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School Materials Safety Manual:

No. 305 Potassium Thiocyanate Issued 2/92

♦ SECTION 1 INTRODUCTION

Material Potassium Thiocyanate, ca 100%

Synonyms Arterocyn, Aterocyn, Kyonate, potassium isithiocyanate, potassium rhodanide, potassium sulfocyanate, potassium sulfocyanide, potassium thiocyanide, Rhocya, Rodanca, Rhodanide, Thiocara

Chemical Formula KCNS

CAS Number 333-20-0

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

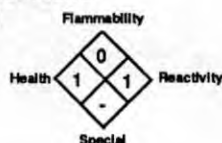
EPA Classification *Not listed* as a RCRA Hazardous Waste (40 CFR 261.33), a CERCLA Hazardous Substance (40 CFR 302.4), a SARA Extremely Hazardous Substance (40 CFR 355), or a SARA Toxic Chemical (40 CFR 372.65)

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 1
F 0
R 1

Description Colorless, transparent, deliquescent, odorless crystals with a saline cooling taste. Potassium thiocyanate turns brown, green, blue when fused, and white again on cooling. Derived by heating potassium cyanide with sulfur.

Overview Potassium thiocyanate is toxic by ingestion. *Do not ingest!* When heated to decomposition, it emits highly toxic fumes of cyanide (CN⁻), potassium oxide (K₂O), sulfur oxides (SO_x), and nitrogen oxides (NO_x). Potassium thiocyanate also emits highly toxic cyanide fumes in contact with acids or acid fumes. It presents few hazards if reasonable precautions are taken. The most common area of use in the school environment is the chemistry laboratory. After working with potassium thiocyanate, always wash hands. Used as an analytical chemistry reagent, a photographic restrainer and intensifier; in manufacturing sulfocyanides, thioureas, and artificial mustard oil; and in printing and dyeing textiles, synthetic dyestuffs, and medicine (hypotensive). Potassium thiocyanate has fallen into disuse as a hypotensive because of its narrow therapeutic index.

Manufacturer Always request an up-to-date MSDS from your chemical supplier. That sheet should include the 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 chemical materials 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 with KCNS.

Employees and students should know the location of eyewash and shower facilities near chemical use areas. Check that eyewash stations and safety showers are working properly.

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. Avoid heat or ignition sources and contact with acid or acid fumes. Do not allow chemical residue or dust buildup in lab or work areas. Wear safety glasses or goggles and gloves to work with potassium thiocyanate. 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 Potassium thiocyanate is stable at room temperature under normal handling and storage conditions. It does not polymerize. Its incompatibilities include calcium chloride and perchloryl fluoride. Metal thiocyanates are oxidized explosively by chlorates, nitric acid (HNO₃), nitrates at 752 °F (400 °C) in intimate mixture, or spark or flame ignition. Potassium thiocyanate in contact with acids or acid fumes may produce highly toxic fumes of CN⁻.

Preferred Storage Location and Methods Store in tightly closed containers in cool, well-ventilated area out of direct sunlight and away from heat and ignition sources. 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 sufficient for one year's use or less.

♦ SECTION 3 SPILL/DISPOSAL PROCEDURES

If Spilled Ventilate spill area and remove all heat and ignition sources. Clean up spilled material promptly and thoroughly. Prevent contact with incompatible materials, especially acids. Cleanup personnel should protect against skin contact. For liquid (solution) spills, cover with an inert solid absorbent (vermiculite, dry sand, etc.) and scoop into appropriate containers (with secure lid) for disposal in accordance with existing regulations. Dike spill area with inert absorbent material, as needed, to contain spill. For dry spills, carefully collect and scoop spilled material into secure disposal or reclamation containers. Avoid creating airborne dust conditions. Vacuum (with appropriate filter), or wet mop to minimize dust dispersion.

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

Potassium thiocyanate is a human poison by ingestion. Large doses can cause a skin rash, psychoses (mental derangement), and collapse.

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 Human, oral, LD_{Lo} : 80 mg/kg; toxic effects not yet reviewed. Rat, oral, LD_{50} : 854 mg/kg; toxic effects include convulsions or effect on seizure threshold and shortness of breath. Mouse, oral, LD_{50} : 594 mg/kg; toxic effects include convulsions or effect on seizure threshold and shortness of breath.

Carcinogenicity Not listed by the NTP, IARC, or OSHA

Acute Effects Ingestion of large amounts causes vomiting, extreme cerebral excitement, delirium, convulsions, and muscle spasms.

Chronic Effects Chronic effects include skin rashes, weakness, fatigue, coryza (acute inflammatory disease of the upper respiratory tract), nausea, vomiting, diarrhea, vertigo (dizziness), confusion, and disorientation.

♦ **SECTION 5 FIRST AID PROCEDURES**

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

Skin Contact 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 and the person is *conscious and alert*, induce vomiting by administering ipecac syrup. The recommended dose of ipecac syrup for an adult or child over 90 to 100 lb (40 to 45 kg) is 30 mL. After the dose is administered, give clear fluids: 6 to 8 oz. for adults and 4 to 6 oz. for a child. Repeat dose if vomiting does not occur within 30 min.

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

♦ **SECTION 6 FIRE PROCEDURES AND DATA**

Fire Hazards When heated to decomposition, potassium thiocyanate emits very toxic fumes of CN^- , K_2O , SO_x , and NO_x . Metal thiocyanates are oxidized explosively by spark or flame ignition. For major fires, or for fires involving large quantities, firefighters should wear fully protective clothing and respirators. Because fire may produce toxic thermal decomposition products, 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 potassium thiocyanate can produce CN^- , K_2O , SO_x , and NO_x .

Extinguishing Media Use water fog, carbon dioxide (CO_2), dry chemical, or regular foam. Because potassium thiocyanate is noncombustible, consider other media appropriate to surrounding fire conditions.

♦ **SECTION 7 PHYSICAL DATA**

Boiling Point Decomposes at 932 °F (500 °C)

Melting Point 343 °F (173 °C)

Solubility in Water Soluble

pH of Aqueous Solution (5%, 25 °C) 5.3-8.7

Molecular Weight 97.18

Density 1.88

References 101, 103, 124, 126, 127, 132, 136, 149; Genium's *College Chemistry Laboratory Manual* (1/92)

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