



Marine *Newslink*

AUGUST 2021

FEATURE ARTICLE

Magnesite ($MgCO_3$)

PHOTO(S) OF THE MONTH

Varieties of Magnesite

BACK-TO-BASICS

Question & Answer

Magnesite (MgCO₃)

Magnesite (MgCO₃) is a carbonate of magnesium. It is usually found as secondary deposits formed due to alteration of ultrabasic rocks (mostly serpentinite) and other magnesium-rich rock types formed by replacement of dolomite and dolomitic limestone, as bedded deposits and as irregular veins. Magnesite deposits in India, generally occur as crystalline mass, amorphous and massive. Calcium and silica are the most common impurities found in magnesite along with Ferric Oxide and Aluminium Oxide.

It is a very important mineral for the manufacture of basic refractories. In general, the term 'Magnesite' can also refer, not only to the mineral, but also to many products, obtained by calcining the natural carbonate, e.g., caustic magnesite and Dead-burnt or refractory magnesite.

Magnesite is found chiefly as encrustations, veins and stringers in ultrabasic rocks like dunite and peridotite. Stringers and veins occur

irregularly in fractures of rocks giving rise to different patterns. Veins are broken and magnesite is sorted out manually.

Magnesite is marketed generally after calcination, that is, after converting it into lightly calcined or caustic magnesite and dead-burnt variety.

The caustic magnesia or low calcined magnesite is used as animal feed stuff and in the manufacture of oxychloride cement. Dead-burnt magnesite and fused magnesia are used in Refractory Industry to manufacture various refractory products.

The major proportion (about 98%) of magnesite mined is used for conversion into calcined form which finds many applications. The industries where raw magnesite is used are mosaic tiles, electrodes, chemicals and manufacture of magnesium metal. Magnesite is also used in fertilizers and by food processing industry.



Caustic Calcined Magnesite (CCM) Low calcined magnesite also known as Caustic Calcined Magnesite is obtained by calcining magnesite in a shaft or rotary kiln at temperature ranging between 800-1000°C. The incomplete dissociation, causes retention of 8 to 10% carbon dioxide as carbonate. Low calcined magnesia when mixed with water forms a feebly plastic paste. Industries like paper, rubber, ceramic, asbestos products, glass, etc. use caustic magnesia

Caustic Calcined Magnesite is used in manufacturing sorel cement (magnesium oxychloride), castable refractories and extraction of magnesium metal. It is also the source material for manufacture of magnesium compounds like magnesium sulphate (Epsom salt) and other salts used in Paper and Pharmaceutical Industries. In Paper Industry, magnesium bisulphate produced from magnesite is used as cooking liquor for preparing pulp. It is also used in Textile, Rubber, Glass, Ceramic Industries and as animal feed stuff.



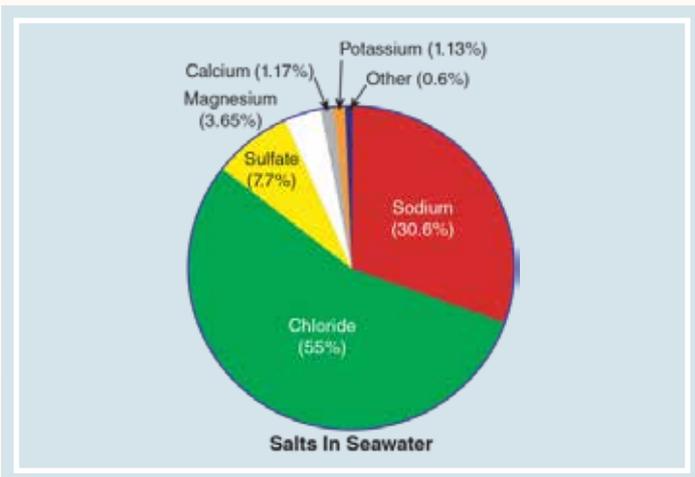
Dead Burnt Magnesite (DBM) Raw magnesite when calcined at temperatures in the range of 1,660-1,800°C in the rotary kiln, carbon dioxide gets expelled completely and a dense product 'Dead-Burnt Magnesite' is obtained. Dead-Burnt Magnesite refers to the magnesite that is chemically unreactive or 'dead' therefore, enabling it to be used in brick making or monolithic hearths without undue difficulty arising out of hydration or shrinkage.

Refractory Industry is one of the major consumers of magnesite in India. The refractory bricks are made from Dead Burnt Magnesite by judicious blending of different types of raw magnesite before dead-burning or of different qualities of Dead Burnt Magnesite prior to brick making.

