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School Materials Safety Manual:

No. 242 Disodium Phosphate
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♦ SECTION 1 INTRODUCTION

Material Disodium Phosphate, ca 100%

Chemical Formula Na_2HPO_4

CAS Number 7558-79-4

DOT Classification Not listed as a Hazardous Material for Transportation (49 CFR 172.101); DOT ID No. 9147

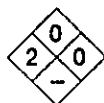
EPA Classification Listed as a CERCLA Hazardous Substance (40 CFR 302.4). Not listed as a RCRA Hazardous Waste (40 CFR 261.33), a SARA Extremely Hazardous Substance (40 CFR 355), or a SARA Toxic Chemical (40 CFR 372.65).

OSHA Classification Not listed as an Air Contaminant (29 CFR 1910.1000, Subpart Z)

Synonyms Disodium hydrogen phosphate; disodium orthophosphate; DSP; exsiccated sodium phosphate; sodium monohydrogen phosphate; sodium orthophosphate, secondary; sodium phosphate dibasic

Genium Hazard Rating

4 = Extreme
3 = High
2 = Moderate
1 = Slight
0 = Minimum



Description Colorless, translucent crystals or white powder with a saline taste; odorless. *Do not ingest!*

Overview In addition to possible uses as a reagent or buffer in analytical chemistry, it may be an ingredient of commercial products the custodial/maintenance staff uses. Disodium phosphate is used as a fireproofing agent for wood and paper; mordant in dyeing; an emulsifier in foods; in manufacturing ceramics, enamels, boiler compounds, and detergents; and in tanning, galvanoplastics, and soldering enamels. It presents few hazards if used with care and reasonable precautions.

Manufacturer Always request an up-to-date MSDS from your chemical supplier. That sheet should identify the substance's manufacturer and include an emergency phone number. This *Manual's* Resources/Manufacturers Index lists some larger manufacturers and available emergency phone numbers.

♦ SECTION 2 USE AND STORAGE DATA

Preliminary Planning Considerations *Plan and provide for safe disposal of all school-generated chemical waste.* Check applicable regulations prior to use. For safety, *do not wear contact lenses in the lab:* soft lenses may absorb, and all lenses concentrate, irritants. Particles adhering to contact lens surfaces can cause corneal damage. Wear rubber gloves to minimize skin contact. Employees and students should know the location of eyewash and shower facilities near where chemicals are used. Be sure that eyewash stations and safety showers are in good working order.

Usage Precautions and Procedure Before using, *read this material's container label* and follow all precautions. Practice good housekeeping to avoid unintentionally

mixing incompatibles. Do not smoke in storage or use area. Do not allow chemical residue or dust buildup in lab or work areas. Wear safety glasses or goggles and appropriate protective clothing to work with this substance. Keep this material away from notebooks, textbooks, and personal belongings to avoid transporting chemical residues from the lab/work area. After working with chemical materials, and before eating, drinking, or smoking, always wash hands and face. Remove and launder contaminated clothing before reusing.

Additional Data Disodium phosphate is stable at room temperature under normal handling and storage conditions. It does not polymerize. If exposed to air, this material absorbs 2 to 7 mol of water, depending on humidity and temperature. Its incompatibilities include alkaloids, lead acetate, antipyrine, chloral hydrate, resorcinol, and pyrogallol.

Preferred Storage Location and Methods Storage areas should be cool and dry, and the containers tightly closed and away from incompatibles. To separate incompatible chemicals, store by chemical family, not by alphabetical name. Protect all chemical containers from physical damage. Prohibit smoking in chemical storage areas. Purchase amounts equal to only a year's needs, if at all

♦ SECTION 3 SPILL/DISPOSAL PROCEDURES

If Spilled Ventilate spill area. Clean up spilled material promptly and thoroughly. Cleanup personnel should protect against skin or eye contact and inhalation. Avoid creating dust conditions. Sweep, vacuum (with an appropriate filter), or wet mop to minimize dust dispersion. For liquid (solution) spills, cover material with an inert, solid absorbent (vermiculite, dry sand, etc.) and scoop it into an appropriate container (with a secure lid) for disposal in accordance with existing regulations. Dike the spill area with an inert, absorbent material, as needed, to contain the spilled material.

