Volume 3. No.4

INDIAN MINERALS

A BI-MONTHLY EZINE ON MINERALS OF INDIA

AUGUST 2025

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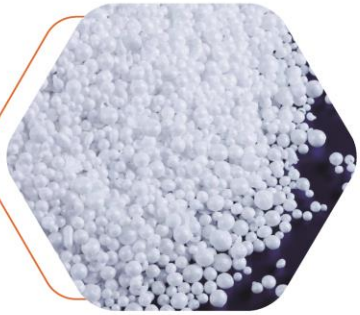
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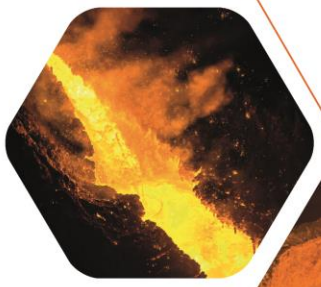


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BETWEEN THE LINES

China's Liaoning Province is known as the magnesite capital of the world with highest level of production of FM, DBM and CCM. Liaoning has one-fifth of the world's total magnesite reserves. For long the provincial Govt. of Liaoning had planned to amalgamate the 100+ mining companies operating there and operate the business as a high value-low volume singular entity. Years of effort are now seeing some fruition with Liaoning province announcing the results of magnesia capacity reduction, with the list involving a total of 227 enterprises, and the retained production capacity of 8.64 million tons. Liaoning had previously made it clear that in the long run the annual output of magnesite ore would be controlled at 30 million tons and the total magnesia production capacity would be reduced to 25 million tons by 2025. If there is boom in steel and cement production in China, India, EU etc., then this is not enough to meet the demands of the downstream industries, mainly refractories as well as electrical items, pharmaceuticals and agriculture. But on the supply side, some demand contraction has happened in the steel industry especially in China, EU for which demand for magnesite is muted. While the impact will not immediately be felt in India, we have to retain a cautious eye on the market dynamics being played out in Liaoning and Shandong provinces as our dependence on Chinese Magnesite is very high. In this issue we feature a detailed article on the dependence of Indian refractory industry on Chinese raw materials.

We also feature an article on the impact of India-UK Free Trade Agreement on the minerals market of India. Although India does not import huge amount of minerals or intermediaries from UK, importers of minerals like kaolin and ball clay are likely to benefit from the deal.

Stay healthy, stay safe.

Thank You.



A. Dasgupta

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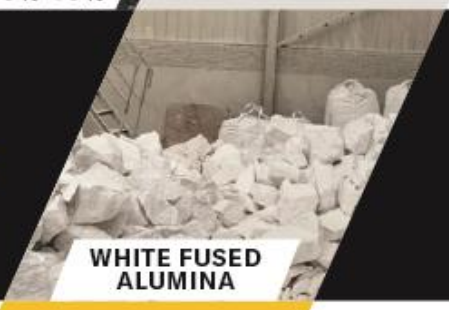
CALCINED BAUXITE 60%-90%

$50M+
Annual Revenue



BROWN FUSED ALUMINA

25+
Commodities Traded



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Years Of History



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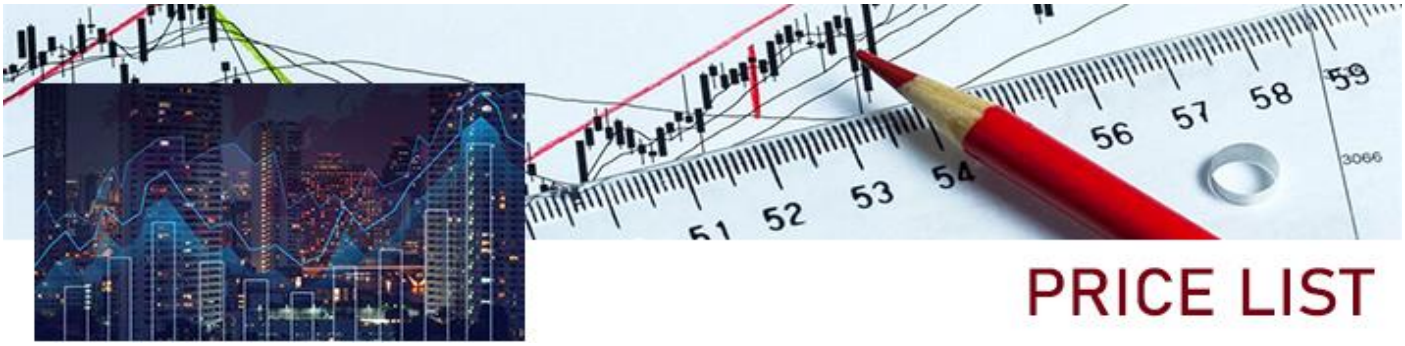
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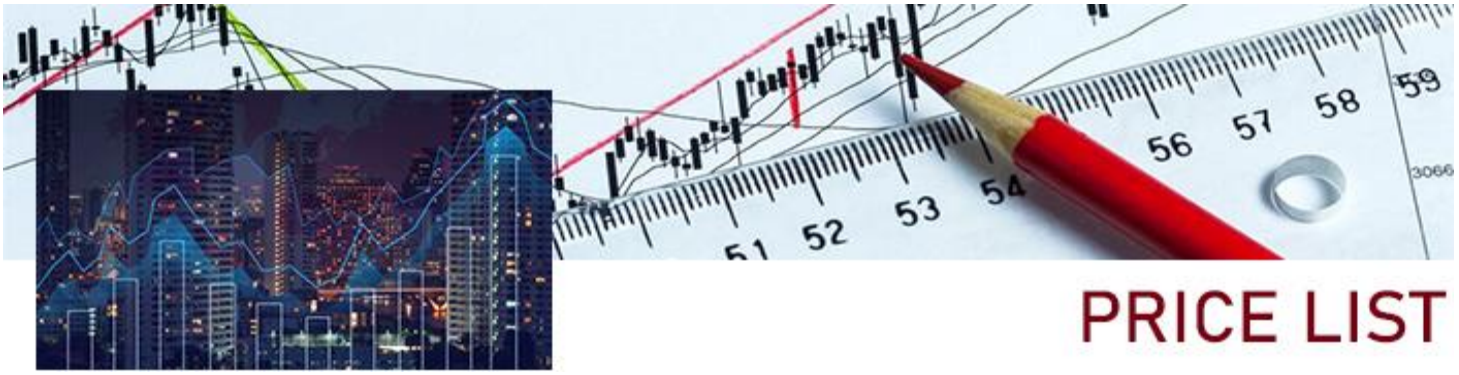
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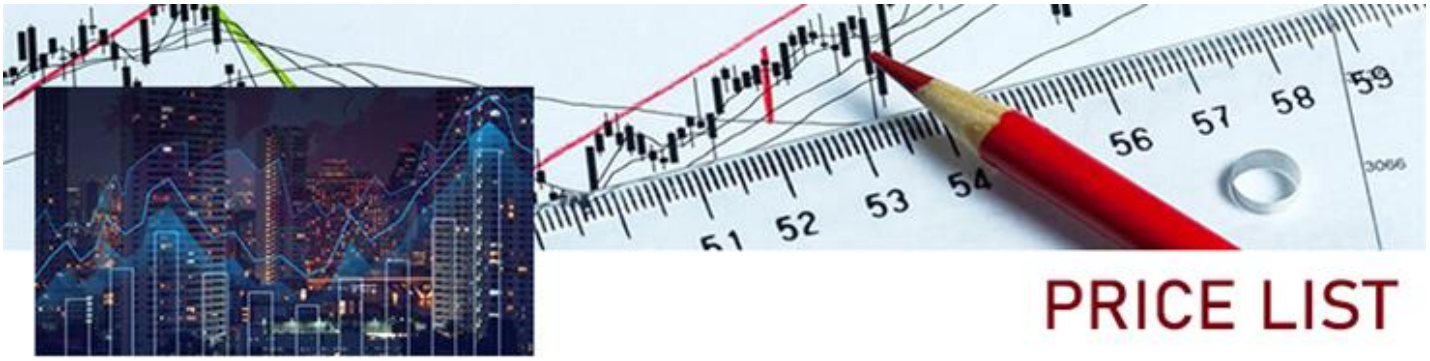
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Name	Source	Port	Price (USD/Mt)	Date
Fused Magnesite MgO: 97.7 %	China	Dalian	780	2/8/2025
Fused Magnesite 97 Brown (2:1)	China	Dalian	570	2/8/2025
DEAD BURNED MAGNESITE 90 (SIZE:3-5MM)	China	Dalian	226	1/8/2025
Dead Burnt Magnesite (Size:5-30mm)	China	Dalian	387	5/8/2025
Caustic Calcined Magnesia MgO 85% min size 200 mesh	China	Dalian	173	3/8/2025
Olivine Sand AFS grade 45-50	Turkey	Iskenderun	140	8/8/2025
Ferro Silicon Nitride (-200mesh)	China	Tianjin	1061	9/8/2025
Fused Silica (50/100 mesh)	China	Lianyungang	682	15/7/2025
FUSED SPINEL 78 SIZE-325 MESH	China	Dalian	710	23/8/2025
Calcined Bauxite Spec: Al_2O_3 87% min	China	Tianjin	535	14/8/2025
Bauxite 1BRTK (1-3mm)	China	Xingang 3-5mm	525	21/8/2025
Rotary Kiln Bauxite 78%	China	Xingang	405	14/8/2025
Calcined Alumina (Non-metallurical grade)	India	N.A.	378	11/8/2025
Artificial Corundum	India	N.A.	1656	8/8/2025
White Fused Alumina	India	N.A.	130	7/7/2025
White Fused Alumina – F80	China	Tianjin	960	2/8/2025
White Fused Alumina 325F	China	Qingdao	800	6/8/2025
BFA 95% (size:200mesh)	China	Tianjin	722	12/8/2025
Brown Fused Alumina (BFA 46F)	China	Tianjin	864	22/8/2025
Brown Fused Alumina 86% DCF	China	Xingang	410	12/8/2025
White Tabular Alumina (size-0-0.3mm)	China	Xingang	810	8/8/2025
Pink Fused Alumina Crude F 220	China	Qingdao	1165	1/8/2025
Semi Friable Blue Fused Alumina Abrasives SFB P80	China	Qinzhou	1935	8/8/2025
Chrome Alumina DCF	France	Antwerpen	223	17/8/2025
Metallurgical Grade Alumina	Vietnam	Go Dau A Terminal	427	5/8/2025
Mullite 70	USA	Savannah	895	15/8/2025
VA Kyanite (100 mesh)	USA	Norfolk	623	2/8/2025
Micro Silica	China	Xingang	149	4/8/2025
Microsilica 920 Astm D	Malaysia	Bintulu	191	7/8/2025
Fire Clay	India	N.A.	100	23/8/2025
Chamotte LF 42 0-1 mm	India	N.A.	184	11/8/2025
Natural Flake Graphite +895	India	N.A.	1050	1/8/2025
PW3 Natural Flake Graphite	Madagascar	Toamasina	550	14/8/2025
Silicon Metal Grade 553	China	Xingang	1265	1/8/2025
Zircon Sand	South Africa	Cape Town	1600	9/8/2025
Zircon Sand	Indonesia	Surabaya	1700	1/8/2025



