

AMMONIUM DICHROMATE

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1. Product Identification

Synonyms: Dichromic acid, diammonium salt; ammonium bichromate

CAS No.: 7789-09-5

Molecular Weight: 252.07

Chemical Formula: $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$

Product Codes: CHEM-062 and others

2. Composition/Information on Ingredients

| Ingredient | CAS No | Percent | Hazardous |
|---------------------|-----------|-----------|-----------|
| Ammonium Dichromate | 7789-09-5 | 99 - 100% | Yes |

3. Hazards Identification

Emergency Overview

DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE A FIRE. CORROSIVE. CAUSES SEVERE BURNS TO EVERY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED. AFFECTS THE RESPIRATORY SYSTEM, LIVER, KIDNEYS, EYES, SKIN AND BLOOD. MAY CAUSE ALLERGIC REACTION. CANCER HAZARD. CAN CAUSE CANCER. Risk of cancer depends on duration and level of exposure.

SAF-T-DATA^(tm) Ratings

Health Rating: 4 - Extreme (Cancer Causing)

Flammability Rating: 1 - Slight

Reactivity Rating: 3 - Severe (Oxidizer)

Contact Rating: 3 - Severe (Life)

Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES

Storage Color Code: Yellow (Reactive)

Potential Health Effects

Inhalation:

Corrosive. Extremely destructive to tissues of the mucous membranes and upper respiratory tract. May cause ulceration and perforation of the nasal septum. Symptoms may include sore throat, coughing, shortness of breath, and labored breathing. May produce pulmonary sensitization or allergic asthma. Higher exposures may cause pulmonary edema.

Ingestion:

Corrosive. Swallowing can cause severe burns of the mouth, throat, and stomach, leading to death. Can cause sore throat, vomiting, diarrhea. May cause violent gastroenteritis, peripheral vascular collapse, dizziness, intense thirst, muscle cramps, shock, coma, abnormal bleeding, fever, liver damage and acute renal failure.

Skin Contact:

Corrosive. Symptoms of redness, pain, and severe burn can occur. Dusts and strong solutions may cause severe irritation. Contact with broken skin may cause ulcers (chrome sores) and absorption, which may cause systemic poisoning, affecting kidney and liver functions. May cause skin sensitization.

Eye Contact:

Corrosive. Contact can cause blurred vision, redness, pain and severe tissue burns. May cause corneal injury or blindness.

Chronic Exposure:

Repeated or prolonged exposure can cause ulceration and perforation of the nasal septum, respiratory irritation, liver and kidney damage and ulceration of the skin. Ulcerations at first may be painless, but may penetrate to the bone producing "chrome holes." Known to be a human carcinogen.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders, asthma, allergies or known sensitization to chromic acid or chromates may be more susceptible to the effects of this material.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion:

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

Autoignition temperature: 225°C (437°F)

Combustible solid. Fire is possible at temperatures above decomposition 180C (356F) or by contact with an ignition source. Decomposition is self-sustaining above 225C (437F) with swelling, release of heat and nitrogen gas, and residue of green chromic oxide.

Explosion:

Contact with oxidizable substances may cause extremely violent combustion. Closed containers exposed to heat may explode.

Fire Extinguishing Media:

Use flooding amounts of water. Do not use dry chemical, carbon dioxide or Halon. Water spray may be used to keep fire exposed containers cool. Do not allow water runoff to enter sewers or waterways.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Closed containers readily rupture at decomposition temperature.

6. Accidental Release Measures

Only specially trained or qualified personnel should handle the emergency. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8.

Spills: Clean up spills in a manner that does not disperse dust into the air. Pick up spill for recovery or disposal and place in a closed container. Keep away from paper and wood products. If wet, slowly reduce with ferrous sulfate and acid, neutralize and package residue for disposal. Do not return spilled material to original container. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Protect against physical damage. Store in a dry location separate from combustible, organic or other readily oxidizable materials. Avoid storage on wood floors. Remove and dispose of any spilled dichromates; do not return to original containers. Wear special protective equipment (Sec. 8) for maintenance break-in or where exposures may exceed established exposure levels. Wash hands, face, forearms and neck when exiting restricted areas. Shower, dispose of outer clothing, change to clean garments at the end of the day. Avoid cross-contamination of street clothes. Wash hands before eating and do not eat, drink, or smoke in workplace. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

OSHA Permissible Exposure Limit (PEL):

For chromic acid and chromates, as $\text{CrO}_3 = 0.1 \text{ mg/m}^3$ (ceiling)

ACGIH Threshold Limit Value (TLV):

For water-soluble Cr(VI) compounds, as Cr = 0.05 mg/m^3 (TWA), A1 - confirmed human carcinogen.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter.

