

Polyhexamethyleneguanidine Hydrochloride (PHMG)

1. Identification

Product	Polyhexamethyleneguanidine Hydrochloride (PHMG)
CAS / EC	57028-96-3 / 690-927-2
Use	Cationic polymer ingredient for professionally assessed industrial antimicrobial and preservation formulations.
Uses advised against	Unassessed consumer, medical or other applications outside the qualified grade and intended use.
Supplier	Hainan Zhongxin Chemical Co., Ltd. (ZXCHEM)
Address	Room 1001, Building A, Caohejing Center, No. 1520 Gumei Road, Xuhui District, Shanghai, China
Contact	+86-21-54265599 sales@zxchem.com.cn www.zxchem.com
Emergency contact	+86-21-54265599; office hours, China time UTC+8. For an urgent incident, contact local emergency services.
Scope	Reference safety information for Polyhexamethyleneguanidine Hydrochloride (PHMG). The reference composition, concentration and supply-grade differences are described in Section 3. This document does not certify the composition or transport status of a specific delivered batch or a different formulation.

2. Hazard identification

Classification	Acute toxicity oral 4, dermal 4, inhalation 3; reproductive toxicity 1A; effects on/via lactation; STOT single exposure 1, repeated exposure 1; aquatic acute 1 and chronic 1.
Signal word	Danger
Pictograms	GHS06, GHS08, GHS09
Hazard statements	H302: Harmful if swallowed. H312: Harmful in contact with skin. H331: Toxic if inhaled. H360: May damage fertility or the unborn child. H362: May cause harm to breast-fed children. H370: Causes damage to organs. H372: Causes damage to organs through prolonged or repeated exposure. H400: Very toxic to aquatic life. H410: Very toxic to aquatic life with long lasting effects.
Prevention	P264: Wash exposed skin after handling. P280: Wear suitable protective gloves, clothing and eye protection. P260/P271: Avoid inhalation; use adequate ventilation and effective exposure controls. P270: Do not eat, drink or smoke when using this material. P273/P391: Avoid environmental release and collect spillage.
Response	Follow the exposure-specific first-aid measures in Section 4. Remove contaminated clothing. Seek urgent advice for severe symptoms.
Storage / disposal	Keep closed under the conditions in Section 7. Dispose through an authorized waste route under local rules.
Other hazards	Dust, splashes, process conditions and decomposition can create exposure risks not represented by the commercial assay.
Pregnancy / nursing precautions	P201/P202/P263: Obtain instructions before handling; avoid contact during pregnancy and while nursing.



3. Composition/information on ingredients

Polyhexamethyleneguanidine Hydrochloride (PHMG) / component	57028-96-3; EC 690-927-2
Supply concentration or grade	95% / 99% solid grades
Composition scope	Reference safety and UN2811 entry describe the solid PHMG hydrochloride substance (100% reference). ZXCHEM lists nominal 95% and 99% solid grades. Residual constituents are not certified by this document and can change the delivered-mixture assessment. This SDS does not cover 25% or 50% liquid formulations.

4. First-aid measures

Eye contact	Rinse eyes immediately with water for at least 15 minutes; remove contact lenses when easily possible and continue rinsing. Seek medical attention if irritation persists.
Inhalation	Move to fresh air without exposing rescuers. Obtain immediate emergency medical assistance; trained personnel may give oxygen or assisted breathing.
Skin contact	Remove contaminated clothing and rinse thoroughly with water. Obtain urgent medical care for burns or toxic exposure.
Ingestion	Rinse the mouth. Do not induce vomiting or give anything by mouth to an unconscious person. Obtain immediate poison-center or medical advice.
Symptoms	Harmful by ingestion and skin contact; toxic by inhalation. Coughing, wheezing and difficulty breathing may occur. The reference identifies reproductive/lactation hazards and systemic organ toxicity after single or repeated exposure. No reliable grade-specific acute LD50 is supplied; the legacy non-toxic claim is not retained.
Immediate treatment	Urgent medical assessment is required after serious exposure. Treat symptoms; rescuers must avoid secondary exposure.

5. Fire-fighting measures

Media / specific hazards	Use media appropriate for the surrounding fire; avoid high-pressure water streams that scatter powder. Firefighters need full protective equipment and independent breathing air. Specific combustion-product testing is not supplied; contain contaminated firewater.
Protection	Use full protective equipment and self-contained breathing apparatus. Fight from a safe position; contain contaminated firewater and cool exposed containers when safe.

6. Accidental release measures

Personal / environmental precautions	Restrict entry, avoid exposure and prevent environmental release. Use the controls and protection in Section 8.
Containment / cleanup	Exclude unprotected personnel and collect the solid without creating airborne dust, using suitable tools and labeled waste containers. Prevent drain and waterway entry.
References	See Sections 7, 8 and 13 for handling, protection and disposal.

7. Handling and storage

Handling	Avoid contact and inhalation; maintain ventilation and good hygiene. Use suitable equipment and prevent chemical contamination.
Storage	Store locked up in original closed containers in a cool, dry, ventilated area. Avoid excessive heat and airborne dust. Prevent entry to waterways; keep separate from food and feed.
Incompatibilities	Reference solid is stable under normal conditions. Avoid excessive heat, contamination and dust dispersal. Specific incompatible-material and decomposition testing is not established for the delivered grade.
Specific end use	Cationic polymer ingredient for professionally assessed industrial antimicrobial and preservation formulations.

