

MATERIAL Polyhexamethyleneguanidine Phosphate
CAS No. 89697-78-9
FORMULA $(C_7H_{18}N_3O_4P)_m (C_7H_{15}N_3)_n$
CHEMICAL NAME Polyhexamethyleneguanidine phosphate
DOT HAZARD CLASSIFICATION
DOT SHIPPING NAME
DOT LABEL

I. INGREDIENTS

| Ingredients | Approximate Weight % | TWA/TLV |
|---|----------------------|------------------|
| Polyhexamethyleneguanidine Phosphate (CAS No. 89697-78-9) | Min 95.5 | None established |
| NaCl (CAS No. 7647-14-5) | Max 3.0 | None established |
| Water (CAS No. 7732-18-5) | Max 1.5 | None established |

II. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE White powdered solid
VISCOSITY 1.31 cps (50 rpm; 25 °C; 25 wt% water solution)
BOILING POINT Decomposes before boiling at about 250°C at 100kPa
VAPOR DENSITY (AIR=1) Not known
PERCENT VOLATILE (by weight) 1.5 (Water)
EVAPORATION RATE (Butyl Acetate=1) < 1 (Water)
pH 6.5 - 7.5 (1% solution at 25°C)
ODOR No odour
FREEZING POINT Not available
VAPOR PRESSURE (mmHg at 25 °C) Not known
SOLUBILITY IN WATER Approx 280g/L at 25°C
SPECIFIC GRAVITY (WATER = 1) Not available. Bulk density 0.74 at 25°C

III. FIRE AND EXPLOSION INFORMATION

FLASH POINT Not flammable **AUTO IGNITION TEMPERATURE** Not Known
LOWER EXPLOSION LIMIT (%) Not applicable **UPPER EXPLOSION LIMIT(%)** Not applicable
EXTINGUISHING MEDIA FOAM X WATER FOG X CO₂ X
 DRY CHEMICAL X OTHER

SPECIAL FIRE FIGHTING PROCEDURES :

When fighting fires involving significant quantities of this product, wear safety boots, non-flammable overalls, gloves, hat, goggles and respirator. All skin areas should be covered.

UNUSUAL FIRE AND EXPLOSION HAZARDS :

Fire decomposition products from this product may form toxic and corrosive mixtures in confined spaces. This product may form flammable or explosive dust clouds in air. Violent steam generation or eruption may occur upon application of direct water stream on hot liquids.

IV. HEALTH EFFECTS INFORMATION

PRIMARY ROUTES OF ENTRY- **SKIN CONTACT** X **EYE CONTACT** X
 INHALATION X **INGESTION**

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Emergency Telephone Number: +82-2-2008-2232,36,48,42

EFFECTS OF OVEREXPOSURE

Based on the available animal toxicity information for a closely related material, it is anticipated that this material will produce severe skin or eye irritation and/or burns and possible irreversible damage upon direct prolonged contact. Inhalation of mists of this product may be harmful. Repeated or prolonged contact with this material may produce allergic reactions.

OVEREXPOSURE MAY AGGRAVATE EXISTING CONDITIONS:

Individuals pre-disposed to allergic skin reactions.

EMERGENCY AND FIRST AID PROCEDURES:

Eyes: If product gets in eyes, wash material from them with running water. If they begin watering or reddening, take special care in washing thoroughly.

Skin: If product gets on skin, wash skin to remove material. No further measures should normally be required.

Ingestion: If swallowed, do NOT induce vomiting. Wash mouth with water and give a glass of water to drink. Seek medical attention.

Inhalation: No first aid measures normally required. However, if vapours or dusts have been inhaled, and irritation has developed, remove to fresh air and observe until recovered. If irritation becomes painful or persists more than about 30 minutes, seek medical advice.

