

1 – Identification of Product and Company

Product name: HEXYLENE GLYCOL

Supplier

Name: Rhodia Poliamida e Especialidades Ltda.
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2 – Composition and Information on Components

>>> SUBSTANCE

Chemical or generic name: 2-methyl-2,4-pentanodiol.
Synonyms: HGL, diolane, isol, pinakon, diacetone glycol, methylamilenoglycol, 1,1,3-trimethyl-triethylenodiol, 2,4-dihidroxy-2-methyl-pentane, 2-methyl-propane-2-4-diol.
CAS register: CAS: 107-41-5 – EC classification: Xi; R36/38

3 – Hazards Identification

MOST IMPORTANT HAZARDS

Product effects: Can be harmful when swallowed, inhaled or absorbed by skin. Irritating to eyes, skin and superior respiratory system.

Adverse effects to human health

- Acute toxicity:

- **Local effects:** Harmful when swallowed, inhaled or absorbed by skin. Irritating to eyes, mucous and superior respiratory system.
- **Main symptoms:** Degreases skin, allowing development of dermatitis and secondary infections.

- Chronic toxicity:

- **Chronic effects:** Can cause depression of central nervous system and unconsciousness when inhaled in great concentrations. There are risks of severe effects to health in case of prolonged and repetitive exposure.

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- Main symptoms: If inhaled causes sleepiness, vertigo, headaches, nose and throat irritation, loss of appetite, vomit and diarrhea. Can cause anemia, leucocytosis, edema and greasy degeneration of viscera.

Physical and chemical hazards

- Fire and explosion: Combustible. Vapors can form flammable and explosive mixtures with air. The product burns when exposed to open flame or spark.
- Specific hazards: Can strongly react with strong oxidizing materials. Releases toxic vapors.
- Chemical product classification: According to EC criteria this product is classified as:
 - IRRITATINGIt is classified as a hazardous product according to Resolução criteria ANTT n° 420 – Agência nacional de Transportes terrestres. Brazil.

4 – First Aid Measures

First aid measures

- Inhalation: Remove victim to a ventilated place. If the victim is not breathing provide artificial breathing. If the victim is breathing but with difficulty provide oxygen from 10 to 15 l/min. Seek immediately medical care; if possible take a label of this product.
- Skin contact: Remove all contaminated clothing and shoes. Wash with a great amount of clear water for at least 20 minutes, preferably under an emergency shower. Seek immediately medical care; if possible take a label of this product.
- Eyes contact: Wash with a great amount of clear water for at least 20 minutes, keeping eyelids separated. Use preferably an eyewash fountain. Seek immediately medical care; if possible take a label of this product.
- Ingestion: Do not induce vomit. If the victim is conscious wash his/her mouth with a great amount of clear water. Seek immediately medical care; if possible take a label of this product.
- Actions to avoid: Do not offer anything to drink if the victim is unconscious. Do not induce vomit and do not let the victim without medical care.
- Note to physician: The emergency and post-overexposure treatments must be directed to control complete clinical state of the patient. Symptomatic treatment. There are no specific antidotes.
- Brigade protection: In rescue operations use self-contained breathing apparatus (SCBA).

5 – Fire Fighting Measures

Extinguish media

- Adequate: Water spray, polyvalent foam, chemical powder and carbon dioxide (CO₂).
- Non-adequate: High-pressured water jet.
- Specific hazards: Combustible. Vapors can form flammable and explosive mixtures with air. Vapor is heavier than air and can reach ignition source even great distances. An internal pressure buildup can occur in containers exposed to fire or heat with explosion risk.

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Special methods: Cool with water spray or keep away all containers exposed to heat.
Firemen protection: Full protection against fire and self-contained breathing apparatus.

6 – Accidental Release Measures

- Personal cares: Isolate the area. Keep away people without function in the emergency response. Signalize danger to transit and notify local competent agencies. Avoid eyes and skin contact. Do not inhale vapors.
- Ignition sources removal: Eliminate all fire or heat sources. In case of product transfer to an emergency container use only explosion-proof pumps and electrically ground all elements in contact with the product. Do not transfer the product under air or oxygen pressure.
- Prevention measures: Protection gloves, boots and clothing, and splash-proof safety goggles (with indirect ventilation) to chemical products.
- Emergency measures: Dike spilled product with earth, vermiculite or other inert material. If indicated put the damaged package up.
- Environment cares: If possible interrupt leakage avoiding the product contact with eyes, skin and clothing. Prevent product or response waters reaching sewers or watercourses. In case of significant spillage dike with earth, sand or similar material.

