

SECTION-1: Identification of the substance / mixture and the company / undertaking

Catalogue Number	CS-T-72422
Product Name	Chromic Acid
CAS No.	7738-94-5
Category	API
Synonyms	Not available
Brand	Clearsynth Labs Ltd.
Identified uses	Laboratory Chemicals
Uses advised against	Not available
Company	Clearsynth Labs Ltd. Mumbai, India
Emergency Phone #	+91-22-245045900
REACH No.	Not available

SECTION 2: Hazards identification

Disclaimer: This is sample MSDS. Please email sales@clearsynth.com for more details.

2.1 Classification of the substance or mixture-Regulation (EC) No 1272/2008:

Acute toxicity (Category 4)

2.2 Label Elements

Signal Word: Warning



Hazard Statement(s)

Code	Statement
H271	Not available
H300	Not available
H301	Not available
H310	Not available

H314	Not available
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H330	Not available
H334	Not available
H340	Not available
H341	Not available
H350	Not available
H361	Not available
H372	Not available
H400	Not available
H410	Not available
H311	Not available
H312	Harmful in contact with skin.

Precautionary Statement(s)

Code	Statement
P203	Not available
P210	Not available
P220	Not available
P233	Not available
P260	Not available
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P262	Not available
P264	Wash hands thoroughly after handling.
P264+P265	Not available
P270	Not available
P271	Use only outdoors or in a well-ventilated area.
P272	Not available
P273	Not available

P280	Wear protective gloves/protective clothing/eye protection/face protection.
P283	Not available
P284	Not available
P301+P316	Not available
P301+P330+P331	Not available
P302+P352	IF ON SKIN: Wash with plenty of water and soap.
P302+P361+P354	Not available
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P354+P338	Not available
P306+P360	Not available
P316	Not available
P317	Not available
P318	Not available
P319	Get medical help if you feel unwell.
P320	Not available
P321	Specific treatment (see ... on this label).
P330	Not available
P333+P317	Not available
P342+P316	Not available
P361+P364	Not available
P362+P364	Take off contaminated clothing and wash it before reuse.
P363	Not available
P370+P378	Not available
P371+P380+P375	Not available
P391	Not available
P403	Not available
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P420	Not available
P501	Dispose of contents/container in accordance with local/regional/national/international regulation

SECTION 3: Composition / information on ingredients

3.1 Substance

Component : Chromic Acid

CAS Number : 7738-94-5

Molecular Formula : Not available

Molecular Weight : Not available

Parent Chemical : Not available

Synonyms : Not available

Concentration : Not available

SECTION 4: First aid measures

SECTION 4: First-aid measures

4.1 Description of first aid measures

General advice: Seek medical attention. Show this SDS to the physician. Remove contaminated clothing and shoes.

Inhalation: Move person to fresh air. If breathing is difficult, seek medical attention. If not breathing, provide artificial respiration by trained personnel and obtain immediate medical attention.

Skin contact: Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing. Seek medical attention.

Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing and obtain immediate medical attention.

Ingestion: Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Obtain immediate medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Corrosive; causes severe skin burns and eye damage. May cause respiratory irritation and damage if inhaled. May cause gastrointestinal burns if swallowed. Additional symptoms/effects: Not available.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically. Special treatment: Not available.

SECTION 5: Firefighting measures

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media: Use extinguishing media appropriate for surrounding fire (e.g., water spray, dry chemical, foam, carbon dioxide).

Unsuitable extinguishing media: Not available.

5.2 Special hazards arising from the substance or mixture

Oxidizing and corrosive material. May intensify fire; oxidizer. Thermal decomposition may produce hazardous fumes/vapors (chromium compounds/oxides). Specific decomposition products: Not available.

5.3 Advice for firefighters

Wear self-contained breathing apparatus (SCBA) and full protective gear. Use water spray to cool unopened containers exposed to heat. Prevent runoff from entering drains or waterways.

SECTION 6: Accidental release measures

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Evacuate area. Avoid breathing dust/mist/vapors. Avoid contact with skin and eyes. Provide adequate ventilation. Wear appropriate PPE (see Section 8).

6.2 Environmental precautions

Prevent entry into sewers, drains, and waterways. Notify authorities if release enters the environment.

6.3 Methods and material for containment and cleaning up

Contain spill. Avoid generating dust. Collect using non-combustible, inert absorbent material and place in a suitable, labeled container for disposal. Wash spill area after material pickup, avoiding environmental release.