Name	Source	Port	Price (USD/Mt)	Date
Black Silicon Carbide SiC88 200F	Vietnam	Haiphong	955	5/8/2025
Green Silicon Carbide Powder	China	Qindao	3087	9/8/2025
Black Silicon Carbide (Size: 0.5-3mm:)	China	Qindao	1062	8/8/2025
Dolomite 2-8-Mm	Bhutan	BTPGL	19	2/8/2025
Dolomite Powder 300 mesh	India	N.A.	16	13/8/2025
Gypsum Crushed	Bhutan	Samdrup-Jonkhar	39	1/8/2025
Loose Gypsum Powder	India	N.A.	24	3/8/2025
Calcite Powder 10 Micron	India	N.A.	44	1/8/2025
Barite API 4.1 SG Grade	India	N.A.	87	5/8/2025
Barite Powder 4.20 API Grade	India	N.A.	149	19/8/2025
Fluorspar Powder (85%)	South Africa	Durban	249	12/8/2025
Silica Quartz - M Grade	India	N.A.	969	28/8/2025
Quartzite Powder	India	N.A.	98	5/8/2025
Potash Feldspar Chips	India	N.A.	37	1/8/2025
Soda Feldspar-L Value 55+	India	N.A.	21	18/8/2025
Kaolin T-95	India	N.A.	235	9/8/2025
China Clay Powder (Rubber Grade)	India	N.A.	46	12/8/2025
Calcined Kaolin X 884	India	N.A.	400	5/8/2025
Ball Clay - YBD3617427	India	N.A.	117	11/8/2025
Oil Refining Clay Fullers Earth N- 100	India	N.A.	214	6/8/2025
Attapulgite Powder	India	N.A.	225	18/8/2025
Processed Bentonite	India	N.A.	90	29/8/2025
SMS Grade Low Silica Limestone Size 30-60mm	UAE	Mina Saqr	28	1/8/2025
CP Grade Limestone in bulk	UAE	Mina Saqr	18	2/8/2025
Limestone Lumps Size 5:15 cm	Egypt	Sokhna	35	1/8/2025
Lime Stone Lumps 240 mesh	Bhutan	Phuntsholing	43	4/8/2025
Uncoated Calcium Carbonate Grade IP-3M ACMA25	Egypt	Port Said	53	1/8/2025
Grounded Calcium Carbonate MT10	Vietnam	Haiphong	116	13/8/2025
Soda Ash Dense	UAE	Jebel Ali	233	6/8/2025
Soda Ash Light	Bulgaria	Varna	246	25/8/2025
Manganese Ore Assmang Nchwaning Lumpy In Bulk (Mn-43.56%)	South Africa	Saldanha Bay	170	13/8/2025
Manganese Ore (MMD)(Mn:46%)	Gabon	Owendo	203	20/8/2025



Name	Source	Port	Price (USD/Mt)	Date
Metallurgical Grade CBG Bauxite	Guinea	Port Kamsar	97	1/8/2025
Iron Ore Lump 10-40 mm(+62% Fe) CLO	India	N.A.	67	10/8/2025
Iron Ore Fine 62-65% Fe Fines (-10 mm)	India	N.A.	63	10/8/2025
Iron Ore Fine 55-58% Fe Fines (-10 mm)	India	N.A.	38	10/8/2025
Chrome Ore 54%+	India	N.A.	262	10/8/2025
Chrome Ore 46-48%	India	N.A.	224	10/8/2025
Chrome Ore (-)40% sub grade	India	N.A.	107	10/8/2025
Chromite Ore AFS 45-50	South Africa	Durban	553	7/8/2025
Chrome Ore Chemical Grade	South Africa	Durban	351	1/8/2025
Refractory Chrome Ore	Oman	Sohar	490	7/8/2025
Bauxite 38-45% Al_2O_3	India	N.A.	33	10/8/2025
Laterite (Loose Grade II) (Bauxitic material)	India	N.A.	6	16/8/2025



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NEWS DESK

Parliament passes Mines and Minerals Amendment Bill



Parliament has passed the Mines and Minerals (Development and Regulation) Amendment Bill, 2025 that aims to further liberalise, modernise and make India's mineral sector more dynamic, especially with a focus on critical and strategic minerals. The bill, which seeks to amend the original Mines and Minerals (Development and Regulation) Act, 1957, was passed in Lok Sabha on August 12. Rajya Sabha passed it with a voice vote. One of the key amendments in the bill is renaming of the National Mineral Exploration Trust as the National Mineral Exploration and Development Trust, and its scope has been expanded to fund exploration and development both domestically and internationally. The bill balances development with sustainability and provides for community participation and welfare of people in the mining area.

India's iron-ore, coking coal, Potash demand to rise on robust economic growth: BHP

Demand for iron ore, coking coal, and Potash is expected to significantly rise in India according to BHP's economic and commodity outlook. This is on the back of higher infrastructure investment accelerating and manufacturing expanding. The country is expected to quadruple its annual steel demand in the coming 25 years, directly driving the need for these raw materials.

Global coal mine additions fall to decade low in 2024, yet oversupply risk looms from China

New coal mining capacity fell to a 10-year low in 2024, but future projects especially in major producer China still risk oversupply, said a new report from U.S. think tank Global Energy Monitor. New mines opened globally in 2024 can dig up about 105 million tons of coal per year, down 46% from 2023 and the smallest increase in a decade, the report found. That is about 1% of the 8.9 billion tons of global capacity in 2024.



DVC, six firms win coal blocks in 12th commercial mining auction

Damodar Valley Corporation and Orissa Alloy Steel Pvt Ltd are among the seven companies that have bagged coal blocks in the 12th round of commercial mines auction. The government had launched the 12th round of coal block auctions in March, seeking bids for the seven blocks that hold a combined geological reserve of around 1,761.49 million tonnes. The cumulative Peak Rated Capacity (PRC) of these blocks stands at 5.25 million tonnes per annum (MTPA), excluding partially explored coal blocks.

Mining industry seeks Rs 15,000 per kWh subsidy for electric trucks



The domestic mining industry has sought a Rs 10,000 to Rs 15,000 per kWh subsidy on electric Heavy Earth Moving Machinery (HEMM) to encourage their use. According to a report by the Federation of Indian Mineral Industries (FIMI), the upfront costs of electric trucks is a major entry barrier to their adoption. "Electric trucks and other HEMMs are currently priced at nearly three times (3x) that of their diesel counterparts. Such price disparity discourages potential buyers," a FIMI report said. The industry body report also recommended a 5% Goods and Services Tax rate on retrofit kits used to convert diesel trucks to electric.

Coking coal hits five-month high on government mine inspections

Coking coal futures' prices have hit a five month high in China as a government inspection on coal mine production sparked concerns of supply disruptions. The continued price rally came after state media confirmed the veracity of government documents calling for inspections on eight major coal production hubs. NEA will inspect coal mines in Shanxi, Inner Mongolia, Anhui, Henan, Guizhou, Shaanxi, Ningxia and Xinjiang in terms of whether their 2024 production exceeded the licensed capacity, the document said without specifying the timing..

India's Response to Critical Minerals Supply Chain disruptions

As China tightens its stranglehold on the global supply of rare earth elements, India is shifting gears — fast. From forging new partnerships in Central Asia to finalising an ambitious incentive scheme for mineral recycling, India is pushing ahead to secure its place in the global race for critical minerals. At the recently held India-Central Asia Dialogue in New Delhi, India and five Central Asian nations expressed mutual interest in jointly exploring rare earths and other critical minerals. In a joint statement, they called for an early meeting of the India-Central Asia Rare Earth Forum, signalling growing geopolitical urgency to diversify away from China's near-monopoly.

India's Underground Coal Mining Gets Major Boost

In a decisive step towards revitalizing India's coal sector, the Ministry of Coal has introduced a series of transformative policy measures aimed at promoting underground coal mining. These bold reforms reaffirm the Government's resolve to modernize the coal ecosystem while aligning with the broader vision of sustainable development.

- Waiver of Upfront Payment: The mandatory upfront payment requirement for underground mining ventures has been completely waived off. This measure removes a significant financial barrier, encouraging broader participation from the private sector and facilitating faster project implementation.

Lease for 7 mines may be revoked as PSEs fail to begin operations

The Centre may withdraw seven mines that public sector companies failed to start operating even five years after receiving the blocks on a nomination basis. These mines have been allocated to state and central public sector enterprises. Steel Authority of India Limited (SAIL) holds two such iron-ore blocks. FCI Aravali Gypsum and Minerals India Limited (FAGMIL) has two blocks bearing rock phosphate and dolomite. MOIL holds one such block in Madhya Pradesh.











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COMPANY NEWS

Hindusthan Zinc Ltd.

Hindustan Zinc, India's top refined zinc producer, will aim to expand into uranium mining if the government opens up the sector to private players. Government sources have informed that India wants to allow private firms to mine, import and process uranium as part of plans to end a decades-old state monopoly over the nuclear sector and bring in billions of dollars in investment.

The company is also setting up of a 10 MTPA tailings teprocessing plant as part of the Company's overall growth plan to double the capacity. HZL has become the first Indian company to join the International Council on Mining and Metals. UK-based International Council on Mining and Metals (ICMM) is a collaborative group of leading mining and metals companies, created to strengthen the industry's contribution to sustainable development and catalyse strong environmental and social performance.

