

## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

#### PRODUCT NAME

Glycerol

#### **SYNONYMS**

C3-H8-O3, glycerin, "glycerin, anhydrous", "glycerin, synthetic", glycerine, glyceritol, "glycyl alcohol", "1, 2, 3-propanetriol", "1, 2, 3-propanetriol", "1, 2, 3-trihydroxypropane", "1, 2, 3-trihydroxypropane", "Symex Sym-GL 9073", "Grocolene Moon Star Superol 24/R0724", "Pricerine 9073", "SYM-GL 9074", "Merck Glycerol AnalaR", "David Craig Glycerol BP", "Optim Glycerine 99.7%", "Glycerin BP/ USP", "Glycerin USP kosher"

#### **PRODUCT USE**

As solvent, humectant, plasticiser, emollient, sweetener; in the manufacture of nitroglycerol (explosive), cosmetics, liquid soaps, liqueurs, confectioneries, blacking, printing and copying inks and lubricants. It is also used in the manufacture of elastic glues, lead oxide cements; to keep fabrics pliable; to preserve printing on cotton; for printing rollers; to keep frost from windshields; as antifreeze in automobiles, gas meters and hydraulic jacks, in shock absorber fluids. In fermentation nutrients in production of antibiotics.

#### SUPPLIER

Company: Santa Cruz Biotechnology, Inc. Address: 2145 Delaware Ave Santa Cruz, CA 95060 Telephone: 800.457.3801 or 831.457.3800 Emergency Tel: Luis Yanez at 831.251.2170

#### HAZARD RATINGS



## **Section 2 - HAZARDS IDENTIFICATION**

#### STATEMENT OF HAZARDOUS NATURE

HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to NOHSC Criteria, and ADG Code.

#### POISONS SCHEDULE None

RISK	SAFETY
<ul> <li>Irritating to eyes respiratory system and skin.</li> </ul>	Do not breathe gas/ fumes/ vapour/ spray.
Cumulative effects may result following exposure*.	■ Avoid contact with skin.
* (limited evidence).	■ Wear eye/ face protection.
	To clean the floor and all objects contaminated by this material use water.
	In case of contact with eyes rinse with plenty of water and contact Doctor or Poisons Information Centre.

# sc-29095



Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW
	■ If swa containe	llowed IMMEDIATELY contact er or label).	ct Doctor or Poisons Informat	tion Centre (show this

## **Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS**

NAME	CAS RN	%
glycerol	56-81-5	> 96

## **Section 4 - FIRST AID MEASURES**

#### **SWALLOWED**

- -
- Immediately give a glass of water.

Material Safety Data Sheet

• First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

#### EYE

- If this product comes in contact with the eyes:
- Wash out immediately with fresh running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- If pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

#### SKIN

- If skin contact occurs:
- Immediately remove all contaminated clothing, including footwear.
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

#### INHALED

- •
- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor, without delay.

## NOTES TO PHYSICIAN

Treat symptomatically.

## **Section 5 - FIRE FIGHTING MEASURES**

#### **EXTINGUISHING MEDIA**

- Water spray or fog.
- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

#### **FIRE FIGHTING**

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Use water delivered as a fine spray to control fire and cool adjacent area.

# sc-29095



Material Safety Data Sheet

Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW
<ul> <li>Avoid spraying water onto</li> <li>DO NOT approach contain</li> <li>Cool fire exposed contain</li> <li>If safe to do so, remove co</li> </ul> FIRE/EXPLOSION HAZ	liquid pools. hers suspected to be hot. ers with water spray from a ontainers from path of fire. <b>ARD</b>	protected location.		
<ul> <li>Combustible.</li> <li>Slight fire hazard when ex Heating may cause expar</li> <li>On combustion, may emit</li> <li>May emit acrid smoke.</li> <li>Mists containing combusti</li> <li>Combustion products include</li> <li>May emit poisonous fumes.</li> <li>May emit corrosive fumes.</li> <li>FIRE INCOMPATIBILITY</li> <li>Avoid contamination with</li> </ul>	posed to heat or flame. Ision or decomposition lead toxic fumes of carbon mon ble materials may be explo : carbon dioxide (CO2), acr	ing to violent rupture of conta oxide (CO). sive. olein, other pyrolysis product s, oxidising acids, chlorine blo	ainers. ts typical of burning organic eaches, pool chlorine etc. as	material. s ignition may result
HAZCHEM None		-		
PERSONAL PROTECT	ON			
Glasses:	Gloves:		Respirator:	

Chemical goggles.

