

Material Safety Data Sheet

2/29/93

Los Angeles Chemical Company
 4545 Ardine Street, South Gate, CA. 90280
 213/562-9500 CHEMTREC 800/424-9300
 L.A. POISON INFO CENTER 800/356-3129

Product: FLUORSPAR
MSDS No: LACCO / 815
Date: April, 1993

National Paint
 and Coatings
 Association

 Hazardous Material
 Identification
 System

| | |
|---------------------|---------------|
| HEALTH HAZARD | 2 - Moderate |
| FLAMMABILITY HAZARD | 0 - Minimal |
| REACTIVITY HAZARD | 0 - Minimal |
| PERSONAL PROTECTION | SEE SECTION 8 |

SECTION I. MATERIAL IDENTIFICATION

Trade/Material Name: FLUORSPAR

Description: Occurs in nature in the mineral fluorite or fluorspar, and is extracted by drilling and blasting. After extraction, it contains 90 to 95% calcium fluoride and 3.5 to 8% silica. Prepared commercially by interaction of soluble calcium salt and sodium fluoride, or by action of hydrofluoric acid on aqueous calcium salt solutions.*

Other Designations: CaF₂; Acid-Spar; calcium difluoride, fluorite; fluorspar; Irtran 3; Liparite; Metstar.

CAS: 7789-75-5

R 0
 I 2
 S -
 K 0

Manufacturer: Contact your supplier or distributor. Consult latest Chemicalweek Buyers' Guide⁽⁷³⁾ for a suppliers list.

Cautions: Calcium fluoride is moderately toxic by inhalation and ingestion, and is considered an experimental mutagen. It is a noncombustible solid.

* There are three major grades of calcium fluoride: metallurgical, 60+% CaF₂; ceramic, 85 to 97% CaF₂; and acid, 97+% CaF₂. The higher purities are obtained from washing and floating. Used as a raw material for hydrofluoric acid production, a catalyst in dehydration and dehydrogenation, a flux in the iron and steel industry, in etching glass, to fluoridate drinking water. Pure crystals (99.93%) are used in spectroscopy, electronics, lasers, and high-temperature dry-film lubricants, coatings for welding rods, and as an ingredient in glass and fiberglass manufacture.

SECTION II. INGREDIENTS AND HAZARDS

| Ingredient Name: | CAS Number: | Percent: | Exposure Limits: |
|------------------|-------------|-----------|---|
| Calcium fluoride | 7789-75-5 | ca 90 95% | 1990 OSHA PEL 8-hr TWA: 2.5 mg/m ³ (as fluoride) 1991-92 ACGIH TLV TWA: 2.5 mg/m ³ (as fluoride) |

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1990 NIOSH REL
 TWA: 2.5 mg/m³
 (inorganic fluorides,
 as F)
 1990 DFG (Germany)
 MAK
 TWA: 2.5 mg/m³ (as
 fluoride)
 Half-life = 2 hr to
 end of shift
 Peak Exposure Limit:
 12.5 mg/m³/30 min,
 average value/2 per
 shift
 1985-86 Toxicity
 Data*
 Rat, oral, LD₅₀:
 4250 mg/kg; toxic
 effects not yet
 reviewed
 Mouse,
 intraperitoneal,
 TD_{Lo}: 3200 mg/kg
 administered on the
 ninth day of
 pregnancy caused
 post-implantation
 mortality
 1990 IDLH Level
 500 mg/m³

* See NIOSH, RTECS (EW1760000), for additional mutation, reproductive, and toxicity data.

SECTION III. PHYSICAL DATA

Appearance & Odor: White powder, or cubic, colorless crystals that become luminous (glowing) with heat.

Boiling point: 4532°F (2500°C)

Melting point: 2556°F

Water solubility (%): Practically insoluble,
 0.0015 g/100 ml water
 at 64.4°F (18°C)

(1402°C)
 Molecular weight: 78.08

Mohs' Hardness: 4

Density: 3.18 at 77°F (25°C)

Other Solubilities: Soluble in ammonium salts, slightly soluble in dilute mineral acids

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SECTION IV. FIRE AND EXPLOSION DATA

Flash Point (method): None reported Limits: LEL %: None reported UEL %: None reported

NFPA Fire Hazard Symbol Codes: Flammability: 0 Health: 2 Reactivity: 0 Special:

Extinguishing Media: Calcium fluoride is noncombustible. Use extinguishing agents suitable for surrounding fire. For small fires, use dry chemical, carbon dioxide (CO₂), water spray, or regular foam. For large fires, use water spray, fog, or regular foam. Autoignition Temp: None reported

Unusual fire or explosion hazards: None reported.

Special fire-fighting procedures: Since fire may produce toxic thermal decomposition products, and since calcium fluoride contains silica (a reported inhalation hazard), wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode. Also wear fully protective clothing. Be aware of runoff from fire control methods. Do not release to sewers or waterways.

* Genium determined these hazard values because the NFPA Guidebook did not.

SECTION V. REACTIVITY DATA

Chemical incompatibilities: Calcium fluoride reacts with hot concentrated sulfuric acid to liberate hydrogen fluoride.

Conditions to avoid: Excessive dust generation and contact with sulfuric acid.

Hazardous decomposition Products: Thermal oxidative decomposition of calcium fluoride can produce toxic fumes of fluoride (F⁻).

Stability/Polymerization: Calcium fluoride is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization cannot occur.