Disposal of Small Quantities *Handle emptied containers carefully since residues may remain.* Investigate recycling, reclamation, or destruction to a less hazardous material rather than disposal of untreated waste to a landfill. Check regulations before disposal is necessary. If this method is not practical, feasible, or in accord with existing regulations, contact your supplier or a licensed disposal contractor for specific treatment/disposal procedures.

Disposal of Larger Amounts Contact your supplier or a licensed contractor for detailed recommendations.

Follow all applicable local, state, and Federal regulations for all waste disposal!

♦ SECTION 4 HEALTH HAZARDS

Summary As a salt, disodium phosphate in high concentrations is an irritant to mucous membranes such as the eyes and respiratory tract, and may cause skin irritation on contact. Due to slow and incomplete absorption of phosphate salts, ingestion results in limited potential for sys-

temic toxicity, although cathartic effects are noted. Disodium phosphate's toxicity relates to the binding of ionized blood calcium. In rare instances of significant disodium phosphate blood levels through ingestive, intravenous, or parenteral routes, high phosphate and low calcium levels result. This change in ionized blood levels results in metabolic disturbances, particularly in the nervous system and the heart. Hyperventilation may follow significant exposures. Symptoms include lethargy, vomiting, elevated body temperature, diarrhea, and muscle spasms, and may be followed by seizures, coma, and life-threatening cardiac disturbances. The probable lethal oral dose for humans is 0.5 to 5 g/kg, or between 1 oz and 1 lb for a 150-lb person.

1989-90 ACGIH TLV None established

1988 NIOSH REL None established

1989 OSHA PEL None established

1985-6 Toxicity Data Rabbit, skin: 500 mg/24 hr produces mild irritation; Rat, oral, LD₅₀: 17 g/kg, toxic effects not yet reviewed

Carcinogenicity Not listed by the NTP, IARC, or OSHA
Acute Effects Inhalation causes coughing, difficulty in breathing, and nose, throat, and respiratory tract irritation. Direct contact causes skin and eye irritation. If ingested, nausea and vomiting may occur.

Chronic Effects None reported

Extinguishing Media Use carbon dioxide, dry chemical, foam, or other media appropriate to surrounding fire conditions.

♦ SECTION 7 PHYSICAL DATA

Melting Point (at 1 atm) Loses water at 198.5 °F (92.5 °C)

Solubility in Water (at 25 °C) Soluble (100 g soluble in 100 ml of water at 122 °F (50 °C))

pH 9.1, basic, for 1% aqueous solution at 25 °C

Molecular Weight 141.98

Specific Gravity (H₂O = 1 at 4 °C) 2.066 at 59 °F (15 °C)

References 7, 73, 84, 85, 103, 124, 126, 127, 136; Genium's *Material Safety Data Sheets Collection*, No. 295 (4/90)

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♦ SECTION 5 FIRST AID PROCEDURES

Get appropriate in-school, paramedic, or community medical attention and support.

Eye Contact Promptly flush eyes with plenty of running water for at least 15 min, including under the eyelids. Get prompt medical attention.

Skin Contact Brush disodium phosphate powder from clothes. Remove heavily contaminated clothing. After flushing with large amounts of water, wash exposed areas with soap and water.

Inhalation Remove victim from exposure to fresh air and support breathing as necessary.

Ingestion Get *prompt* medical attention. Never give anything by mouth to an unconscious or convulsing person. If ingested, have that *conscious* person drink 1 to 2 glasses of water to dilute, then induce repeated vomiting until vomit is clear.

♦ SECTION 6 FIRE PROCEDURES AND DATA

Fire Hazards For major fires, or for fires involving large quantities of chemical materials, firefighters should wear appropriate protective clothing and respirators. A self-contained breathing apparatus (SCBA) is recommended.

Flash Point and Method None reported

Autoignition Temperature None reported

Flammability Limits in Air (vol. %) None reported

Hazardous Decomposition Products Toxic fumes of phosphorus oxides and sodium oxide