6.4 Reference to other sections

See Section 8 for exposure controls/personal protection and Section 13 for disposal considerations.

SECTION-7: Handling and storage

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes, and clothing. Avoid breathing dust/mist. Use only with adequate ventilation. Keep away from incompatible materials.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well-ventilated area in tightly closed container. Protect from moisture. Store away from combustibles and reducing agents. Keep container properly labeled.

7.3 Specific end use(s)

Not available.

SECTION 8: Exposure controls / personal protection

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits: Not available.

Biological limit values: Not available.

8.2 Exposure controls

Engineering controls: Use local exhaust ventilation or other engineering controls to maintain airborne levels below applicable exposure limits (if established). Provide eyewash station and safety shower.

Personal protective equipment (PPE):

- Eye/face protection: Chemical safety goggles and face shield.
- Skin protection: Chemical-resistant gloves; protective clothing (lab coat/acid-resistant apron as appropriate).
- Respiratory protection: If ventilation is inadequate or exposure is possible, use a properly fitted respirator with appropriate cartridges/filters per local regulations.

- Hygiene measures: Wash hands thoroughly after handling. Remove contaminated clothing and wash before reuse.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Test	Result
Appearance	No data available
IR spectrum	No data available
pH	No data available
Solubility	No data available

Property	Value
a) Physical State	No data available
b) Color	No data available
c) Odor	No data available
d) pH	No data available
e) Vapour Pressure	No data available
f) Viscosity	No data available
g) Initial Boiling Point and boiling range	No data available
h) Melting Point / Freezing Point	No data available
i) Auto Ignition Temperature	No data available
j) Flash Point	No data available
k) Explosion Limit, Lower	No data available
l) Explosion Limit, Upper	No data available
m) Decomposition Temperature	No data available
n) Loss on Drying	No data available
o) Relative Density	No data available
p) Solubility (in DMSO)	No data available
q) Oxidizing Properties	No data available

SECTION 10: Stability and reactivity

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10.1 Reactivity

Oxidizing agent; may react with reducing agents and combustible materials. Reactivity details: Not available.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

May react vigorously with incompatible materials. Hazardous polymerization: Not available.

10.4 Conditions to avoid

Heat, moisture, contamination, and contact with incompatible materials.

10.5 Incompatible materials

Reducing agents; combustible/organic materials; strong bases; metals. Additional incompatibilities: Not available.

10.6 Hazardous decomposition products

Chromium oxides/compounds; other hazardous fumes/vapors: Not available.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

- Acute toxicity: IDENTIFICATION AND USE: Chromic acid forms dark purplish-red crystals. It is used as photographic chemical; aluminum anodizing reagent; chrome electroplating/zinc colorless conversion coatings reagent; side-chain oxidation reagent, and wood preservative. HUMAN EXPOSURE AND TOXICITY: Repeated or prolonged exposure to chromic acid or chromate dust or mist may cause an ulceration and perforation of the nasal septum. Respiratory irritation may occur with symptoms resembling asthma. Liver damage with yellow jaundice has been reported. Prolonged or repeated exposure of the skin may cause a skin rash. Allergic skin rash may also occur. Contact causes severe eye injury characterized by infiltration, vascularization, and opacification of the cornea. Full-thickness skin burns covering as little as 1% of the body surface area may lead to irreversible acute tubular necrosis secondary to acute chromium intoxication. The mortality rate is high if the burned area exceeds approximately 10% of the body surface. The correlation with duration of chrome bath work associated with exposure to chromium acid was positive only for cancers of the lung and bronchus in male workers. It was experimentally and epidemiologically confirmed that hexavalent chromium compounds act as carcinogens and cause specific biological effects on the respiratory system. These characteristics of hexavalent compounds might be attributable to the strong oxidizing potency and/or high permeability through the cell membrane. Furthermore, hexavalent compounds might be entirely different in biological action from trivalent compounds which are chemically most stable. ANIMAL STUDIES: There is limited evidence in experimental animals for the carcinogenicity of chromic acid. There was an increased incidence in abnormalities (cleft palate, cleft sternum, perforated sternum) in developmental studies in mice. In CHO cells, there was a significant increase in SCE with CrVI compounds. In the Ames test there was a dose-response for increase in revertant colonies for all CrVI compounds at 10-200 ug/plate with TA1537, TA98 and TA100. Addition of S9 did not affect mutation incidence. In other studies, when tested in Salmonella typhimurium strains TA1537, TA1538, TA98 and TA100 the S9 mix decreased the mutagenicity of CrVI compounds. Chromic acid is highly corrosive and strongly oxidative. Many strong acids cause tissue burns through the denaturation of proteins and partial hydrolysis of proteins. Most proteins denature at pH values of less than 3-4. The large-scale denaturation of proteins, de-esterification of lipids and subsequent desiccation of tissues leads to chemical burns. . Symptoms include itching, bleaching or darkening of skin or tissues, blistering and burning sensations. Chromic acid