Raw magnesite is dead-burnt for making basic refractory bricks, basic refractory

mortars, ramming mass, tar/pitch impregnated magnesite, magnesia-carbon bricks, slide-gate plates and other refractories.

dolomite, around 300 kilograms sea water needs to be processed to obtain one kilogram of magnesia. The sea water magnesia can be used to manufacture Dead Burnt Magnesite, caustic magnesia and other magnesium compounds.



Sea Water Magnesia (SWM) Sea water or lake bitterns is an alternative source to obtain magnesia by chemical reaction. The main raw materials required other than sea water is dolomite or limestone, fresh water and sulphuric acid. The magnesia content of sea water is about 0.2%, and even by enrichment with



Fused Magnesia is produced by the fusion of the high-grade magnesite in Higgin's or electric arc tilt furnaces between 2,500-3,000°C. It is resistant to the action of molten metals, basic slags and fluxes and high temperatures. It is used in the

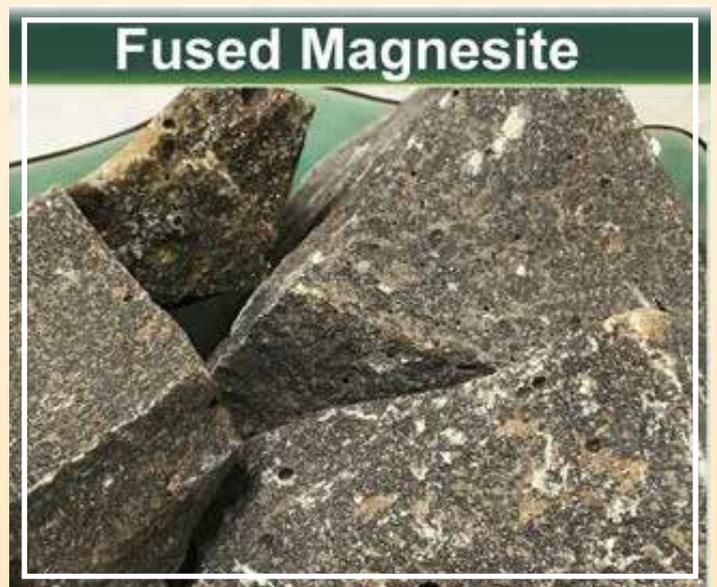
form of moulded vessels and as compressed material for covering resistant elements of the furnaces used in the melting of lead, tin, etc. Fused magnesia finds application as insulating material in tubular heating elements in Electrical Industry and refractory brick linings in steel furnaces.



traditionally produced in ingot form of approximately 7 kg each with purity close to 99.9%. Its chief applications are, in die casting (alloyed with zinc), to remove sulphur in the production of iron and steel, for production of titanium in the Kroll process. The other application field of magnesium is in electronic devices. Defence equipment and nuclear reactor materials also consume magnesium.



Magnesium metal is a fairly strong, silvery-white, light-weight metal (about one third lighter than aluminium). It is



STORAGE

Usually safely stored in open yards with exposure to elements. Bagged cargo should be stored in covered warehouses to avoid any rainwater saturation.



PACKAGING & TRANSPORTATION

Raw form of Magnesite can be shipped in bulk, usually from mines to processing plants only, by tippers or dumper trucks. These trucks can carry up to 30-40 MT in single loads.

Processed Magnesite is usually shipped in polypropylene bags of various sizes, from 25 kgs to jumbo bags of 5 MT can be used for same. The bagged magnesite can be shipped directly on trucks, in containers or in ship's cargo holds.

BULK SHIPMENT



CONTAINER





Magnesite in lumps form can also be loaded as bulk in containers

RISKS

Almost none except dust & illegal dumping. It is low in toxicity & usually presents no hazards to environment. Only considerations being that when in contact with strong acids it has slow reactions and generates heat but again nothing that should be considered alarming.

Since the cargo is mainly handled in bulk form & with lots of other materials, unexplained shortages & contamination should be considered as exclusions.

