

Chemical Safety Data Sheet MSDS / SDS

Ammonium dichromate SDS

Revision Date:2024-04-25 Revision Number:1

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SECTION 1: Identification of the substance/mixture and of the company/undertaking**Product identifier**

Product name: Ammonium dichromate

CAS: 7789-09-5

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: For R&D use only. Not for medicinal, household or other use.

Uses advised against: none

Company Identification

Company: Chemicalbook.in

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SECTION 2: Hazards identification**Classification of the substance or mixture**

Oxidizing solids, Category 2

Acute toxicity - Category 3, Oral

Acute toxicity - Category 4, Dermal
Skin corrosion, Sub-category 1B
Skin sensitization, Category 1
Acute toxicity - Category 2, Inhalation
Respiratory sensitization, Category 1
Germ cell mutagenicity, Category 1B
Carcinogenicity, Category 1B
Specific target organ toxicity - repeated exposure, Category 1
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1
Reproductive toxicity, Category 1B

GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H272 May intensify fire; oxidizer
H301 Toxic if swallowed
H312 Harmful in contact with skin
H314 Causes severe skin burns and eye damage
H317 May cause an allergic skin reaction
H330 Fatal if inhaled
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
H340 May cause genetic defects
H350 May cause cancer
H372 Causes damage to organs through prolonged or repeated exposure
H410 Very toxic to aquatic life with long lasting effects

Precautionary statement(s)

Prevention

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P220 Keep away from clothing and other combustible materials.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P264 Wash ... thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P272 Contaminated work clothing should not be allowed out of the workplace.
P271 Use only outdoors or in a well-ventilated area.
P284 [In case of inadequate ventilation] wear respiratory protection.
P203 Obtain, read and follow all safety instructions before use.
P273 Avoid release to the environment.

Response

P370+P378 In case of fire: Use ... to extinguish.
P301+P316 IF SWALLOWED: Get emergency medical help immediately.
P321 Specific treatment (see ... on this label).
P330 Rinse mouth.
P302+P352 IF ON SKIN: Wash with plenty of water/...
P317 Get medical help.
P362+P364 Take off contaminated clothing and wash it before reuse.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P363 Wash contaminated clothing before reuse.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P316 Get emergency medical help immediately.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+P317 If skin irritation or rash occurs: Get medical help.
P320 Specific treatment is urgent (see ... on this label).
P342+P316 If experiencing respiratory symptoms: Get emergency medical help immediately.
P318 IF exposed or concerned, get medical advice.
P319 Get medical help if you feel unwell.
P391 Collect spillage.

Storage

P405 Store locked up.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.

Disposal

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	Ammonium dichromate
Common names and synonyms:	Ammonium dichromate
CAS number:	7789-09-5
EC number:	232-143-1
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Half-upright position. Artificial respiration may be needed. Refer for medical attention.

Following skin contact

First rinse with plenty of water for at least 15 minutes, then remove contaminated clothes and rinse again. Refer for medical attention .

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Rinse mouth. Do NOT induce vomiting. Give one or two glasses of water to drink. Refer for medical attention .

Most important symptoms/effects, acute and delayed

Inhalation causes irritation or ulceration of the mucous membranes of the nose, throat or respiratory tract. Respiratory irritation can produce symptoms resembling those of asthma. Continuing irritation of the nose may lead to perforation of the nasal septum. External contact can cause eye irritation and conjunctivitis, irritation and ulceration of skin wounds, and rash or external ulcers. If

ingested, irritates mucous membrane and causes vomiting. (USCG, 1999)

Indication of immediate medical attention and special treatment needed, if necessary

We report the ingestion of ammonium dichromate by a child that resulted in multiple-organ-system failure and death. Exchange transfusion and hemodialysis were ineffective in removing significant amounts of chromium or causing sustained clinical improvement. We suggest that immediate, large doses of the reducing agent ascorbic acid would allow effective reduction of hexavalent chromium with less cellular toxicity.