Clean-up methods

- Interdiction: Do not use water without specific guideline. Do not transfer the product under air or oxygen pressure. Do not use common or explosion motors in the transfer of the spilled product.
- Recovery: Recover maximum amount of recoverable product to an emergency container, duly well-closed and labeled, to posterior recovery or elimination. Provide adequate grounding of all conductive elements.
- Neutralization: Do not use water. Absorb non-recoverable liquid with dry earth, vermiculite or a dry absorbent material.
- Clean-up/decontamination: Recover the contaminated material and soil to another independent container. Use anti-spark tools.
- Disposal: Do not dispose as common garbage. The final disposal of this material should be supervised by an expert according to all current environmental regulations. We recommend incineration in an approved facility.

7 – Handling and Storage

HANDLING

Technical measures

- Worker exposure prevention: PPE must be used to avoid product contact with skin, eyes, mucous membranes and respiratory tract.
- Fire and explosion prevention: Avoid electric sparks, static electricity, etc. Do not smoke. All conductive elements must be electrically grounded. Do not transfer the product under air or oxygen pressure.
- Safe handling cares: Guarantee good local ventilation at workplace. Provide exhaust local ventilation where necessary.



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- Safe handling guidelines: Handle respecting general rules of Industrial Hygiene and Safety.

STORAGE

Adequate technical measures: All electrical connections must be done according to NEC (National Electrical Code) or IEC (International Electrical Commission) Standards and/or ABNT (Associação Brasileira de Normas Técnicas) standards. Observe all necessary dispositions to prevent product reaches sewers or watercourses in case of container or transfer system collapse.

Storage conditions

- Adequate: Store in a clean and well-ventilated place avoiding heating and under inert nitrogen atmosphere (N₂). Keep away from ignition sources, heat and flames. The soil must be impervious, non-combustible and have a system to flow the product to a contention container. Storage containers must have contention dikes and drainage.

- To avoid: Keep away from ignition sources/heat and incompatible materials.

- Incompatible products and materials: Strong acids, strong reducer agents, acetic anhydride and acid chlorides.

Package condition: Keep the product only in the original package.

Safe materials to package

- Recommended: Ordinary steel or aluminum.

- Non-recommended: Plastic materials.

8 – Exposure Control and Personal Protection

Engineering control measures: Capture the vapors at the emission points. Guarantee good local ventilation at workplace.

Specific control parameters

Occupational exposure limits

- Threshold limit value (Brazil, Portaria MTb 3214/78, NR 15 – Annex 11): Not listed.

- Threshold limit value (USA, ACGIH – 2001): TLV/CEIL (40 h/week) = 125 mg/m³ (25 ppm).

- Threshold limit value (USA, NIOSH): TLV/CEIL (40 h/week) = 125 mg/m³ (25 ppm).

Monitoring recommended procedures: Environmental and personal monitoring at regular intervals.

Personal Protective Equipment

- Respiratory protection: Respirator with filter to organic vapors if product concentration is inferior to threshold limit value and if there is no lack of oxygen. Self-contained breathing apparatus if product concentration is superior to threshold limit value and/or there is a lack of oxygen.

- Hands protection: Solvent-resistant and impermeable gloves.

- Eyes protection: Splash-proof safety goggles to chemical products (with indirect ventilation).

- Skin and body protection: Impermeable clothing, gloves and boots.

Special cares: Emergency showers and eyewash fountains.

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Hygiene measures:

Hygienize clothing and shoes after using. General methods used in Industrial Hygiene must minimize the exposition to the product. Do not drink, eat or smoke during handling of chemicals.

9 – Physicochemical Properties

Appearance

- Physical state: Liquid.
- Form: Clear.
- Color: Colorless.
- Odor: Sweetish.
- pH: 6.93.

Specific temperatures

- Crystallization point: - 50.0°C.
- Boiling point: 197.5°C @ 760 mmHg (Rhodia's method).
- Boiling range: 195.5 - 198.5 @ 760 mmHg (Rhodia's method).
- Critical temperature: 348.0°C.