NMDC

NMDC Ltd has reported a revenue surge of 24.5% in the first quarter of FY26 to ₹6,739 crore against ₹5,414 crore in Q1FY25, beating estimates. Net profit for the quarter ended June 30, 2025, edged up 0.20% year-on-year (YoY) to ₹1,968 crore against ₹1,964 crore. This was higher than the poll's predicted profit of ₹1,899 crore.

Hindustan Copper Ltd

In a significant development for India's mining sector, Hindustan Copper Limited (HCL) has successfully transitioned its flagship Malanjkhand mine from open-cast to fully underground operations. "For the year 2024-25, our entire production from Malanjkhand has come from underground mining," said CMD Singh. "We are currently producing around 4 million tonnes, and we aim to double this to nearly 12 million tonnes -- within the next six years," he said.

The company also looks to build a new Rs 400-crore concentrator plant with 3 million tonnes per annum capacity at Malanjkhand in Madhya Pradesh in the next two-three years as part of plans to triple its ore production capacity.integration, ensuring a stable and self-sufficient supply of critical raw materials like iron ore and manganese, which are essential for its integrated steel production facilities.

Coal India Ltd

State-run Coal India has allowed utilities to sell power generated from fuel supplied under long-term deals called "linkage contracts" on power exchanges. The move would enable consistent demand for coal, Coal India said in the notice dated August 6. The decision comes at a time India's coal-fired power plants are withdrawing more fuel from inventories and slashing fresh purchases from Coal India as coal use for power generation fell for a fourth month despite higher electricity demand., CIL reported a 6% drop in production at 229.8 million tonnes (MT) in the April-July period of the current financial year even as the government is making efforts to increase the output to cut imports.

IREL

State-owned miner IREL is seeking to collaborate with Japanese and South Korean companies to start commercial production of rare earth magnets, a source familiar with the matter said, as part of efforts to reduce reliance on China. The company is looking at both Japan and South Korea for rare earth processing technology, potentially through government-to-government channels, the source said, declining to be named as the discussions are not public.

MOIL

State-owned MOIL has reported around a 7 per cent year-on-year rise in its manganese ore output to 5.02 lakh tonnes in the April-June quarter. In June, MOIL recorded its highest-ever production of 1.68 lakh tonnes of manganese ore, marking a 2 per cent increase over the corresponding period last year.

Jindal Steel & Power Ltd.

Jindal Steel has received a Letter of Intent (LoI) from the Government of Odisha for a 50-year mining lease for the Roida-I Iron Ore and Manganese Block in Keonjhar district. The Roida-I block, spread across 104.84 hectares, holds a mineral deposit of 126.05 million tonnes and comes with an Environmental Clearance capacity of 3 million tonnes per annum (MTPA). This vital resource is expected to strengthen Jindal Steel's raw material supply and support its goal of integrated and sustainable steel production in India's mineral-rich eastern region.

Emirates Global

Emirates Global Aluminium (EGA) has completed a debottlenecking expansion at its Al Taweelah alumina refinery, which will unlock up to 50,000 tonnes per year of additional alumina production. The project installed a third ball mill at the alumina refinery, which it said will enhance operational resilience and enable future production growth at the UAE's only alumina refinery. Al Taweelah alumina refinery has consistently exceeded its nameplate capacity of 2 million tonnes of alumina per annum every year since its 2019 startup. Last year, Al Taweelah alumina refinery met 49% of EGA's total alumina requirements.

VARIETY OF MATERIALS

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FM 98 2:1 N
FM 97 2:1 LC
FM 97.5 2:1 LC
FM 98 2:1 LC

Fused Magnesite

DBM 90
DBM 95
DBM 97

Dead Burnt Magnesite

RKCB 76
RKCB 78
RKCB 80
RKCB 84
RKCB 86
RKCB 90

Rotary Kiln Calcined Bauxite

M 60
M70

Mullite

ALMAG 22/ MA 78
ALMAG 32/ MA 67
ALMAG MA 90

Fused Almag Spinel

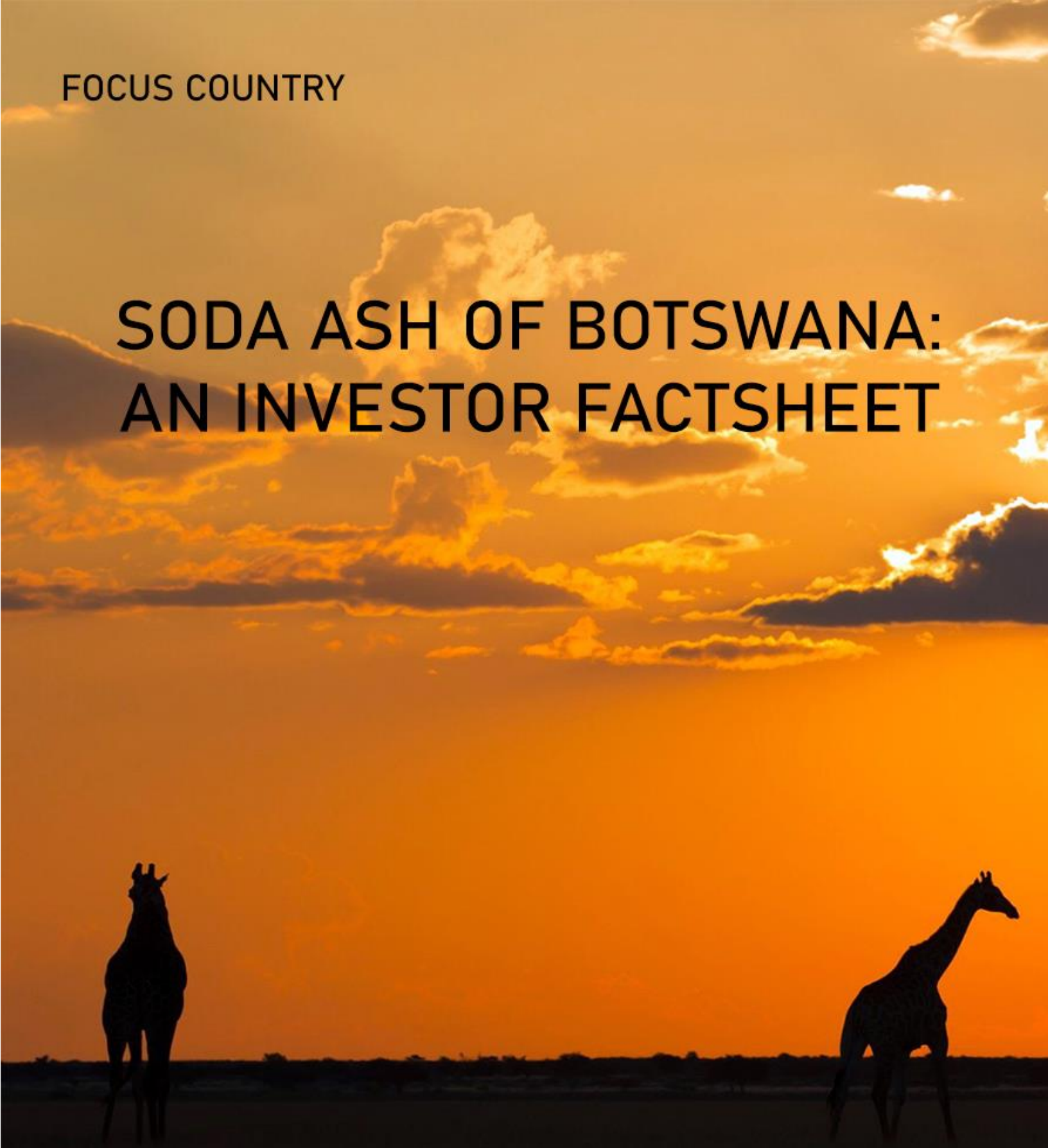
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FOCUS COUNTRY

SODA ASH OF BOTSWANA: AN INVESTOR FACTSHEET



Botswana is one of the largest producers and exporters of soda ash in Africa. The country is now welcoming foreign investors to further develop the sector.

Production of both salt and soda ash in Botswana are carried out by the partly state-owned Botswana Ash, commonly known as BotAsh. The company operates one of the few large natural soda ash reserves globally, with production capacity of 300,000 tonnes of soda ash and approximately 650,000 tonnes of salt annually.

THE SODA ASH SECTOR:

The Botswana Ash (Pty) Ltd (BotAsh), the only extractor of Soda Ash, is a 50/50 partnership between the Government of Botswana and Chlor Alkali Holdings (CAH) Group, a South African based company, which is also the management partner. Botswana Ash has a capacity of 300,000 tons of Soda Ash per annum and currently produces over 280,000 tons, making the country one of the largest producers in the world. Bulk Soda Ash is loaded at Sua Pan in Botswana and transported to the Natalspruit depot in South Africa.

60% of its soda ash is sold to the glass industry in South Africa. It is used as a fluxing agent as it lowers the melting temperature of the raw material pure silica, thus reducing energy requirements. Botash sells around 20% of its soda ash to the chemical industry. Both dense and light soda ash are used in chemical reactions to produce inorganic or organic compounds that are in turn used in a range of different applications. 2% of soda ash is sold to the detergent industry.

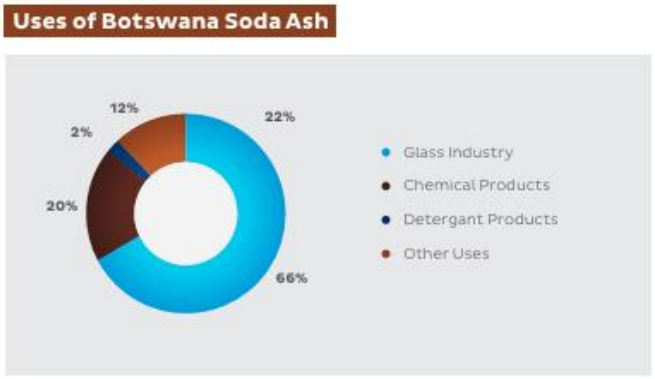


Fig 1

Light soda ash is used in powdered, paste and soap detergents where it acts as a builder. Additionally, it acts as a water softener and has a cleaning function. 11% of soda ash is sold to metallurgical applications or steel & vanadium. In the vanadium sector, soda ash is used for vanadium ore beneficiation. In steel works, it is used as a flux, and to reduce limestone and coke consumption in blast furnaces. It is also used to reduce the phosphorous and sulphur content in cast iron which is used to produce high quality steel.