also denatures proteins through inserting oxygen atoms into protein side chains. Chromic acid is also a source of chromium and especially hexavalent chromium. Hexavalent chromium compounds (including chromium trioxide, chromic acids, chromates, chlorochromates) are toxic and carcinogenic. For this reason, chromic acid oxidation is not used on an industrial scale except in the aerospace industry. Hexavalent chromium's carcinogenic effects are caused by its metabolites, pentavalent and trivalent chromium. The DNA damage may be caused by hydroxyl radicals produced during reoxidation of pentavalent chromium by hydrogen peroxide molecules present in the cell. Trivalent chromium may also form complexes with peptides, proteins, and DNA, resulting in DNA-protein crosslinks, DNA strand breaks, DNA-DNA interstrand crosslinks, chromium-DNA adducts, chromosomal aberrations and alterations in cellular signaling pathways. It has been shown to induce carcinogenesis by overstimulating cellular regulatory pathways and increasing peroxide levels by activating certain mitogen-activated protein kinases. It can also cause transcriptional repression by cross-linking histone deacetylase 1-DNA methyltransferase 1 complexes to CYP1A1 promoter chromatin, inhibiting histone modification. Chromium may increase its own toxicity by modifying metal regulatory transcription factor 1, causing the inhibition of zinc-induced metallothionein transcription. (A12, L16, A34, A35, A36)

- Skin corrosion/irritation: Chromic acid is highly corrosive and strongly oxidative. Many strong acids cause tissue burns through the denaturation of proteins and partial hydrolysis of proteins. Most proteins denature at pH values of less than 3-4. The large-scale denaturation of proteins, de-esterification of lipids and subsequent desiccation of tissues leads to chemical burns. Symptoms include itching, bleaching or darkening of skin or tissues, blistering and burning sensations. Chromic acid also denatures proteins through inserting oxygen atoms into protein side chains. Chromic acid is also a source of chromium and especially hexavalent chromium. Hexavalent chromium compounds (including chromium trioxide, chromic acids, chromates, chlorochromates) are toxic and carcinogenic. For this reason, chromic acid oxidation is not used on an industrial scale except in the aerospace industry. Hexavalent chromium's carcinogenic effects are caused by its metabolites, pentavalent and trivalent chromium. The DNA damage may be caused by hydroxyl radicals produced during reoxidation of pentavalent chromium by hydrogen peroxide molecules present in the cell. Trivalent chromium may also form complexes with peptides, proteins, and DNA, resulting in DNA-protein crosslinks, DNA strand breaks, DNA-DNA interstrand crosslinks, chromium-DNA adducts, chromosomal aberrations and alterations in cellular signaling pathways. It has been shown to induce carcinogenesis by overstimulating cellular regulatory pathways and increasing peroxide levels by activating certain mitogen-activated protein kinases. It can also cause transcriptional repression by cross-linking histone deacetylase 1-DNA methyltransferase 1 complexes to CYP1A1 promoter chromatin, inhibiting histone modification. Chromium may increase its own toxicity by modifying metal regulatory transcription factor 1, causing the inhibition of zinc-induced metallothionein transcription. (A12, L16, A34, A35, A36) Skin contact with chromic acid can cause redness, pain, and severe skin burns. Chromic acid may cause severe burns to the eye and permanent eye damage. Severe and rapid corrosive burns of the mouth, gullet and gastrointestinal tract will result if chromic acid is swallowed. Symptoms include burning, choking, nausea, vomiting and severe pain. Chronic exposure to low levels of chromic acid can lead to chronic exposure to hexavalent chromium. Hexavalent chromium is a known carcinogen. Chronic inhalation especially has been linked to lung cancer. Hexavalent chromium is also known to cause reproductive and developmental defects. (A12)

- Serious eye damage/eye irritation: No data available.