Flammability characteristics

- Flash point: 92.85°C (closed cup) – TAG; 102.0°C (open cup) – TAG
- Self-ignition temperature: 305.5°C.

Comburent properties:

Non-comburent according to EC criteria.

Explosivity characteristics

- Lower (LFL): 1.3% v/v.
- Upper (UFL): 9.0% v/v.
- Vapor pressure: 0.005 kPa @ 20°C.
- Vaporization rate: 1.0 (n-butyl acetate = 100).

Density

- Vapor density (air = 1): 4.1.
- Liquid density: 0.9201 g/ml @ 20°C.

Miscibility

- In water: Product in water: complete.
Water in product: complete.
- In organic solvents: It is miscible in most organic solvents, greasy acid and water.

10 – Stability and Reactivity

Specific conditions

- Stability: Stable at room temperature and under normal conditions of use.
- Hazardous reactions: Reacts strongly with oxidizing agents.
- To avoid: Generation and inhalation of vapors, liquid spraying, prolonged or repetitive exposure, skin, eyes and clothing eyes contact, moisture, flames, sparks, static electricity, heat, hot surfaces and other ignition sources.

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Incompatible materials or substances:	Strong oxidizing agents, strong reducer agents, strong acids, acetic anhydride and acid chlorides.
Hazardous products from decomposition:	By combustion or thermal degradation (pyrolysis) releases carbon dioxide and carbon monoxide.
Other data:	Decomposes in contact with strong acids.

11 – Toxicological Information

Acute toxicity

- Inhalation:	Harmful. It is absorbed by aerial via. LC ₅₀ (rats) = 4,000 ppm (15 min). LC ₅₀ (mice) = 23,300 mg/kg.
- Skin contact:	Not easily absorbed by skin. Irritating to mucous membranes. LD ₅₀ (rabbits) > 3 g/kg.
- Ingestion:	It is absorbed by digestive via. LD ₅₀ (rats): 2,080 mg/kg. LD ₅₀ (mice): 2,671 mg/kg.
Acute symptoms:	Epigastric pain, damage to liver and kidneys as well as depression of central nervous system. Symptoms include: emotional lability, vertigo, nausea, vomit, absence of motor coordination, double vision, narcosis, unconsciousness, face reddish, accelerated pulse and eventual urinary and fecal incontinence. These symptoms are more frequently observed when product is ingested or inhaled in large quantities.

Acute local effects

- Inhalation:	The vapor inhalation can cause irritation of aerial via depending on the exposure time.
- Skin contact:	Degreases the skin.
- Eyes contact:	Irritating in the liquid and vapor form; can cause severe injuries.
- Ingestion:	It is harmful when swallowed. It is absorbed by digestive via. Can cause gastrointestinal problems, vomit and diarrhea.

Chronic toxicity

- Inhalation:	Can cause sleepiness, headaches, nose and throat irritation, vertigo, loss of appetite, vomit and diarrhea.
- Skin contact:	Degreases the skin and can cause dermatitis and cracks, allowing development of secondary infections.
- Ingestion:	Chronic intoxication can cause anemia, leucocytosis, edema and greasy degeneration of viscera.

Specific effects

- Carcinogeny:	Product not yet classified by ACGIH (2001), and considered as non-human carcinogenic by OSHA, NTP and IARC.
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12 – Ecological Information

Mobility

Volatility: Low.

Absorption/desorption: High mobility. The product can easily infiltrate on soils.

Target compartment: Water and air.

Persistence/Degradability

- Hydrolysis: It is not a significant process.

Biodegradability

- Final aerobic biodegradability: It is subject to biodegradation in soil and natural waters.

Bioaccumulation:

Octanol/water separation coefficient: It is not potentially bioaccumulative.

Ecotoxicity

Effects under aquatic organisms: LC₅₀ (*Mississippi silverside*): 10 g/l (96 h).

LC₅₀ (*Goldfish*) : > 5 g/l (24 h).

EC₅₀ (*Photobacterium phosphoreum*): 3,038 ppm (5 min).

Environmental impact

- Effects under treatment facilities: COD = 2.20 g O₂/g.
BOD₅ = 0.02 g O₂/g.

Threshold values

Other information: By being miscible in water it is easily leached, but the availability in biodegradation decreases this importance.

