SAFETY DATA SHEET

SODIUM HEXAMETAPHOSPHATE (SHMP) TECHNICAL

CAS No.: 10124-56-8

This Safety Data Sheet is issued by Suraj Chemicals as the distributor/supplier of record, based on manufacturer and published GHS / regulatory reference data for this substance. Users should also consult the specific manufacturer's SDS where available.

1. IDENTIFICATION

GHS Product identifier

SODIUM HEXAMETAPHOSPHATE (SHMP) TECHNICAL
Glass H; Hexaphos; Sodaphos; Graham's Salt; Sodium Polyphosphate, glassy; Metaphosphoric Acid, Sodium Salt

CAS: 10124-56-8 *(also registered under CAS 68915-31-1 / EINECS 272-808-3 for the glassy polyphosphoric acid, sodium salt form of this material)*

Other means of identification

Formula: $(NaPO_3)_6$ | $Na_2O{\cdot}P_2O_5$ | Chemical classification: Inorganic condensed phosphate salt

Recommended use of the chemical and restrictions on use

Relevant uses: Sequestrant/chelating agent, water softening, dispersing agent for clays and pigments, scale & corrosion inhibitor in boiler and cooling water treatment, detergent builder, and (food-grade material only, subject to end-user compliance) permitted food additive. For industrial user only.

Uses advised against: All uses not specified in this section or in section 7.3.

Supplier's details

SURAJ CHEMICALS
No 92, Govindappa Naicken Street, Shiva Complex, Chennai – 600001, Tamil Nadu, India
Tel: +91 - 7092722822, +91 - 9840284032 / +91 - 44 - 25393652, 42130281
Email: sales@surajchemicals.com | Website: www.surajchemicals.com
GST No: 33ACEPV8190L1ZZ

Emergency phone number

Emergency Contact No: +91 - 7092722822, +91 - 9840284032

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

GHS:
The source safety data for this material (EC classification: None; Risk phrase R36/37/38) pre-dates GHS/CLP adoption. Translating the listed R-phrase to the modern GHS classification system using standard, publicly documented R- to H-phrase mapping tables gives the following classification:

Eye Irrit. 2	Eye irritation, Category 2, H319
Skin Irrit. 2	Skin irritation, Category 2, H315
STOT SE 3	Respiratory tract irritation, single exposure, Category 3, H335

GHS label elements, including precautionary statements

GHS: Warning

Hazard statements

Eye Irrit. 2: H319 – Causes serious eye irritation.
Skin Irrit. 2: H315 – Causes skin irritation.
STOT SE 3: H335 – May cause respiratory irritation.

Precautionary statements

P261: Avoid breathing dust.
P264: Wash hands thoroughly after handling.
P271: Use only outdoors or in a well-ventilated area.
P280: Wear protective gloves/protective clothing/eye protection.
P302+P352: IF ON SKIN: Wash with plenty of water.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+P313: If skin irritation occurs, get medical advice/attention.
P337+P313: If eye irritation persists, get medical advice/attention.
P501: Dispose of contents/container in accordance with local regulations on industrial waste.

Other hazards which do not result in classification

Dry material may cause foreign-body irritation in the eyes. Prolonged contact with the dry material may cause drying or chapping of the skin. Not expected to produce significant environmental effects when used as recommended.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substances

Chemical description: Sodium Hexametaphosphate (technical/industrial grade)

In accordance with Annex 4.3.3 of the GHS, the product contains:

Identification	Chemical Name / Classification	Concentration
CAS: 10124-56-8 (EINECS 272-808-3)	Sodium Hexametaphosphate (Polyphosphoric acids, sodium salts) — Eye Irrit. 2: H319; Skin Irrit. 2: H315; STOT SE 3: H335 – Warning	100%

To obtain more information on the hazards of the substances, consult sections 11, 12 and 16.

Mixtures	Non-applicable

4. FIRST AID MEASURES

Description of necessary first-aid measures

This product has low oral toxicity and is minimally irritating to skin and eyes; treatment is controlled removal from exposure with symptomatic and supportive care.

By inhalation

Remove to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Inhalation of the dust may cause coughing and sneezing; get medical attention if symptoms persist.