THE EXPORT MARKET:

Southern African Development Community (SADC) offers an attractive export market for Botswana Soda Ash as these countries are a significant markets for Soda Ash.

Prices for Soda Ash vary according to each country and South Africa imports a significant volume compared to other regional countries. This price is over $0.20/kg. Besides Namibia and Zambia, all other SADC countries pay average Soda Ash prices above $0.20/kg. Botswana is already the largest Soda Ash exporter to SADC Region. The country exports over 35,000 tons to other SADC countries. Other significant exporters of Soda Ash into SADC include:

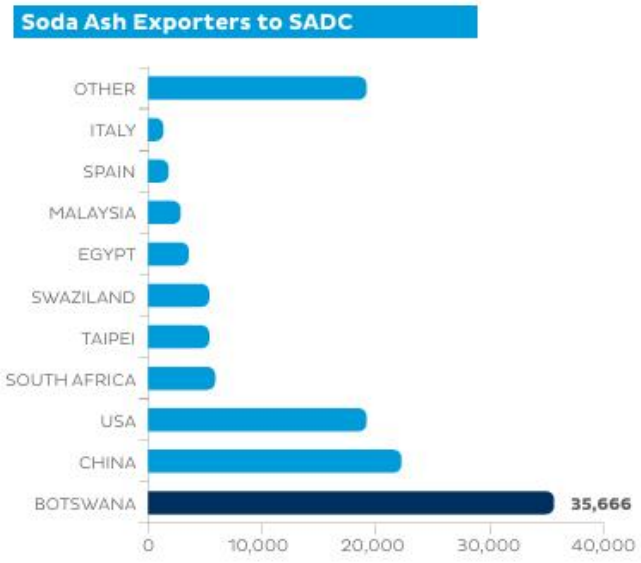


Fig 2

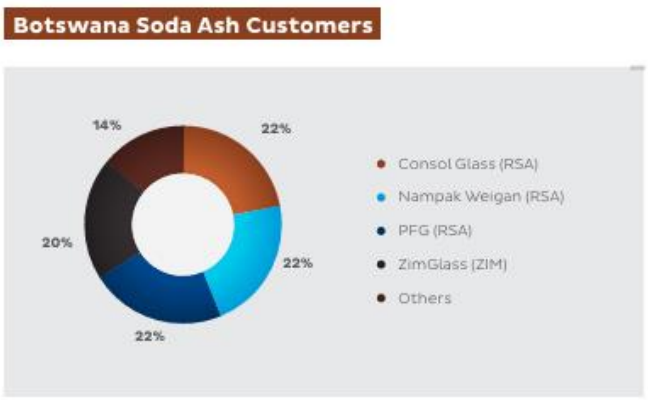


Fig 3

INVESTMENT OPPORTUNITIES IN THE SODA ASH SECTOR

Opportunity 1:

Chromium Production

For the production of pure chromium, the iron has to be separated from the chromium in a two-step roasting and leaching process. The chromite ore is heated with a mixture of calcium carbonate and sodium carbonate in the presence of air. The chromium is oxidized to the hexavalent form used in stainless steel, other alloys and steel plating in the car industry.

Opportunity 2:

Chemicals – Applications

a. Sodium Dichromate uses include:

- Main ingredient of chromium chemicals,
- Water softener in laundering,
- Additive to swimming pools to raise the PH and neutralize effects of chlorine,
- Food additive (E500) acidity regulator, anticaking agent and raising agent.
- Wetting agent, brick industry
- Tannery and fur industry for leather and fur tanning;
- Chemical industry for producing non-organic pigments, catalyzers and other chromecontaining elements;
- Textile industry for fabric pickling;
- Other industries in passive mixtures content, in anti-freeze liquid for engines, acetylene cleaning and chemical reagents

b. Sodium Chromate uses include:

- Corrosion inhibitor in petroleum industry,
- Dyeing auxiliary in textile industry,
- Wood preservative,
- Red blood cell volume diagnostic.

c. Sodium Silicate uses include:

i. Spray dried detergents
ii. Soap manufacturing
iii. Water treatment
iv. Deflocculation of ceramic clays
v. Foundry - CO_2 and self-set Process
vi. Soil Consolidation
vii. Tube Winding Adhesives
viii. Welding Electrode Manufacture Opportunity

Opportunity 3:

Swimming Pool Care Soda Ash is widely used for the water treatment in swimming pools to increase swimming pool alkalinity (Increase in pH). The final product requires minimal processing and it is sold to consumers in packs of 500gr – 4kg. There is potentially an opportunity for an investor to proceed with the following:

- Set up operations nearby Sowa Town Production Plant to pack soda ash in consumer ready pack sizes in order to satisfy the domestic and other markets north and west of the borders
- Set up operations nearby Botash's South Africa depot to pack soda ash in consumer-ready pack sizes in order to satisfy the South African market.

The operations could be set up in parallel with salt packing facilities to ensure maximum synergies. There are estimated 170.000 pools in South Africa (3 per 1000 inhabitants) corresponding to 100,000 pools in rest of Southern Africa. Assuming that:

- Swimming pools open 6 months per annum
- 1kg of soda ash is required per swimming per month Price of consumer pack is USD 3.00 per kg

Opportunity 4:

Potassium chloride is a naturally occurring compound made up of potassium and chlorine, and its uses include:

.

- Agriculture – fertilisers, animal feeds
- Food processing – salt substitute
- Water softener – Sodium chloride substitute

- "Three drug cocktail" – one of the three active ingredients for lethal injections used in the USA
- Food supplement – against a condition called "Hypokalaemia"
- Industry
- Radiation monitoring equipment
- Common batteries
- To melt ice

Potassium Chloride – Applications

I. Agriculture: In Agriculture, Potassium fertilizers are commonly used to overcome plant deficiencies. Potassium chloride (KCl), the most commonly used source, is also frequently referred to as muriate of potash or MOP. Potassium chloride is the most widely used K fertilizer.

II. II. Animal feeds: Pets and livestock need to be fed potassium to avoid reaching low potassium levels, especially during heavy training, as it is essential to the functioning of many physiological systems, especially to neuromuscular function that is lost in sweat. It also contributes in improving your pet's appetite under stressful situations and aids in digestion of nutrients for maximum feed efficiency.

III. III. Medicine: Potassium is a mineral that is found in many foods and is needed for several functions of your body, especially the beating of your heart. Potassium chloride is used to prevent or to treat low blood levels of potassium (hypokalemia).

Opportunity 5:

Detergents production is a more value added business vs. soda ash. Exports in 2015 from South Africa were valued around $160 million. Soda Ash (Sodium Bicarbonate) is used as a base or carrier for the following applications: Scouring powder

Powder detergents Prospective Customers for Detergents/Cleaning products

- Gaborone Chemicals
- Clover Chemical Industries
- Africa-Chemicals
- Kgalagadi Soap Industries
- Unilever (need to meet quality parameters) • Procter and Gamble
- Blendwell
- The Soap Factory
- Bliss Brands Chemicals
- Reckitt Benckiser
- Tiger Brands
- Britechem



Opportunity 6:

Paper Mills and Pulp Soda helps increase the pH in the pulping process of fibres. The higher pH of the paper-fibres solution results to fibres smoothen and swell facilitating the grinding process of the fibres. Additional potential uses of soda ash include Flue Gas Desulfurization (FGD). It is a technology which is used to remove sulphur dioxide (SO_2) from the exhaust flue gases of fossil fuel power plants. For example, in a typical coal-fired power station, FGD will remove 95-99 percent of the SO_2 in the flue gases.

Botswana Investment and Trade Centre (BITC)

These opportunities and estimates provided on this brief are calculated based on current available knowledge. Further investigation is recommended to evaluate the size of the opportunities in SODA ASH more accurately. For the detailed SODA ASH Value Proposition kindly contact:

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SHREE SADASHIV REFRACTORIES PVT LTD

ABOUT US

Shree Sadashiv Refractories Pvt Ltd is an emerging company in the business of Mining and Processing of Refractory Raw Materials in Jamnagar, Gujarat in India. We are engaged in producing Refractory Raw Materials like Calcined Bauxite, Calcined Clay & Chamotte.

MISSION

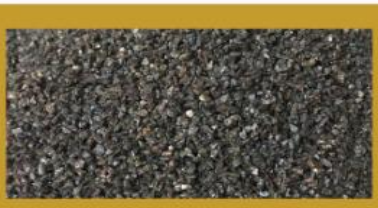
SSRPL's core business mission hinges on its' commitment quality and service and offering raw material products consistent in size, chemistry & physicality. Our Laboratory is equiped with latest equipment for testing as per the industry standard.

KEY PRODUCTS



CALCINED BAUXITE

Refractory Bauxite, also known as Calcined Bauxite is produced by sintering high alumina bauxite in rotary kilns at high temperatures.



BROWN FUSED ALUMINA

Calcined Bauxite is heated to Temperatures above 2000°C through smelting process in Arc Furnaces. Then slow solidification process is followed to get blocky crystals, which in other words is known as Brown Fused Alumina.



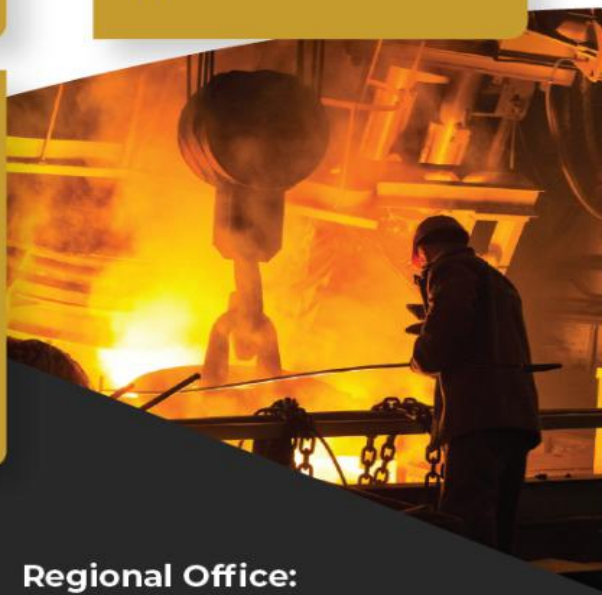
CALCINED CLAY

Calcined clay is obtained by calcining (heating) superior grade clay at high temperature in Rotary Kiln.