SECTION VI. HEALTH HAZARD INFORMATION

Summary of risks: Calcium fluoride is considered only mildly toxic due to its low solubility and low ionization. Calcium fluoride's toxic properties result mainly from its fluorine and silica content.

Medical conditions which may be aggravated by contact: Possible aggravation of respiratory problems (due to silica content).

Target organs: Bones, teeth, gastrointestinal (GI) and respiratory systems, kidney, heart. Electrolytes may also be affected.

Primary entry route(s): Inhalation and ingestion.

Acute effects: Gastrointestinal signs (due to ingestion) and symptoms generally dominate the clinical picture, are characterized by abdominal pain, difficulty

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swallowing, nausea, vomiting, and increased salivation, and may be delayed in onset. Ingestion of large amounts can result in accumulation in bones and teeth (due to fluorine). The probable oral lethal dose for a human is 0.5 to 5 g/kg for a 150-lb (70-kg) person. Inhalation may initially cause an increase in respiration, possibly accompanied by coughing, choking, and shortness of breath and followed by a decrease in respiratory rate. Respiratory arrest has occurred. Cardiac arrhythmia may occur, consistent with hyperkalemia. Hypocalcemia may cause hyperactive reflexes and painful muscular spasms.

Chronic effect(s): Pulmonary lesions are seen in workers exposed to inhalation of calcium fluoride dust. These lesions are attributed to calcium fluoride's 3.5% silica content and its intensification of silica's fibrogenic action in the lungs. Cases of bronchitis and silicosis (condition of massive fibrosis of the lungs, marked by shortness of breath, and due to prolonged inhalation of silica dusts) are reported among fluorospar miners. Prolonged exposure can cause fluorosis, characterized by brittle bones, calcified ligaments, and the other musculoskeletal system changes in bones and teeth. Exposure has led to renal damage. Prolonged exposure reportedly decreases blood clotting.

First aid:

Eye contact: Gently lift eyelids and flush immediately and continuously with flooding amounts of water until transported to an emergency medical facility. Consult a physician immediately.

Skin contact: Quickly remove contaminated clothing. Rinse with flooding amounts of water for at least 15 min. For reddened or blistered skin, consult a physician. Wash affected area with soap and water.

Inhalation: Remove exposed person to fresh air and support breathing as needed.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. Consult a poison control center. Unless otherwise advised, have that conscious and alert person drink 1 to 2 glasses of water, then induce vomiting with Ipecac syrup, preferably within 30 min.

Carcinogenicity: The IARC,⁽¹⁶⁴⁾ NTP,⁽¹⁴²⁾ and OSHA⁽¹⁶⁴⁾ do not list calcium fluoride as a carcinogen.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Treatment is symptomatic and supportive. After vomiting, give milk, calcium gluconate, or calcium lactate to bind fluoride in the GI tract. Monitor EKG, CBC, serum electrolytes, and urinalysis.

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SECTION VII. SPILL, LEAK AND DISPOSAL PROCEDURES

Spill / Leak procedures: Immediately notify safety personnel, isolate and ventilate area, deny entry, and stay upwind. Cleanup personnel should protect against dust inhalation. For small spills minimize dust generation by wet mopping or vacuuming (with appropriate filter). For large spills, flush with a water spray and dike for later disposal. Follow applicable OSHA regulations (29 CFR 1910.120).

Waste management / Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

OSHA Designations

Listed (as fluoride) as an Air Contaminant (29 CFR 1910.1000, Table Z-1-A)

EPA Designations

RCRA Hazardous Waste (40 CFR 261.33): Not listed

CERCLA Hazardous Substance (40 CFR 302.4): Not listed

SARA Extremely Hazardous Substance (40 CFR 355): Not listed

SARA Toxic Chemical (40 CFR 372.65): Not listed

SECTION VIII. SPECIAL PROTECTION INFORMATION

Personal protective equipment:

Goggles: Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Since contact lens use in industry is controversial, establish your own policy.

Respirator: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA.*

Other: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent repeated or prolonged skin contact.

Workplace considerations:

Ventilation: Provide general and local exhaust ventilation systems to maintain airborne concentrations below the OSHA PEL (Sec. 2). Local exhaust ventilation is preferred since it prevents contaminant dispersion into the work area by controlling it at its source. (103)

Safety stations:

Make available in the work area emergency eyewash stations, safety/quick-drench showers, and washing facilities.

Contaminated equipment:

Separate contaminated work clothes from street clothes. Launder contaminated work clothing before wearing. Remove this material from your shoes and clean personal protective equipment.

Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or

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applying cosmetics.

* Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. If respirators are used, OSHA requires a respiratory protection program that includes at least: training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

SECTION IX. SPECIAL PRECAUTIONS

Storage segregation: Avoid physical damage to containers. Store in cool, dry, well-ventilated area away from sulfuric acid.

Engineering controls: To reduce potential health hazards, use sufficient dilution or local exhaust ventilation to control airborne contaminants and to maintain concentrations at the lowest practical level.

Other precautions: Administrative Controls: Carefully enforce dust control, especially in the mining of fluorospar. Apply relevant safety measures for the possible formation of hazardous hydrofluoric acid (MSDS Collection, No. 6). Consider preplacement and periodic medical examinations of exposed workers that emphasize respiratory function.

Transportation Data (49 CFR 172.101, .102): Not listed

Data source code(s): 73, 101, 103, 124, 126, 127, 132, 136, 139, 142, 163, 164

Prepared/revised by: B. MARTINEZ

April 14, 1993

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