1.NATURAL+NEOPRENE 2.NITRILE

Type A-P Filter of sufficient capacity

## Section 6 - ACCIDENTAL RELEASE MEASURES

### **EMERGENCY PROCEDURES**

MINOR SPILLS

■ Slippery when spilt.

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact by using protective equipment.
- Contain and absorb spill with sand, earth, inert material or vermiculite.
- Wipe up.
- Place in a suitable, labelled container for waste disposal.

MAJOR SPILLS

Slippery when spilt.

Moderate hazard.

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.
- No smoking, naked lights or ignition sources.
- Increase ventilation.
- Stop leak if safe to do so.
- Contain spill with sand, earth or vermiculite.
- Collect recoverable product into labelled containers for recycling.
- Absorb remaining product with sand, earth or vermiculite.
- Collect solid residues and seal in labelled drums for disposal.
- Wash area and prevent runoff into drains.
- If contamination of drains or waterways occurs, advise emergency services.

# sc-29095

Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

# Section 7 - HANDLING AND STORAGE

### **PROCEDURE FOR HANDLING**

- DO NOT allow clothing wet with material to stay in contact with skin
- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.

Material Safety Data Sheet

- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- Avoid smoking, naked lights or ignition sources.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions. ٠

#### SUITABLE CONTAINER

- Metal can or drum
- · Packaging as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.
- STORAGE INCOMPATIBILITY
- Glycerol:
- · reacts violently with strong oxidisers, acetic anhydride, alkali metal hydrides, calcium hypochlorite, calcium oxychloride, chlorine, chromic anhydride, chromium oxides, ethylene oxide, hydrogen peroxide, phosphorous triiodide, potassium chlorate, potassium permanganate, potassium peroxide, silver perchlorate, sodium hydride, sodium peroxide, sodium triiodide, sodium tetrahydroborate, is incompatible with strong acids, caustics, aliphatic amines, isocyanates, uranium fluoride
- is able to polymerise above 145 C
- Avoid reaction with oxidising agents

#### PACKAGING MATERIAL INCOMPATIBILITIES

**Chemical Name** Glycerin

#### STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- No smoking, naked lights or ignition sources.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

### SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS





Container Type Polyurethane

# sc-29095



Hazard Alert Co	de Key:	EXTREME	HIGH		MODERATE	LOW
+	x	+	Х	х	+	

X: Must not be stored together

Material Safety Data Sheet

O: May be stored together with specific preventions

+: May be stored together

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

#### **EXPOSURE CONTROLS**

Source	Material	TWA ppm	TWA mg/m³	STEL ppm	STEL mg/m³	Peak ppm	Peak mg/m³	TWA F/CC
Notes	Australia Exposure Standards	glycerol (Glycerin mist (a))		10				
	(see Chapter 14)							

#### MATERIAL DATA

GLYCEROL:

• Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat. Historically occupational exposure standards for these irritants have been based on observation of workers' responses to various airborne concentrations. Present day expectations require that nearly every individual should be protected against even minor sensory irritation and exposure standards are established using uncertainty factors or safety factors of 5 to 10 or more. On occasion animal no-observable-effect-levels (NOEL) are used to determine these limits where human results are unavailable. An additional approach, typically used by the TLV committee (USA) in determining respiratory standards for this group of chemicals, has been to assign ceiling values (TLV C) to rapidly acting irritants and to assign short-term exposure limits (TLV STELs) when the weight of evidence from irritation, bioaccumulation and other endpoints combine to warrant such a limit. In contrast the MAK Commission (Germany) uses a five-category system based on intensive odour, local irritation, and elimination half-life. However this system is being replaced to be consistent with the European Union (EU) Scientific Committee for Occupational Exposure Limits (SCOEL); this is more closely allied to that of the USA.

