Marine *Newslink*

NOVEMBER 2020

TATA AIG INSURANCE

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FEATURE ARTICLE
Barite (baryte)

PHOTO(S) OF THE MONTH
Minerology

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Question Of The Month

BARITE / BARYTE

MINEROLOGY

Barite (barium sulfate, BaSO4) is an industrial mineral commodity that is primarily used in the drilling of oil and gas wells. The mineral commodity is also referred to as Barite or Baryte. It is a key constituent of drilling mud, which is the fluid pumped into the oil or gas well to lubricate the bit and drill stem, remove rock chips, prevent collapse of well walls, and prevent blowouts if over pressured strata are encountered.

Barite has an unusual combination of properties—high density, softness, and chemical inertness—that make it exceptionally well suited for this purpose. Other minor uses of the mineral include its use as an additive for friction materials, paints, plastics, rubbers, and other products; feedstock for chemical manufacturing; and shielding in X-ray and gamma-ray applications. Barium, which constitutes 59 percent of barite by weight, is used in ceramic glazes, enamels, optical glass, primers, signal flares, steel hardeners, welding fluxes and a variety of other products.

Barite is well-known for its great range of colors and varied crystal habits. It is easily identifiable by its heavy weight, since most similar minerals are much lighter. It is strikingly heavy (specific gravity about 4.5) for a mineral without metallic appearance. Crystals may be mistaken for feldspar, but again weight gives it away and it is also significantly softer mineral (hardness about 3 on Mohs scale).

The name Barite comes from Greek word ‘Barys’ which means heavy.

Barite concretions

Barite-Black

Barite-Morocco

Barite-Morocco

Barite-Golden Brown

Barite-White Blades

MINES & DEPOSITS

Barite deposits can be divided into the following four main types: bedded-sedimentary; bedded-volcanic; vein, cavity-fill and metasomatic; and residual. Bedded-sedimentary deposits, which are found in sedimentary rocks with characteristics of high biological productivity during sediment accumulation, are the major sources of barite production and account for the majority of reserves. Barite reserves tend to be defined only a few years prior to production because (a) drilling activity—the major market for barite and (b) the ease of extraction and ore processing allows for faster and less expensive mine startup than for many other mined commodities.

The largest identified resources of barite on a global scale are found in the Qinling and Jiangnan regions of southern China and the Cuddapah district of India. Tonnage estimates have varied widely, but all suggest that the amounts of barite available for mining are quite large. According to recent estimates for one of the larger deposits in China, the Gangxi deposit in Hunan Province, have ranged from more than 80 million metric tons to 453 million metric tons grading between 63.6 and 77.3 percent BaSO4.

The Mangampeta deposit in the Cuddapah district in India has been estimated to contain 73.4 million metric tons with a specific gravity of 3.8 or greater, 50 percent of which has a specific gravity of 4.2 or greater.

Barite specimens from certain locations are brown from sand inclusions and may occur in beautiful rosette aggregates that strikingly resemble a flower. These are known as Barite "Desert Roses." The mineral Gypsum also contains similar Desert Roses, but Gypsum roses are much light in weight and are more brittle and thinner.

USES

OIL AND GAS DRILLING

The properties like non-corrosive, non-abrasive, insolubility in water, inertness and high specific gravity enable Barite application as a weighting agent in drilling operations to remove the cutting from the bits, transport cutting to the surface to reduce the friction in the drilling string, control pressure, prevent blow-out and at the same time to provide lubrication.

Barite powder containing minimum 90% barium sulphate with 4.15 specific gravity is recommended for drilling. For offshore drilling, the specific gravity should be 4.2.

CHEMICAL

Major barium chemicals obtained from Barite are carbonate, chloride, oxide, hydroxide, nitrate, peroxide and sulphate. Barium carbonate is used in glass industry as a flux to add brilliance & clarity in electro ceramics and for removing inconvenient impurities in phosphoric acid. Barium hydroxide is used in the preparation of barium salts of organic acids which are utilized as additives for lubricating oils and as stabilizers for PVC. Barium sulphate is used as pigment, extender and filler in rubber and paper industries.

Barium nitrate is used in green signal flares, tracer bullets, primers and detonators. Barium oxide is used in electric furnace. Barium titanite finds its use in miniature electronic and communication equipment. Barite is also used in explosive manufacture.

PAINT

Barite is used as filler and extender in paint industry. White pigment is manufactured from Barite. Barite should be free from mud, clay or siliceous minerals. The material should be in the form of dry powder.

GLASS

In glass manufacturing, Barite is added to the glass melt for making the glass more workable and enhancing its brilliance.

RUBBER

Barite is used as a filler and extender in rubber products. It is added to rubber compounds to impart resiliency and durability. Barite containing minimum 99.5% $BaSO_4$ is usually preferred. Since such purity material is not found in nature, before use, Barite is normally bleached called 'blanc fixe' used as a best acid resistance.

OTHER USES

Barite is used in the manufacture of asbestos products required for autobrake lining and other frictional materials. It is used as a filler in paper industry, oil cloth, X-Ray proof plaster and rope finishes. Finely ground Barite and clay are used as suspension in Barvois system of coal washing.

Barite is also used in concrete aggregate as an absorber of gamma and X-Ray radiation required for reactor shielding. In medicine, it is used in radiodiagnosis to highlight the abnormalities in internal body parts.

In its chemically purified form (blanc fixe) it is swallowed in substantial quantities to make the gastrointestinal tract (or throat) more visible in X-ray images. It is somewhat odd to think about that because barium compounds are usually very toxic. This practice is considered to be of low risk because barite is very insoluble and chemically inert mineral. Blanc fixe is also used as a filler in paper and cosmetics and as a pigment. Playing cards, for example, are filled with barite to make them heavier.

