GALAXY INTERNATIONAL INTERDISCIPLINARY RESEARCH JOURNAL (GIIRJ)
ISSN (E): 2347-6915
Vol. 10, Issue 5, May. (2022)

ON THE IMPORTANT PROPERTIES OF MAGNESIUM METAL

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ANNOTATION

This article is devoted to the important properties of magnesium, one of the most common metals in the Earth's crust, and covers in what form this metal is found in nature, its acquisition, physical and chemical properties, its application in military and other fields, its biological importance, as well as its useful and detrimental aspects.

Keywords: carnallite, bisulfite, kizerite, epsomite, kainite, magnesite, dolomite, brucite, refinement, sublimation, construction material, magnesium nitride, flame retardant material, dazzling flame.

INTRODUCTION

Magnesium metal is located in the 12th place of the Mendeleev davriy system, it is a light, durable and soft, white-silver-colored metal. It is part of the alkaline earth metals. Initially, it was discovered in 1695 year in England in the composition of mineral waters. If magnesium in natural conditions occurs mainly in compound form, the pure magnesium o zi initially M. Obtained by electrolysis by faradei. Natural magnesium consists of three stable isotopes: Mg24, Mg25 and Mg26, and if the percentage share in the mixture is 78,6%, 10,1% and 11,3% respectively, the remaining 19 isotopes are radioactive, the most abundant in them is Mg28, its Half-Life is 20,91 hours. This metal is one of the most common metals in the Earth's crust, most often in the form of a salt solution, threeraydi in sea water. The main minerals of magnesium with a high mass content are:

- Sea water – (0,12 – 0,13 %),
- Carnallit – MgCl_2 · kcl · 6h_2o (8,7%),
- Bishofit-MgCl_2·6H_2O (11,9%),
- Kizerit-MgSO_4 · h_2 O (17,6%),
- Epsomit-MgSO_4·7H_2O (9,9%),
- Kainit -llmg__4·3H_2O (9,8%),
- Magnet - MgCO_3 (28,7%),
- Dolomite-CaCO_3·MgCO_3 (13,1%),
- Brusit-Mg (OH)_2 (41.6%)

A rare mineral with native magnesium was first found in 1991 year in eastern Siberia, and later in the southern part of the Fortress mountains of Tajikistan. The richness of magnesium deposits is mainly dolomite and magnesite, which is also obtained from sea water.

The most common way to obtain magnesium metal is to obtain it by electrolysis from a mixture of magnesium chloride MgCl_2(bishofit), NaCl and KCLS.

MgCl_2→Mg+Cl_2 (1)

The downside of taking magnesium with this method is that the compound 0,1% is also threeraydi. For further cleaning, it is necessary to use additional special methods, such as refining and sublimation. The purity of the refined magnesium metal is now 99,999%. In addition, when taking magnesium, silicon and Coke are used to restore magnesium oxide at a higher temperature:

MgO+C→Mg+CO (2)

When taking magnesium using silicon from dolomite (CaCO_3·MgCO_3), it is done without separating the kaltsium and magnesium in it, that is, it is done as follows, first Dolomite is burnt:

CaCO_3·MgCO_3→CaO+MgO+2CO_2 (3)

Then it is sharply heated with Silicon:

2mgo+CaO+Si→CaSiO_3+2Mg (4)

The advantage of this method is that the magnesium obtained from it is Magnesium of high purity. When obtaining magnesium metal, it is used not only mineral raw materials, but also sea water.

Physical hassles. As it turned out, under normal conditions, the magnesium metal will be covered with a solid protective layer consisting of magnesium oxide. This layer is eaten only at a temperature of 600oC, after which the metal is burned with dazzling brilliance, and as a result, either oxidized again, or magnesium nitride Mg_3 N_2 is formed. At this time there is no saying that the person could take a hand burn. It is necessary to look at the burning magnesium only through a darkened glass or glass. Otherwise, separation from the eyes is nothing. The density of magnesium in 20oC is 1,738 g/cm3, the melting temperature is 650oC, the boiling temperature is 1090oC, the thermal conductivity is 156 W / (M ·k). High-purity magnesium plastic, well pressed, can be treated with scraping.

