an aspiration hazard. Sebacic acid: (decanedioic acid) Based on physical properties, not likely to be an aspiration hazard. Sodium benzoate: Based on physical properties, not likely to be an aspiration hazard. Boron potassiium oxide (B4K2O7), tetrahydrate: Based on physical properties, not likely to be an aspiration hazard. Sodium hydroxide: Aspiration into the respiratory system may occur during ingestion or vomiting. Due to corrosivity, tissue damage or lung injury may occur. Tolyl triazole: Based on physical properties, not likely to be an aspiration hazard.

Specific Target Organ Systemic Toxicity (Repeated Exposure)	May cause damage to organs (Kidney) through prolonged or repeated exposure if swallowed. Information for components: Ethylene glycol: Observations in humans include: Nystagmus (involuntary eye movement). In animals, effects have been reported on the following organs: Kidney. Liver. Sebacic acid (decanedioic acid): No relevant data found. Sodium benzoate: In animals, effects have been reported on the following organs: Liver. Boron potassiium oxide (B4K2O7), tetrahydrate: For this family of materials: In humans, symptoms may include: Respiratory effects. In animals, effects have been reported on the following organs: Central nervous system. Testes. Sodium hydroxide: Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects. Tolyl triazole: Based on available data, repeated exposures are not anticipated to cause significant adverse effects.
Carcinogenicity:	Information for components: Ethylene glycol: Ethylene glycol did not cause cancer in long-term animal studies. Sebacic acid (decanedioic acid) No relevant data found. Sodium benzoat: No relevant data found. Boron potassiium oxide (B4K2O7), tetrahydrate: For this family of materials: Did not cause cancer in laboratory animals. Sodium hydroxide: No relevant data found. Tolyl triazole: No relevant data found
Reproductive toxicity:	May damage fertility or the unborn child. Information for components: Ethylene glycol: Ingestion of large amounts of ethylene glycol has been shown to interfere with reproduction in animals. Sebacic acid (decanedioic acid) No relevant data found. Sodium benzoate: No relevant data found. Boron potassiium oxide (B4K2O7), tetrahydrate: In animal studies, boron compounds have been shown to interfere with fertility in males, and to a lesser degree in females. Sodium hydroxide: No relevant data found. Tolyl triazole: No relevant data found.
Teratogenicity	May damage fertility or the unborn child. Information for components: Ethylene glycol: Based on animal studies, ingestion of very large amounts of ethylene glycol appears to be the major and possibly only route of exposure to produce birth defects. Exposures by inhalation or skin contact, the primary routes of occupational exposure, had minimal effect on the fetus, in animal studies. Sebacic acid (decanedioic acid): No relevant data found. Sodium benzoate: Did not cause birth defects or any other fetal effects in laboratory animals. Boron potassiium oxide (B4K2O7), tetrahydrate: In laboratory animals, boron compounds have caused birth defects only at doses toxic to the mother and have been toxic to the fetus at doses nontoxic to the mother. Sodium hydroxide: No relevant data found. Tolyl triazole: Has caused birth defects in laboratory animals.

Mutagenicity	Not classified based on available information. Information for components: Ethylene glycol: In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative. Sebacic acid (decanedioic acid): In vitro genetic toxicity studies were negative. Sodium benzoate: In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were negative. Boron potassiium oxide (B4K2O7), tetrahydrate: For this family of materials: In vitro mutagenicity studies were negative. Animal genetic toxicity studies were negative. Sodium hydroxide: In vitro genetic toxicity studies were negative. Tolyl triazole: In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

12. Ecological information

Ethylene glycol:

Acute toxicity to fish: Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested). LC50, Pimephales promelas (fathead minnow), static test, 96 Hour, 72,860 mg/l.

Acute toxicity to aquatic invertebrates: EC50, Daphnia magna (Water flea), static test, 48 Hour, > 100 mg/l, OECD Test Guideline 202 or Equivalent .

