1. Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Commercial name	Glycogelo
Our code	70770 - 70771 - 70772

1.2 Relevant identified uses of substance or mixture and uses advised against

Industrial sector	Refrigeration, Air-conditioning and Automotive
Relevant identified uses	Use in heat transfer and hydraulic fluids. Laboratory chemicals. Intermediates. Antifreeze and de-icing.
Application	Industrial and professional

1.3 Details of the supplier of the safety data sheet

TECNOGAS SRL
Via Marco Polo, 33
235020 Albignasego (PD) Italy
Telephone: +39 049 8625910
E-mail: info@tecnogas.net

2. Hazards identification

2.1 Classification of the substance or mixture

Classified under Regulation (EC) 1272/2008 (CLP)

Physical Hazards: Acute Tox. 4 – H302
STOT RE 2 – H373

2.2 Label elements

Hazard pictograms

GHS08 **GHS07**

Signal word	Danger	
Hazard statements (H)	H302	Harmful if swallowed.
	H373	May cause damage to organs through prolonged or repeated exposure.
Precautionary statements (P)	P264	Wash … thoroughly after handling.
	P314	Get Medical advice/attention if you feel unwell.

2.3 Other hazards

On the basis of available data, the product does not contain any PBT or vPvB in percentage greater than 0,1%.

3. Composition/information on ingredients

3.2 Mixtures

Substance name	%	CAS No.	CE No.	Index No.	REACH No.	Classification under Reg. (EC) 1272/2008 (CLP)
1,2-Ethanediol	94 ≤ x < 98	107-21-1	203-473-3	603-027-00-1	01-2119456816-28-xxxx	Acute Tox. 4 – H302 STOT RE 2 – H373
Inert	5 ≤ x < 6	---	---	---	---	---

For the full text of hazard (H) phrases, see section 16.
See section 8, 11, 12 and 16 for more information on dangerous components.

4. First aid measures

4.1 Description of first aid measures

Inhalation	Remove patience from exposure to fresh air. Administer oxygen if necessary. Obtain immediate medical attention.
Skin contact	In case of contact with skin, wash immediately with plenty of water. Remove contaminated clothing. If irritation or blistering occurs, call a physician.
Eye contact	Remove contact lenses, if present. Wash immediately with plenty of water, also under the eyelids, for at least 15 minutes. If symptoms persist, call a physician.
Ingestion	Get medical advice/attention immediately. Do not induce vomiting. Do not administer anything not explicitly authorized by a doctor.

4.2. Most important symptoms and effects, both acute and delayed

Specific information on symptoms and effects caused by the product are unknown.

4.3. Indication of any immediate medical attention and special treatment needed

n.a.

5. Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	Water spray, carbon dioxide (CO2), foam and chemical powder.
No suitable extinguishing media	None in particular.

5.2 Special hazards arising from the substance or mixture

Do not breathe combustion products.

5.3 Advice for firefighters

Specific methods	Use jets of water to cool the containers to prevent product decomposition and the development of substances potentially hazardous for health. Always wear full fire prevention gear. Collect extinguishing water to prevent it from draining into the sewer system. Dispose of contaminated water used for extinction and the remains of the fire according to applicable regulations.
Equipment for fire fighters	Normal firefighting clothing i.e. fire kit (BS EN 469), gloves (BS EN 659) and boots (HO specification A29 and A30) in combination with self-contained open circuit positive pressure compressed air breathing apparatus (BS EN 137).

6. Accidental release measure

6.1 Personal precautions, protective equipment and emergency procedures

Block the leakage if there is no hazard.
Wear suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing.
These indications apply for both processing staff and those involved in emergency procedures.

6.2 Environmental precautions

The product must not penetrate the sewers, surface water, ground water or surface water.

6.3 Methods and material for containment and cleaning up

Collect the leaked product into a suitable container. Evaluate the compatibility of the container to be used, by checking section 10.
Absorb the remainder with inert absorbent material (sand, vermiculite, diatomaceous earth, etc.)
Ventilate / aerate the leakage site.
Contaminated material should be disposed of in compliance with the provisions set forth in point 13.