- Respiratory or skin sensitization: No data available.

- Germ cell mutagenicity: IDENTIFICATION AND USE: Chromic acid forms dark purplish-red crystals. It is used as photographic chemical; aluminum anodizing reagent; chrome electroplating/zinc colorless conversion coatings reagent; side-chain oxidation reagent, and wood preservative. HUMAN EXPOSURE AND TOXICITY: Repeated or prolonged exposure to chromic acid or chromate dust or mist may cause an ulceration and perforation of the nasal septum. Respiratory irritation may occur with symptoms resembling asthma. Liver damage with yellow jaundice has been reported. Prolonged or repeated exposure of the skin may cause a skin rash. Allergic skin rash may also

occur. Contact causes severe eye injury characterized by infiltration, vascularization, and opacification of the cornea. Full-thickness skin burns covering as little as 1% of the body surface area may lead to irreversible acute tubular necrosis secondary to acute chromium intoxication. The mortality rate is high if the burned area exceeds approximately 10% of the body surface. The correlation with duration of chrome bath work associated with exposure to chromium acid was positive only for cancers of the lung and bronchus in male workers. It was experimentally and epidemiologically confirmed that hexavalent chromium compounds act as carcinogens and cause specific biological effects on the respiratory system. These characteristics of hexavalent compounds might be attributable to the strong oxidizing potency and/or high permeability through the cell membrane. Furthermore, hexavalent compounds might be entirely different in biological action from trivalent compounds which are chemically most stable. ANIMAL STUDIES: There is limited evidence in experimental animals for the carcinogenicity of chromic acid. There was an increased incidence in abnormalities (cleft palate, cleft sternum, perforated sternum) in developmental studies in mice. In CHO cells, there was a significant increase in SCE with CrVI compounds. In the Ames test there was a dose-response for increase in revertant colonies for all CrVI compounds at 10-200 ug/plate with TA1537, TA98 and TA100. Addition of S9 did not affect mutation incidence. In other studies, when tested in Salmonella typhimurium strains TA1537, TA1538, TA98 and TA100 the S9 mix decreased the mutagenicity of CrVI compounds. Chromic acid is highly corrosive and strongly oxidative. Many strong acids cause tissue burns through the denaturation of proteins and partial hydrolysis of proteins. Most proteins denature at pH values of less than 3-4. The large-scale denaturation of proteins, de-esterification of lipids and subsequent desiccation of tissues leads to chemical burns. Symptoms include itching, bleaching or darkening of skin or tissues, blistering and burning sensations. Chromic acid also denatures proteins through inserting oxygen atoms into protein side chains. Chromic acid is also a source of chromium and especially hexavalent chromium. Hexavalent chromium compounds (including chromium trioxide, chromic acids, chromates, chlorochromates) are toxic and carcinogenic. For this reason, chromic acid oxidation is not used on an industrial scale except in the aerospace industry. Hexavalent chromium's carcinogenic effects are caused by its metabolites, pentavalent and trivalent chromium. The DNA damage may be caused by hydroxyl radicals produced during reoxidation of pentavalent chromium by hydrogen peroxide molecules present in the cell. Trivalent chromium may also form complexes with peptides, proteins, and DNA, resulting in DNA-protein crosslinks, DNA strand breaks, DNA-DNA interstrand crosslinks, chromium-DNA adducts, chromosomal aberrations and alterations in cellular signaling pathways. It has been shown to induce carcinogenesis by overstimulating cellular regulatory pathways and increasing peroxide levels by activating certain mitogen-activated protein kinases. It can also cause transcriptional repression by cross-linking histone deacetylase 1-DNA methyltransferase 1 complexes to CYP1A1 promoter chromatin, inhibiting histone modification. Chromium may increase its own toxicity by modifying metal regulatory transcription factor 1, causing the inhibition of zinc-induced metallothionein transcription. (A12, L16, A34, A35, A36)