By skin contact

Wash with plenty of water. Prolonged contact with the dry material may cause drying or chapping of the skin. Get medical attention if irritation develops.

By eye contact

Rinse immediately with plenty of water. The dry material may cause foreign-body irritation in some individuals. Get medical attention if irritation occurs and persists.

By ingestion/aspiration

Drink plenty of water. Never give anything by mouth to an unconscious person. No significant adverse health effects are expected if only a small amount (less than a mouthful) is swallowed.

Most important symptoms/effects, acute and delayed

Acute and delayed effects are indicated in sections 2 and 11.

Indication of immediate medical attention and special treatment needed, if necessary

Not relevant

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Suitable: Product is non-combustible – use extinguishing media appropriate to the surrounding fire (water spray/fog, foam, dry chemical powder, carbon dioxide).
Unsuitable: None known

Specific hazards arising from the chemical

Non-combustible. No special fire or explosion hazards are known for this product.

Special protective actions for fire-fighters

As a general precaution, firefighters and others exposed should wear self-contained breathing apparatus.

Additional provisions

No special requirement beyond standard fire response procedures.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

No special requirement for small spills. Use personal protective equipment described in Section 8.

For emergency responders

Wear protective equipment. Keep unprotected persons away.

Environmental precautions

Small quantities present no environmental problems. For large quantities, avoid discharge into the environment as a general precaution.

Methods and materials for containment and cleaning up

Sweep, scoop or vacuum and place into containers for disposal or reuse. Flush residual area with water.

Reference to other sections

See sections 8 and 13.

7. HANDLING AND STORAGE

Precautions for safe handling

A. General precautions for safe use

Good industrial practice in housekeeping and personal hygiene should be followed. Avoid contact with eyes and skin. Wash hands immediately after handling. Remove material from clothing.

B. Technical recommendations for the prevention of fires and explosions

Not applicable – product is non-combustible.

C. Technical recommendations on general occupational hygiene

Do not eat or drink during handling; wash hands after handling.

D. Technical recommendations to prevent environmental risks

Prevention of eye and skin contact may be required under normal use conditions. Where severe agitation or dispersion into the work environment occurs, provide local exhaust ventilation/enclosure to prevent release of dust.

Conditions for safe storage, including any incompatibilities

A. Specific storage requirements

Storage condition	Cool, dry place
Materials to avoid	Excessive moisture
Container	Keep tightly closed

B. General conditions for storage

Store in a cool, dry, well-ventilated place to maintain product performance and prevent caking/hydrolysis. For additional information see subsection 10.5.

Specific end use(s)

Except for the instructions already specified, it is not necessary to provide any special recommendation regarding the uses of this product.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

Identification	Occupational Exposure Limit Type	Value
Sodium Hexametaphosphate CAS: 10124-56-8	ACGIH TLV (inhalable dust), 8-hr TWA	10 mg/m³
	ACGIH TLV (respirable dust), 8-hr TWA	3 mg/m³
	OSHA PEL (total dust), 8-hr TWA	15 mg/m³
	OSHA PEL (respirable dust), 8-hr TWA	5 mg/m³

Specific limits have not been established for this material; the values above are the applicable particulates-not-otherwise-regulated (PNOR/PNOC) dust limits.

Appropriate engineering controls

Provide local exhaust ventilation where dust may be generated, to keep airborne concentrations below the occupational exposure limits, in addition to individual PPE as needed.

B. Respiratory protection

In case of insufficient ventilation, wear suitable respiratory equipment (dust mask/respirator conforming to EN149 or equivalent).

C. Specific protection for the hands

Wear protective gloves; wash hands and contaminated skin thoroughly after handling.

D. Eye and face protection

Wear appropriate protective eye glasses or chemical safety goggles (EN166 or equivalent).

E. Bodily protection

Wear protective clothing appropriate to prevent prolonged/repeated skin contact with the dry material.

F. Additional emergency measures

Emergency eyewash and washing facilities should be available in the work area.