SECTION 5: Firefighting measures

Suitable extinguishing media

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Specific hazards arising from the chemical

Special Hazards of Combustion Products: Greenish chromic oxide smoke may cause irritation of lungs and mucous membranes. Behavior in Fire: Decomposes at about 180°C. Decomposition self-sustaining at about 225°C with spectacular swelling and evolution of heat and nitrogen, leaving chromic oxide residue. Pressure of confined gases can burst closed containers explosively. (USCG, 1999)

Special protective actions for fire-fighters

In case of fire in the surroundings, use appropriate extinguishing media. In case of fire: keep drums, etc., cool by spraying with water. Combat fire from a sheltered position.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal protection: complete protective clothing including self-contained breathing apparatus. Sweep spilled substance into covered non-combustible containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations. Do NOT absorb in saw-dust or other combustible absorbents. Do NOT let this chemical enter the environment.

Environmental precautions

Personal protection: complete protective clothing including self-contained breathing apparatus. Sweep spilled substance into

covered non-combustible containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations. Do NOT absorb in saw-dust or other combustible absorbents. Do NOT let this chemical enter the environment.

Methods and materials for containment and cleaning up

ACCIDENTAL RELEASE MEASURES: Personal precautions, protective equipment and emergency procedures: Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust; Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided; Methods and materials for containment and cleaning up: Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wetbrushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

Precautions for safe handling

NO contact with combustible substances. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

Conditions for safe storage, including any incompatibilities

Fireproof. Provision to contain effluent from fire extinguishing. Separated from organic solvents, combustible substances and reducing agents. Well closed. Store in an area without drain or sewer access. Keep container tightly closed in a dry and well-ventilated place.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: (as Cr(VI), inhalable fraction): 0.0002 mg/m³, as TWA; 0.0005 mg/m³ as STEL; A1 (confirmed human carcinogen); (skin); (DSEN); (RSEN).EU-OEL: (as Cr): 0.1 mg/m³ as TWA

Biological limit values

no data available

Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear face shield or eye protection in combination with breathing protection.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use closed system or ventilation.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Solid. Crystalline.
Colour:	Orange/red.
Odour:	Odorless
Melting point/freezing point:	170°C
Boiling point or initial boiling point and boiling range:	no data available
Flammability:	Not combustible but enhances combustion of other substances.
Lower and upper explosion limit/flammability limit:	Combustible solid

Flash point:	no data available
Auto-ignition temperature:	437° F (USCG, 1999)
Decomposition temperature:	180° C
pH:	1% solution has pH of 3.95; 10% solution has pH of 3.45
Kinematic viscosity:	no data available
Solubility:	35.6 g/100 g water at 20 deg C
Partition coefficient n-octanol/water:	no data available
Vapour pressure:	no data available
Density and/or relative density:	Ca. 2.15.
Relative vapour density:	8.7 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

250 mg/cu m (as Cr(II)). Chromium(II) compounds (as Cr)

25 mg/cu m (as Cr(III)). Chromium(III) compounds (as Cr)

15 mg/cu m (as Cr(VI)). Chromic acid and chromates

NIOSH considers chromic acid and chromates to be potential occupational carcinogens. Chromic acid and chromates

May explode on heating. The substance is a strong oxidant. It reacts with combustible and reducing materials. The solution in water is a weak acid. Reacts violently with organic solvents.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

Moderately flammable. It is an oxidizing reagent, it readily reacts with reducing materials, in large quantity it may produce a violent reaction. Direct exposure to heat or shock will explode it. When heated to decomposition it emits toxic fumes of ammonia and nitrogen oxides [Sax, 9th ed., 1996, p. 205].

Conditions to avoid

no data available

Incompatible materials

Incompatible materials: Strong reducing agents, alcohols, strong acids. Do not store near acids.

Hazardous decomposition products

Thermal decomposition is initiated by locally heating to 190 deg C, and flame spreads rapidly through the mass.

