

# CHROMIC ACID CHROMIUM TRIOXIDE FLAKE

**ELEMENTIS**  
CHROMIUM

## PROPERTIES:

**Chemical Formula:**

CrO<sub>3</sub>

**CAS Number:** 1333-82-0**Molecular Weight:**

100.0

**Appearance:**

Dark Red Flakes

**Specific Gravity:**

2.7 at 20 °C (68 °F)  
- starts to decompose

**Chemical Characteristics:**

Chromic acid is a strong acid and oxidizing agent. When neutralized with alkalis, chromic acid forms dichromate or chromate compounds. In oxidation reactions, the chromium atom is reduced from the hexavalent to trivalent state.

**Stability in Air:**

Deliquesces at humidity above 30%

**Solubility in Water:**

Highly soluble: 62.5% w/w at 20 °C (68 °F)  
67.5% w/w at 100 °C (212 °F)

**Bulk Density**

Loose 75 lbs. per cubic foot

**Heat of Solution**

Exothermic (24.7 cal./g.; 44.5 BTU/lb.)

**Behavior on Heating** Melts at 197 °C (387 °F)

to intermediate chromium oxides at slightly higher temperatures.

## TYPICAL ANALYSIS: \*

|                             | Specification | Typical Analysis |
|-----------------------------|---------------|------------------|
| CrO <sub>3</sub>            | 99.5 % Min.   | 99.9 %           |
| Sulfate as SO <sub>4</sub>  | 0.10 % Max.   | 0.08 %           |
| Chloride as Cl              | 0.01 % Max.   | 0.005 %          |
| Insoluble Matter            | 0.01 % Max.   | 0.002 %          |
| Sodium as Na <sub>2</sub> O | 0.02 % Max.   | 0.014 %          |
| pH of 1% Aqueous Solution   | NA            | 1.0              |

Meets GSA Commercial Item Description A-A-55827, October 11, 1996 (superseding Fed. Spec. O-C-303D)

## **GENERAL APPLICATIONS:**

The major uses of chromic acid are in wood preservation, metal finishing and plating. Secondary applications include catalyst manufacture and magnetic recording tapes.

Chromic acid is used to produce salt-free CCA type wood preservatives. These preservatives are combinations of chromium, copper and arsenic. The CCA offers protection from wood destroying fungi, marine borers, termites, ascomycetes, white rot, dry rot and brown rot. When treatment is in accordance with American Wood Preservers Association standards, a clean, odorless, paintable surface is produced which is safe and non-toxic for human use and is environmentally sound.

The two main types of chromium electroplating are decorative and functional. Decorative chromium plating is usually applied as a very thin layer to articles that have been nickel plated and is used for plumbing fixtures, automobile accessories, domestic appliances, etc., imparting a bright shiny finish. Functional or "hard" chromium plate is applied in much thicker layers and gives an extremely hard, corrosion-resistant surface with a low coefficient of friction. Hard chrome plating finds use in piston rings, engine cylinders, inspection and cutting tools and metal working machinery. The finish is usually dull. Electrodeposition of chromium from solutions containing chromic acid is also used in the manufacture of pure chromium metal for incorporation in creep resistant high temperature alloys.

Chromic acid is used in the anodizing of aluminum. The extremely thin layer of oxide, which gives aluminum metal its resistance to corrosion, is thickened by anodic oxidation using chromic acid solution as the electrolyte. The coatings obtained are semi-opaque and gray in color. They are capable of being dyed to give a very pleasing finish. They also provide a good base for the application of paint and other organic finishes.

Chromate or dichromate ions are widely used in the metal finishing field to impart corrosion resistance. Conversion coatings, chromate containing films of oxide, are formed on metal surfaces by using sodium dichromate, potassium dichromate or chromic acid. Chromic acid solutions are also used for sealing phosphate coatings applied to iron or steel to improve their corrosion resistance. Other applications in the metal finishing field include its use for bright dipping of brass and acid cleaning of aluminum and magnesium.

Chromic acid is a powerful oxidizing agent, which leads to a variety of uses in organic syntheses and in the bleaching of oils, fats and waxes. Chromic acid is used in the manufacture of other chromium compounds and as an analytical reagent.

## **HEALTH AND SAFETY PRECAUTIONS:**

Chromic acid is a hexavalent chromium compound, and contact with it, either in the solid or solution form, should be avoided. In case of contact, flush thoroughly with water. For eyes, give prolonged irrigation with water, and get medical attention immediately.

For detailed information, consult our Material Safety Data Sheet (MSDS), which is available upon request.

## STORAGE:

This product should be stored in a cool, dry place. It is a powerful oxidizing agent and may cause a fire if it comes in contact with readily oxidizable or combustible matter.

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