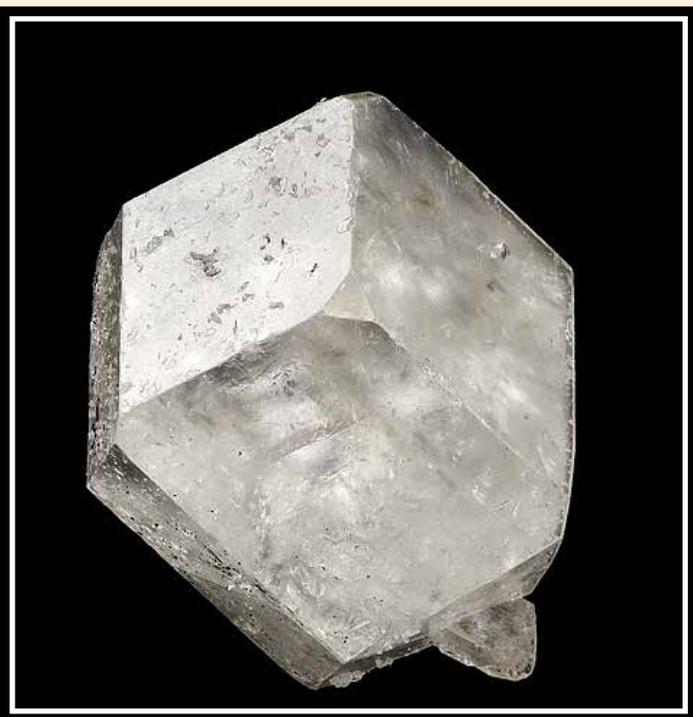


PHOTOS OF THE MONTH

Iron-bearing Magnesite Crystal



Crystal White Magnesite



Pale Magnesite



BACK-TO-BASICS

QUESTION OF THE MONTH

Two consignments of cargo of dry fruits were being imported from Afghanistan to India on FCA basis, after taking approvals from respective authorities in the month of July 2021, insurances were subsequently taken by Indian assured from Kabul till destination in India. The cargoes were to travel by land from Afghanistan through Pakistan and then from Karachi to Chennai by sea. Soon after the clearing of paperwork from Afghanistan customs, near the border town & while cargo was near the Afghanistan-Pakistan border, one of the consignments, on road, was put on fire by armed terrorists and was completely damaged. The area pertaining to the road was completely taken over by the terrorist forces & didn't allow any vehicles to move. The second cargo got stuck – it could neither move forward or backward. The transporter's people left the consignment on the road and fled the situation to save their own life. The Indian importer tried to push the logistics company to save the consignment, but they refused stating that the area is under control of the terrorists and couldn't be reached and that they could not be held responsible for consignment any further. The Assured filed claim for both the consignments.

Q: Are both the claims payable? Please share your answer, with reasons.

LAST MONTH'S QUESTION

Assured is importing consignment of machinery from Germany to Mumbai. The coverage given is INSTITUTE CARGO CLAUSES (A) + War + SRCC, During the course of the voyage, there is leakage and spillage of hazardous chemicals from some containers, onboard the vessel, due to which the voyage is diverted to nearest port of refuge.

Assured has to bear extra charges, which were found reasonable, for safe unloading and warehousing at the port of refuge. The cargo was in sound condition and then forwarded to its original destination within 30 days.

Are these extra charges, for unloading, warehousing at the port of refuge and forwarding to the original destination payable under the scope of policy since the cargo has not suffered any damages?

LAST MONTH'S ANSWER

The charges for unloading storing and forwarding the machinery to destination port are payable in terms of clause 12 forwarding charges clause, ensuring that exclusions 4, 5 and 6 are not attracted and there is no negligence on the part of assured

Please send your replies/answers ONLY to: marine.newslink@tataaig.com

CORRECT ANSWERS SENT BY: (In order of replies received)

- Sohag Parikh : Cadila Healthcare Ltd., Ahmedabad
- Kiran Mohanty : Harsha Engineers Ltd., Ahmedabad
- V. Ganesan : Marsh Insurance Brokers India Ltd., Chennai
- Ashish Sharma : Shree Cement
- H.G. Shah : Beacon Insurance Brokers Pvt. Ltd., Vadodra
- P. Lakshmi Prasanna : Dr. Reddy's Laboratories Ltd., Hyderabad.
- Bharat Bhushan : Optima Insurance Brokers Pvt Ltd., New Delhi
- Achuthan Sridharan : Aon India Insurance Brokers Pvt. Ltd., Bengaluru

IF YOU HAVE ANY COMMENTS / FEEDBACK PLEASE SEND IT TO

Shioram Balachandran (98206 34466)

VP & National Head - Marine

Email: marine.newslink@tataaig.com

Vijay Pal Singh (98330 60959)

VAS & Marine Loss Control (India)

Email: marine.newslink@tataaig.com

CONTACT US

Tata-AIG General Insurance Company Limited,

15th Floor, Tower A, Peninsula Business Park,

G.K. Marg, Lower Parel, Mumbai 400013.

www.tataaig.com

DISCLAIMER

The publication is for private circulation only. It is for internal additional information of employees and associates. Views expressed in the article are personal views of author and the publisher, editor does not own any responsibility legally or otherwise. Though due care is taken to give accurate information, the readers are advised to verify independently, the correctness of the information given. For all earlier months Marine Newslink issues, please do visit our website link

<https://www.tataaig.com/Marine>