Environmental exposure controls

Avoid environmental spillage of the product. See subsection 7.1.D.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	
Physical state at 20°C	Solid – free-flowing powder
Appearance	Powder, free-flowing
Color	White
Odor	Odorless
Odour threshold	Not relevant *
Volatility	
Boiling point at atmospheric pressure	1500°C
Melting point/freezing point	628°C
Vapour pressure	Not relevant *
Evaporation rate	Not relevant *
Product Description	
Specific gravity at 20°C/4°C	1.79
Bulk density	700 kg/m³ (loose) – 850 kg/m³ (packed)
pH (1% aqueous solution)	7.0 (long-chain SHMP grade: 5.6 – 6.8)
Water solubility at 20°C	< 150 g/l (partly soluble)
Particle size distribution	> 45% retained on –100 mesh USSS
Partition coefficient n-octanol/water	Not relevant *
Flammability	
Flash Point	Non-applicable
Flammability (solid, gas)	Non-applicable – product is non-combustible
Autoignition temperature	Non-applicable
Lower / Upper flammability limit	Non-applicable

** Not relevant due to the nature of the product, not providing information on the properties of its hazards.*

Other information

Explosive properties	Non-applicable
Oxidising properties	Non-applicable
Corrosive to metals	Not relevant
Chemical formula	$Na_2O \cdot P_2O_5$

10. STABILITY AND REACTIVITY

Reactivity

No specific reactivity hazards known under normal conditions of storage, handling and use.

Chemical stability

Chemically stable under the indicated conditions of storage, handling and use. Solutions of this product hydrolyse over time to form ortho-phosphate and other shorter-chain phosphates; hydrolysis is accelerated by temperature and pH of the system.

Possibility of hazardous reactions

Under the specified conditions, hazardous reactions are not expected.

Conditions to avoid

Shock/Friction	Contact with Air	Increase in Temperature	Sunlight	Humidity
Not applicable	Not applicable	Not applicable	Not applicable	Avoid excessive moisture

Incompatible materials

No specific material to avoid; keep away from excessive moisture.

Hazardous decomposition products

Oxides of phosphorus (on thermal decomposition at high temperature).

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

In case of exposure that is repetitive, prolonged, or at concentrations higher than the recommended occupational exposure limits, adverse health effects may result depending on the means of exposure:

A. Ingestion (acute effect)

Low oral toxicity. No significant adverse health effects expected if only a small amount is swallowed.

B. Inhalation (acute effect)

Inhalation of dust may cause coughing and sneezing/respiratory irritation.

C. Contact with skin and eyes (acute effect)

Minimally irritating; prolonged contact with the dry material may cause drying/chapping of skin; dry material may cause foreign-body irritation of the eyes.

D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity)

No adverse effects on reproductive capacity were reported in a multigenerational rat study. No increase in tumours was reported in a 2-year rat feeding study. Classification criteria for carcinogenicity and mutagenicity are not met based on available data.

E. Sensitizing effects

Classification criteria for respiratory or skin sensitisation are not met based on available data.

F. Specific target organ toxicity (STOT) – single exposure

May cause respiratory irritation (see Section 2).

G. Specific target organ toxicity (STOT) – repeated exposure

Rats fed this material in the diet for one month showed decreased growth and increased kidney, lung and spleen weight with kidney damage; rats fed for two years showed decreased weight gain, increased kidney weight and kidney changes.

H. Aspiration hazard

Classification criteria are not met based on available data.

Product-specific toxicological information

Identification	Acute Toxicity	Genus
Sodium Hexametaphosphate CAS: 10124-56-8	LD50 oral: 6600 mg/kg	Rat
	LD50 dermal: > 7940 mg/kg	Rabbit
	Eye irritation: 1.3/110.0 (slightly irritating); Skin irritation: 0.0/8.0 (non-irritating)	Rabbit

12. ECOLOGICAL INFORMATION

Not expected to produce significant environmental effects when recommended use instructions are followed.

Toxicity

Acute Toxicity	Species	Genus
EC50: > 485 mg/L (48h)	Daphnia magna	Crustacean
LC50: > 1000 mg/L (96h)	Rainbow trout	Fish
LC50: > 1000 mg/L (96h)	Mysid shrimp	Crustacean

Persistence and degradability

Not applicable in the classical sense to inorganic compounds. Phosphates may form precipitates with calcium or magnesium, which become part of soil/sediment.

Bioaccumulative potential

Not available; not expected to bioaccumulate (inorganic phosphate).