- Carcinogenicity: IDENTIFICATION AND USE: Chromic acid forms dark purplish-red crystals. It is used as photographic chemical; aluminum anodizing reagent; chrome electroplating/zinc colorless conversion coatings reagent; side-chain oxidation reagent, and wood preservative. HUMAN EXPOSURE AND TOXICITY: Repeated or prolonged exposure to chromic acid or chromate dust or mist may cause an ulceration and perforation of the nasal septum. Respiratory irritation may occur with symptoms resembling asthma. Liver damage with yellow jaundice has been reported. Prolonged or repeated exposure of the skin may cause a skin rash. Allergic skin rash may also occur. Contact causes severe eye injury characterized by infiltration, vascularization, and opacification of the cornea. Full-thickness skin burns covering as little as 1% of the body surface area may lead to irreversible acute tubular necrosis secondary to acute chromium intoxication. The mortality rate is high if the burned area exceeds approximately 10% of the body surface. The correlation with duration of chrome bath work associated with exposure to chromium acid was positive only for cancers of the lung and bronchus in male workers. It was experimentally and epidemiologically confirmed that hexavalent chromium compounds act as carcinogens and cause specific biological effects on the respiratory system. These characteristics of hexavalent compounds might be attributable to the strong

oxidizing potency and/or high permeability through the cell membrane. Furthermore, hexavalent compounds might be entirely different in biological action from trivalent compounds which are chemically most stable. ANIMAL STUDIES: There is limited evidence in experimental animals for the carcinogenicity of chromic acid. There was an increased incidence in abnormalities (cleft palate, cleft sternum, perforated sternum) in developmental studies in mice. In CHO cells, there was a significant increase in SCE with CrVI compounds. In the Ames test there was a dose-response for increase in revertant colonies for all CrVI compounds at 10-200 ug/plate with TA1537, TA98 and TA100. Addition of S9 did not affect mutation incidence. In other studies, when tested in Salmonella typhimurium strains TA1537, TA1538, TA98 and TA100 the S9 mix decreased the mutagenicity of CrVI compounds. Chromic acid is highly corrosive and strongly oxidative. Many strong acids cause tissue burns through the denaturation of proteins and partial hydrolysis of proteins. Most proteins denature at pH values of less than 3-4. The large-scale denaturation of proteins, de-esterification of lipids and subsequent desiccation of tissues leads to chemical burns. Symptoms include itching, bleaching or darkening of skin or tissues, blistering and burning sensations. Chromic acid also denatures proteins through inserting oxygen atoms into protein side chains. Chromic acid is also a source of chromium and especially hexavalent chromium. Hexavalent chromium compounds (including chromium trioxide, chromic acids, chromates, chlorochromates) are toxic and carcinogenic. For this reason, chromic acid oxidation is not used on an industrial scale except in the aerospace industry. Hexavalent chromium's carcinogenic effects are caused by its metabolites, pentavalent and trivalent chromium. The DNA damage may be caused by hydroxyl radicals produced during reoxidation of pentavalent chromium by hydrogen peroxide molecules present in the cell. Trivalent chromium may also form complexes with peptides, proteins, and DNA, resulting in DNA-protein crosslinks, DNA strand breaks, DNA-DNA interstrand crosslinks, chromium-DNA adducts, chromosomal aberrations and alterations in cellular signaling pathways. It has been shown to induce carcinogenesis by overstimulating cellular regulatory pathways and increasing peroxide levels by activating certain mitogen-activated protein kinases. It can also cause transcriptional repression by cross-linking histone deacetylase 1-DNA methyltransferase 1 complexes to CYP1A1 promoter chromatin, inhibiting histone modification. Chromium may increase its own toxicity by modifying metal regulatory transcription factor 1, causing the inhibition of zinc-induced metallothionein transcription. (A12, L16, A34, A35, A36)