Acute toxicity to algae/aquatic plants ErC50, Pseudokirchneriella subcapita, 96 Hour, Growth rate inhibition, 6,500 - 13,000 mg/l . Toxicity to bacteria EC50, activated sludge, 30 min, 225 mg/l, OECD 209 Test.

Chronic toxicity to fish NOEC, Pimephales promelas (fathead minnow), 7 d, 15,380 mg/l.

Chronic toxicity to aquatic invertebrates NOEC, Ceriodaphnia dubia (water flea), 7 d, 8,590 mg/l

Sebacic acid (decanedioic acid):

Acute toxicity to fish Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested). LC50, Brachydanio rerio (zebrafish), 96 Hour, > 100 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates EC50, Daphnia magna (Water flea), 48 Hour, > 100 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants EL50, Skeletonema costatum (marine diatom), 72 Hour, Growth rate, 38.7 mg/l

Sodium benzoate:

Acute toxicity to fish Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested). LC50, Pimephales promelas (fathead minnow), static test, 96 Hour, > 100 mg/l

Acute toxicity to aquatic invertebrates EC50, Daphnia magna (Water flea), static test, 96 Hour, > 100 mg/l

Acute toxicity to algae/aquatic plants ErC50, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, > 100 mg/l

Boron potassiium oxide (B4K2O7), tetrahydrate:

Acute toxicity to fish For this family of materials: Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested). For this family of materials: LC50, dab (Limanda limanda), flow-through, 96 Hour, 523 mg/l

Acute toxicity to aquatic invertebrates For this family of materials: LC50, Daphnia magna (Water flea), static test, 48 Hour, 939 mg/l, OECD Test Guideline 202 or Equivalent

Sodium hydroxide:

Acute toxicity to fish May increase pH of aquatic systems to > pH 10 which may be toxic to aquatic organisms.

Tolyl triazole:

Acute toxicity to fish Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested). LC50, Cyprinodon variegatus (sheepshead minnow), semi-static test, 96 Hour, 55 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates LC50, copepod Acartia tonsa, static test, 48 Hour, 55 mg/l For similar material(s): EC50, Daphnia galeata (water flea), static test, 48 Hour, 8.58 mg/l For similar material(s): EC50, Daphnia galeata (water flea), static test, 48 Hour, 15.8 mg/l

Acute toxicity to algae/aquatic plants EC50, Skeletonema costatum (marine diatom), static test, 72 Hour, Growth rate inhibition, 53 mg/l NOEC, Skeletonema costatum (marine diatom), static test, 72 Hour, Growth rate inhibition, 30 mg/l For similar material(s): EC10, Desmodesmus subspicatus (green algae), 72 Hour, Growth rate inhibition, 2.86 mg/l For similar material(s): NOEC, Desmodesmus subspicatus (green algae), 72 Hour, Growth rate inhibition, 2.5 mg/l For similar material(s): EC10, Desmodesmus subspicatus (green algae), 72 Hour, Growth rate inhibition, 1.18 mg/l For similar material(s) NOEC, Desmodesmus subspicatus (green algae), 72 Hour, Growth rate inhibition, 1.2 mg/l Chronic toxicity to aquatic invertebrates NOEC, Daphnia magna (Water flea), semi-static test, 21 d, Reproduction, 18.4 mg/l For similar material(s): EC10, Daphnia galeata (water flea), 21 d, Reproduction, 0.4 mg/l For similar material(s): EC10, Daphnia galeata (water flea), 21 d, Reproduction, 0.97 mg/l

Persistence and degradability:

Ethylene glycol

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material has inherent, ultimate biodegradability according to OECD test (s) guidelines (reaches > 60 or 70% biodegradation in OECD test(s). 10-day Window: Pass

Biodegradation: 90 - 100 % Exposure time: 10 d Method: OECD Test Guideline 301A or Equivalent 10-day Window: Not applicable