Mobility in soil

Koc	Henry	Dry Soil	Moist Soil
Not relevant	Not relevant	No significant mobility – forms insoluble precipitates	No significant mobility – forms insoluble precipitates

Results of PBT and vPvB assessment

Non-applicable (inorganic substance, not subject to PBT/vPvB assessment criteria).

Other adverse effects

Inorganic compounds in contact with soil/surface water may be taken up by plants as essential nutrients.

13. DISPOSAL CONSIDERATIONS

Disposal methods

Not classified as hazardous waste under standard criteria. Dry material may be landfilled or recycled in accordance with local, state and central regulations. For packaging: avoid unnecessary treatments – use dedicated containers.

Refer to national and local regulations on waste management.

14. TRANSPORT INFORMATION

Transport of dangerous goods by land (ADR 2023 / RID 2023)

14.1 UN number	Not classified as Dangerous Goods
14.2 UN proper shipping name	Non-applicable
14.3 Transport hazard class(es)	Non-applicable
14.4 Packing group	Non-applicable
14.5 Environmental hazard	No
14.6 Special precautions for user	Non-hazardous for transport under standard road/rail regulations
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by sea (IMDG 41-22)

14.1 UN number	Not classified as Dangerous Goods
14.2 UN proper shipping name	Non-applicable
14.3 Transport hazard class(es)	Non-applicable
14.4 Packing group	Non-applicable
14.5 Marine pollutant	No
14.6 Special precautions for user	Non-hazardous for transport (IMDG/UN: Not classified)
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by air (IATA/ICAO 2024)

14.1 UN number	Not classified as Dangerous Goods
14.2 UN proper shipping name	Non-applicable
14.3 Transport hazard class(es)	Non-applicable
14.4 Packing group	Non-applicable
14.5 Environmental hazard	No
14.6 Special precautions for user	Non-hazardous for transport (ICAO/IATA: Not classified)
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

15. REGULATORY INFORMATION

Safety, health and environmental regulations specific for the product in question

It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of local circumstances, in order to establish the necessary risk prevention measures for the manipulation, use, storage and disposal of this product. Listed on TSCA (USA), DSL (Canada), EINECS (EU), and the chemical inventories of Japan, Australia, Korea, Philippines and China.

Other legislation

Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989
The Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987)
Food Safety and Standards Act, 2006 (applicable only to food-grade material)

16. OTHER INFORMATION

Legislation related to safety data sheets

This safety data sheet has been designed in accordance with Annex 4 – Guidance on the preparation of Safety Data Sheets of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). The original supplier data used R/S phrases (pre-GHS format); these have been translated to H/P statements per standard published conversion tables.

Texts of the legislative phrases mentioned in sections 2 and 3

H315: Causes skin irritation.
H319: Causes serious eye irritation.
H335: May cause respiratory irritation.
R36/37/38 (legacy): Irritating to eyes, respiratory system and skin.

The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3.

NFPA / HMIS ratings (as reported by original manufacturer)

	Health	Fire	Reactivity	Additional
NFPA	1	0	0	–
HMIS	1	0	0	Safety glasses, gloves, synthetic apron, dust respirator

Advice related to training

Minimal training is recommended to prevent industrial risks for staff using this product, in order to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

Principal bibliographical sources

Manufacturer's Material Safety Data Sheet for Sodium Hexametaphosphate; standard published GHS R/S-to-H/P conversion references.

Abbreviations and acronyms

ADR: European agreement concerning the international carriage of dangerous goods by road | IMDG: International maritime dangerous goods code | IATA: International Air Transport Association | ICAO: International Civil Aviation Organisation | TWA: Time-weighted average | LD50: Lethal Dose 50 | LC50: Lethal Concentration 50 | EC50: Effective Concentration 50 | Koc: Partition coefficient of organic carbon

Disclaimer: The information contained in this safety data sheet is based on sources, technical knowledge and current legislation, without being able to guarantee its accuracy. This information cannot be considered a guarantee of the properties of the product; it is simply a description of the security requirements. The occupational methodology and conditions for users of this product are not within Suraj Chemicals' awareness or control, and it is ultimately the responsibility of the user to take the necessary measures to obtain the legal requirements concerning the manipulation, storage, use and disposal of chemical products. The information on this safety data sheet only refers to this product, which should not be used for needs other than those specified.

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