6.4 Reference to other sections

For more information on personal protection and disposal, see sections 8 and 13.

7. Handling and storage

7.1 Precautions for safe handling

Avoid contact with eyes and skin.
Handle in accordance with good industrial hygiene and safety
Do not eat, drink or smoke during use.
Wash hands before breaks and immediately after handling the product.
Remove contaminated clothing and protective equipment before entering eating areas.

7.2 Conditions for safe storage, including any incompatibility

Store only in the original container.
Store the containers sealed, in a well-ventilated place, away from direct sunlight.
Store in a well-ventilated place, keep far away from sources of heat, naked flames and sparks and other sources of ignition.
Avoid leakage of the product into the environment.
Keep containers away from any incompatible materials, for details see section 10.

7.3 Specific end use(s)

n.d.a.

8. Exposure controls/personal protection

8.1 Control parameters

1,2-ETHANEDIOL

Threshold Limit Value						
Type	Country	TWA/8h		STEL/15 min		Note
		mg/m³	ppm	mg/m³	ppm	
VLA	ESP	52	20	104	40	Skin
VLEP	FRA	52	20	104	40	Skin
WEL	GBR	52	20	104	40	
TLV	ITA	52	20	104	40	Skin
OEL	EU	52	20	104	40	Skin
TLV-ACGIH			25		50	
TLV-ACGIH				10		Inhalation

Regulatory References

ESP	España	INSHT - Límites de exposición profesional para agentes químicos en España 2017
FRA	France	JORF n°0109 du 10 mai 2012 page 8773 texte n° 102
GRB	United Kingdom	EH40/2005 Workplace exposure limits
ITA	Italy	Decreto Legislativo 9 Aprile 2008, n.81
EU	OEL EU	Directive 2009/161/EU ; Directive 2006/15/EC ; Directive 2004/37/EC ; Directive 2009/39/EC..
	TLV-ACGIH	ACGIH 2017

1,2-ETHANEDIOL

PNEC		
	Values	
Normal value in fresh water	10	mg/l
Normal value in marine water	1	mg/l
Normal value in fresh water sediment	37	mg/kg
Normal value in marine water sediment	3,7	mg/kg
Normal value in intermittent release (water)	10	mg/l
Normal value of STP micro-organisms	199,5	mg/l
Normal value for the terrestrial compartment	1,53	mg/kg

1,2-ETHANEDIOL

DNEL / DMEL			
Route of exposure	**Category**	**Values**	
Inhalation	Workers	Chronic local Chronic systemic	35 mg/ m^3 VND*
	Consumers	Chronic local Chronic systemic	7 mg/ m^3 VND*
Skin	Workers	Chronic local Chronic systemic	VND 106 mg/kg
	Consumers	Chronic local Chronic systemic	VND* 53 mg/kg

*VDN: hazard identified but no DNEL/PNEC available.

8.2 Exposure controls

Ensure and provide adequate air ventilation, including appropriate local extraction.
Wash hands before breaks and immediately after handling the product. Do not smoke.
The personal protective equipment must comply with EN regulations: EN 136, 140, 149 respiratory protection; EN 166 eye protection (glass); EN 340, 463, 468, 943-1, 943-2 skin protection; EN 374 hand protection (gloves), EN ISO 20345 safety shoes.

