ZERTIFIKAT ■ CERTIFICATE ■ 認證證書 ■ СЕРТИФИКАТ ■ CERTIFICADO ■ CERTIFICAT

Management Service

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH

certifies that

OLTCHIM S.A.

Str. Uzinei Nr. 1
240050 Râmincu Vâlcea
Romania

has established and applies
a Quality and Environmental Management System
for the following scope of application:

Research, design, production and delivery of in-organic, organic and macromolecular chemical products; Production and delivery of PVC profiles, windows and doors; Distribution and delivery of electrical energy and delivery of natural gas.

Performance of audits (Report No. 70002392)
has furnished proof that the requirements under:

ISO 9001:2015
ISO 14001:2015

are fulfilled.

The certificate is valid from **2017-09-10** until **2020-09-09**.

Certificate Registration No.: **12 100/104 8304 TMS**.

Product Compliance Management
Munich, 2017-08-14

DAkkS Deutsche Akkreditierungsstelle D-ZM-14143-01-00

MS/01-07/2014

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

1.1. Identification of the substance/preparation

Trade Name	**Propyleneglycol- technical grade**
Chemical Name	Propane 1,2-diol
Family	Glycols
Common Synonyms	1,2-dihydroxypropane, methylethylene glycol
Chemical Formula	CH_2CH_2CH3/ $C_3H_8O_2$ I I OH OH
Molecular Weight	76.09

1.2.Uses of the substance/preparation
Intermediate in chemical synthesis, raw material for manufacture of polyether polyols, raw material for manufacture of antifreezing solutions.

1.3. Company/undertaking identification

Company Name	**OLTCHIM SA**
Adress	1, Uzinei Street, 240050, Ramnicu Valcea, Romania
Phone	+40 / 250 / 701200
Fax	+40 / 250 / 735446
e-mail	oltchim@oltchim.ro

1.4.Emergency telephone number +40 / 0250/738141

2. HAZARD IDENTIFICATION

Health effects: Not normally considered a health hazard due to the low vapor pressure. May cause skin and eye irritations.

Environmental effects: No critical hazard to the environment in the ordinary sense of valid regulations. This product is readily biodegradable. No bioaccumulation is to be expected. No ecological problems are to be expected when the product is handled and used with due care and attention.

Emergency overview: Slight fire hazard when exposed to heat or flame. Heat from fire can generate flammable vapor. When mixed with air and exposed to ignition source, vapor can burn in open or explode if confined. The vapor is heavier than air and will accumulate in low area.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components /constituents	Concentration %,wt.	CAS No.	EC No.	Annex I Index	Hazard Symbol	Risk phrases
Propyleneglycol	99.5	57-55-6	200-338-0	-	-	-

4. FIRST - AID MEASURES

Seek medical attention immediately in all cases of exposure!

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult give oxygen. Call a physician.

Skin contact: May cause slight irritation. Wash the contaminated skin with plenty of soap or mild detergent and water for at least 15 minuteswhile removing contaminated clothing and shoes. If irritation persists after washing, get medical attention.

Eye contact: May cause slight temporary eye irritation. Direct contact with the liquid or exposure to vapor or mists may cause stinging, tearing and redness. Wash the eyes immediately with large amount of water lifting the upper and lower lids, until no evidence of chemical remains at least 15minutes. If irritation persists after washing get medical attention. Contact lenses should not worn with this product.

Ingestion: Relatively non-toxic. Ingestion of sizable amount (over 100 ml) may cause some gastrointestinal upset and temporary central nervous system depression. No expected to require first aid measures. Give several glasses of water to drink to dilute. If large amounts were swallowed, get medical advise.

Note to Physician: In case of ingestion, monitor for acidosis and central nervous system changes. Exposed persons with previous kidney disfunction may require special treatment

5. FIRE - FIGHTING MEASURES

Suitable extinguishing media: Dry chemical, foam or carbon dioxide and water spray.

Unsuitable extinguishing media: None

Exposure hazards: Slight fire hazard when exposed to heat or flame. Heat from fire can generate flammable vapor. When mixed with air and exposed to ignition source, vapor can burn in open or explode if confined. The vapor is heavier than air and will accumulate in low area. Carbon monoxide and dioxide may form when heated to decomposition. Aldehydes or lactic, pyruvic or acetic acids may also be formed.

Protection of fire-fighters: Wear full protective clothing and self contained breathing apparatus with full face piece operated in positive pressure mode.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Ventilate area of leak or spill. Persons performing clean-up work should wear adequate personal protective equipment and a self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Keep unnecessary and unprotected personnel from entering. Slippery walking. Spread granular cover. Remove all sources of ignition.

