SECTION 1 IDENTIFICATION

Product identifier	
Substance name	Refined Glycerine
Synonyms	Glycerine; 1,2,3-Propanetriol; Glycerol; Glycerin; Glyceryn
Recommended use of the chemical	
Uses	
Used as emulsifier, emollient, plasticizer, humectant, sweetener, anti-freeze, in food products, drug excipient, cosmetics, surface coatings and paints. Used as intermediate for making glycerol derivatives.	
Supplier's details	
Legal Entity	Vance Bioenergy Sdn. Bhd. Co. Reg: 200501027029 (709163 K)
Address	PLO 668 & 669, Jalan Keluli 5 Kawasan Perindustrian Pasir Gudang 81700 Pasir Gudang, Johor Darul Takzim Malaysia
Telephone Number	+607 257 1328
Fax Number	+607 257 1329 / +607 257 1330
Email address of person responsible for SDS	vancemsds@vancebioenergy.com
Official Website	www.vancebioenergy.com
Emergency phone number	
Emergency phone Number	+6012-712 7356

SECTION 2 HAZARD IDENTIFICATION

GHS Classification **Classification according to Regulation (EC) No. 1272/2008**	
Physical hazards	Not classified
Health hazards	Not classified
Environmental hazards	Not classified
GHS Label elements	
Signal words	None
Symbols	None
Hazard statement	None
Other hazards which do not result in classification	
None	
This SDS complies with 29 CFR 1910.1200 (Hazard Communication Standard).	

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances		
Main constituent	Molecular Formula	$C_3H_8O_3$
	Concentration	99% to 100%
	EC name	Glycerol
	EC number	200-289-5
	CAS number (EC inventory)	56-81-5
	IUPAC name	Glycerol
Mixtures		
Not relevant as substance is not a mixture.		

SECTION 4 FIRST-AID MEASURES

Description of necessary first-aid measures	
First aid instructions	EYE – Wash out with plenty of water. Remove contact lenses, if present and easy to do. Get medical attention if any sensations persist. SKIN – Remove contaminated clothing. Wash skin thoroughly with plenty of water. Get medical attention if necessary. INHALATION – Use self-contained breathing equipment if in confined place. Remove to fresh air. Get medical attention if necessary. INGESTION – Remove material from mouth. Drink plenty of water. No typical symptoms and effects known. However, if large amount swallowed or symptoms develop, get medical attention. Do not induce vomiting.
Most important symptoms/effects, acute and delayed	
EYE – Direct contact with eyes is likely irritating. SKIN – Not expected under normal conditions of use. INHALATION – Not expected to present a significant inhalation hazard under anticipated conditions of normal use. INGESTION – If a large quantity has been ingested, may cause nausea, vomiting, and diarrhoea.	
Indication of immediate medical attention and special treatment needed, if necessary	
If medical advice is needed, have product container or label at hand.	

SECTION 5 FIRE-FIGHTING MEASURES

Suitable extinguishing media	
Appropriate extinguishing media	Use extinguishing media appropriate for surrounding fire. Water fog, water spray, foam, dry powder, carbon dioxide (CO2) and alcohol resistant foam.
Unsuitable extinguishing media	None known. However, avoid using water jet as that may cause the fire to spread.
Special hazards arising from the chemical	
Fire Hazard – Not flammable. Explosion Hazard – Not explosive. Reactivity – Stable at ambient temperature and under normal conditions of use.	
Special protective actions for fire-fighters	
Specific hazards – Combustion causes toxic fumes Protection during firefighting – Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus and face mask. Cool containers exposed to flames with water until well after the fire is out.	

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	
Personal precautions, protective equipment and emergency procedures	Use appropriate personal protection equipment (PPE). Evacuate unnecessary personnel. Equip clean-up crew with proper protection
Environmental precautions	
Prevent runoff from entering drains, sewers, or streams. Avoid discharge onto the ground.	
Methods and materials for containment and cleaning up	
Method for spill containment	Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible.

Method for spill clean-up	Large Spills – Dike far ahead of spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Small Spills – Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Following product recovery, flush area with water. Never return spills in original containers for re-use.
Reference to other sections	
Please refer to section 8 on information for exposure controls / personal protection, and section 13 for disposal considerations.	

