

# Chromium (Cr)



**Chromium** is an element with a steel-gray metallic appearance and belongs to the group of transition metals. Its most notable uses are in stainless steel, pigments, and electroplating. In nature, chromium is found in several minerals from which it is mined.

The naturally occurring form of chromium is in its trivalent, or Cr<sup>3+</sup> state, which is essential for our health. On the other hand, Cr<sup>6+</sup> is a highly toxic and carcinogenic form of chromium which is created as a byproduct of human industrial processes and is rarely found in nature. For this reason, depending on its form, chromium can be toxic as well as essential for us.

**Cr**  
Chromium



[Ar] 3d<sup>5</sup> 4s<sup>1</sup>

Atomic number  
protons/electrons

**24**

Neutrons  
(most common isotope)

**28**

Atomic weight  
(amu)

**51.99**

Atomic radius  
(pm)

**139**

## Functions/Health effect:

The essential form of chromium participates in the metabolism of sugars and fats, regulates blood sugar levels, and in the production of cholesterol. Although an essential element, it is only required in trace amounts.

The toxic, hexavalent form is a known carcinogen and chronic exposure to its compounds can lead from a mere irritation of skin or lungs to more serious conditions, such as cancer.

## Sources:

Good sources of the essential form of chromium are eggs, poultry, nuts, and many vegetables. Most people, however, do not have diets rich enough to cover the daily requirement, so several forms of chromium supplements are available.

Sources of the toxic chromium compounds range from drinking water contaminated by nearby industrial waste to working in such an industrial environment.

## Did you know that?

Chromium has got its name from the Greek word chroma, meaning "color", because chromium compounds exhibit different colors depending on the oxidation state.

Chromium is the hardest metal and so it gives hardness to the alloys it is used in. About 80 % of all mined chromium is used to make stainless steel and other alloys.

Food  
division