13 – Treatment and Disposal Considerations

Treatment and disposal methods

Product: The product treatment and disposal must be technically evaluated in an individual way. Consult Rhodia's technical report.

Product leftovers

- Interdiction: Do not discard in sewers or watercourses.

- Destruction/elimination: Eliminate in an approved facility according to the current environmental regulations.

Used package

- Interdiction: Do not reuse package.

- Decontamination/clean-up: Empty completely the containers. Wash with an adequate solvent. Recover the used solvent and send to incineration in an approved facility.

- Destruction/elimination: Send used package to incineration in an approved facility according to current environmental regulations.

NOTE:

We remind users that there may exist local relevant regulations relative to elimination practices.]

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14 – Transport Information

Brazilian regulations

Road transport (ANTT – Resolução 420/2004): Not regulated ad hazardous product to transport.

International regulations

Railroad/road transport (RID/ADR): Not regulated.

Sea/river transport (IMO/IMDG): Not regulated.

Air transport (OACI/IATA-DGR): Not regulated.

NOTE:

The regulatory prescriptions above are effective at the moment of this file update. However, due to frequent alterations of the regulation relative to the transportation of dangerous substances we suggest that users confirm their status with their local commercial agencies.

15 – Regulations

Regulations

Regulation according EC:

Obligatory labeling (self-classification) to hazardous substances: Applicable.

Classifications/symbols:

➤ IRRITATING (Xi).

Risk phrases:

R36/38 Irritating to skin and eyes.

Safety phrases:

S2: Keep away from children.

NOTE:

The regulatory information contained in this section refers exclusively to the main prescriptions specifically applicable to the product addressed by the corresponding MSDS. All users should be aware of the possible existence of other dispositions that might complement these prescriptions. We suggest that every applicable national and international disposition be taken into account for this purpose.

16 – Other Information

Types of use

- Recommended:

The product is used in aqueous emulsions (PVA/Acrylic), paints and varnishes, hydraulic fluids, oils and emulsions to textile and leather industry, anti-agglomeration agent in cement industry and silica materials, agricultural defensives and cosmetics and perfumery. To get more information consult current Rhodia's Technical Report.

Chemical formula:

C₆H₁₄O₂

Molecular mass:

118.17.

Registers:

Listed on TSCA inventory.

Update:

See version and date on heading.

Bibliographic references:

www.rhodia.rp/info

<http://chemfinder.camsoft.com>

NTP Chemical Repository

New Jersey Department of Health and Senior Services

Limites de Exposição (TLVs) para Substâncias Químicas e Agentes Físicos & Índices Biológicos de Exposição (BEIs) – ACGIH-2003



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Pocket Guide To Chemical Hazards – NIOSH-OSHA – 1997

Normas Regulamentadoras Comentadas – NR-Portaria 3214 de 08/06/1978 - MT; Portaria 3.067 de 12/04/1988; Legislação Previdenciária Aplicada (Decretos, Portarias e Ordens de Serviço do INSS).

Resolução nº 420/04 – ANTT (Agência Nacional de Transportes Terrestres) – 12 de fevereiro de 2004.

Dangerous Goods Regulations – International Air Transport Association – IATA – 46th edition – 2005.

International Maritime Dangerous Goods Code – IMDG/2004 – Version 7.0

Fire Protection Guide To Hazardous Materials- national Fire Protection Association – 12 TH edition – 1997

<https://webinsight.arielresearch.com/admin/activate.aspx>

EU. Directive 67/548/EEC – classification packing and labeling of dangerous substance, annex I, as last amended by directive 2004/73/EC (29 ATP).

DISCLAIMER: The present material safety data sheet is intended for use in conjunction with its corresponding product's technical data sheet, which it does not substitute in any aspect. All information published in the technical data sheet is selected in good faith and represents our current and updated knowledge of the product in question. All users should be aware of possible risks involved in using chemical products for purposes other than those for which they are intended. The present MSDS does not exempt users from observing the set of regulatory texts pertinent to their activities. It is also their responsibility to comply with the recommendations regarding the use of each particular product. The regulatory provisions mentioned above aim exclusively at assisting the user in meeting all applicable requirements regarding the use of dangerous products. These procedures should not be regarded as the only recommended ones and therefore do not exempt the user from conforming to legal obligations relative to the storage and usage of dangerous products other than the ones mentioned herein.