8.2.2 Individual protection measures, such as personal protective equipment

a) Eye/face protection
Wear airtight protective goggles (see standard EN 166).
In the presence of risks of exposure to splashes or squirts during work, adequate mouth, nose and eye protection should be used to prevent accidental absorption).

b) Skin protection

i) Hand protection
Protect hands with category III work gloves (see standard EN 374).
The following should be considered when choosing work glove material: compatibility, degradation, failure time and permeability. The gloves' wear time depends on the duration and type of use.
Gloves should be replaced immediately if they show signs of wear or deterioration.

ii) Other
Wear category II professional long-sleeved overalls and safety footwear (see Directive 89/686/EEC and standard EN ISO 20344).
Apron or protective clothing are not necessary.

c) Respiratory protection
In case of insufficient ventilation or the threshold value (e.g. TLV-TWA) is exceeded for the substance or one of the substances present in the product, use a mask with a type A filter whose class (1, 2 or 3) must be chosen according to the limit of use concentration (see standard EN 14387).
Respiratory protection devices must be used if the technical measures adopted are not suitable for restricting the worker's exposure to the threshold values considered. The protection provided by masks is in any case limited.
In the case of an emergency, wear open-circuit compressed air breathing apparatus (in compliance with standard EN 137) or external air-intake breathing apparatus (in compliance with standard EN 138). For a correct choice of respiratory protection device, see standard EN 529.


8.2.3. Environmental exposure controls

The emissions generated by manufacturing processes, including those generated by ventilation equipment, should be checked to ensure compliance with environmental standards.
The product must not penetrate the sewers, surface water, ground water or surface water.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	**Appearance**	Liquid
	Colour	Coloured (Blue)
b)	**Odour**	Characteristic

c) Odour threshold	n.a.
d) pH	9
e) Melting point / Freezing point	**<** - 18 °C
f) Initial boiling point	160 °C
g) Flash point	> 124 °C
h) Evaporation rate	n.a.
i) Upper/lower flammability	4,9% (V/V) / 14,6% (V/V)
j) Vapour pressure	n.a.
k) Vapour density	n.a.
l) Relative density	1,125 kg/l
n) Solubility (in the water)	Soluble
o) Partition coefficient: n-Octanol/water	- 1,36
p) Auto-ignition temperature	> 400 °C
q) Decomposition temperature	n.a.
r) Viscosity	1,61 cPs @ 20°C
s) Explosive properties	Not explosive
t) Oxidising properties	Not oxidizing

9.2 Other information

VOC (Directive 2010/75/EC)	95,00 % - 1.065,90 g/litre
VOC (volatile carbon)	36,73 % - 412,14 g/litre
Density	n.a.

10. Stability and reactivity

10.1 Reactivity

There are no particular risks of reaction with other substances in normal use and storage conditions.

1,2-ETHANEDIOL: In the air absorbs moisture. Decomposes at temperatures above 200°C.

10.2 Chemical stability

Stable in normal handling and storage conditions.

10.3 Possibility of hazardous reactions

No hazardous reactions are foreseeable in normal conditions of use and storage.

1,2-ETHANEDIOL: Risk of explosion on contact with: perchloric acid. May react dangerously with: chlorosulphuric acid, sodium hydroxide, sulphuric acid, phosphorus pentasulphide, chromium (III) oxide, chromyl chloride, potassium perchlorate, potassium dichromate, sodium peroxide, aluminium. Forms explosive mixtures with air.

10.4 Conditions to avoid

None in particular. Observe the usual precautions against chemicals.
However, the usual precautions used for chemical products should be respected.

ETHANEDIOL: Avoid exposure to sources of heat, naked flames.

10.5 Incompatible materials

n.d.a.

10.6 Hazardous decomposition products

There are no dangerous decomposition in normal handling and storage conditions.

1,2-ETHANEDIOL: hydroxyacetaldehyde, glyoxal, acetaldehyde, methane, carbon monoxide, hydrogen.

11. Toxicological information

11.1 Information on toxicological effects

In the absence of experimental data for the product itself, health hazards are evaluated according to the properties of the substances it contains, using the criteria specified in the applicable regulation for classification.
It is therefore necessary to take into account the concentration of the individual hazardous substances indicated in section 3, to evaluate the toxicological effects of exposure to the product.

Acute effects: the product is harmful if swallowed and even small quantities can cause significant health problems (abdominal pain, nausea, vomiting and diarrhoea). Repeated or continuous exposure to the product can produce functional as well as morphological changes.

