

SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

Product Identifier

SRM Number: 2700

SRM Name: Hexavalent Chromium in Contaminated Soil (Low Level)

Other Means of Identification: Not applicable.

Recommended Use of This Material and Restrictions of Use

This Standard Reference Material (SRM) is intended primarily for use in the analysis of waste, soils, sediments, or other materials of a similar matrix. SRM 2700 is a soil, contaminated with chromite ore processing residue (COPR) that has been air-dried, sieved, radiation-sterilized, and blended to achieve a high degree of homogeneity. A unit of SRM 2700 consists of approximately 75 g of material in an amber screw-caped glass bottle.

Company Information

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2. HAZARDS IDENTIFICATION

Note: This material is complex mixture that contains respirable crystalline silica as quartz. The health and physical hazard classification provided is associated with the inhalation of quartz particulates at a concentration ≥ 1 %.

Classification

Physical Hazard: Not classified.

Health Hazard: Carcinogenicity Category 1
STOT, Repeated Exposure Category 1

Label Elements

Symbol



Signal Word

DANGER

Hazard Statement(s):

H350 May cause lung cancer.

H372 Causes damage to lungs through prolonged or repeated inhalation.

Precautionary Statement(s):

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P260 Do not breathe dust.

P264 Wash hands thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P280 Wear protective gloves, protective clothing, and eye protection.

P308 + P313 If exposed or concerned: Get medical attention.

P405 Store locked up.

P501 Dispose of contents and container according to local regulations.

Hazards Not Otherwise Classified: Not applicable.

Ingredients(s) with Unknown Acute Toxicity: Not applicable.

3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Substance: Soil, contaminated

Other Designations: Chromite ore processing residue, waste ore.

This material is naturally occurring soil contaminated with chromite ore processing residue which contains a trace amount of hexavalent chromium, a known human carcinogen. The hexavalent chromium contained in this material is below the OSHA threshold value for SDS information; 0.1 % for carcinogens. This material should be handled with care. Components are listed in compliance with OSHA's 29 CFR 1910.1200; for the actual values see the Certificate of Analysis.

| Hazardous Component(s) | CAS Number | EC Number (EINECS) | Nominal Mass Concentration (%) |
|------------------------------|---------------|--------------------|--------------------------------|
| Soil, powder contaminated | not available | not available | 100 |
| <i>Individual Components</i> | | | |
| Quartz | 14808-60-7 | 238-878-4 | >0.1 |
| Chromite | 1308-31-2 | 215-159-3 | 0.1055 |
| Hexavalent chromium | 18540-29-9 | not available | 0.0015 |

4. FIRST AID MEASURES

Description of First Aid Measures:

Inhalation: If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration or oxygen by qualified personnel. Seek immediate medical attention.

Skin Contact: Wash skin with soap and water.

Eye Contact: Flush eyes with water for at least 15 minutes. If necessary, seek medical attention.

Ingestion: If adverse effects occur after ingestion, seek medical treatment.

Most Important Symptoms/Effects, Acute and Delayed: May cause irritation.

Indication of any immediate medical attention and special treatment needed, if necessary: If any of the above symptoms are present, seek medical attention if needed.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Negligible fire hazard. Avoid generating dust. See Section 9, "Physical and Chemical Properties" for flammability properties.

Extinguishing Media:

Suitable: Use extinguishing media appropriate for surrounding fire.

Unsuitable: None listed.

Specific Hazards Arising from the Chemical: None listed.

Special Protective Equipment and Precautions for Fire-Fighters: Avoid inhalation of material or combustion byproducts. Wear full protective clothing and NIOSH approved self-contained breathing apparatus (SCBA).

NFPA Ratings (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health = 1

Fire = 0

Reactivity = 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: Any accumulated material on surfaces should be removed and properly disposed of. Use suitable protective equipment; see Section 8, "Exposure Controls and Personal Protection".

Methods and Materials for Containment and Clean up: Collect spilled material in appropriate container for disposal. Keep out of water supplies and sewers. Keep unnecessary people away, isolate hazard area and deny entry.

7. HANDLING AND STORAGE

Safe Handling Precautions: Minimize dust generation and accumulation on surfaces. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. See Section 8, “Exposure Controls and Personal Protection”.