Chemical properties. When magnesium is burned in the hakhoda, a large amount of heat and light is released:

$$2\text{Mg}+O_2 \rightarrow 2MgO + 1203\ kJ \quad (5)$$

$$3\text{Mg}+N_2 \rightarrow Mg_3N_2$$

Magnesium metal also burns in carbon dioxide:

$$2Mg + CO_2 \rightarrow 2MgO + C \quad (6)$$

Burning magnesium burns more strongly at the impact of water:

$$Mg + H_2O \rightarrow MgO + H_2 + 75\ kkal \quad (7)$$

This reaction can also occur as follows:

$$Mg + 2H_2O \rightarrow Mg(OH)_2 + H_2 \uparrow + 80{,}52\ kkal \quad (8)$$

Alkalis do not affect magnesium, and in acid, magnesium chloride is formed with the release of hydrogen:

$$Mg + 2HCl \rightarrow MgCl_2 + H_2 \uparrow \quad (9)$$

Magnesium metal is a powerful reducer and is used in the production of titanium and uranium recovery:

$$TiCl_4 + 2Mg \rightarrow Ti + 2MgCl_2 \quad (10)$$

$$UF_4 + 2Mg \rightarrow U + 2MgF_2 \quad (11)$$

Be applied. It is used in the construction of aircraft from magnesium and in the production of automobiles in the casting of light and transient alloys, in pyrotechnics, and in the military field in dazzling and burning rockets. Magnesium-based alloys are one of the important building materials in the production of space, aviation and automobiles. Magnesium-based chemical token sources are characterized by high cost of energy characteristic and high electrical conducting power. One of the largest capacitive accumulators that keep hydrogen the most compact is a magnesium hybrid. Magnesium oxide is used in the manufacture of metal furnaces as a refractory material. Perchlorate magnesium Mg (ClO_4)_2 (anhydron) is used in laboratories for deep drying of gases, preparation of electrolytes of chemical sources of current with the participation of magnesium. Magnesium fluoride MgF_2 is used in optics(when making lenses and prisms) in the form of synthetic monocrystals. As for magnesium bromide MgBr_2, it is used in the preparation of electrolytes of chemical current in reserve. And in the military sphere, it is used in missiles that illuminate and signal from the dazzling fire-emitting hinges of magnium, as well as in missiles that leave a trace in the flight of arrows and projectiles, and in burning bombs. It is also used as the main component of the composition of the arrow-drugs that interfere with the passage of light. In addition to these, in the military sphere, magnium is also used to heat the field Food of military personnel, which is also called a fireproof heater. Magnesium is also an important vital element for the normal functioning of tissues in the human body. It is one of the important elements in many metabolism reactions, in the management of the transmission of nerve impulses, in the contraction of muscles. Magnesium oxide and tuzi are widely used in cardiology, neurology, gastroentrology. Magnesium powder with oxidative additives is used in photography as a chemical photographer. One of the batteries that has a future of magnesium-sulfur, theoretically, passes through the capacity of ion-lithium batteries.

Although magnesium compounds are considered less harmful, it also contains poisonous acids. Biological significance. Magnesium is one of the important biogen elements, it is present in sufficient quantities in the tissues of plants and animals (chlorophyll). Magnesium is necessary at all stages of protein synthesis. It plays an important role in ensuring the normal functioning of the nervous system and heart muscles in the body, in the regulation of vessels, in the normalization of bile secretion, in increasing the activity of the intestines gait, in the excretion of cholesterol from the body. In the absorption of magnesium into the body, the presence of phytin, excess fat and calcium in the Food Composition prevents. Deficiency of magnesium in the body can be seen through the following symptoms: uyqus weakness, chronic fatigue, osteoporosis, arthritis, fibromyalgia, migraine, nervousness, cardiac arrhythmia, abdominal relaxation. With a lot of sweating, a lot of application of diuretic and sedative drugs, alcohol, in mental and physical stress (especially stress), magnesium is in demand.

Magnesium is abundant mainly in hemp, pumpkin seeds, cocoa powder. Foods rich in magnesium again include sesame, oats and nuts. But the presence of phytin in them prevents the absorption of magnesium into the body. Therefore, too much consumption of greens can satisfy the body's need for magnesium. It should also be noted that in bread, dairy, meat products, in which a lot is desired by a person in his daily life, the amount of magnesium is low.

The daily norm of magnesium intake is 300 mg for women and 400 mg for men. It is also worth noting separately that the excess amount of magnesium in the body is also considered dangerous for a person and can cause various unpleasant situations in the body.

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