CHEMICALS LISTED AS CARCINOGEN BY :

NATIONAL TOXICOLOGY PROGRAM - No
I.A.R.C. MONOGRAPHS - No
OSHA - No

V. REACTIVITY INFORMATION

STABILITY: STABLE X CONDITIONS TO AVOID
UNSTABLE Temperatures above 200 °C

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon dioxide, and if combustion is incomplete, carbon monoxide and smoke. Nitrogen and its compounds, and under some circumstances, oxides of nitrogen. Oxides of phosphorus and other phosphorus compounds.

| | |
|---------------------------------|----------------------------|
| HAZARDOUS POLYMERIZATION | CONDITIONS TO AVOID |
| MAY WILL NOT X | None known |
| OCCUR OCCUR | |

INCOMPATIBILITY (MATERIALS TO AVOID)

WATER X OTHER X strong oxidising agents

VI. SPILL AND DISPOSAL INFORMATION**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

In the event of a major spill, prevent spillage from entering drains or water courses. Immediately call the Fire Brigade. Wear full protective clothing including face mask, face shield and gauntlets. All skin areas should be covered. Thoroughly launder protective clothing before storage or re-use. Stop leak if safe to do so, and contain spill. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. Recycle containers wherever possible. After spills, wash area preventing runoff from entering drains. If a significant quantity of material

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enters drains, advise emergency services. This material may be suitable for approved landfill. Advise laundry of nature of contamination when sending contaminated clothing to laundry.

WASTE DISPOSAL METHODS

Disposal of waste in an approved hazardous waste management facility. Care must be taken when using or disposing of chemicals and/or their containers to prevent environmental contamination. Sanitation landfill or incineration in accordance with local, state and federal regulations.

VII. PERSONAL PROTECTION INFORMATION**VENTILATION TYPE**

Use local exhaust sufficient to maintain minimum worker exposure.

RESPIRATORY PROTECTION

It is usually safe to not use a dust mask or respirator protection on account of this product. However, if the product is being used in dusty or confined conditions, use of a mask or respirator may be preferred.

PROTECTIVE GLOVES

Protective gloves are recommended when using this product. Rubber or PVC is recommended.

EYE PROTECTION

Protective eyewear (goggles) is suggested when using this product. It is always prudent to use protective eyewear.

OTHER PROTECTIVE EQUIPMENT

Eye wash; safety shower; protective clothing (long sleeves, coveralls or other, as appropriate), to prevent skin contact.

VIII. STORAGE AND HANDLING**PRECAUTIONS FOR STORAGE AND HANDLING**

No special storage and transport requirements. This product has no UN classification. Not a Scheduled Poison. Containers should be kept closed in order to minimise contamination. Keep from extreme heat and open flames, and make sure that the product does not come into contact with substances listed under "INCOMPATIBILITY" above.

IX. TOXICOLOGY INFORMATION**ACUTE/CHRONIC TOXICITY TEST DATA**

- oral LD₅₀ (rat) : 857mg/kg
- dermal LD₅₀ (rat) : 2000mg/kg
- eye irritation (rabbit) : Mild irritation to the eyes
- skin irritation (rabbit) : No Irritation
- skin sensitization (Guinea-Pig) : No Sensitization

ECOTOXICITY TEST DATA

- 48 hour EC₅₀ (Daphnia magna) : 122.2 ppb
- 96 hour EC₅₀ (Oryzias latipes) : 66.9 ppb
- 96 hour LC₅₀ (Selenastrum capricornutum) : 11.6 ppb

X. DISPOSAL CONSIDERATION**DISPOSAL PRODUCT :**

Disposal of waste in an approved hazardous waste management facility. Care must be taken when using or disposing of chemicals and/or their containers to prevent environmental contamination.

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Dispose of in compliance with all Federal, state and local laws and regulations. Incineration is the preferred method.

PACKAGING :

Non-contaminated packaging may be reused

XI. TRANSPORTATION

DOT HAZARD CLASS :

BULK ONLY :

PROPER SHIPPING NAME :

UN / NA No. :

DOT LABEL(S) :

FURTHER INFORMATION : None

XII. MISCELLANEOUS AND REGULATORY INFORMATION

FEDERAL LEVEL REGULATIONS:

None

TOXIC SUBSTANCES CONTROL ACT (TSCA INVENTORY) STATUS:

Not found on the U.S. EPA TSCA inventory. For use only in products that are not regulated under TSCA (such as EPA FIFRA registered and FDA regulated products), or to be used in research and development (R&D) only by technically qualified individuals.