Storage: Store and handle in accordance with all current regulations and standards.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

| Exposure Limits ^(a) | | | |
|--------------------------------|---|--|--|
| Components | OSHA (PEL) | ACGIH (TLV) | NIOSH (REL) |
| Finely powdered soil | 15 mg/m ³ (TWA, total particulates not otherwise regulated) 5 mg/m ³ (TWA, respirable particulates not otherwise regulated) | NOEL | 10 mg/m ³ (TWA, total particulates not otherwise regulated) 5 mg/m ³ (TWA, respirable particulates not otherwise regulated) |
| <i>Individual components</i> | | | |
| Quartz | (30)/(%SiO ₂ + 2) mg/m ³ (TWA) [total dust] (250)/(%SiO ₂ + 5) mppcf (TWA) [respirable fraction] (10)/(%SiO ₂ + 2) mg/m ³ (TWA) [respirable fraction] | 0.025 mg/m ³ (TWA) [respirable fraction] | 0.05 mg/m ³ (TWA) [respirable dust] 50 mg/m ³ (TWA) [respirable dust] |
| Chromium compounds | 5 mg/m ³ (TWA) | NOEL | 0.0002 mg/m ³ (TWA) as Cr (related to Chromium(VI) compounds) |
| Hexavalent chromium | 5 µg/m ³ (TWA) 2.5 µg/m ³ (Action Level) | NOEL | NOEL |

^(a) NOEL: No occupational exposure limits established.

Engineering Controls: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Personal Protection: In accordance with OSHA 29 CFR 1910.132, subpart I, wear appropriate Personal Protective Equipment (PPE) to minimize exposure to this material.

Respiratory Protection: If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

Eye/Face Protection: Wear splash resistant safety goggles with a face shield. An eye wash station should be readily available near areas of use.

Skin and Body Protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Chemical-resistant gloves should be worn at all times when handling chemicals.

9. PHYSICAL AND CHEMICAL PROPERTIES

Descriptive Properties

| | |
|--|------------------|
| Appearance (physical state, color, etc.): | amorphous powder |
| Molecular Formula: | not applicable |
| Molar Mass (g/mol): | not applicable |
| Odor: | not available |
| Odor threshold: | not available |
| pH: | not available |
| Evaporation rate: | not applicable |
| Melting point/freezing point (°C): | not available |
| Specific Gravity (water=1): | not available |
| Vapor Pressure (mmHg): | not applicable |
| Vapor Density (air = 1): | not applicable |
| Viscosity (cP): | not applicable |
| Solubility(ies): | not available |
| Partition coefficient (n-octanol/water): | not available |
| Particle Size: | respirable |

Thermal Stability Properties

| | |
|--|---------------|
| Autoignition Temperature (°C): | not available |
| Thermal Decomposition (°C): | not available |
| Initial boiling point and boiling range (°C): | not available |
| Explosive Limits, LEL (Volume %): | not available |
| Explosive Limits, UEL (Volume %): | not available |
| Flash Point (°C): | not available |
| Flammability (solid, gas): | not available |

10. STABILITY AND REACTIVITY

Reactivity: Stable at normal temperatures and pressure.

Stability: X Stable Unstable

Possible Hazardous Reactions: None listed.

Conditions to Avoid: Avoid generating dust.

Incompatible Materials: Bases, halogens, acids, metal salts, metals, oxidizing materials, and combustible materials.

Fire/Explosion Information: See Section 5, "Fire Fighting Measures".

Hazardous Decomposition: Thermal decomposition will produce oxides of carbon and miscellaneous decomposition products.

Hazardous Polymerization: Will Occur X Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Exposure: X Inhalation X Skin Ingestion

Symptoms Related to the Physical, Chemical and Toxicological Characteristics: Generated dust may cause irritation, if inhaled. May cause irritation, lung damage, silicosis, and cancer.

Potential Health Effects (Acute, Chronic and Delayed):

Inhalation: Generated dust may cause irritation. Chromite dust has produced pneumoconiosis. Inhalation of dust may cause coughing, sneezing, upper respiratory tract irritation, and lung damage. Chronic exposure to fine particles containing respirable quartz may result in lung damage, silicosis, and cancer.

Skin Contact: May cause mechanical irritation. Chromite dust has caused contact dermatitis and allergic reactions in previously exposed persons

Eye Contact: May cause mechanical irritation.

Ingestion: No data available.

Numerical Measures of Toxicity:

Acute Toxicity: Not classified, no data available.

Skin Corrosion/Irritation: Not classified; no data available.

Serious Eye damage/ Eye irritation: Not classified; no data available.

Respiratory Sensitization: Not classified; no data available.

Skin Sensitization: Not classified; no data available.

Germ Cell Mutagenicity: Not classified.

Carcinogenicity: Category 1

Listed as a Carcinogen/Potential Carcinogen X Yes No

Silica, crystalline (as respirable dust) is listed by IARC and NTP as a human carcinogen. Silica, crystalline is not listed by OSHA as a designated carcinogen.