- Reproductive toxicity: IDENTIFICATION AND USE: Chromic acid forms dark purplish-red crystals. It is used as photographic chemical; aluminum anodizing reagent; chrome electroplating/zinc colorless conversion coatings reagent; side-chain oxidation reagent, and wood preservative. HUMAN EXPOSURE AND TOXICITY: Repeated or prolonged exposure to chromic acid or chromate dust or mist may cause an ulceration and perforation of the nasal septum. Respiratory irritation may occur with symptoms resembling asthma. Liver damage with yellow jaundice has been reported. Prolonged or repeated exposure of the skin may cause a skin rash. Allergic skin rash may also occur. Contact causes severe eye injury characterized by infiltration, vascularization, and opacification of the cornea. Full-thickness skin burns covering as little as 1% of the body surface area may lead to irreversible acute tubular necrosis secondary to acute chromium intoxication. The mortality rate is high if the burned area exceeds approximately 10% of the body surface. The correlation with duration of chrome bath work associated with exposure to chromium acid was positive only for cancers of the lung and bronchus in male workers. It was experimentally and epidemiologically confirmed that hexavalent chromium compounds act as carcinogens and cause specific biological effects on the respiratory system. These characteristics of hexavalent compounds might be attributable to the strong oxidizing potency and/or high permeability through the cell membrane. Furthermore, hexavalent compounds might be entirely different in biological action from trivalent compounds which are chemically most stable. ANIMAL STUDIES: There is limited evidence in experimental animals for the carcinogenicity of chromic acid. There was an increased incidence in abnormalities (cleft palate, cleft sternum, perforated sternum) in developmental studies in mice. In CHO cells, there was a significant increase in SCE with CrVI compounds. In the Ames test there was a dose-response for increase in revertant colonies for all CrVI compounds at 10-200 ug/plate with TA1537, TA98 and TA100. Addition of S9 did not affect mutation incidence. In other studies, when tested in Salmonella typhimurium

strains TA1537, TA1538, TA98 and TA100 the S9 mix decreased the mutagenicity of CrVI compounds. Skin contact with chromic acid can cause redness, pain, and severe skin burns. Chromic acid may cause severe burns to the eye and permanent eye damage. Severe and rapid corrosive burns of the mouth, gullet and gastrointestinal tract will result if chromic acid is swallowed. Symptoms include burning, choking, nausea, vomiting and severe pain. Chronic exposure to low levels of chromic acid can lead to chronic exposure to hexavalent chromium. Hexavalent chromium is a known carcinogen. Chronic inhalation especially has been linked to lung cancer. Hexavalent chromium is also known to cause reproductive and developmental defects. (A12)

- STOT-single exposure: No data available.

- STOT-repeated exposure: IDENTIFICATION AND USE: Chromic acid forms dark purplish-red crystals. It is used as photographic chemical; aluminum anodizing reagent; chrome electroplating/zinc colorless conversion coatings reagent; side-chain oxidation reagent, and wood preservative. HUMAN EXPOSURE AND TOXICITY: Repeated or prolonged exposure to chromic acid or chromate dust or mist may cause an ulceration and perforation of the nasal septum. Respiratory irritation may occur with symptoms resembling asthma. Liver damage with yellow jaundice has been reported. Prolonged or repeated exposure of the skin may cause a skin rash. Allergic skin rash may also occur. Contact causes severe eye injury characterized by infiltration, vascularization, and opacification of the cornea. Full-thickness skin burns covering as little as 1% of the body surface area may lead to irreversible acute tubular necrosis secondary to acute chromium intoxication. The mortality rate is high if the burned area exceeds approximately 10% of the body surface. The correlation with duration of chrome bath work associated with exposure to chromium acid was positive only for cancers of the lung and bronchus in male workers. It was experimentally and epidemiologically confirmed that hexavalent chromium compounds act as carcinogens and cause specific biological effects on the respiratory system. These characteristics of hexavalent compounds might be attributable to the strong oxidizing potency and/or high permeability through the cell membrane. Furthermore, hexavalent compounds might be entirely different in biological action from trivalent compounds which are chemically most stable. ANIMAL STUDIES: There is limited evidence in experimental animals for the carcinogenicity of chromic acid. There was an increased incidence in abnormalities (cleft palate, cleft sternum, perforated sternum) in developmental studies in mice. In CHO cells, there was a significant increase in SCE with CrVI compounds. In the Ames test there was a dose-response for increase in revertant colonies for all CrVI compounds at 10-200 ug/plate with TA1537, TA98 and TA100. Addition of S9 did not affect mutation incidence. In other studies, when tested in Salmonella typhimurium strains TA1537, TA1538, TA98 and TA100 the S9 mix decreased the mutagenicity of CrVI compounds. Skin contact with chromic acid can cause redness, pain, and severe skin burns. Chromic acid may cause severe burns to the eye and permanent eye damage. Severe and rapid corrosive burns of the mouth, gullet and gastrointestinal tract will result if chromic acid is swallowed. Symptoms include burning, choking, nausea, vomiting and severe pain. Chronic exposure to low levels of chromic acid can lead to chronic exposure to hexavalent chromium. Hexavalent chromium is a known carcinogen. Chronic inhalation especially has been linked to lung cancer. Hexavalent chromium is also known to cause reproductive and developmental defects. (A12)

- Aspiration hazard: No data available.