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling	
Recommendations for safe handling	Handle in accordance with good industrial hygiene and safety procedures.
Conditions for safe storage, including any incompatibilities	
Safe storage conditions	Store in a cool, dry place in the original container.
Incompatible products	Strong acids, strong bases and strong oxidizers.
Packaging materials	Store in packaging that are food grade.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters		
Glycerol (56-81-5)		
Parameters	**Value**	**Form**
USA – OSHA PEL (TWA)	5 mg/m^3	Mist
Appropriate Engineering Controls	Adequate ventilation should be provided so that exposure limits are not exceeded.	
Personal Protective Equipment	***Eye*** – Safety glasses or chemical goggles. ***Skin*** – Wear suitable protective clothing. Wear chemical resistant protective gloves. ***Inhalation*** – No personal respiratory protective equipment normally required. In case of risk of inhalation of vapours, use suitable respiratory equipment with combination filter (type A2/P2). ***General*** – Practice good industrial hygiene and safety. Keep away from food and drink.	

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties	
Appearance	Clear viscous liquid
Odour	Not determined
Odour threshold	Not available
pH	Not available
Melting point	18º C solidifies at a much lower temperature due to supercooling property
Freezing point	Not available
Boiling point	290^oC
Flash point	198.9^oC (PMCC)
Evaporation rate	Not available
Flammability (solid, gas)	Not available
Upper/lower flammability or explosive limits	Not available
Vapour pressure	<0.01 mmHg @ 50^oC

Vapour density	Not available
Specific Gravity (H20 = 1)	Approx. 1.26
Solubility(ies)	Soluble
Partition coefficient: n-octanol/water	-1.8
Auto-ignition temperature	Approx 400°C
Decomposition temperature	Not available
Viscosity	1410mPa.s at 20°C
Explosive properties	Not determined
Other information	
Other information on physical and chemical parameters	None

SECTION 10 STABILITY AND REACTIVITY

Reactivity
Stable at ambient temperature and under normal conditions of use.
Chemical stability
Product is stable.
Possibility of hazardous reactions
Hazardous polymerization does not occur.
Conditions to avoid
Avoid temperatures exceeding 200°C as decomposition may occur.
Incompatible materials
Contact of glycerine with strong oxidizing agents such as nitric acid or other strong acids, chromium trioxide, potassium chlorate, or potassium permanganate may cause explosion.
Hazardous decomposition products
Dangerous Decomposition Product - Acrolein (>280°C)

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological (health) effects			
Hazard class		**Result**	**Criteria**
Acute toxicity	Oral LD50	>20000 mg/kg (rat)	OECD GHS
	Inhalation L(Ct)50	4655 mg/min/litre (rat)	OECD GHS
	Dermal LD50	45 ml/kg (guinea pig)	OECD GHS
Information on likely routes of exposure			
Ingestion		Not classified	
Inhalation		Not classified	
Skin contact		Not classified	
Eye contact		Not classified	
Sensitization			
Sensitization	Respiratory sensitization	Not classified	
	Skin sensitization	Not classified	
Aspiration toxicity			
Aspiration hazard		No data available	Nil

Mutagenicity			
Germ cell mutagenicity	Mutagenicity	Not Classified	
	Germ cell mutagenicity: Ames test	Result: Negative Species: Salmonella Typhimirium (Salmonella enterica)	in vitro, OECD 471
	Germ cell mutagenicity: Chromosome aberration	Result: No effects	in vitro - Chinese Hamster Ovary, OECD 473
Carcinogenicity			
Carcinogenicity		Not classified. Not considered a carcinogen by IARC, ACGIH, NTP and OSHA.	
		Result: No effects Species: Rat Test Duration: 2 years	Oral: feed
Reproductive & development toxicity			
Reproductive effects		Not Classified	
Fertility effects		Result: No effects Species: Rat	2000 mg/kg bw/day; Oral: feed, 2 generation study
Teratogenicity			
Teratogenicity		Not classified	
Developmental effects		Result: No effects Species: Rat	1310 mg/kg bw/day Oral: feed, NOAEL. Study followed intent of OECD 414
Serious eye damage/eye irritation			
Serious eye damage/eye irritation		Not classified	
Irritation Corrosion - Eye		Result: No effects Species: Rabbit Test Duration: 7 days	0.1 ml in vivo
Specific target organ toxicity			
STOT-single exposure		Not Classified (Single / Repeated Exposure)	
		Result: No effects. Species: Rat Test Duration: 13 weeks	167 mg/m3 Inhalation, NOAEL. Study followed intent of OECD 413
		Result: No effects. Species: Rabbit Test Duration: 45 weeks	5040 mg/kg bw/day Dermal, NOEL
		Result: No effects. Species: Rat Test Duration: 2 years	8000 - 10000 mg/kg bw/day Oral, NOAEL. Study followed intent of OECD 452
Other information on adverse health effects			
See section 2 for effects of the substance			

