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Stearic Acid

School Materials Safety Manual:

No. 240 Zinc Stearate
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◆ SECTION 1 INTRODUCTION

Material Zinc Stearate, ca 100%

Chemical Formula $\text{Zn}(\text{CH}_3(\text{CH}_2)_{16}\text{COO})_2$

CAS Number 0557-05-1

DOT Classification Not listed as a Hazardous Material for Transportation (49 CFR 172.101)

EPA Classification Not listed as a RCRA Hazardous Waste (40 CFR 261.33), a CERCLA Hazardous Substance (40 CFR 302.4), a SARA Extremely Hazardous Substance (40 CFR 355), or a SARA Toxic Chemical (40 CFR 372.65) / **OSHA Classification** Listed as an Air Contaminant (29 CFR 1910.1000, Table Z-1-A)

Synonyms Dibasic zinc stearate; octadecanoic acid, zinc salt; stearic acid, zinc salt; zinc distearate; zinc octadecanoate

NFPA Hazard Rating

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



Description A metallic soap in the form of a white, fluffy powder, with a slight fatty acid odor and water-repellant properties.

Overview Zinc stearate is most likely found in a school environment as an ingredient of commercial products the custodial/maintenance staff uses. Although the information provided here pertains to this chemical alone, the hazards and precautions are relevant to products containing it. This material is used in manufacturing lacquers, plastics, and tablets; as an agent in waterproofing, powder metallurgy, and human medicine for dermatitis; a dietary supplement; a lubricant; a heat and light stabilizer; a lubricant; a filler; a mold release agent; and an antifoamer. If used with care and reasonable precautions, zinc stearate presents few hazards.

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. Provide adequate ventilation to avoid exceeding the TLV (Sec. 4). Eliminate possible ignition sources. 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 allow residue or dust buildup in lab or work areas. Do not smoke in storage or use area. 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** Zinc stearate is stable at room temperature under normal handling and storage conditions. It does not polymerize. Its incompatibilities include strong oxidizers. Provide adequate ventilation and avoid dispersing zinc stearate into air to prevent explosive concentrations of this dust.

Preferred Storage Location and Methods Store zinc stearate in closed containers in a cool, well-ventilated area away from strong oxidizing materials. To separate incompatible materials, store by chemical family, not alphabetical name. Practice good housekeeping routines to prevent dust accumulation. 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 and remove ignition sources to prevent an explosion hazard. Clean up spilled material promptly and thoroughly while avoiding dispersing zinc stearate into air. Cleanup personnel should protect against skin or eye contact and inhalation and use nonsparking tools. 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. Place spilled powder into an appropriate container (with a secure lid) for proper disposal. Sweep, vacuum (with an appropriate filter), or wet mop to minimize dust dispersion.

Disposal of Small Quantities *Handle emptied containers carefully since residues may remain.* Do not dispose of this material in sewers or waterways. 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 disposal company.

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

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◆ SECTION 4 HEALTH HAZARDS

Summary Zinc stearate is not appreciably irritating to the skin or eyes. Although not readily absorbed through the skin, it can be toxic by ingestion. Inhalation of this material is reported to cause emphysema, pulmonary fibrosis, and thickening of the pleura in one individual.⁽²⁴⁾

1989-90 ACGIH TLV None established

1988 NIOSH REL None established

1989 OSHA PEL 8-hr TWA: 5 mg/m³ (respirable fraction), 10 mg/m³ (total dust)

1985-6 Toxicity Data Rat, intratracheal, LD₅₀: 250 mg/kg

Carcinogenicity Not listed by the NTP, IARC, or OSHA

Acute Effects Symptoms from excessive dust inhalation can include cough and dyspnea (difficult breathing). Inhaling zinc stearate's oxidation products can produce fume fever, a flu-like syndrome characterized by muscle aches, cough, and low-grade fever (No. 48, Zinc Oxide). With or without these symptoms, nausea and vomiting may be the only clear symptoms of exposure.

Chronic Effects Pneumoconiosis (a lung disease caused by chronic mineral particle inhalation) is reported.

Extinguishing Media Use water spray, carbon dioxide, dry chemical, foam, or other media appropriate to surrounding fire conditions. Water or foam may cause frothing.

◆ SECTION 7 PHYSICAL DATA

Melting Point 266 °F (130 °C)

pH (slurry of 10 g in 30 g distilled water) 6.5 to 7.5

Formula Weight 25.94

Specific Gravity (H₂O = 1) 1.095

Molecular Weight (pure) 632

% Volatile (by weight) 1% moisture

References 1-7, 12, 24, 34, 37, 41, 82; Genium's *Material Safety Data Sheets Collection*, No. 444 (3/86)

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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 zinc stearate off clothes. Remove heavily contaminated clothing. After flushing with large amounts of water, wash exposed areas with water and soap.

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. Give 1 to 2 glasses of water to dilute, then induce vomiting.

◆ SECTION 6 FIRE PROCEDURES AND DATA

Fire Hazards Although combustible, zinc stearate has a low vapor pressure and offers no unusual fire hazard. For major fires, or for fires involving large quantities, firefighters should wear appropriate protective clothing and respirators. A self-contained breathing apparatus (SCBA) is recommended.

Flash Point and Method 530 °F (277 °C), OC

Autoignition Temperature 790 °F (421 °C)

Flammability Limits in Air (vol. %) Possible dust-cloud explosion; LEL: 0.02 g/l; UEL: not found

Hazardous Decomposition Products Carbon monoxide or zinc oxide fumes