Soil and Chromite are not listed by NTP, IARC or OSHA as a carcinogen. NTP lists hexavalent chromium as "known human carcinogen (related to Chromium (VI) compounds as; IARC lists hexavalent chromium in Group 1 (carcinogen to humans) (Chromium (VI) compounds). OSHA lists hexavalent chromium as "cancer hazard" (see 29 CFR 1910.1026)

Reproductive Toxicity: Not classified; no data available.

Specific Target Organ Toxicity, Single Exposure: Not classified; no data available.

Specific Target Organ Toxicity, Repeated Exposure: Category 1

Cumulative exposure to silica dust may result in reduced lung capacity and silicosis.

Aspiration Hazard: Not classified; no data available.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data: No data available.

Persistence and Degradability: No data available.

Bioaccumulative Potential: No data available.

Mobility in Soil: No data available.

Other Adverse effects: No data available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose of waste in accordance with all applicable federal, state, and local regulations.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: Not regulated by DOT or IATA.

15. REGULATORY INFORMATION

U.S. Regulations:

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.

SARA Title III Section 302 (40 CFR 355.30): Not regulated.

SARA Title III Section 304 (40 CFR 355.40): Not regulated.

SARA Title III Section 313 (40 CFR 372.65): Not regulated.

OSHA Process Safety (29 CFR 1910.119): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE HEALTH: No.
CHRONIC HEALTH: Yes.
FIRE: No.
REACTIVE: No.
PRESSURE: No.

State Regulations:

California Proposition 65: WARNING! This product contains a chemical known to the state of California to cause cancer (chromium and quartz) and reproductive/developmental effects (chromium).

U.S. TSCA Inventory: Chromite and quartz are listed.

TSCA 12(b), Export Notification: Not listed.

Canadian Regulations: WHMIS Information is not provided for this material.

16. OTHER INFORMATION

Issue Date: 13 March 2019

Sources: ChemADVISOR, Inc., SDS *Chromite*, 09 December 2015.

ChemADVISOR, Inc., SDS *Chromium (VI) Ion*, 09 December 2015.

ChemADVISOR, Inc., SDS *Quartz*, 09 December 2015.

29 CFR Occupational Health and Safety Office (OSHA) 1910.1000, *Limits for Air Contaminants*, Table Z-1; available at

https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9992 (accessed Mar 2019).

Key of Acronyms:

| | | | |
|--------|---|-------|--|
| ACGIH | American Conference of Governmental Industrial Hygienists | NRC | Nuclear Regulatory Commission |
| ALI | Annual Limit on Intake | NTP | National Toxicology Program |
| CAS | Chemical Abstracts Service | OSHA | Occupational Safety and Health Administration |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act | PEL | Permissible Exposure Limit |
| CFR | Code of Federal Regulations | RCRA | Resource Conservation and Recovery Act |
| DOT | Department of Transportation | REL | Recommended Exposure Limit |
| EC50 | Effective Concentration, 50 % | RM | Reference Material |
| EINECS | European Inventory of Existing Commercial Chemical Substances | RQ | Reportable Quantity |
| EPCRA | Emergency Planning and Community Right-to-Know Act | RTECS | Registry of Toxic Effects of Chemical Substances |
| IARC | International Agency for Research on Cancer | SARA | Superfund Amendments and Reauthorization Act |
| IATA | International Air Transport Association | SCBA | Self-Contained Breathing Apparatus |
| IDLH | Immediately Dangerous to Life and Health | SRM | Standard Reference Material |
| LC50 | Lethal Concentration, 50 % | STEL | Short Term Exposure Limit |
| LD50 | Lethal Dose, 50 % | TLV | Threshold Limit Value |
| LEL | Lower Explosive Limit | TPQ | Threshold Planning Quantity |
| MSDS | Material Safety Data Sheet | TSCA | Toxic Substances Control Act |
| NFPA | National Fire Protection Association | TWA | Time Weighted Average |
| NIOSH | National Institute for Occupational Safety and Health | UEL | Upper Explosive Limit |
| NIST | National Institute of Standards and Technology | WHMIS | Workplace Hazardous Materials Information System |

Disclaimer: Physical and chemical data contained in this SDS are provided only for use in assessing the hazardous nature of the material. The SDS was prepared carefully, using current references; however, NIST does not certify the data in the SDS. The certified values for this material are given in the NIST Certificate of Analysis.

Users of this SRM should ensure that the SDS in their possession is current. This can be accomplished by contacting the SRM Program: telephone (301) 975-2200; fax (301) 948-3730; e-mail srmmsds@nist.gov; or via the Internet at <https://www.nist.gov/srm>.