1,2-ETHANEDIOL: may cause damage to kidney through prolonged or repeated exposure if swallowed. The symptoms of overexposure are vomiting, drowsiness, difficult breathing, and convulsions. The lethal dose for humans is about 1.4 ml/kg. The routes of penetration are inhalation and ingestion.

Metabolism, toxic-kinetics, mechanism of action and other information	Information not available
Information on likely routes of exposure	Information not available
Delayed and immediate effects as well as chronic effects from short and long-term exposure	Information not available
Interactive effects	Information not available

a) Acute toxicity

1,2-ETHANEDIOL	Oral	LD50: > 1600 mg/kg Species: Human being The European Union has classified the substance as "harmful".
	Skin	LD50: > 3500 mg/kg Species: Mouse
	Inhalation	LD50: > 2,5 mg/l Duration: 6 h Species: Rat Note: tested by aerosol.

b) Skin corrosion/irritation Does not meet the classification criteria for this hazard class.

c) Serious eye damage/irritation Does not meet the classification criteria for this hazard class.

d) Respiratory or skin sensitisation Does not meet the classification criteria for this hazard class.

e) Germ cell mutagenicity Does not meet the classification criteria for this hazard class.

f) Cancerogenicity Does not meet the classification criteria for this hazard class.

g) Reproductive toxicity Does not meet the classification criteria for this hazard class.

h) STOT-SE, single exposure Does not meet the classification criteria for this hazard class.

i) STOT-RE, repeated exposure Does not meet the classification criteria for this hazard class.

j) Aspiration hazard Does not meet the classification criteria for this hazard class.

For more information on dangerous components for health, see section 2 and 8.

12. Ecological information

12.1 Toxicity

1,2-ETHANEDIOL

Fish	LC50: 72860 mg/l Exposition time: 96 h Species: Pimephales promelas
	NOEC: 15380 mg/l Species: Pimephales promelas
Aquatic invertebrates	EC50: > 100 mg/l Exposition time: 48 h Species: Daphnia magna
	NOEC: 8590 mg/l Species: Ceriodaphnia sp.

12.2 Persistence and degradability

1,2-ETHANEDIOL

Solubility in water	1000 – 10000 mg/l

Rapidly degradable.

12.3 Bioaccumulative potential

1,2-ETHANEDIOL

Partition coefficient: n-octanol/water	-1,36

12.4 Mobility in soil

n.d.a.

12.5 Results of PBT and vPvB assessment

Based on available data, the product does not contain any PBT or vPvB in percentage greater than 0.1%.

12.6 Other adverse effects

n.d.a.

13. Disposal consideration

13.1 Waste treatment methods

Reuse, when possible.
Product residues and contaminated packaging must be recovered or disposed of in compliance with local/national waste regulations.
Disposal of the product in sewers and watercourses is forbidden.

The user is obliged to observe EU, state and/or local regulations on waste disposal.

14. Transport information

14.1 UN Number Not applicable

Transport by road (ADR) / Transport by train (RID)

14.2 UN proper shipping name	Not applicable
14.3 Transport hazard class(es)	Not applicable
14.4 Packing group	Not applicable
14.5 Environmental hazards	Not applicable

Transport by sea (IMDG)

14.2 UN proper shipping name	Not applicable
14.3 Transport hazard class(es)	Not applicable
14.4 Packing group	Not applicable
14.5 Environmental hazards	Not applicable

Transport by sea (IATA/ICAO)

14.2 UN proper shipping name	Not applicable
14.3 Transport hazard class(es)	Not applicable
14.4 Packing group	Not applicable
14.5 Environmental hazards	Not applicable

14.6 Special precautions for user

If not otherwise specified, general safety measures must be performed.

14.7 Transport in bulk according to Annex II of MARPOL and the IBC code

Information not relevant.

15. Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Seveso Category - Directive 2012/18/EC: Not included.
Restrictions relating to the product or contained substances pursuant to Annex XVII to EC Regulation 1907/2006: Product - Point 3
Substances in Candidate List (Art. 59 REACH): Not included.
Substances subject to authorisation (Annex XIV REACH): Not included.
Substances subject to exportation reporting pursuant to (EC) Reg. 649/2012: Not included.
Substances subject to the Rotterdam Convention: Not included
Substances subject to the Stockholm Convention: Not included

Healthcare controls
Workers exposed to this chemical agent must not undergo health checks, provided that available risk-assessment data prove that the risks related to the workers' health and safety are modest and that the 98/24/EC directive is respected.

15.2 Chemical safety assessment

A chemical safety assessment (CSA) has been performed for the following contained substances: 1,2-ETHANEDIOL.

16. Other information

This Material Safety Data Sheet has been made according to the European Directive in force.

Full text of Hazard (H) and Precautionary (P) statements in section 2 and 3

H302 Harmful if swallowed.
H373 May cause damage to organs through prolonged or repeated exposure.
P264 Wash … thoroughly after handling.
P314 Get Medical advice/attention if you feel unwell.

Full text of Risk phrases according to Regulation (EC) n. 1272/2008 (CLP) in section 2 and 3

Acute Tox. 4	Acute toxicity, category 4
STOT RE 2	Specific Target Organ Toxicity - repeated exposure, category 2

History Version 1 by Tecnogas Srl
Date: 10/2019

b) Abbreviations and acronyms

ADR	European Agreement concerning the International Carriage of Dangerous Goods by road
CAS	Chemical Abstracts Service number
CE / EC	European Community
CLP	Classification, Labelling, Packaging
CSA	Chemical Safety Assessment
DNEL	Derived No Effect Level
DMEL	Derived Minimal Effect Levels
EC50	Effective Concentration 50%
GHS	Global Harmonized System
IATA	International Air Transport Association
IBC code	International Bulk Chemical code
ICAO	International Civil Aviation Organization
IMDG code	International Maritime Dangerous Goods code
INDEX	Identificative number in Annex VI of CLP
LC50	Lethal Concentration 50%
LD50	Lethal Dose 50%
MARPOL	MARitime POLlution
n.a.	not applicable
n.d.a.	no data available
NOEC	No Observed Effect Concentration
OEL	Occupational Exposure Limit
PBT	Persistent, Bioaccumulative, Toxic
PNEC	Predicted No Effect Concentration

REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	International Carriage of Dangerous Goods by rail
STEL	Short Term Exposure Limit
STOT-RE	Specific Target Organ Toxicity - repeated exposure
STOT-SE	Specific Target Organ Toxicity – single exposure
TLV	Threshold Limit Value
TWA	Time-Weighted Average
UE / EU	European Union
VOC	Volatile Organic Compounds
vPvB	very Persistent very Bioaccumulative

General Bibliography

1. Regulation (EU) 1907/2006 of the European Parliament (REACH)
2. Regulation (EU) 1272/2008 of the European Parliament (CLP)
3. Regulation (EU) 790/2009 of the European Parliament (I Atp. CLP)
4. Regulation (EU) 2015/830 of the European Parliament
5. Regulation (EU) 286/2011 of the European Parliament (II Atp. CLP)
6. Regulation (EU) 618/2012 of the European Parliament (III Atp. CLP)
7. Regulation (EU) 487/2013 of the European Parliament (IV Atp. CLP)
8. Regulation (EU) 944/2013 of the European Parliament (V Atp. CLP)
9. Regulation (EU) 605/2014 of the European Parliament (VI Atp. CLP)
10. Regulation (EU) 2015/1221 of the European Parliament (VII Atp. CLP)
11. Regulation (EU) 2016/918 of the European Parliament (VIII Atp. CLP)
12. Regulation (EU) 2016/1179 (IX Atp. CLP)
13. Regulation (EU) 2017/776 (X Atp. CLP)

Notice of liability

This information should not constitute a guarantee for any specific product properties. This information are only a guidance for safe handling, use, processing, storage, transportation, disposal and release and are not to be considered a warranty or a quality specification.