School Material Safety Data Sheet

Genium Publishing Corporation
1145 Catalyn Street
Schenectady, NY 12303-1836 USA
(518) 377-8855

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AMMONIUM DICHROMATE
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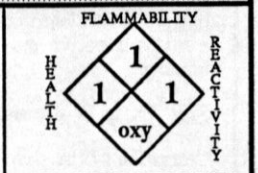
SECTION 1. INTRODUCTORY INFORMATION

MATERIAL NAME AND FORMULA: AMMONIUM DICHROMATE, $(NH_4)_2Cr_2O_7$
SYNONYMS: Ammonium Bichromate, Dichromaic Acid; Diammonium Salt
CAS NUMBER: 7789-09-5
INGREDIENTS: Ammonium dichromate, >99.7% (Tech. Grade, US Spec.)
DOT CLASSIFICATION: Oxidizer
EPA CLASSIFICATION: Hazardous Substance/Waste (No. D007)
MANUFACTURER: Always request Material Safety Data Sheets from your chemical supplier. These should indicate the manufacturer of the substance and include an emergency phone number to call. The Manufacturers section of this book contains a listing of some of the larger manufacturers, and available emergency numbers.



NFPA FIRE HAZARD SYMBOL
(See Glossary for details)

DESCRIPTION: Bright orange crystals or powder. Odorless.

PRELIMINARY INFORMATION: A chemical typically used in chemical change experiements or demonstrations in Chemistry classes. A dangerous fire hazard, potential mutagen, and possible carcinogen (see sect. 4). This material should not be used in schools if alternatives can be found to meet the necessary educational objectives. If the use is deemed necessary, keep amounts to a minimum and use with great caution.

SECTION 2. USE AND STORAGE INFORMATION

-- PRELIMINARY PLANNING CONSIDERATIONS --

- Safety glasses or goggles and protective clothing (rubberized apron, etc.) should be worn for all experiments.
- Be sure eyewash station and safety shower are in good working order and readily available.
- For safety, contact lenses should not be worn in the laboratory. Soft lenses may absorb and all lenses may concentrate irritants. Particles may adhere to contact lenses and cause corneal damage.
- Always provide for safe disposal of all chemical waste generated in the lab. Check applicable regulations prior to use.
- Eliminate all possible sources of ignition. Nearby electrical service and equipment should be explosion proof (no spark-generation potential).
- Material will ignite if exposed to sparks, flames, or excessive heat (225°C).
- Whenever possible, substitute less hazardous materials.
- Dangerous fire hazard - may explode in contact with organic materials such as paper, wood, sulfur, combustible solvents, etc.

-- USAGE PRECAUTIONS AND PROCEDURES --

- READ THE LABEL and follow all precautions.
- Maintain good housekeeping practices to avoid unintentional mixing with incompatible materials.
- Corrosive - prevent contact with skin and eyes.
- After working with this material, always wash hands and face before eating, drinking, or smoking.
- No smoking in storage or use area.

-- ADDITIONAL INFORMATION --

- This material does not polymerize. It is stable at room temperature under normal conditions of storage.
- Not recommended for use or storage in schools without an absolute need being determined. Use for demonstration purposes only, if at all. N.Y. State Education Dept. Manual of Safety and Health Hazards (ref. #511) recommends removal from schools if safer alternatives can be found.
- Ammonium dichromate is an oxidizer; incompatible with easily oxidizable materials.

-- PREFERRED STORAGE LOCATION AND METHODS --

- Storage area should be cool and well ventilated. Containers should be tightly closed.
- Do not store chemicals alphabetically by name; store by chemical family instead to keep compatibles together.
- All chemical containers should be protected from physical damage and kept out of direct sunlight.
- Purchase only amounts equivalent to one year's needs, if at all.
- Should be stored in approved FLAMMABLES cabinet away from sources of ignition and easily oxidizable substances.
- Smoking should not be permitted in areas where chemicals are stored..
- Not recommended for use or storage in schools without an absolute need being determined.

SECTION 3. SPILLS & DISPOSAL PROCEDURES

IF MATERIAL IS SPILLED:
- Carefully scoop up spilled powder (avoid dust generation).
- Mop up residue with water.
- Classified as an EPA Hazardous substance; see disposal information below.
- Clean-up personnel should have protection against inhalation of dust or mists and skin or eye contact.