OSHA (USA) concluded that exposure to sensory irritants can:

- cause inflammation
- · cause increased susceptibility to other irritants and infectious agents
- lead to permanent injury or dysfunction
- permit greater absorption of hazardous substances and
- acclimate the worker to the irritant warning properties of these substances thus increasing the risk of overexposure.

The mist is considered to be a nuisance particulate which appears to have little adverse effect on the lung and does not produce significant organic disease or toxic effects. OSHA concluded that the nuisance particulate limit would protect the worker form kidney damage and perhaps, testicular effects.

#### PERSONAL PROTECTION



## EYE

- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59]

sc-29095



Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW
HANDS/FEET				
Wear chemical protective glo Wear safety footwear or safe Suitability and durability of glove frequency and duration of co chemical resistance of glove glove thickness and dexterity, are important in the selection of <b>OTHER</b>	oves, eg. PVC. ty gumboots, eg. Rubber type is dependent on usag ntact, material, gloves.	e. Factors such as:		
<ul> <li>Overalls.</li> <li>P.V.C. apron.</li> <li>Barrier cream.</li> <li>Skin cleansing cream.</li> <li>Eye wash unit.</li> <li>GLOVE SELECTION INDE</li> <li>Glove selection is based on a</li> </ul>	<b>EX</b> modified presentation of th	e:		
"Forsberg Clothing Performanc	e Index".			
The effect(s) of the following su	bstance(s) are taken into ac	count in the computer-ge	enerated selection: glycerol	
Protective Material CPI *.				
NATURAL+NEOPRENE		А		
NATURAL RUBBER		А		
NITRILE		А		
* CPI - Chemwatch Performa	nce Index			
A: Best Selection				
B: Satisfactory; may degrade at	fter 4 hours continuous imm	ersion		
C: Boor to Dangerous Choice fr	an athan than about tarma image			

NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

\* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

### RESPIRATOR

Material Safety Data Sheet

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

(volume)	Maximum Protection Factor	Half-face Respirator	Full-Face Respirator
1000	10	A-AUS P	-
1000	50	-	A-AUS P
5000	50	Airline *	-
5000	100	-	A-2 P
10000	100	-	A-3 P
	100+		Airline**

\* - Continuous Flow \*\* - Continuous-flow or positive pressure demand.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

#### **ENGINEERING CONTROLS**

• General exhaust is adequate under normal operating conditions. Local exhaust ventilation may be required in special circumstances. If risk of overexposure exists, wear approved respirator. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection. Provide adequate ventilation in warehouses and enclosed storage areas. Air contaminants

# sc-29095



Material Safety Data Sheet

Hazard Alert Code Key:	EXTREME	HIGH		MODERATE		LOW	
generated in the workplace required to effectively remove	possess varying "escape" e the contaminant.	velocities which,	in turn, de	etermine the "captu	re velocities" of	fresh circu	ulating air
Type of Contaminant:		Air	Speed:				
solvent, vapours, degreasing	etc., evaporating from tank	(in still air). 0.2	25-0.5 m/s (	(50-100 f/min)			
aerosols, fumes from pouring low speed conveyer transfers pickling (released at low velo	g operations, intermittent co s, welding, spray drift, platin poity into zone of active gene	ntainer filling, g acid fumes, 0.5 eration)	5-1 m/s (100	0-200 f/min.)			
direct spray, spray painting ir loading, crusher dusts, gas d rapid air motion)	n shallow booths, drum filling lischarge (active generation	g, conveyer into zone of 1-2	2.5 m/s (200	0-500 f/min.)			
grinding, abrasive blasting, to dusts (released at high initial motion)	umbling, high speed wheel of velocity into zone of very h	generated igh rapid air 2.5	5-10 m/s (50	00-2000 f/min.)			
Within each range the approp	priate value depends on:						
Lower end of the range		Up	per end of	the range			
1: Room air currents minima	or favourable to capture	1:	Disturbing r	room air currents			
2: Contaminants of low toxici	ty or of nuisance value only	. 2:	Contamina	nts of high toxicity			
3: Intermittent, low production	n.	3:	High produ	ction, heavy use			
4: Large hood or large air ma	ass in motion	4:	Small hood	-local control only			
Simple theory shows that a	ir velocity falls rapidly with	h distance away	from the o	opening of a simple	e extraction pipe	Velocity	generally