WHITE FUSED ALUMINA

White Fused Alumina is manufactured by the Fusion of Pure Quality Calcined Alumina in Arc Furnaces with Temperatures greater than 2000°C. After Slow solidification, a high purity synthetic material is obtained.



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EXPLORING REFRACTORY RAW MATERIAL PROCUREMENT CHALLENGES FROM CHINA



Indian refractory industry is heavily dependent on imported raw materials from China. A brief outline of the key challenges is outlined in the article.



China controls approximately 80% of worldwide fused and dead burnt magnesite production, and also has overwhelming majority market share of calcined bauxite, white fused alumina and brown fused alumina businesses. Indian refractory industry too is heavily import dependent when it comes to sourcing of refractories raw materials with conservative estimates being 35-40% of total refractories raw material needs is met by Chinese suppliers. However diversification in sourcing of raw materials is happening with a case point being white fused alumina which is now being produced by a number of domestic manufacturers.
The primary imports from China include:

- Fused Magnesite, Dead Burnt Magnesite, Caustic Calcined Magnesite
- Brown Fused Alumina & White Fused Alumina
- Calcined Bauxite
- Fused Mullite
- Silicon carbide.



Fig 1

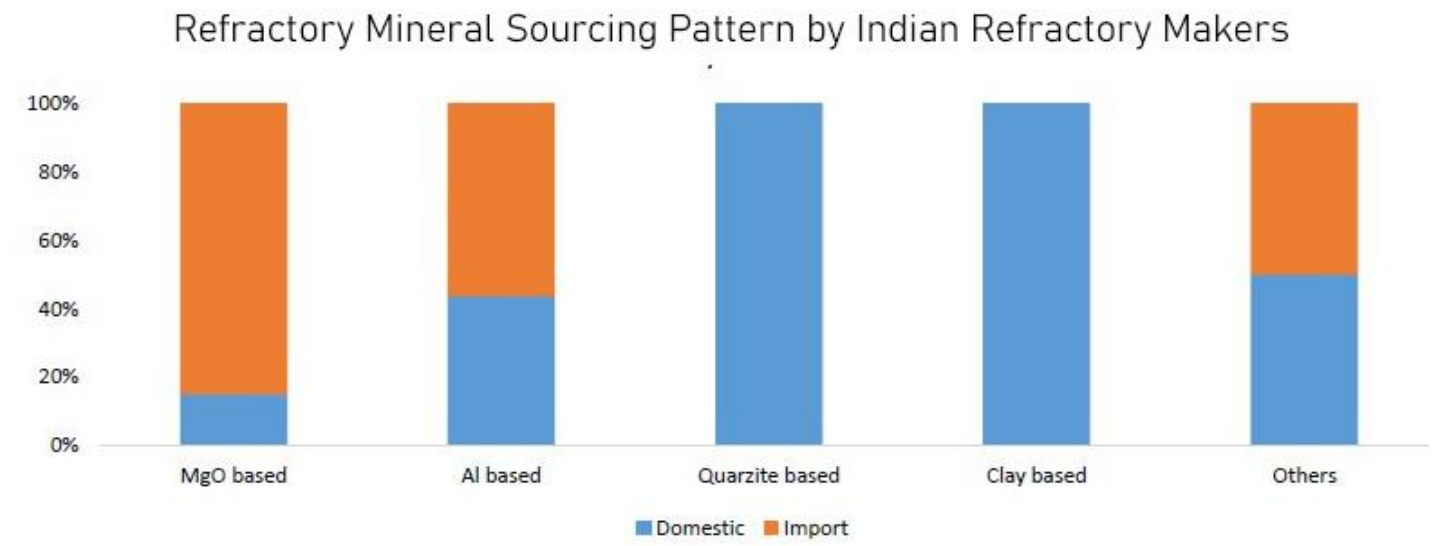


Fig 2 (adopted from IMFORMED, China refractory minerals outlook in transition)

CALCINED BAUXITE

The Indian refractory industry remains heavily dependent on Chinese calcined bauxite, as refractory grade bauxite deposit is scant in India. While exact percentages for imported calcined bauxite is not available vis-à-vis the net demand, its critical role and China's global supply dominance suggest a high level of reliance. In India, refractory grade bauxite is found only Devbhoomi Dwarka district of Gujarat. Good quality bauxite reserve has already been depleted in Government land, while private land owners are not interested to let go their land for mining as there is no guarantee they will get the mining right through auction (highest bidder gets the mining right as per MMDRA).

At present, GMDC and some private players are supplying bauxite/calcined bauxite and meeting almost half of India's calcined bauxite demand. Yet quality continues to fluctuate widely for reasons already mentioned above.

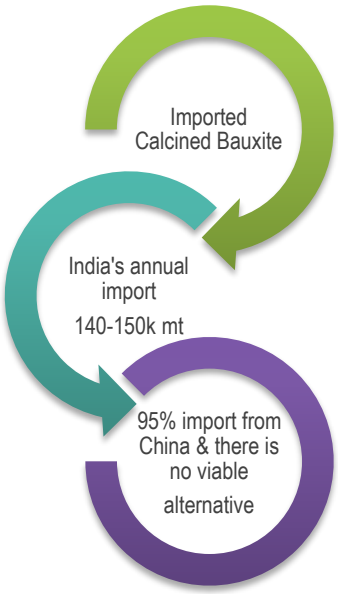
As good quality Indian bauxite sources have dried up, many calcination units of Porbander, Gujarat have started importing raw bauxite from Guyana. However high energy cost and irregular supply of feedstock have not made the venture very popular. For this reason India's dependence on China regarding supply of calcined bauxite is very high.

For high performance products, refractory makers need calcined bauxite with higher purity for which China is the only viable source.

Top Chinese calcined bauxite suppliers to Indian market are:

- Chuen Yick Industrial Limited
- Cmp Tianjin Co Limited
- Global Monarch F Z C
- Hongkong Baide International Trading Co Limited
- Hy Int L Trading Co Limited
- Minchem Impex Singapore Private Limited
- Thyme Hongkong Co Limited
- Wise Power HK Industrial Limited





.Fig 3

BROWN FUSED ALUMINA

Brown fused alumina is made by melting bauxite (calcined), carbon materials (like coke or anthracite), and iron filings in an electric arc furnace at temperatures over 2000°C. Barring a few isolated cases where Brown Fused Alumina is manufactured from Calcined Alumina, the basic feedstock of BFA is refractory grade bauxite, a mineral that is scant in India. Also fusion cost is higher in India compared to China while the price fluctuation is wide as per global demand scenario. For this reason BFA production in India has been restricted to few players who have deep pocket to absorb these market fluctuations.

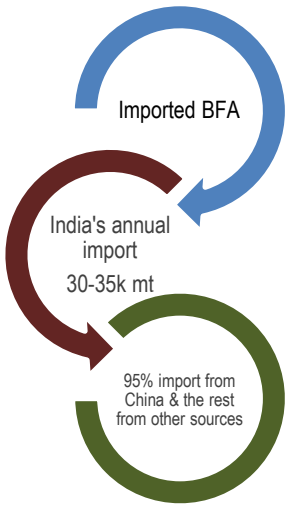


Fig 4

Top Chinese BFA suppliers to Indian market are:

- AIQ Limited
- Chongqing Saite Corundum
- Cremer Erzkontor Hong Kong Limited
- Futong Industry Co Limited
- Guangzhou Qianyang Metals And Machinery Co Limited
- Heavy Return Trading Limited
- Linyi City Lanshan District Shunyue Trading Co Limited
- Luoyang Yaning Abrasives Co Limited
- Meizer Minerals Co Limited
- Mingtai New Materials Co Limited
- Prosperity Development Enterprise Limited
- Traxys Europe S A

WHITE FUSED ALUMINA

White fused alumina is the most important alumina aggregate that is used in the refractory industry. Earlier India was completely dependent on imported WFA barring few producers like Carborundum Universal Ltd, Orient Ceratech Ltd. (under Ashapura Group). Now they have ramped up their production due to high demand from refractory industry while new players like Romco Aluminates have entered the field. Other players in this field include Ceramics International, Chirag Fuel etc. The Maithan Group and Bathwal Corporation are developing an alumina plant in the Khalifa Economic Zone of Abu Dhabi to produce specialty alumina products. Production capacity will be 80,000 tonnes per year, with potential to expand to 150,000 tonnes annually. Expected to commence production in 2026, production starts, it will have significant impact on Indian WFA market and we may see significant decrease in import of Chinese WFA.

Production costs for WFA in India are estimated at $1,200–1,800 per ton, driven by higher energy and compliance costs, though local bauxite availability helps. Facilities with captive power could lower costs to $1,000–1,500 per ton for large producers. Production costs range in China from $1,000–1,500 per ton, benefiting from economies of scale, lower energy costs, and advanced technology. However, rising bauxite import costs (from Australia etc) and stricter environmental regulations may push costs toward the higher end. Top Chinese WFA suppliers to Indian market are:

- Chiheng Minerals Private Limited
- Cremer Erzkontor Hong Kong Limited
- Futong Imp And Exp Inc
- Heavy Return Trading Limited
- Shandong Bosheng New Materials Co Limited
- Thyme Hongkong Co Limited
- United Mineral Distribution Co Limited

FUSED MAGNESITE

With 70% of world magnesite production, China has a huge influence over the global magnesia market. India has complete dependence on China for its need of fused magnesite because of quality and price factors. Turkey could have been an alternative source and their products are equally or in some cases even better than their Chinese counterparts as fusion temperature of Turkey magnesite is 2750-2850^{0}C leading to formation of very large periclase crystals. However price is comparatively higher compared to Chinese counterparts for which it has occasional takers.