SECTION 12 ECOLOGICAL INFORMATION

Toxicity		
Aquatic And Terrestrial Organisms Ecotoxicity	**Fish** (Oncorhynchus mykiss)	LC_{50}> 54000 mg/l, 96 hours
	Crustacea (Daphnia magna)	EC_{50}> 10000 mg/l, 24 hours
	Algae (Scenedesmus quadricauda)	EC_3> 10000 mg/l, 8 days
	Cyanobacteria (Microcystis aeruginosa)	EC_3> 2900 mg/l, 8 days
	Other aquatic/terrestrial toxicological end points	No information

Persistence and degradability	
Conclusion	**Supporting Information**
Readily biodegradable (OECD 301)	Percent degradation (Aerobic biodegradation-ready) Result: Readily biodegradable Species: Activated sludge, industrial Test Duration: 24 hours
Bioaccumulative potential	
Low bioaccumulation potential, accumulation in organisms is not expected	Octanol/water partition coefficient log Kow = -1.75.
Mobility in soil	
Low potential for sorption to soil. Glycerine will partition primarily to water.	Henry's law Calculation result: 0.000000006 atm m3/mol@25°C
Results of PBT and vPvB assessment	
The substance is not PBT / vPvB **Persistence**: The substance is demonstrated to be readily biodegradable, thus meeting screening criterion for "not P and not vP" **Bioaccumulation**: The substance has measured log Kow of -1.75, which is well below the screening criterion of log Kow </= 4.5 for "not B and not vB" **Toxicity**: The available acute aquatic E/LC50 values are well above the screening criterion of E/LC50 < 0.1 mg/L for "T". The substance is not classified for CMR or other organ-specific chronic health effects.	
Other adverse effects	
Avoid release to the environment	

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal methods
Disposal is to be performed in compliance with all federal, state/provincial and local regulations. Do not dispose of via sinks, drains or into immediate environment.

SECTION 14 TRANSPORT INFORMATION

Land transport - International Carriage by Rail (RID) and by Road (ARD)
Not regulated as dangerous goods.
Inland waterway transport (AND(R))
Not regulated as dangerous goods.
Marine transport - International Maritime Dangerous Goods Code (IMDG)
Not regulated as dangerous goods.
Air transport - International Civil Aviation Organization (ICAO) International Air Transport Association (IATA)
Not regulated as dangerous goods.
United States Department of Transportation (US DOT)
Not regulated as dangerous goods.
International Maritime Organization (IMO)
International Bulk Chemical (IBC) Code Name: Glycerine

SECTION 15 REGULATORY INFORMATION

Safety, health and environmental regulations specific for the product in question	
OSHA (Occupational Safety and Health Administration) status	This product is not hazardous under the criteria of the Federal OSHA Hazard Standard 29 CFR 1910.1200.
CERCLA (Comprehensive Response compensation, and Liability Act)	No chemicals in this material with known CAS numbers are subject to the reporting requirements of CERCLA.
SARA Title III (Superfund Amendments and Reauthorization Act)	Section 302 Extremely Hazardous Substances: No. Section 311/312 Hazardous Chemical: No.
California Proposition 65	This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

Inventory Status

Country(s) or region	Inventory Name	On Inventory (yes/no)*
Australia	Australian Inventory of Industrial Chemicals (AIIC)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
South Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes
Switzerland	Switzerland FOPH	No

SECTION 16 OTHER INFORMATION

Further information	HMIS® is a registered trade and service mark of the NPCA. Substance meets the criteria of Paragraph 9 of Annex V of the REACH EC Regulation No. 987/2008 and is therefore exempted from the obligation to register under REACH.
HMIS® ratings	Health: 1
	Flammability: 1
	Physical hazard: 0
NFPA ratings	Health: 1
	Flammability: 1
	Reactivity: 0
This SDS only concerns the above mentioned product and does not need to be valid if used with other products or in any process. This SDS is intended to provide a brief summary of our knowledge and guidance regarding the use of this product. The information contained here is offered in good faith but without warranty, and has been compiled from sources considered by Vance Bioenergy to be dependable and is accurate to the best of the Company's knowledge. It remains the user's own responsibility to make sure the information is appropriate and complete for his use of this product. Vance Bioenergy assumes no responsibility for injury to the recipient or third persons or for any damage to any property resulting from misuse of this product	
SDS revision information	Version 13.0 – Printed Date: 16 February 2021
SDS date reviewed	20 August 2021

Key/Abbreviations
SDS: Safety Data Sheet PBT: Substance with Persistent, Bioaccumulative and Toxic properties vPvB: Substance with very Persistent and very Bioaccumulative properties

Mixture classification information
Not relevant
List of relevant R phrases, hazard statements, safety phrases and/or precautionary statements
Not relevant