Environmental precautions: Prevent from contamination the ground and the surface water by isolating the hazard area. Contain and recover liquid when possible. Keep closed containers and dispose according to all applicable federal, state or local environment regulations

Methods of cleaning up: Absorb spills with dry sand, earth or similar non-combustible absorbent material then collect into drums for later disposal. Incinerate or bury in a licensed facility if permitted. For large, dike and pump into suitable containers for disposal. Flush area with plenty of water. Waste water will be treated in biological treatment plant.

Special precautions: Do not use combustible materials, such as saw dust. Do not flush to sewer!

7. HANDLING AND STORAGE

Handling: No special measures required. It is not considered a hazardous material in most industrial operations. Protect containers from physical damage. Sources of ignition such as smoking and open flames prohibited where propyleneglycol is handled.

Storage: Store in a tightly closed containers in a cool, dry, well ventilated area away from sources of heat, moisture and incompatible substances, at 15-25^{0}C temperatures. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits Not established

Engineering control : A system of local and/or general exhaust is recommended to keep employee exposure as low as possible. Local exhaust ventilation is generally preferred because it can control the emission of the contaminant at its sources, preventing dispersions of it into the general work area. Ventilation equipment should be explosion- proof if explosive concentration of dust, vapor or fume are present.

Respiratory protection: No special respirator protection is recommanded under anticipated conditions of normal use with adequate ventilation. Where excessive vapor or aerosol may result from use, use respiratory protection equipment for organic substances.

Hand protection: Wear chemical protective gloves.

Eye / Face protection: Use chemical safety goggles and/or full face shield where splashing is possible. Maintain eye wash and quick-drench facilities in work area.

Skin protection: Not normally considered a skin hazard. Wear impervious protective clothing including boots, lab coat, apron or coveralls as appropriate to prevent skin contact. Wash hands and other exposed area with soap and water before eating, drinking, smoking and leaving work.

Other precautions: Maintain shower, eye wash fountain and quick-drench facilities in work area.

9. PHYSICAL AND CHEMICAL PROPERTIES

General informations

Appearance	Clear oil liquid
Odor	Characteristic odour

Important health, safety and environmental informations

pH of 100g/l solution	6-8
Boiling point	188.2^{o}C at 1 atm. pressure
Flash point	99^{O}C
Flammability	non flammable
Explosive properties	may form explosive vapor/air mixture explosive limits in air: 2.4-17.4%.
Oxidizing properties	no oxidizing properties
Vapor pressure,Pa at 20 ^{o}C	10.6
Specific gravity (water=1)	1.04 at 20^{0}C
Water solubility	Soluble
Partition coefficient (log K_{ow})	1.4
Vapor relative density (air=1)	2.6 at 20^{0}C
Dynamic viscosity	45 mPas at 20^{0}C

Other informations

Melting point	-59^{o}C
Autoignition temperature	371^{O}C

10. STABILITY AND REACTIVITY

Chemical stability: Stable under ordinary conditions of use and storage. Product is very hygroscopic.

Conditions to avoid: Heat, flame, light, sources of ignition and incompatibles.

Materials to avoid: Strong oxidizers.

Hazardous decomposition products: Carbon monoxide and dioxide may form when heated to decomposition. Aldehydes or lactic, pyruvic or acetic acids may also be formed.

11. TOXICOLOGICAL INFORMATION

Animal toxicity data:

LD_{50}/ Oral, rat	>20000 mg/kg
LC_{50}/Dermal, rat	>20800 mg/kg

Acute toxicity

- **Inhalation:** While this material has a low volatility, exposure to vapor is unlikely, however, vapor or mists produced under certain conditions of use may cause sings of nervous system depression (headache, drowsiness, loss of coordination and fatigue).
- **Skin contact:** May cause slight irritation. Prolonged or repeated contact may cause redness, burning, drying and craking of the skin. Persons with pre-existing skin disorder may be more susceptible to the effects of this material.
- **Eye contact:** May cause slight temporary eye irritation. Direct contact with the liquid or exposure to vapor or mists may cause stinging, tearing and redness.
- **Ingestion:** Relatively non-toxic. Ingestion of sizable amount (over 100 ml) may cause some gastrointestinal upset and temporary central nervous system depression. Effects appear more severe in individuals with kidney problems.

Chronic effect: Lactic acidosis, stupor and seizures have been reported following chronic ingestion. No teratogenic effect in animal experiments. Noncarcinogenic in animal experiments. No mutagenic effect in animal experiments.