Biodegradation: 90 % Exposure time: 1 d Method: OECD Test Guideline 302B or Equivalent Theoretical Oxygen Demand: 1.29 mg/mg

Sebacic acid (decanedioic acid):

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. 10-day Window: Pass

Biodegradation: 98 % Exposure time: 7 d Method: OECD Test Guideline 301E or Equivalent

Sodium benzoate:

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. 10-day Window: Pass

Biodegradation: > 74 % Exposure time: 28 d Method: OECD Test Guideline 301B or Equivalent

Boron potassiium oxide (B4K2O7), tetrahydrate:

Biodegradability: Biodegradation is not applicable.

Sodium hydroxide:

Biodegradability: Biodegradability is not applicable to inorganic substances.

Tolyl triazole:

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

Biodegradation: 4 % Exposure time: 28 d

Bioaccumulative potential

Ethylene glycol: Bioaccumulation: Bioconcentration potential is low (BCF 100 or Log Pow 3). Partition coefficient: n-octanol/water(log Pow): -1.36 Measured Bioconcentration factor (BCF): 10 Leuciscus idus (Golden orfe)

Sebacic acid (decanedioic acid) Bioaccumulation: Bioconcentration potential is low (BCF 100 or Log Pow 3). Partition coefficient: n-octanol/water(log Pow): 1.5 OECD Test Guideline 117 or Equivalent

Sodium benzoate Bioaccumulation: Bioconcentration potential is low (BCF 100 or Log Pow 3). Partition coefficient: n-octanol/water(log Pow): -2.27 Estimated.

Boron potassiium oxide (B4K2O7), tetrahydrate Bioaccumulation: Partitioning from water to n-octanol is not applicable.

Sodium hydroxide Bioaccumulation: No bioconcentration is expected because of the relatively high water solubility.

Tolyl triazole Bioaccumulation: Bioconcentration potential is low (BCF 100 or Log Pow 3). Partition coefficient: n-octanol/water(log Pow): 1.71 Est

Mobility in soil:

Ethylene glycol: Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process. Partition coefficient (Koc): 1 Estimated.

Sebacic acid (decanedioic acid): No relevant data found.

Sodium benzoate: No relevant data found.

Boron potassiium oxide (B4K2O7), tetrahydrate: No relevant data found.

Sodium hydroxide Partition coefficient (Koc): 14 Estimated.

Tolyl triazole Partition coefficient (Koc): 1647 Estimated.

Results of PBT and vPvB assessment	Ethylene glycol: This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB). Sebacic acid (decanedioic acid): This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT). Sodium benzoate: This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT). Boron potassiium oxide (B4K2O7), tetrahydrate:This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT). Sodium hydroxide: This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB). Tolyl triazole: This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).
Other adverse effects:	Ethylene glycol: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer. Sebacic acid (decanedioic acid): This substance is not on the Montreal Protocol list of substances that deplete the ozone layer. Sodium benzoate: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer. Boron potassiium oxide (B4K2O7), tetrahydrate: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer. Sodium hydroxide: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer. Tolyl triazole: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

13. Disposal considerations

Disposal methods:	Do not dump into any sewers, on the ground, or into any body of water. All disposal practices must be in compliance with all federal, state/provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility of the waste generator. As your supplier, we have no control over the management practices or manufacturing processes of parties handling or using this material. The information presented here pertains only to the product as shipped in its intended condition as described in sds section 1: identified uses. For unused & uncontaminated product, the preferred options include sending to a licensed, permitted: recycler. Reclaimer. Incinerator or other thermal destruction device.

14. Transport information

UN number:	Not regulated
UN proper shipping name:	Not regulated
Transport hazard class(es):	Not regulated
Packaging group	Not regulated
Environmental hazards:	Not regulated
Special precautions for user:	Not regulated
Further information:	Not regulated.

15. Regulatory information

This product has been classified in accordance with the criteria of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), rev. 8.

16. Other information

Other Information:	The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process unless specified in the text.