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

## **Section 9 - PHYSICAL AND CHEMICAL PROPERTIES**

#### APPEARANCE

Oily, colourless, odourless liquid, with syrupy, sweet taste. Miscible with water and alcohol. Insoluble in benzene, ether, chloroform, fixed and volatile oils. Absorbs water from the air. Also absorbs hydrogen sulfide, hydrogen cyanide and sulfur dioxide.

#### PHYSICAL PROPERTIES

Liquid. Mixes with water.			
State	Liquid	Molecular Weight	92.1
Melting Range (°C)	18	Viscosity	Not Available
Boiling Range (°C)	290	Solubility in water (g/L)	Miscible
Flash Point (°C)	160	pH (1% solution)	7 approx.
Decomposition Temp (°C)	>280	pH (as supplied)	Not applicable
Autoignition Temp (°C)	370	Vapour Pressure (kPa)	0.003 @ 50 C
Upper Explosive Limit (%)	19	Specific Gravity (water=1)	1.2-1.3 @ 20 C
Lower Explosive Limit (%)	3	Relative Vapour Density (air=1)	3.17
Volatile Component (%vol)	Nil @ 38 C.	Evaporation Rate	Non Volatile

Material	Value
log Kow	-2.662.47

# sc-29095



Hazard Alert Code Key: EXTREME HIGH MODERATE LOW

### CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.

Material Safety Data Sheet

Hazardous polymerisation will not occur.

For incompatible materials - refer to Section 7 - Handling and Storage.

## Section 11 - TOXICOLOGICAL INFORMATION

#### POTENTIAL HEALTH EFFECTS

### **ACUTE HEALTH EFFECTS**

#### SWALLOWED

■ Although ingestion is not thought to produce harmful effects (as classified under EC Directives), the material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (e.g. liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.

#### EYE

• Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals. Prolonged eye contact may cause inflammation characterised by a temporary redness of the conjunctiva (similar to windburn).

#### SKIN

• The material may cause mild but significant inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterised by redness, swelling and blistering.

Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions.

Open cuts, abraded or irritated skin should not be exposed to this material.

Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

#### INHALED

• The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage. Not normally a hazard due to non-volatile nature of product.

#### **CHRONIC HEALTH EFFECTS**

• Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems. Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

#### TOXICITY AND IRRITATION

■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Oral (Rat) LD50: 12600 mg/kg	
Oral (Guinea pig) LD50: 7750 mg/kg	
Oral (Human) TDLo: 1428 mg/kg	
Intraperitoneal (Rat) LD50: 4420 mg/kg	
Subcutaneous (Rat) LD50: 100 mg/kg	
Intravenous (Rat) LD50: 5566 mg/kg	
Oral (Mouse) LD50: 4090 mg/kg	
Intraperitoneal (Mouse) LD50: 8700 mg/kg	
Subcutaneous (Mouse) LD50: 91 mg/kg	
Intravenous (Mouse) LD50: 4250 mg/kg	
■ For glycerol:	

Acute toxicity: Glycerol is of a low order of acute oral and dermal toxicity with LD50 values in excess of 4000 mg/kg bw. At very high dose levels, the signs of toxicity include tremor and hyperaemia of the gastro-intestinal -tract. Skin and eye irritation studies indicate that glycerol

# sc-29095



Material Safety Data Sheet

lazard Alert Code Key: EXTREME HIGH	HIGH	MODERATE	LOW	

has low potential to irritate the skin and the eye. The available human and animal data, together with the very widespread potential for exposure and the absence of case reports of sensitisation, indicate that glycerol is not a skin sensitiser.

Repeat dose toxicity: Repeated oral exposure to glycerol does not induce adverse effects other than local irritation of the gastro-intestinal tract. The overall NOEL after prolonged treatment with glycerol is 10,000 mg/kg bw/day (20% in diet). At this dose level no systemic or local effects were observed. For inhalation exposure to aerosols, the NOAEC for local irritant effects to the upper respiratory tract is 165 mg/m3 and 662 mg/m3 for systemic effects.