Due to China's immense sway over magnesite market, it has always been the intention of the provincial Governments to consolidate the magnesite mines into a handful of companies and turn the entire business into a low volume high margin one. Recently Liaoning province announced the results of magnesia capacity reduction, with the list involving a total of 227 enterprises, and the retained production capacity of 8.64 million tons. With the implementation of production capacity reduction, magnesia output may be restricted. According to available information, the idle production capacity of various types of magnesia has exceeded 50% or even more. On the other hand, the demand from traditional downstream industries such as steel and cement remains extremely weak. Under the circumstance of both supply and demand reduction, whether the magnesia market can recover its upward momentum in the later period will depend largely on changes in end-user demand. In the past, attempts had been made to produce Sea Water Magnesia in Vizag but the project failed due to economic reasons. The same cost benefit paradigm persists till date for which production of SWM in India is not viable.

Top Chinese FM suppliers to Indian market are:

- Chiheng Minerals Private Limited
- Hongyun Mineral Co Limited
- Minrefractory China Limlted
- Realhi Trade Co Limited
- Refracsource Private Limited
- Sakthi International Hk Limited
- Songmag Hk Limited
- Thyme Hongkong Co Limited

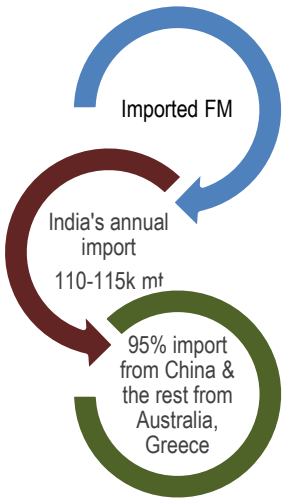


Fig 5

DEAD BURNT MAGNESITE

China is the biggest player in this market with almost 90% market share. Apart from quality, price and easy availability also play determining role. India cannot produce good grade of DBM because of high level of impurities in its local varieties. Almora magnesite is high in iron while Salem magnesite is high in silica. Past attempts to beneficiate the above have not been commercially viable. For this reason, India is completely dependent on Chinese imports.

Top Chinese DBM suppliers to Indian market are:

- Chenxin Refractories Co Limited
- Dalian Renheng Chemical Products Co Limited
- Hongtong Ruixiang International Enterpris
- Minrefractory China Limited
- Refracsource Private Limited
- Relove Refra Co Limited
- Songmag Hk Limited
- Yingkou Kaining Industry Co Limited
- Yingkou Yingwei Magnesium Co Limited

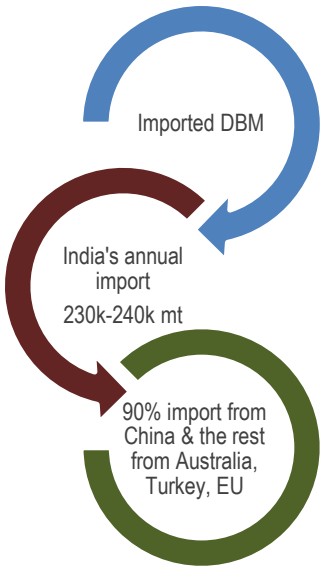


Fig 6

GRAPHITE

Indian refractory makers mostly depend on Madagascar (~75%) and Mozambique (~20%) because of their superior quality and easy availability. Graphite imported from China is mostly used in batteries, automobile industries, brake lining etc. Only a very small fraction of graphite imported from China goes to meet the requirement of flake graphite for the refractory industry.

China's graphite export control policy introduced on December 1, 2023, requires exporters to obtain permits for specific graphite products, including high-purity, natural flake graphite citing national security concerns. These controls were further

HIGHLIGHTS

China produces 67% of global supply; used in magnesia-carbon bricks for steelmaking.

Chinese Bauxite is essential for high-alumina bricks & shapes, castables etc; alternatives like Guyana explored.

India is fast reaching to be by and large self-reliant in White Fused Alumina with a singnificant number of local producing various grades of WFA.

Silicon Carbide manufacturing cost is high in India due to high power tariff for which a significant amount is imported from China other than Bhutan and Vietnam.

tightened in December 2024, with stricter end-user and end-use checks specifically targeting exports to the United States, as part of escalating trade tensions. The policy is not a complete ban but involves licensing requirements, which have led to a significant decline in exports. For instance, China's flake graphite exports dropped by 77.66% in January-February 2024 compared to the previous year. Despite some exports continuing to destinations like the US, South Korea, and Japan under approved licenses, the controls have disrupted global supply chains. However Indian refractory industry is not affected by this export control due to alternatives available from other sources.

IMPORT DEPENDENCE MATRIX

Dependency on China	High Dependency	Medium Dependency	Low Dependency	No Dependency	Comments
Calcined Bauxite	■				High dependency, attempts being made to import Guyanese bauxite and calcine it in locally has not been widespread.
Brown Fused Alumina	■				No alternative source has emerged.
White Fused Alumina		■			A number of Indian companies have started manufacturing WFA, reducing India's import dependency.
Fused Magnesite	■				Turkey could have been an alternative source but due to cost factors, China is more or less the sole procurement source for India
Dead Burnt Magnesite		■			Some amount of DBM is procured from Turkey and Europe. But due to cost factors, China holds overwhelming market share of DBM.
Natural Graphite				■	No dependence on China



ROMCO ALUMINATES PVT. LTD.

RomAlux

Premium Grade White-Fused Alumina

Sustainable by Design : Produced through energy-efficient processes, offering a lower carbon footprint for eco-conscious operations

Proudly Made in India : Manufactured using high-purity indigenous raw materials for complete value addition & self-reliance

Performance You Can Rely On : Proven across diverse refractory applications for consistent quality, durability, & customer trust



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India and the United Kingdom have signed the Comprehensive Economic and Trade Agreement (CETA), a bilateral free trade agreement marking a major milestone in their longstanding partnership. Bilateral trade has already reached USD 56 billion, with a target to double this by 2030. CETA provides an unprecedented duty-free access to 99 per cent of India's exports to the UK, covering nearly 100% of the trade value. This includes labour-intensive sectors such as textiles, leather, marine products, gems and jewellery, toys as well as high-growth sectors like engineering goods, chemicals, and auto components. At the same time, India has opened 89.5 % of its tariff lines covering 91 % of UK's export. Only 24.5 % of UK's export will enjoy immediate duty free market access. The agreement reduces India's tariffs on UK goods, particularly in machinery, vehicles, and minerals, by 90%, while also addressing non-tariff barriers like regulatory compliance. This is expected to increase UK exports in capital and intermediate goods, which constitute nearly 80% of UK imports to India.

The CETA's tariff reductions on UK machinery exports to India (previously facing duties up to 7.5%) and streamlined non-tariff barriers (e.g., regulatory certifications) are expected to boost UK exports by 25.5% (£865 million) in mineral-related equipment. This aligns with India's need for advanced mining technologies to support its critical minerals and base metal production (e.g., aluminium, copper).

Company	Key Products	FTA Impact (Projected)
JCB	Excavators, wheel loaders, dump trucks	+25.5% exports; tariff-free access
CNH Industrial	Hydraulic excavators, wheel loaders	Enhanced market access; sustainability focus
Dale (Mansfield)	Conveyor systems, belt reelers, ventilation	Niche underground equipment demand
Atlas Copco (UK)	Drilling rigs, compressors, rock tools	+20% exports; critical minerals focus
Sandvik (UK)	Rock-drilling tools, automated systems	+20-25% exports; tech partnerships

KEY MINERALS & INTERMEDIARIES INDIA IMPORT FROM UK

Unlike China, Russia or Indonesia, India does not import huge amount of minerals of minerals from UK. However the following are the key minerals and intermediaries that are imported from UK . We expect their prices to come down to some extent.

1. Kaolin & Ball Clay:

India imports significant amount of kaolin, molochite and ball clay from UK. The UK, particularly regions like Cornwall, is renowned for producing high-quality kaolin (also known as china clay) and ball clay, which are valued for their purity, whiteness, and fine particle size. These properties are critical for industries like ceramics, porcelain, sanitary ware, and high-grade paper production, where UK-sourced clays are preferred for their superior performance. UK ball clay is particularly sought after in the ceramics industry due to its plasticity and strength, which enhance the workability and firing properties of ceramic products like tiles, tableware, and sanitary ware.

- India's import of kaolin from UK (April-July 2025): 7000 MT
- India's import of ball clay from UK (April-July 2025): 15700 MT

The key UK companies that supply to Indian market are:

- Hempel A S
- Imerys Minerals Ltd.
- Sibelco UK Ltd.

2. Carbon Black & Trough Powder:

The UK is known for producing high-quality, specialty carbon black grades, such as high-jetness, low-PAH (polycyclic aromatic hydrocarbons), or conductive blacks, which are used in advanced applications like plastics, inks, coatings, and electronics. India's growing demand for these specialized grades, particularly in industries like automotive, packaging, and energy storage, may drive imports from the UK, where producers have expertise in premium products. Despite India's strong local production, high demand from India's tyre industry, which consumes the majority of carbon black and is projected to grow at 6-8% annually necessitates some import.

India's import of carbon black from UK (April-July 2025): 240 MT. James Durrans & Sons Limited is the main supplier in this sector.

3. Cristobalite:

Cristobalite, a high-temperature polymorph of silica, is valued for its thermal stability, low thermal expansion, and high whiteness, making it ideal for applications in industries like ceramics, refractories, coatings, and engineered stone. The UK, particularly through companies like Sibelco, produces high-purity cristobalite that meets stringent quality standards required for these applications. India's industries, such as ceramics and high-performance coatings, rely on imported cristobalite for its consistent quality and specific properties that may not be adequately met by domestic sources. Domestic production of cristobalite in India is limited or may not match the purity and specifications required for high-end applications. As a result, India imports cristobalite from countries like the UK, where advanced processing techniques ensure the desired quality.

India's import of cristobalite from UK (April-July 2025): 1325 MT. Hoben International Ltd. is the main supplier of cristobalite.

4. Hydrated Lime:

Hydrated lime is used in India for diverse purposes, including steel manufacturing, chemical production, environmental applications (e.g., flue gas desulfurization), and construction (e.g., in high-quality plaster or mortar). The country imports hydrated lime (calcium hydroxide) from the United Kingdom due to a combination of quality requirements, specific industrial applications, and trade dynamics. Lhoist UK is the main supplier of hydrated lime supplying 1050 MT to Indian market from April-July 2025. While India has significant domestic limestone resources and produces hydrated lime, imports from the UK are driven by the following reasons:

- High-Purity and Specialized Grades
- Industrial Applications Requiring Premium Quality
- Limited Domestic Capacity for Specific Grades

KNOWLEDGE tracker



ENVIRONMENT

RED MUD AS A RESOURCE

Red mud, the highly alkaline waste from alumina production, is increasingly viewed as a valuable secondary resource containing significant amounts of iron, aluminum, titanium, and rare earth elements.

