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School Materials Safety Manual:

No. 256 Ascorbic Acid
Issued 9/90

◆ SECTION 1 INTRODUCTION

Material Ascorbic Acid, ca 100%

Chemical Formula $C_6H_8O_6$

CAS Number 0050-81-7

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

Synonyms L(+)-ascorbic acid, cevitamic acid, 3-keto-L-gulofuranolactone, vitamin C, L-xyloascorbic acid.

NFPA Hazard Rating

Not found

Genium Hazard Rating

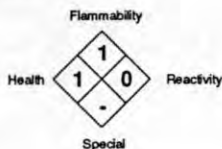
4 = Extreme

3 = High

2 = Moderate

1 = Slight

0 = Minimum



Description Good sources of ascorbic acid are citrus fruits, acerola, hip berries, and fresh tea leaves. White crystals with a pleasant, sharp acidic taste.

Overview Used to treat vitamin C deficiency; as an antimicrobial and antioxidant in foodstuffs; as an oxidant in bread dough; in the abscission of citrus fruit in harvesting; and as a reducing agent in analytical chemistry. Ascorbic acid is practically nontoxic and most likely found in the school as a reagent in the chemistry or biology lab. 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 impervious 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. Do not smoke in use or storage areas. Practice good housekeeping to avoid unintentionally mixing incompati-

bles. 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 Ascorbic acid is stable in closed containers at room temperature under normal handling and storage conditions. Ascorbic acid is stable to air when dry, but aqueous solutions are rapidly oxidized by air and accelerated by alkalis, iron, and copper. It does not polymerize. Its incompatibilities include strong oxidizers.

Preferred Storage Location and Methods Store ascorbic acid in closed containers in a cool, dry, well-ventilated area away from heat (direct sunlight), sparks, open flame, and strong oxidizers. Storage areas must meet OSHA requirements for combustible solids. 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. Remove all heat and ignition sources. Clean up spilled material promptly and thoroughly. Cleanup personnel should protect against skin or eye contact and dust inhalation. Remove leaking containers to a safe place, if feasible. For liquid (solution) spills, cover with an inert solid absorbent (vermiculite, dry sand, etc.) and scoop into appropriate disposal containers (with a secure lid) for disposal in accordance with existing regulations. For large spills, dike the spill area with an inert absorbent material, as needed, to contain the spilled material. For dry spills, use nonsparking tools to carefully shovel, scoop, or vacuum (with an appropriate filter) the spilled material into closable containers for disposal. Avoid creating airborne dust conditions.

Disposal of Small Quantities *Handle emptied containers carefully since residues may remain.* Check regulations before disposal is necessary. Investigate recycling or reclamation rather than disposal of untreated waste to a landfill. 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.

◆ SECTION 4 HEALTH HAZARDS

This material is relatively nonhazardous in routine situations and should present no significant health risks.

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Although serious toxicity from the administration of ascorbic acid is uncommon, several grams ingested on an empty stomach may provoke gastric distress, diarrhea, and acidification of urine. Toxicity data has shown human blood systemic effects by intravenous route.

1989-90 ACGIH TLV None established

1988 NIOSH REL None established

1989 OSHA PEL None established

1985-6 Toxicity Data Man, intravenous, TD_{L0} : 2300 mg/kg administered over 2 days affects the blood (oxidant-related anemia); Rat, oral, LD50: 11900 mg/kg; no toxic effect noted

Carcinogenicity Not listed by the NTP, IARC, or OSHA

Acute Effects Mild eye and mucous membrane irritation may occur during exposure to relatively high dust concentrations of ascorbic acid.

Chronic Effects None reported

◆ SECTION 5 FIRST AID PROCEDURES

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 Immediately wash the affected area 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, give the conscious victim two glasses of milk or water to drink. Do not induce vomiting unless directed to do so by a physician.

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

◆ SECTION 6 FIRE PROCEDURES AND DATA

Fire Hazards This combustible solid is a slight fire hazard when exposed to heat, sparks, and open flame. For major fires, 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 Thermal oxidative decomposition of ascorbic acid can produce acrid smoke and fumes.

Extinguishing Media Use water fog, carbon dioxide, dry chemical, alcohol-type foam, or other media appropriate to surrounding fire conditions. *Caution! Water or foam may cause frothing.* Consult suppliers of foam before an emergency arises to determine their products' specific applicability to ascorbic acid fires.

◆ SECTION 7 PHYSICAL DATA

Melting Point Range (at 1 atm) 374 to 378 °F (190 to 192 °C)

Solubility in Water (at 25 °C) Soluble (80% at 100 °C)

pH of Aqueous Solution pH = 3 (5 mg/ml); pH = 2 (50 mg/ml)

Molecular Weight 176.12

Specific Gravity ($H_2O = 1$) 1.65

References 1, 5, 7, 73, 81-94, 103, 124, 126, 127, 132, 136; Genium's *Material Safety Data Sheets Collection*, No. 644 (11/87)

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