Genotoxicity: Glycerol is free from structural alerts, which raise concern for mutagenicity. Glycerol does not induce gene mutations in bacterial strains, chromosomal effects in mammalian cells or primary DNA damage in vitro. Results of a limited gene mutation test in mammalian cells were of uncertain biological relevance. In vivo, glycerol produced no statistically significant effect in a chromosome aberrations and dominant lethal study. However, the limited details provided and the absence of a positive control, prevent any reliable conclusions to be drawn from the in vivo data. Overall, glycerol is not considered to possess genotoxic potential.

Carcinogenicity: The experimental data from a limited 2 year dietary study in the rat does not provide any basis for concerns in relation to carcinogenicity. Data from non-guideline studies designed to investigate tumour promotion activity in male mice suggest that oral administration of glycerol up to 20 weeks had a weak promotion effect on the incidence of tumour formation.

Reproductive and developmental toxicity: No effects on fertility and reproductive performance were observed in a two generation study with glycerol administered by gavage (NOAEL 2000 mg/kg bw/day). No maternal toxicity or teratogenic effects were seen in the rat, mouse or rabbit at the highest dose levels tested in a guideline comparable teratogenicity study (NOEL 1180 mg/kg bw/day).

## Section 12 - ECOLOGICAL INFORMATION

Refer to data for ingredients, which follows: GLYCEROL:

■ Algae IC50 (72hr.) (mg/l):	2900- 10000
■ log Kow (Sangster 1997):	- 1.76
■ log Pow (Verschueren 1983):	1.07692307
■ BOD5:	51%
■ COD:	95%
■ ThOD:	93%
■ For glycerol log Kow : -2.662.47 BOD 5: 0 617-0 87 31-51%	

BOD 5: 0.617-0.87,31-51% COD : 1.16,82-95% ThOD : 1.217-1.56 Completely biodegradable.

Environmental fate:

Based on the relevant physical-chemical properties and the fact that glycerol is readily biodegradable, glycerol will partition primarily to water. Biodegradability: Glycerol is considered to be readily biodegradable in the aquatic environment. Pre-adapted microorganisms can degrade glycerol rapidly under both aerobic and anaerobic conditions.

Bioaccumulation: Based on Log Kow -1.76, glycerol will have a low bioaccumulation potential and is not expected to bioaccumulate. Photodegradation: The calculated half-life for the photo-oxidation (reaction with hydroxyl radicals) of glycerol in air is 6.8 hours (EPIWIN vs 3.04).

Stability in Water: Glycerol does not contain functional groups that are expected to react with water.

Transport between Environmental Compartments: From the EQC model (Mackay level III), it can be deduced that 100% of glycerol will end up in the water phase. Negligible amounts will be distributed towards soil, air and sediment

Ecotoxicity:

Fish LC50: >5000 mg/l

Algae IC50: >2900 mg/l

Bacteria EC50: .10000 mg/l (Pseudomonas putida)

The weight of evidence indicates that glycerol is of low toxicity to aquatic organisms and this conclusion is supported by QSAR predictions. The lowest LC50 for fish is a 24-h LC50 of >5000 mg/l for Carassius auratus (Goldfish) and for aquatic invertebrates, a 24 h EC50 of >10000 mg/l for Daphnia magna is the lowest EC50. Several tests on algae are available, which suggest very low toxicity to a range of species, however their validity is uncertain. A QSAR prediction for the 96h EC50 to algae was 78000 mg/l. No toxicity towards the microorganism Pseudomonas putida was observed at 10000 mg/l after exposure for 16 hours. No long-term aquatic toxicity data is available. Screening studies are available on frog and carp embryos which indicate some effects on growth and hatching rates respectively at very high concentrations of glycerol, >7000 mg/l. However, their ecological relevance is not clear.

DO NOT discharge into sewer or waterways.

