



Genium Publishing Corporation  
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## School Materials Safety Manual:

### No. 281 Sodium Citrate Issued 10/91

#### ◆ SECTION 1 INTRODUCTION

**Material** Sodium Citrate, ca 100%

**Synonyms** Citratin;® Citreme;® citric acid, trisodium salt; Citrosodina;® Citrosodine;® Natrocitral;® 1,2,3-propanetricarboxylic acid, 2-hydroxy, trisodium salt; trisodium citrate; Urisal.®

**Chemical Formula**  $C_6H_5O_7Na_3$

**CAS Number** 0068-04-2 (anhydrous), 6132-04-3 (dihydrate)

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

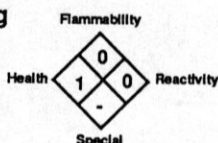
**EPA Classification** Not listed as a RCRA Hazardous Waste (40 CFR 261.33), a CERCLA Hazardous Substance (40 CFR 302.4), a SARA Extremely Hazardous Substance (40 CFR 355), or a SARA Toxic Chemical (40 CFR 372.65)

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

**NFPA Hazard Rating** Not found

**Genium Hazard Rating**

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



**HMIS**  
H 0  
F 0  
R 0

**Description** White crystals or granular powder. Sodium citrate is derived from sodium sulfate solution which is treated with calcium citrate, filtered, concentrated, and crystallized. Used in photography, electroplating, and detergents; in special cheeses, soft drinks, frozen desserts, and meat products; as a sequestering agent to remove trace metals, a buffer, and an alkalizer; to prevent blood coagulation.

**Overview** The most common area of use of sodium citrate is in the chemistry lab. Sodium citrate used as a laboratory reagent is relatively nonhazardous. 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 include the substance's manufacturer and emergency phone numbers. 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. Contact lens use when handling materials in the laboratory is controversial. In some cases, soft lenses can actually protect eyes from chemicals. In other cases, chemical entrapment is presumed a possible hazard. Particles adhering to contact lens surfaces can cause corneal damage. For safety, always wear safety glasses or goggles. 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 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 usage or storage areas. Practice good housekeeping to avoid unintentionally mixing incompatibles. 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** Sodium citrate is stable at room temperature under normal handling and storage conditions. Sodium citrate has an indefinite shelf life. Not as stable, the dihydrate form dries out and cakes on exposure to air. It does not polymerize.

**Preferred Storage Location and Methods** Storage areas should be cool and well ventilated, and the containers tightly closed and out of direct sunlight. 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. 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. Dike the spill area with an inert absorbent material, as needed, to contain the spilled material. For dry spills, carefully collect and scoop the spilled dry material into secure disposal or reclamation containers.

**Disposal of Small Quantities** Handle emptied containers carefully since residues may remain. Always check regulations before disposal. Investigate recycling or reclamation rather than disposal of sodium citrate 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

Sodium citrate is usually well tolerated, and is commonly used as a medicinal agent. Individuals with poor kidney function or urine output are particularly at risk of toxicity. These and healthy individuals with an excessive exposure may suffer from health effects caused by a rise of blood and tissue pH (alkalinization). Also, a drop in ionized blood calcium may occur which can cause tetany (continued contraction of muscles) and heart rhythm disturbances (depression of normal function). These may be life-threatening complications. Exposure to smaller doses by ingestion may have a laxative effect.

1991-92 ACGIH TLV 8-hr TWA: None established  
1990 NIOSH REL 10-hr TWA: None established  
1990 OSHA PEL 8-hr TWA: None established

**1985-6 Toxicity Data** Mouse, intraperitoneal, LD<sub>50</sub>: 1364 mg/kg; Mouse, intravenous, LD<sub>50</sub>: 170 mg/kg  
**Carcinogenicity** Not listed by the NTP, IARC, or OSHA  
**Acute Effects** Direct skin or eye contact may be slightly irritating due to its slightly alkaline pH.  
**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** 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 a significant amount is ingested, have that *conscious and alert* person, drink one or two glasses of water and induce vomiting with Ipecac syrup. With large exposure or in susceptible individuals, consider monitoring blood pH and calcium.

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

#### ◆ SECTION 6 FIRE PROCEDURES AND DATA

**Fire Hazards** Fire may produce toxic fumes. 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** None reported

**Autoignition Temperature** None reported

**Flammability Limits in Air (vol. %)** None reported

**Hazardous Decomposition Products** When heated to decomposition, it emits toxic fumes of sodium oxide (Na<sub>2</sub>O).

**Extinguishing Media** Use water fog, carbon dioxide (CO<sub>2</sub>), dry chemical, or alcohol-type, or other media appropriate to surrounding fire conditions.

#### ◆ SECTION 7 PHYSICAL DATA

**Boiling Point (at 1 atm)** Decomposes at red heat.

**Solubility in Water (at 25 °C)** Soluble in 1.3 parts water; 0.6 part boiling water

**pH of Aqueous Solution** Slightly alkaline to litmus

**Molecular Weight** 258.07

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**References** 124, 126, 132, 136, 527

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