For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. (Natural rubber).

Eye Protection:

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Bright, orange-red crystals.

Odor:

Odorless.

Solubility:

36.4 g/100 g water @ 20°C (68°F)

Specific Gravity:

2.15

pH:

1% sol. = 3.95 10% sol. = 3.45

% Volatiles by volume @ 21°C (70°F):

0

Boiling Point:

Not applicable.

Melting Point:

180°C (356°F) Decomposes.

Vapor Density (Air=1):

8.7

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage. Can react explosively when in contact with certain organic substances.

Hazardous Decomposition Products:

Burning may produce chrome oxides. Burning may produce ammonia, nitrogen oxides.

Hazardous Polymerization:

Will not occur. Ammonia released due to decomposition forms flammable mixtures in air between 16% and 25%.

Incompatibilities:

Reducing agents, combustibles, organic materials, strong acids, alcohols, ethylene glycol, carbide, hydrazine, potassium chlorate, sodium nitrite and water. Avoid readily oxidizable substances, such as paper, wood, sulfur, aluminum, plastics, etc.

Conditions to Avoid:

Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

Investigated as a tumorigen and mutagen.

| Ingredient | Cancer Lists NTP Carcinogen | | IARC Category |
|---------------------------------|--------------------------------|-------------|---------------|
| | Known | Anticipated | |
| Ammonium Bichromate (7789-09-5) | Yes | No | 1 |

12. Ecological Information

Environmental Fate:

When released into the soil, this material may leach into groundwater. When released into water, this material is not expected to evaporate significantly. This material may bioaccumulate to some extent. When released into the air, this material may be removed from the atmosphere to a moderate extent by wet deposition.

Environmental Toxicity:

This material is expected to be toxic to aquatic life.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: RQ, AMMONIUM DICHROMATE

Hazard Class: 5.1

UN/NA: UN1439

Packing Group: II

Information reported for product/size: 12KG

International (Water, I.M.O.)

Proper Shipping Name: AMMONIUM DICHROMATE

Hazard Class: 5.1

UN/NA: UN1439

Packing Group: II

Information reported for product/size: 12KG

15. Regulatory Information

| Ingredient | Chemical Inventory Status - Part 1 | | | |
|---------------------------------|------------------------------------|-----|-------|-----------|
| | TSCA | EC | Japan | Australia |
| Ammonium Dichromate (7789-09-5) | Yes | Yes | Yes | Yes |

Chemical Inventory Status - Part 2

Canada

| Ingredient | Korea | DSL | NDSL | Phil. |
|---------------------------------|-------|-----|------|-------|
| Ammonium Dichromate (7789-09-5) | Yes | Yes | No | Yes |

Federal, State & International Regulations - Part 1

SARA 302 SARA 313

| Ingredient | RQ | TPQ | List | Chemical Catg. |
|---------------------------------|----|-----|------|----------------|
| Ammonium Dichromate (7789-09-5) | No | No | No | Chromium comp. |

Federal, State & International Regulations - Part 2

RCRA TSCA

| Ingredient | CERCLA | 261.33 | 8(d) |
|---------------------------------|--------|--------|------|
| Ammonium Dichromate (7789-09-5) | 10 | No | No |

Chemical Weapons Convention: No TSCA 12(b): No CDTA: Yes

SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No

Reactivity: Yes (Pure / Solid)

WARNING:

THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

Australian Hazchem Code: 2X

Poison Schedule: S6

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 3 Flammability: 1 Reactivity: 1 Other: **Oxidizer**

Label Hazard Warning:

DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE A FIRE. CORROSIVE. CAUSES SEVERE BURNS TO EVERY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED. AFFECTS THE RESPIRATORY SYSTEM, LIVER, KIDNEYS, EYES, SKIN AND BLOOD. MAY CAUSE ALLERGIC REACTION. CANCER HAZARD. CAN CAUSE CANCER. Risk of cancer depends on duration and level of exposure.

Label Precautions:

Keep from contact with clothing and other combustible materials.

Do not store near combustible materials.

Do not get in eyes, on skin, or on clothing.

Do not breathe dust or mist from solutions.

Store in a tightly closed container.

Keep container closed.

Use only with adequate ventilation.

Remove and wash contaminated clothing promptly.

Wash thoroughly after handling.

Label First Aid:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. In all cases get medical attention immediately.

Product Use:

Laboratory Reagent and Consumer Hobby

Revision Information:

No Changes.

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