Ecotoxicity

# sc-29095



												The Power is Quant							
Hazard Alert Code I	Key:	EXTREME			H	IIGH				М	ODE	RATE					_ow		
Ingredient glycerol	Persisten LOW	stence: Water/Soil Persistence: Air				r	Bioaccumulation LOW								Mobility HIGH				
GESAMP/EHS COMPOSITE LIST - GESAMP Hazard Profiles																			
Name / Cas No / RTEC	CS No		EHS	TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
Glycerine / CAS:56-81	-5 / MA805	0000	363	363	0	NI	0	R	0	NI	0	0	(1)	0	1			D	1

Legend: EHS=EHS Number (EHS=GESAMP Working Group on the Evaluation of the Hazards of Harmful Substances Carried by Ships) NRT=Net Register Tonnage, A1a=Bioaccumulation log Pow, A1b=Bioaccumulation BCF, A1=Bioaccumulation, A2=Biodegradation, B1=Acuteaquatic toxicity LC/ECIC50 (mg/l), B2=Chronic aquatic toxicity NOEC (mg/l), C1=Acute mammalian oral toxicity LD50 (mg/kg), C2=Acutemammalian dermal toxicity LD50 (mg/kg), C3=Acute mammalian inhalation toxicity LC50 (mg/kg), D1=Skin irritation & corrosion, D2=Eye irritation& corrosion, D3=Long-term health effects, E1=Tainting, E2=Physical effects on wildlife & benthic habitats, E3=Interference with coastal amenities, For column A2: R=Readily biodegradable, NR=Not readily biodegradable. For column D3: C=Carcinogen, M=Mutagenic, R=Reprotoxic, S=Sensitising, A=Aspiration hazard, T=Target organ systemic toxicity, L=Lunginjury, N=Neurotoxic, I=Immunotoxic. For column E1: NT=Not tainting (tested), T=Tainting test positive. For column E2: Fp=Persistent floater, F=Floater, S=Sinking substances. The numerical scales start from 0 (no hazard), while higher numbers reflect increasing hazard. (GESAMP/EHS Composite List of Hazard Profiles - Hazard evaluation of substances transported by ships)

## Section 13 - DISPOSAL CONSIDERATIONS

Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.

- A Hierarchy of Controls seems to be common the user should investigate:
- Reduction,
- Reuse
- Recvclina •
- Disposal (if all else fails)

Material Safety Data Sheet

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.

- DO NOT allow wash water from cleaning or process equipment to enter drains.
- It may be necessary to collect all wash water for treatment before disposal.
- In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
- Where in doubt contact the responsible authority.
- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Authority for disposal.
- Bury or incinerate residue at an approved site.
- Recycle containers if possible, or dispose of in an authorised landfill.

## Section 14 - TRANSPORTATION INFORMATION



HAZCHEM:

None (ADG6) NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: UN, IATA, IMDG

GESAMP hazard profiles for this material can be found in section 12 of the MSDS.

sc-29095



Hazard Alert Code Key: EXTREME HIGH MODERATE LOW

**POISONS SCHEDULE** None

#### REGULATIONS

#### glycerol (CAS: 56-81-5) is found on the following regulatory lists;

"Australia Exposure Standards", "Australia High Volume Industrial Chemical List (HVICL)", "Australia Inventory of Chemical Substances (AICS)","Australia Therapeutic Goods Administration (TGA) Substances that may be used as active ingredients in Listed medicines","CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General, Unless Otherwise Specified, in Accordance with GMP","GESAMP/EHS Composite List of Hazard Profiles - Hazard evaluation of substances transported by ships","IMO IBC Code Chapter 18: List of products to which the Code does not apply","IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances", "International Council of Chemical Associations (ICCA) - High Production Volume List", "OECD Representative List of High Production Volume (HPV) Chemicals"

## **Section 16 - OTHER INFORMATION**

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references. A list of reference resources used to assist the committee may be found at: www.chemwatch.net/references.

The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

This document is copyright. Apart from any fair dealing for the purposes of private study, research, review or criticism, as permitted under the Copyright Act, no part may be reproduced by any process without written permission from CHEMWATCH. TEL (+61 3) 9572 4700.

Issue Date: 20-Aug-2009 Print Date:5-Feb-2010



ar is Q