CERCLA (Comprehensive Environmental Response, Compensation and Liability Act of 1980) requires notification of the National Response Center (Telephone 800-424-8802) in the event of a release of quantities of the following hazardous materials Contained in this product, if the release is equal to or greater than the Reportable Quantities (RQs) listed in 40 CFR 302.4:

| <u>Chemical Name</u> | <u>CAS Number</u> | <u>Typical Maximum Concentration</u> |
|----------------------|-------------------|--------------------------------------|
| Not known | | |

SARA Title III, Sections 302/304 (Superfund Amendments and Reauthorization act of 1986) - This act requires emergency planning, including agency notification, for possible release of the following components of this material, based upon the Threshold Planning Quantities (TPQs) and release Reportable Quantities (RQs) listed for the Components in 40 CFR 355:

| <u>Chemical Name</u> | <u>CAS Number</u> | <u>Typical Maximum Concentration</u> |
|----------------------|-------------------|--------------------------------------|
| Not known | | |

SARA Title III Sections 311/312 - This act requires reporting under the Community Right-to-Know provisions due to the inclusion of the following components of this material in one or more of the five hazard categories listed in 40 CFR 370 :

| <u>Chemical Name</u> | <u>CAS Number</u> | <u>Hazard *) Categories</u> |
|----------------------|-------------------|-----------------------------|
| Not known | | |

*) The five hazard categories are as follows : F=FIRE HAZARD; S=SUDDEN RELEASE OF PRESSURE; R=REACTIVE; A=IMMEDIATE (ACUTE) HEALTH HAZARD; C=DELAYED (CHRONIC) HEALTH HAZARD

SARA Title III Section 313 - This act requires submission of annual reports off the releases of

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the following components of this material if the threshold reporting quantities as listed in 40 CFR 372, are met or exceeded :

| <u>Chemical Name</u> | <u>CAS Number</u> | <u>Typical Maximum Concentration</u> |
|----------------------|-------------------|--------------------------------------|
| Not known | | |

STATE RIGHT-TO-KNOW REGULATIONS:

CALIFORNIA PROPOSITION 65 - Components present in this material which the State of California has found to cause cancer, birth defects or other reproductive harm are as follows :

| <u>Chemical Name</u> | <u>CAS Number</u> | <u>Typical Maximum Concentration</u> |
|----------------------|-------------------|--------------------------------------|
| Not known | | |

MASSCHUSETTS Right-to-Know - The following components of this material are included in the Massachusetts Substance List and are present at or above reportable levels :

| <u>Chemical Name</u> | <u>CAS Number</u> | <u>Typical Maximum Concentration</u> |
|----------------------|-------------------|--------------------------------------|
| Not known | | |

MICHIGAN Critical Materials - The following components of this material are included in the Michigan

Critical Materials List :

| <u>Chemical Name</u> | <u>CAS Number</u> | <u>Typical Maximum Concentration</u> |
|----------------------|-------------------|--------------------------------------|
| Not known | | |

NEW JERSEY Right-to-Know - The following components of this material are included in the New Jersey Hazardous Substance List and are present at or above reportable levels:

| <u>Chemical Name</u> | <u>CAS Number</u> | <u>Typical Maximum Concentration</u> |
|----------------------|-------------------|--------------------------------------|
| Not known | | |

PENNSYLVANIA Right-to-Know - The following components of this material are included in the Pennsylvania Hazardous Substance List and are present at or above reportable levels:

| <u>Chemical Name</u> | <u>CAS Number</u> | <u>Typical Maximum Concentration</u> |
|----------------------|-------------------|--------------------------------------|
| Not known | | |

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall we be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if we have been advised of the possibility of such damages