8. Exposure controls/personal protection

Control parameters	No supply-specific occupational exposure limit or DNEL/PNEC is established by this record. Apply local substance and particulate exposure limits where relevant.
Engineering and personal protection	Use closed transfer or local extraction. Provide an eyewash and safety shower. Wear chemical-resistant gloves selected for the actual exposure, protective clothing and splash goggles. For airborne dust, use a suitable approved respirator selected through a workplace risk assessment; emergency or unknown atmospheres require independent air supply.
Hygiene / environmental control	Wash after handling; separate contaminated clothing. Contain product and process effluent; do not eat or drink in handling areas.

9. Physical and chemical properties

Physical state / appearance	White to off-white solid powder
Formula / formula weight	Polymer; molecular-weight distribution is grade dependent.
pH, 2% aqueous solution	6.5–7.5
Odor / odor threshold	No supply-grade value provided.
Boiling / decomposition point	No supply-grade limit provided.
Flammability / flash point	No supply-grade test value provided; see fire and reactivity information in Sections 5 and 10.
Vapor pressure / density	No supply-grade value provided.
Partition coefficient / autoignition	No supply-grade value provided.

10. Stability and reactivity

Reactivity / stability / reactions	Reference solid is stable under normal conditions. Avoid excessive heat, contamination and dust dispersal. Specific incompatible-material and decomposition testing is not established for the delivered grade.
Conditions and materials to avoid	Follow the incompatible-material and storage requirements in Section 7.
Decomposition products	See Section 5. No normal-storage decomposition is indicated under the recommended conditions.

11. Toxicological information

Routes / effects	Harmful by ingestion and skin contact; toxic by inhalation. Coughing, wheezing and difficulty breathing may occur. The reference identifies reproductive/lactation hazards and systemic organ toxicity after single or repeated exposure. No reliable grade-specific acute LD50 is supplied; the legacy non-toxic claim is not retained.
Other endpoints	Supply-batch sensitization, mutagenicity, carcinogenicity, reproduction and repeated-dose testing has not been provided. This does not override the classifications and target organs listed in Section 2.
Mixture assessment	Reference-substance or component results are not delivered-batch analytical or toxicological results.

12. Ecological information

Aquatic toxicity / behavior	Very toxic to aquatic organisms, with long-lasting effects. Reference transport identifies environmental hazard and a marine pollutant. Prevent entry to drains and waterways; no quantitative delivered-grade environmental test results are supplied.
Other environmental endpoints	Supply-batch PBT/vPvB, endocrine-disruption, persistence, degradation, mobility and bioaccumulation assessments have not been provided. Do not infer absence of effects from missing data.

13. Disposal considerations

Product and residues	Characterize waste under applicable local rules and use a licensed waste contractor. Do not discharge chemical residues or contaminated process water to drains.
Contaminated packaging	Do not reuse contaminated packaging for unrelated purposes. Handle retained material with the same protection as the product and use an authorized disposal or return route.

14. Transport information

ADR / RID	UN 2811; TOXIC SOLID, ORGANIC, N.O.S. (polyhexamethyleneguanidine hydrochloride); Class 6.1; packing group III
IMDG	UN 2811; TOXIC SOLID, ORGANIC, N.O.S. (polyhexamethyleneguanidine hydrochloride); Class 6.1; packing group III
IATA	UN 2811; TOXIC SOLID, ORGANIC, N.O.S. (polyhexamethyleneguanidine hydrochloride); Class 6.1; packing group III
Environmental hazards	Environmentally hazardous; marine pollutant in the solid-substance reference.
Special precautions	Use authorized packaging, labels and trained personnel for the applicable mode. Quantity exemptions depend on the consignment and are not assumed.
Bulk transport	The packaged-product reference does not establish authorization for maritime bulk transport.
Scope	Transport entries apply to the reference identity, concentration and form described in Section 3. Changes in composition require reassessment.

15. Regulatory information

Classification framework	GHS/CLP reference classification is given for the material in Section 3. Local worker-protection, labeling, transport, environmental and end-use requirements apply.
Registration / use status	No supply-specific registration number, market authorization or end-use certification is established by this reference record.
Chemical safety assessment	No supply-formulation chemical safety assessment is supplied by ZXCHEM in this record.

16. Other information

Revision date	2026-10-13; initial ZXCHEM reference safety document, version 2026.1.
Abbreviations	ADR/RID: road/rail dangerous goods; IMDG: maritime dangerous goods; IATA: air dangerous goods; PG: packing group; LD50/LC50: median lethal dose/concentration; STOT: specific target organ toxicity.
Use of information	Use together with the grade TDS and a workplace assessment. Concentration, solvent, impurity or physical-form changes require applicable safety information.
Document scope	Reference safety information for the material and grade described in Sections 1 and 3. Different concentrations, solvents or formulations require the applicable safety information. This is not a batch analytical certificate.

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