Iron(ii) Oxide Encyclopedia Article

Iron(ii) Oxide

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Iron(ii) Oxide

Overview

Iron(II) oxide (EYE-urn two OK-side) is a black, dense powder that occurs in nature as the mineral wustite. It reacts readily with oxygen in the air to form iron(III) oxide and with carbon dioxide to form iron(II) carbonate ($FeCO_3$).

How It Is Made

Iron(II) oxide occurs in nature as the result of the incomplete oxidation of iron metal. It can be prepared synthetically by heating iron(II) oxalate (FeC_2O_4), although the product of this reaction is contaminated with another oxide of iron, triiron tetroxide (Fe_3O_4).

Key Facts

Other Names:

Ferrous oxide; iron monoxide

Formula:

FeO

Elements:

Iron, oxygen

Compound Type:

Metal oxide

State:

Solid

Molecular Weight:

71.84 g/mol

Melting Point:

1,377°C (2,151°F)

Boiling Point:

Not applicable

Solubility:

Insoluble in water and all ordinary organic solvents; soluble in acids

Common Uses and Potential Hazards

Iron(II) oxide has three primary uses. First, it has long been used as a dye or pigment in pottery, glazes, and glasses, especially in the green, heat-absorbing glass used in buildings, automobiles, and other applications. The compound is also used as a raw material in the production of steel. Finally, iron(II) oxide is used as a catalyst in a number of industrial and chemical operations.

Interesting Facts

- Both iron(II) oxide and its cousin, iron(III) oxide are abundant in rocks on the surface of Mars. The former accounts for the dark, nearly jet black, color of some rocks, while the latter is responsible for the predominant red color of the planet's surface.

Inhalation of iron(II) oxide fumes or dust is considered a hazard and can cause throat and nasal irritation. High levels of exposure may lead to a condition known as metal fume fever, a workplace exposure illness that causes flu-like symptoms. Continued exposure at high levels can have more serious effects, including a disease known as siderosis, an inflammation of the lungs that is accompanied by pneumonia-like symptoms.

Words to Know

OXIDATION

- A chemical reaction in which oxygen reacts with some other substance or, alternatively, in which some substances loses electrons to another substance, the oxidizing agent.

For Further Information

Cornell, Rochelle M., and Udo Schwertmann. *The Iron Oxides; Structure, Properties, Reactions, and Uses*. Second edition. New York: Wiley-VCH, 2003.

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See Also

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