Red mud is a by-product produced during the extraction of alumina from bauxite using Bayer's process. The production of red mud as a by-product of hydrothermal alumina extraction results in the production of non-dissolved iron oxides, sodium aluminosilicates, titania, and silica, in addition to rare earth elements. Due to its high alkalinity, disposal dramatically impacts the environment. India produces around 10-11 million tonnes of red mud per annum for which it is very necessary to treat it as a resource and utilize it in various ways. Red mud has been considered a building material additive and metal recovery technique for decades. In recent years, red mud has also been investigated as a potential method for cleaning up gas and wastewater. Nowadays plans are afoot to extract critical minerals from red mud.

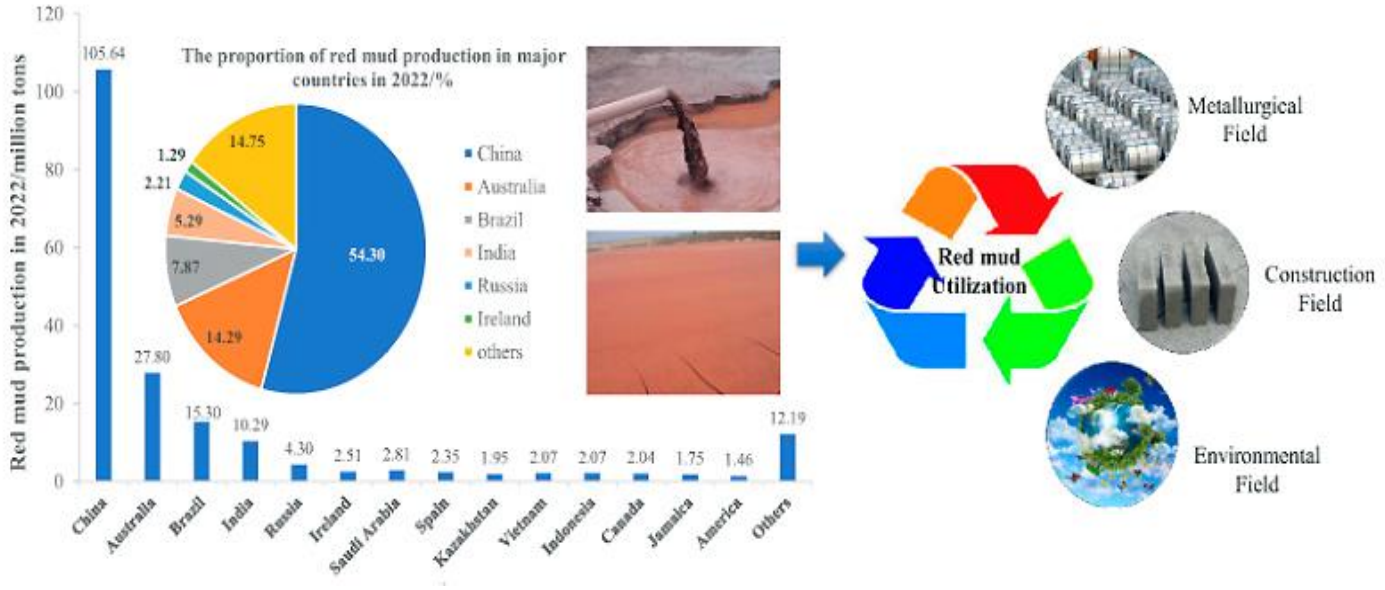


Fig 1

INTRODUCTION:

Aluminium is produced through bauxite ore, which contains high quality alumina and also some aluminium, obtained by recycling. However, in bauxite processing the two process steps are involved: In 1st step alumina is refined through the Bayer process and 2nd step the aluminum is produced by dissolving alumina using Hall-Heroult process. In the 1st step the bauxite ore is chemically dissolved with caustic soda in presence of lime at elevated temperature. The un-dissolved product is washed and filtered, which is called bauxite residue or red mud. However ~55 to 65% of residue is generated during processing of bauxite i.e 1 ton of alumina produces around 1.25 to 1.5 ton of red mud.

CHEMICAL COMPOSITION OF RED MUD:

The chemical composition of red mud contains six major constituents. Chemical analysis shows that red mud contains silicium, aluminium, iron, calcium, titanium, sodium as well as an array of minor elements namely K, Cr, V, Ba, Cu, Mn, Pb, Zn, P, F, S, As and etc. The variation in chemical composition between red mud worldwide is high.

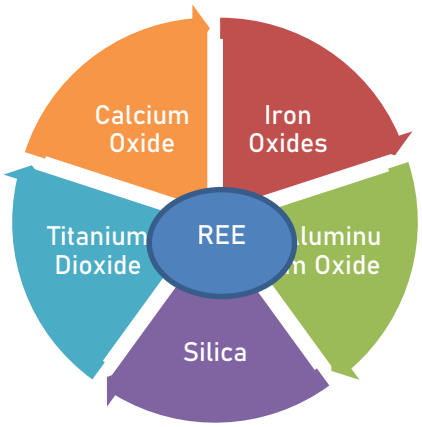


Fig 2 Chemical Composition of Red M

Chemical composition of Indian red muds

Company	Al_2O_3%	Fe_2O_3%	SiO_2%	TiO_2%	Na_2O%	CaO%	LOI%
BALCO Korba	18-21	35-37	6-7	17-19	5-6	2-3	11-14
HINDALCO Renukoot	17-19	35-36	7-9	14-16	5-6	3-5	10-12
HINDALCO Muri	19-21	44-46	5-7	17-19	3-4	1-2	12-14
HINDALCO Belgaum	17-20	44-47	7-9	8-11	3-5	1-3	10-14
MALCO Metturdam	18-22	40-26	12-16	3-4	4-5	1-3	11-15
NALCO Damonjodi	17-20	48-54	4-6	3-4	3-5	1-2	10-14

Table 1

RED MUD UTILIZATION:

Production of Construction Materials from Red Mud:

Among the uses on the utilization of red mud, the most important are for building materials production such as cement, bricks, roofing tiles and glass & ceramics.

- Geopolymers
- Clay based products
- Cement
- Bricks

Hindalco is supplying red mud to UltraTech Cement plants where it has been proved to be an effective substitute for mined materials, successfully replacing up to 3% of clinker raw mix volume. Use of red mud reduces the cement industry's dependence on natural resources and promotes a circular economy. Hindalco's alumina refineries are currently supplying 250,000 metric tonnes of bauxite residue to cement companies every month, making Hindalco the world's first company to have enabled such large scale commercial application of bauxite residue.

For Flue Gas Desulphurization:

Bekir et al. activated red mud by drying and roasting, and studied the absorption of this activated red mud for SO_2 gas. The desulfurization rate is initially 100%, and is still as high as 94% after 10 cycles. Chen et al. carried out research on the absorption and purification of waste gas containing SO2 by red mud. They pointed out that the adsorption by Bayer red mud is a process of chemical reaction and physical adsorption, and that it requires small particle sizes (more than 50% of the particles are smaller than 45 μm) and a large specific surface area (10~20 m^2/g) to improve the speed and depth of the chemical reaction, determining that the Bayer process red mud is a excellent absorbent for SO_2. The main chemical reactions are as following:

SO_2 (g) + $Na_2O \rightarrow Na_2SO_3$

$4SO_2$ (g) + $4Na_2O \rightarrow 3Na_2SO_4 + Na_2S$

$4.5SO_2$ (g) + $Al_2O_3 \rightarrow Al_2(SO_4)_3 + 1.5S$

$4SO_2$ (g) + $4CaO \rightarrow 3CaSO_4 + CaS$

The roasting pretreatment process for desulfurization generated a lot of SO_2 gas. Lv et al., when studying high sulfur bauxite, put forward a new roasting pretreatment technology that absorbs the acidic SO_2 exhaust generated by the roasting process directly by alkaline red mud generated in the alumina production process. This technology can simultaneously solve the problems of the absorption of SO_2 exhaust and the neutralization reaction of alkali red mud. What is more, the modified neutral or alkalescent red mud can also be used as construction material.

Recovery of Valuable Metals:

Red Mud is a typically metallurgical solid waste resource which predominantly includes valuable metals of aluminum, iron, titanium, sodium, potassium, rare metals and precious metals. Considering the low comprehensive utilization efficiency of RM and the urgent demand for valuable metal resources, it is of great significance to recover valuable metals from RM. Efforts are already on in this regard and various methods already suggested with their associated pros and cons.

The recycling technology mainly includes physical beneficiation, hydrometallurgy, pyrometallurgy and electrodialysis.