CMR effects (Carcinogenity, Mutagenicity, toxicity for Reproduction): It has no CMR effects.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Fish	*P. promelas*	LC_{50}=54.9mg/l/96 hours
	Onchorhynchus mykiss	LC_{50}=51.6g/l/96 hours

Daphnia	*Daphnia magna*	LC_{50}=34,4g/l/48 hours
Algae	*Selenastrum capricornutum*	IC_{50}=19g/l/96 hours
Bacteria	*Photobacterium phosphoreum*	EC_{50}=26,8g/l/30minutes
Activated sludge		EC_{50} >1g/l/3 hours

Mobility: Propyleneglycol may enter the environment from industrial discharges, plant discharges or spills. When released into the air, this material may be readily degraded by reaction with photochemically produced hydroxyl radicals. Propylene glycol is completely miscible in water, with a log K_{ow} of 0.92, indicating high mobility in the environment.

Persistence and degradability: Since it may be used directly as a food source by most microorganisms, it is readily biodegraded where such microorganisms are present (soil, groundwater and water courses). The halftime in air is 1-10 days.

Bioaccumulative potential: No bioaccumulation is to be expected (log K_{ow}<1).

PBT assessment: Not applicable.

Other adverse effects: No ecological problems are to be expected when the product is handled and used with due care and attention.

13. DISPOSAL CONSIDERATIONS

Waste treatment: What ever cannot be saved for recovery or recycling should be handled as non-hazardous waste and sent to an approved incinerator or disposed in an approved waste facility. Dispose of contaminated product, container residues and spill clean up materials in accordance with federal, state and local requirements.

Packaging treatment: The empty containers, tank cars and tank trucks are treated with steam and rinsed with plenty of water. The resulted effluent are treated in the same way as waste. The empty and clean containers are to be reused in conformity with regulations.

14. TRANSPORT INFORMATION

According to ADR, RID, IMDG-IMO, IATA/IT-ICAO norms for shipping of dangerous goods, PROPYLENE GLYCOL have not specific regulations for any mode of transportation.

15. REGULATORY INFORMATION

PROPYLENEGLYCOL is not classified and labeled as hazardous material according to Directive 67/548/EC. As a result, risk phrases-does not exist.

16. OTHER INFORMATION

Precautions to be taken in handling and storing: Keep well ventilated the areas where propyleneglycol is stored and handled.

Work hygienic practices: Avoid direct contact of substance with skin/eyes.

Interdictions: **Do not drink or eat** in working area.
Do not smoke in or near working area.
The use of open flame in working areas is prohibited.

Uses and Restrictions: Advice in this document relates only to product as originally supplied. Other derivative chemicals will have different properties and hazard.

MSDS Revisions: This Material Safety Data Sheet is made in accordance to Regulation (EC) no.1907/2006 REACH and will replace the previous version 5 dated February 05, 2008.

Revised information:
TÜV mark for Quality-Environmental Integrated System was replaced with the new one, remitted by TÜV Management GmbH.

Sources of key data uses to compile the data sheet:
EC Directive 67/548/EC resp. 99/45/EC as amended in each case.
EC Directive 2001/58/EC as amended in each case.
EC Directive 2000/39/EC as amended in each case.
National Threshold Limit Values of corresponding countries as amended in each case.
Transport regulations according to ADR, RID, IMDG, IATA as amended in each case.

This MSDS has been elaborated in accordance with Regulation (EC) No.1907/2006 REACH.. The information contained here in is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.
This MSDS cannot cover all possible situations which the user may experience during handling and processing. Each aspect of the user's operation should be examined to determine if, or where, additional precautions may be necessary. All health and safety information contained within this MSDS should be provided to the user's employees or customers.

OLTCHIM S.A.

✓ ÎN REORGANIZARE JUDICIARA
✓ IN JUDICIAL REORGANISATION
✓ EN REDRESSEMENT

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CERTIFICATE OF ANALYSIS No. 311

Product name: PROPYLENE GLYCOL

Appendix to Shipping Document No. 0063268
Consignee : TO ORDER
Address : GREECE

Gross weight, kg. : 38 820
Net weight, kg. : 22 350

Forwarded with truck/tank/waggon No. :EKE 4875 / P 49182

Analyssis report No. : P42/182 Date : 24.08.2018

Lot No : -

Validity : 12 months

CHARACTERISTICS	U.M.	RESULTS	SPEC. LIMITS	TESTING METHOD
Appeareance		clear,viscous liqui	clear,viscous liquid	visual
Propylene glycol	%	99.66	min 99,5	ILL003/3-01-17
Distillation range(95 %vo)	°C	185.8- 188.2	185-189	ASTM D 1078
Water content (K-Fischer)	%	0.10	max. 0,25	ASTM E 203
Acidity (CH_3COOH)	%	0.0015	max. 0,005	ASTM D 1613
Ash	%	0.0006	max. 0,01	ILL003/3-01-18
Hazen colour	hazen degree	10	max. 10	SR ISO 2211
Density at 20°C	g / cm^3	1.037		

QUALITY CONTROL DEPARTMENT,
LABORATORY
Name and surname: IONESCU IUSTINA

Cod : F 002 - 003, ed. A, rev. 1

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