Barite is also a very popular and common mineral among collectors.

PACKAGING

Barite as ore can be shipped in bulk & bagged form. Barite crude ore is shipped in lumps and even as Barite powder. Preferred packaging for Barite powder is in 1Mt – 1.5 Mt. Jumbo bags. The Jumbo Bags are loaded in 20’ or 40’ Containers and shipped to Client’s desired location (Port).

Other types of packaging, such as 50 kg bags on wood pallets.

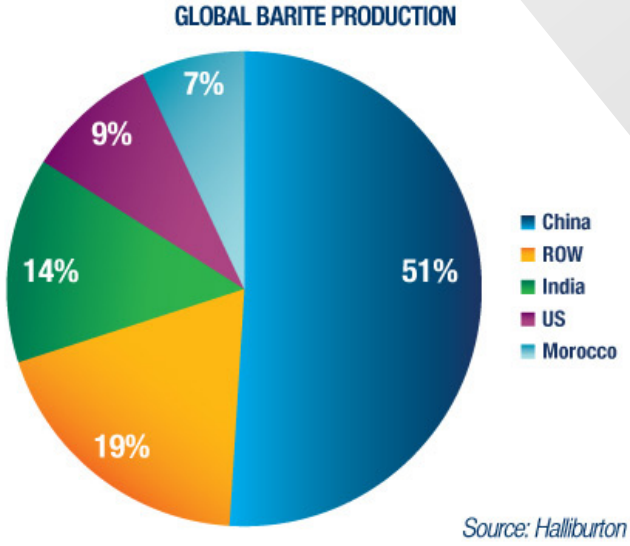
TRANSPORTATION

The bagged cargo can be shipped any mode of transportation which can meet with strength capacity of carrying this heavy mineral. The bagged cargo can be either shipped in break-bulk form or by containers.

RISKS

Barite does not pose any fire or carcinogenic or hygroscopic risk but if spilled and washed by water, it may settle in drains or sewers & cause clogging. Similar challenge can be faced on while cleaning spilled cargo in ship's cargo holds. Hence any spilled cargo should be scooped & dusted out when dry.

India ranks second in the production of barytes in the world after China and is one of the important exporters in the world market. About 80% of the world's barytes is used in the petroleum industry. The worldwide demand for barytes would continue till petroleum products are preferred as chief source of energy given their importance in the transportation and industrial end-use sectors. The future growth in petroleum usage suggests that petroleum exploration will continue to grow and along with it barytes consumption, especially as more drilling has to be done per unit of oil as hydro-carbon discoveries become smaller and less productive with time. In the domestic front, however, exploration is necessary to locate new deposits of barytes especially in Rajasthan, Himachal Pradesh, etc. The apparent domestic demand of barytes is estimated to be 3.0 million tonnes by 2020.



PHOTOS OF THE MONTH

BARITE MINE

BARITE CONCENTRATE

BACK-TO-BASICS

QUESTION OF THE MONTH

Client ABC had imported some Project Cargoes on CIP Incoterms 2020 from Germany. ABC had also insured the shipment under a separate Cargo Policy in India since the Imports of Project Cargoes included Imports on FOB/CFR/EX-Works terms. Under the Policy issued by the Indian Underwriters, cover on such CIF shipments were covered from FOB point.

On a CIF shipment which was imported in FCL Container, cargo was cleared and taken to the Importers' premises. At the time of de-stuffing, some equipment's were found rusted. Salinity test proved that rusting was on account of sea water ingress. The loss amount was INR 50 lakhs plus Customs Duty of INR 10 Lakhs.

Is the claim payable admissible, by the Indian Underwriters?

LAST MONTH'S QUESTION

Client shipped ODC machinery from his factory in Madhya Pradesh to a CFS, Nhava Sheva by trailer. Surveyors attended Pre-dispatch and loading & lashing survey at client's factory. At Nhava Sheva, the cargo was secured on Flat-Rack Container (FRC) by CHA people and no survey was carried out. Cargo was shipped under-deck to a European country. On arrival at discharge port, it was noted that the pallet of machinery had collapsed thus causing damages to the machinery. Shipping line's surveyor concluded that machine was not duly secured on the FRC. No joint survey or claim's surveyors were allowed to attend at this point. Policy also did not have any ODC cargo warranty.

On basis of shipping line surveyor's report, Claims was declined as policy had exclusion that "damages due to inadequate packaging are excluded".

Is the stand taken by claims team correct OR is the claim payable?

LAST MONTH'S ANSWER

As per General Exclusion 4.3 reproduced below, the claim would be payable

4.3: Loss damage or expense caused by insufficiency or unsuitability of packing or preparation of the subject matter insured (for the purpose of this Clause 4.3 "packing" shall be deemed to include stowage in a container or liftvan but only when such stowage is carried out prior to attachment of this insurance or by the Assured or their servants)

CORRECT ANSWERS SENT BY: (IN ORDER OF REPLIES RECEIVED)

- S.K. RUSTAGI - Beacon Insurance Brokers Pvt. Ltd., Vadodara
- PARESH SHAH - Madhuvan Insurance Broking Services Pvt. Ltd., Ahmedabad
- ALKESH SHAH - Yash Insurance and Advisory Service., Vadodra
- V.P. MOHANKUMAR - Link-K Insurance Broker Co Pvt., Ltd., Coimbatore
- HEMA RAGHAV - Optima Insurance Brokers Pvt. Ltd., New Delhi
- BHARAT BHUSHAN - Optima Insurance Brokers Pvt. Ltd., New Delhi
- AZAD KUMAR - UIB Insurance Brokers (India) Pvt. Ltd., Mumbai

Please send your replies/answers ONLY to

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