Likely routes of exposure

- Skin contact with chromic acid can cause redness, pain, and severe skin burns. Chromic acid may cause severe burns to the eye and permanent eye damage. Severe and rapid corrosive burns of the mouth, gullet and gastrointestinal tract will result if chromic acid is swallowed. Symptoms include burning, choking, nausea, vomiting and severe pain. Chronic exposure to low levels of chromic acid can lead to chronic exposure to hexavalent chromium. Hexavalent chromium is a known carcinogen. Chronic inhalation especially has been linked to lung cancer. Hexavalent chromium is also known to cause reproductive and developmental defects. (A12)

Symptoms related to the physical, chemical and toxicological characteristics

- IDENTIFICATION AND USE: Chromic acid forms dark purplish-red crystals. It is used as photographic chemical; aluminum anodizing reagent; chrome electroplating/zinc colorless conversion coatings reagent; side-chain oxidation reagent, and wood preservative. HUMAN EXPOSURE AND TOXICITY: Repeated or prolonged exposure to chromic acid or chromate dust or mist may cause an ulceration and perforation of the nasal septum. Respiratory irritation may occur with symptoms resembling asthma. Liver damage with yellow jaundice has been reported. Prolonged or repeated exposure of the skin may cause a skin rash. Allergic skin rash may also occur. Contact causes severe eye injury characterized by infiltration, vascularization, and opacification of the cornea. Full-thickness skin burns covering as little as 1% of the body surface area may lead to irreversible acute tubular necrosis secondary to acute chromium intoxication. The mortality rate is high if the burned area exceeds approximately 10% of the body surface. The correlation with duration of chrome bath work associated with exposure to chromium acid was positive only for cancers of the lung and bronchus in male workers. It was experimentally and epidemiologically confirmed that hexavalent chromium compounds act as carcinogens and cause specific biological effects on the respiratory system. These characteristics of hexavalent compounds might be attributable to the strong oxidizing potency and/or high permeability through the cell membrane. Furthermore, hexavalent compounds might be entirely different in biological action from trivalent compounds which are chemically most stable. ANIMAL STUDIES: There is limited evidence in experimental animals for the carcinogenicity of chromic acid. There was an increased incidence in abnormalities (cleft palate, cleft sternum, perforated sternum) in developmental studies in mice. In CHO cells, there was a significant increase in SCE with CrVI compounds. In the Ames test there was a dose-response for increase in revertant colonies for all CrVI compounds at 10-200 ug/plate with TA1537, TA98 and TA100. Addition of S9 did not affect mutation incidence. In other studies, when tested in Salmonella typhimurium strains TA1537, TA1538, TA98 and TA100 the S9 mix decreased the mutagenicity of CrVI compounds.

SECTION 12: Ecological information

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12.1 Toxicity

Not available.

12.2 Persistence and degradability

Not available.

12.3 Bioaccumulative potential

Not available.

12.4 Mobility in soil

Not available.

12.5 Results of PBT and vPvB assessment

Not available.

12.6 Endocrine disrupting properties

Not available.

12.7 Other adverse effects

Not available.

SECTION 13: Disposal considerations

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Dispose of contents/container in accordance with local/regional/national/international regulations. Do not discharge to drains. Dispose as hazardous waste where applicable. Contaminated packaging: Dispose of as unused product unless properly cleaned.

Waste codes: Not available.

SECTION 14: Transport information

SECTION 14: Transport information

14.1 UN number

Not available.

14.2 UN proper shipping name

Not available.

14.3 Transport hazard class(es)

Not available.

14.4 Packing group

Not available.

14.5 Environmental hazards

Not available.

14.6 Special precautions for user

Not available.

14.7 Maritime transport in bulk according to IMO instruments

Not available.

SECTION 15: Regulatory information

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Not available.

SECTION 16: Other information

SECTION 16: Other information

Product: Chromic Acid

Catalog No.: CS-T-72422

CAS No.: 7738-94-5

Supplier: Clearsynth Labs Ltd., Mumbai, India

Emergency phone: +91-22-245045900

Revision date: Not available

SDS version: Not available

Disclaimer: The information provided is believed to be accurate based on available data, but no warranty is expressed or implied. Users must determine suitability for their particular purpose and comply with applicable laws and regulations.

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