SECTION 11: Toxicological information

Acute toxicity

Oral: no data available

Inhalation: no data available

Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

WEIGHT OF EVIDENCE CHARACTERIZATION: Under the current guidelines (1986), Cr(VI) is classified as Group A - known human carcinogen by the inhalation route of exposure. Carcinogenicity by the oral route of exposure cannot be determined and is classified as Group D. Under the proposed guidelines (1996), Cr(VI) would be characterized as a known human carcinogen by the inhalation route of exposure on the following basis. Hexavalent chromium is known to be carcinogenic in humans by the inhalation route of exposure. Results of occupational epidemiological studies of chromium-exposed workers are consistent across investigators and study populations. Dose-response relationships have been established for chromium exposure and lung cancer. Chromium-exposed workers are exposed to both Cr(III) and Cr(VI) compounds. Because only Cr(VI) has been found to be carcinogenic in animal studies, however, it was concluded that only Cr(VI) should be classified as a human carcinogen. Animal data are consistent with the human carcinogenicity data on hexavalent chromium. Hexavalent chromium compounds are carcinogenic in animal bioassays, producing the following tumor types: intramuscular injection site tumors in rats and mice, intrapleural implant site tumors for various Cr(VI) compounds in rats, intrabronchial implantation site tumors for various Cr(VI) compounds in rats and subcutaneous injection site sarcomas in rats. In vitro data are suggestive of a potential mode of action for hexavalent chromium carcinogenesis. Hexavalent chromium carcinogenesis may result from the formation of mutagenic oxidative DNA lesions following intracellular reduction to the trivalent form. Cr(VI) readily passes through cell membranes and is rapidly reduced intracellularly to generate reactive Cr(V) and Cr(IV) intermediates and reactive oxygen species. A number of potentially mutagenic DNA lesions are formed during the reduction of Cr(VI). Hexavalent chromium is mutagenic in bacterial assays, yeasts and V79 cells, and Cr(VI) compounds decrease the fidelity of DNA synthesis in vitro and produce unscheduled DNA synthesis as a consequence of DNA damage. Chromate has been shown to transform both primary cells and cell lines. **HUMAN CARCINOGENICITY DATA:** Occupational exposure to chromium compounds has been studied in the chromate production, chromeplating and chrome pigment, ferrochromium production, gold mining, leather tanning and chrome alloy production industries. Workers in the chromate industry are exposed to both trivalent and hexavalent compounds of chromium. Epidemiological studies of chromate production plants in Japan, Great Britain, West Germany, and the United States have revealed a correlation between occupational exposure to chromium and lung cancer, but the specific form of chromium responsible for the induction of cancer was not identified ... Studies of chrome pigment workers have consistently demonstrated an association between occupational chromium exposure (primarily Cr(VI)) and lung cancer. Several studies of the chromeplating industry have demonstrated a positive relationship between cancer and exposure to chromium compounds. **ANIMAL CARCINOGENICITY DATA:** Animal data are consistent with the findings of human epidemiological studies of hexavalent chromium ... Chromium (VI)

Reproductive toxicity

no data available

STOT-single exposure

The substance is corrosive to the eyes, skin and respiratory tract. Corrosive on ingestion. The substance may cause effects on the kidneys and liver. This may result in tissue lesions.

STOT-repeated exposure

Repeated or prolonged contact may cause skin sensitization. Repeated or prolonged inhalation may cause asthma. Repeated or prolonged inhalation may cause nasal ulceration. This may result in perforation of the nasal septum. The substance may have effects on the kidneys. This may result in kidney impairment. This substance is carcinogenic to humans. Animal tests show that this substance possibly causes toxicity to human reproduction or development.

Aspiration hazard

A harmful concentration of airborne particles can be reached quickly when dispersed.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: no data available

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: 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

SECTION 13: Disposal considerations

Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

UN Number

ADR/RID: UN1439 (For reference only, please check.)

IMDG: UN1439 (For reference only, please check.)

IATA: UN1439 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: AMMONIUM DICHROMATE (For reference only, please check.)

IMDG: AMMONIUM DICHROMATE (For reference only, please check.)

IATA: AMMONIUM DICHROMATE (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 5.1 (For reference only, please check.)

IMDG: 5.1 (For reference only, please check.)

IATA: 5.1 (For reference only, please check.)

Packing group, if applicable

ADR/RID: II (For reference only, please check.)

IMDG: II (For reference only, please check.)

IATA: II (For reference only, please check.)

Environmental hazards

ADR/RID: Yes

IMDG: Yes

IATA: Yes

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

EC Inventory

Listed.

United States Toxic Substances Control Act (TSCA) Inventory

Listed.

China Catalog of Hazardous chemicals 2015

Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Listed.

Korea Existing Chemicals List (KECL)

Listed.

SECTION 16: Other information

Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

References

IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>

HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>

IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>

ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website:
<http://www.phmsa.dot.gov/hazmat/library/erg>

Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>

ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

Other Information

Do NOT take working clothes home. Rinse contaminated clothing with plenty of water because of fire hazard. Anyone who has shown symptoms of asthma due to this substance should avoid all further contact. The symptoms of asthma often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential. Depending on the degree of exposure, periodic medical examination is suggested.

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any