DISPOSAL OF SMALL QUANTITIES:
- Waste containing this material may require disposal as a hazardous waste in an approved chemical waste landfill. Follow all applicable regulations.

DISPOSAL OF LARGER AMOUNTS: Contact a licensed disposal company.

*** FOLLOW ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS FOR ALL WASTE DISPOSAL ***

MATERIAL NAME: AMMONIUM DICHROMATE SHEET NO: 107

SECTION 4: HEALTH HAZARDS

- Current ACGIH TLV: 8-hr. TWA: (0.5 mg/m^3) as Cr VI, water soluble.

- Current OSHA PEL is 0.1 mg/m^3 as a ceiling value.

- NIOSH recommends a TWA of 25 $\mu g/m^3$ and a ceiling of 50 $\mu g/m^3$ as Cr VI.

- Inhalation of bichromate dusts and mists can cause irritation of the nose, throat, bronchial tubes and lungs. Prolonged or repeated exposure may result in ulceration and perforation of the nasal septum. Kidney and liver damage have also been reported.

- Skin contact is also associated with both contact dermatitis and allergic skin rashes.

- Ulceration of the skin ("chrome ulcers") may also occur, especially if the skin is broken.

- Increased incidences of respiratory cancers have been reported in the chromate-producing industry. In its 1975 Criteria Document on Chromium (VI), NIOSH identified ammonium dichromate as a "noncarcinogenic chromium (VI)."

- The International Agency for Research on Cancer (IARC) has classified "chromium and certain chromium compounds" as being carcinogenic to humans. The specific chromium compounds responsible for the carcinogenic effects are not identified.

SECTION 5: FIRST AID PROCEDURES

Eye contact:
- Flush eyes promptly with plenty of running water for at least 15 minutes, including under the eyelids.
- Get prompt medical attention.*

Skin contact:
- Wash exposed areas of skin with soap and water.
- Remove contaminated clothing promptly.
- Get medical help when area of skin exposure is large or if irritation persists.*

Inhalation:
- Remove patient to fresh air; restore and/or support breathing as necessary.
- Get medical help for coughing or breathing difficulty.*

Ingestion:
- Get prompt medical attention.
- Give three glasses of water to drink.
- If medical help is not immediately available, induce vomiting -- but ONLY if victim is conscious and alert.*
- Never give anything by mouth to a person who is unconscious or convulsing.

* Get medical help (in school, paramedic, community) for further treatment, observation, and support after first aid.

SECTION 6: FIRE PROCEDURES AND DATA

- Water can be used as an extinguishing agent. Prevent runoff to sewers.
- Material will ignite if exposed to sparks, flames, or heat above 225°C. If the material is confined in a closed container, internal gas pressure and heat from decomposition can cause container to rupture or explode.
- For major fires, or if large quantities of this material are involved, fire fighters should wear appropriate protective clothing and use respiratory protection. Self-contained breathing apparatus is recommended.
- A water spray may be used to cool fire-exposed containers and disperse vapors.

THERMAL DECOMPOSITION PRODUCTS: Nitrogen, steam and perhaps ammonia. (Decomposition begins at 170°C and is self sustaining above 235°C.)

FLASH POINT AND METHOD(S) ... Not Applicable
AUTOIGNITION TEMPERATURE ... 225°C
FLAMMABILITY LIMITS IN AIR (vol. %) :
Lower ... Not Applicable **Upper ...** Not Applicable

SECTION 7: PHYSICAL DATA

BOILING POINT (@ 1 atm.) ... 170°C (Decomposes)
DENSITY @ 25°C ... 2.15
SOLUBILITY IN WATER (@ 15°C) ... 30.8 g/100cc (@ 30°C ... 89 g/100cc)
pH OF AQUEOUS SOLUTION (1%) ... 3.9
FORMULA WEIGHT ... 252.06

DATA SOURCES: Genium's Industrial MSDS #129 (12/85) and references 2, 12, 19, 25, 27, 57, 58, 503, 505, 509, 510, 511, 518.
(see glossary for titles)

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Approvals: Author J. Bates
Indust. Hygiene/Safety
Medical Review M/HARRISON