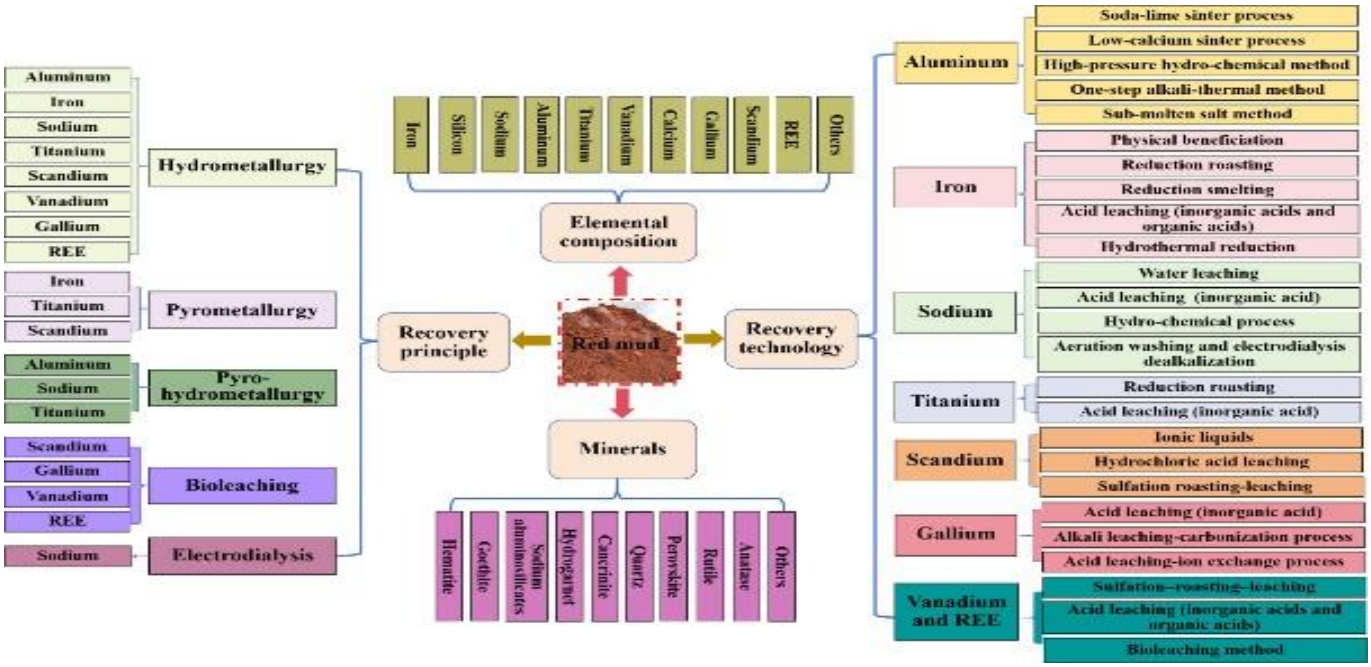


Fig 4

Creation of Green Belt:

In Jan-2022, Hindalco Muri took an initiative to grow vegetation and simultaneously neutralize the red mud soil. This time gypsum, fly ash, vermi-compost /farmyard manure (FYM) and mycorrhizae were used to make the region fertile enough to grow vegetation.
The whole process is a combination of mechanical, civil, chemical, microbial and vegetation-based treatment.

The major benefits attributed to the green cover are:

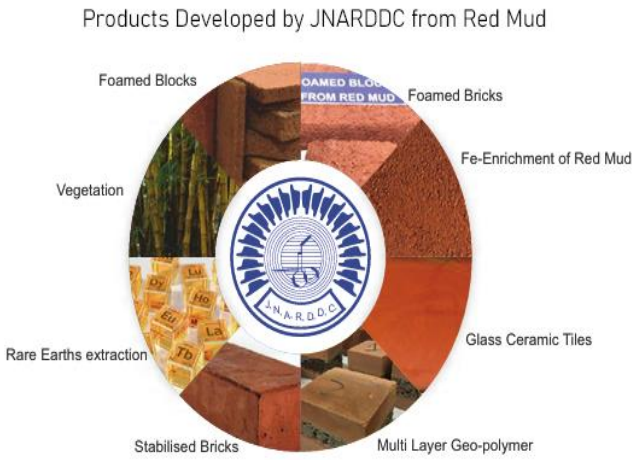
- Alkalinity of red mud top layers got neutralized.
- pH of surface runoff became normalized in the range of 6.5 to 8.5.
- Vegetation growth in red mud areas provided stability to red mud yard and reduced
- erosion.
- Green vegetation also reduced the dust emission from red mud yards which used to be a
- major challenge during summer.
- Promotion of local biodiversity and acting as a carbon sink.



Key recent developments in the area of synthetic/artificial aggregates production using red mud:

Sl. No.	Year	Materials	Procedure Description	Property observed
1.	2020	Acid-leaching tailings and Red mud	Raw materials mix in certain mass ratio using planetary ball mil, 5-6 mm pallet were sintered in electrically heated furnace with 1000-1085℃ for 30 min	Water absorption (1.46%), Bulk density (728.76 Kg/m3) and Compressive strength (10.77 MPa)
2.	2021	Red mud and fly ash	Red mud and fly ash blended with alumino silicate precursors.	Mechanical properties, densities, and internal structures using X-ray computed tomography (XCT) images
3.	2021	Red Mud and MSW bottom ash	Raw materials mixing, pelletizing by disc pelletizer and then high-temperature sintering to transformed lightweight aggregate ceramsites	Bulk density (1046.73 Kg/m3), apparent density (1783.44 Kg/m3), particle strength (27.11 MPa), 1 hour water absorption (0.8%), and pH (8.9)
4.	2021	Red mud, FGD gypsum, Aluminum dust and Carbide slag	Raw materials mixing, cold bonded granulation using disc granulator to obtained sintering-free lightweight aggregates.	Bulk density (900–1000 kg/m3), 28 day cylinder compressive strength (9.2–11.3 MPa), and water absorption

Table 1



CONCLUSION:

Instead of the traditional treatment of being treated as a 'necessary evil', today red mud is being increasingly viewed as a valuable resource whose comprehensive utilization can generate value added industrial products. However a lot many path need to traversed before our miners and concerned scientists realize that So stockpiling is not a fundamental way to resolve the problems of red mud.

A number of issues still need to be addressed as recycling of red mud is cost intensive and sometimes energy intensive. A mature market driven technology will drive more and more utilization of red point, case point being Hindalco-Ultratech tie-up as already mentioned. Using red mud as an environmental remediation material is a new focus point in terms of utilization. Due to the simple process, low cost, it is worth promoting but it is fraught with the risks of new contamination, and difficulty of recycling it after the application. Therefore, more in-depth studies are needed to assess the chemical and biological effects of its usage.

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   Ashutosh Singh Raghubanshia,b, Manish Mudgala,b*, R K Chouhanb, Anil Kumarb, & Avanish Kumar Srivastavaa,b
   aAcademy of Scientific and Innovative Research, Ghaziabad 201 002, India Centre for Advanced Radiation Shielding & Geopolymeric Materials, CSIR-Advanced Materials and Processes Research Institute, Bhopal462 026, India
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INDIA'S BALL CLAY IMPORT MARKET (LAST 6 MONTHS)

Ball clays are fine-grained, highly plastic clays, which are principally used in the manufacture of ceramic whiteware and sanitaryware where they are appreciated for their plasticity, unfired strength and their light colour on firing. They are also are also used in refractories, polymers, adhesives and sealants and in horticulture as soil amendments.

Total Ball Clay Import (mt): 28375
Total Ball Clay Import (USD): 7.1 million



Top Exporting Countries:
China: 160 mt
Portugal: 1732 mt
Thailand: 475 mt
Ukraine: 2424 mt
United Kingdom: 22905
USA: 503 mt

Ball clay is mostly imported by the sanitariware, insulators, and ceramics industries.
Some ball clay is imported to be used in cement mixtures while very little is imported by the refractory industry.

With more than 80% market share, UK stands to further consolidate its hold on Indian imported ball clay market post signing of India- UK Free Trade Agreement

Top Importers:
> CJI Porelain Pvt. Ltd.
> Duravit India Pvt. Ltd.
> Grasim Industries Ltd.
> Hindustan Urban In frastructure Ltd.
> Jaquar & Co. Pvt. Ltd.
> Kohler India Corporation Pvt. Ltd.
> Modern Insulatiors Ltd
> Sibelco Indian Minerals Pvt. Ltd.
> Toto Indian Industries Pvt. Ltd.

Top Suppliers:
> Corbario Minerais Industriais S A (Portugal)
> Imerys Minerals Limited (UK)
> Kentucky Tennessee Clay Company (USA)
> Mota Ii Solucoes Ceramicas S A (Portugal)
> MRD ECC Company Limited (Thailand)
> Sibelco Minerales Ceramicos S A (Ukraine)
> Sibelco UK Limited (UK)

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UNBURNT BASIC TEMPERING KILN



HIGH ALUMINA TUNNEL KILN



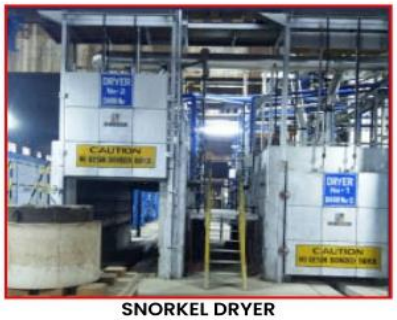
CCR KILN & DRYER



HIGH TEMPERATURE TUNNEL KILN



TABLEWARE DECORATING KILN



SNORKEL DRYER



GLASS BOTTLE DECORATING LEHR



BASIC TUNNEL KILN



UNBURNT BASIC TEMPERING KILN



GRAPHITE ELECTRODE REBAKE TUNNEL KILN



HIGH ALUMINA TUNNEL DRYER



PCPF DRYER



GRAPHITE PREHEATING FURNACE



FCPTUNNEL KILN



BASIC TEMPERING KILN

THE GROWING MARKET OF DIATOMACEOUS EARTH



The future of the diatomaceous earth market looks promising with opportunities in filter aids, fillers, absorbents, construction materials, and many other applications.



Diatomaceous earth is a naturally occurring, soft, siliceous sedimentary rock that can be crumbled into a fine white to off white powder. It is a silicon dioxide ($SiO_2 \cdot nH_2O$) mineral made up of fossilized single-celled algae called diatoms. Diatom silica is available from two sources: from culturing diatoms, which is expensive and has limited scalability, and from fossilized Diatomaceous earth minerals are available in large quantities from the mineral industry. Depending on the granularity, this powder can have an abrasive feel, similar to pumice powder, and has a low density as a result of its high porosity. The typical chemical composition of oven-dried diatomaceous earth is 80–90% silica, with 2– 4% alumina (attributed mostly to clay minerals), and 0.5–2% iron oxide. Diatomaceous earth consists of fossilized remains of diatoms, a type of hard-shelled protist. It is used as a filtration aid, mild abrasive in products including metal polishes and toothpaste, mechanical insecticide, absorbent for liquids, matting agent for coatings, reinforcing filler in plastics and rubber, anti-block in plastic films, porous support for chemical catalysts, cat litter, activator in blood clotting studies, a stabilizing component of dynamite, a thermal insulator, and a soil for potted plants and trees like bonsai. Diatomaceous earth is often processed by grinding, drying, and classifying the material into a powdery dust-like form. The basic processing of DE includes milling, possible purification, drying, and calcination to reduce moisture and make it a fine, talc-like powder, or dust.

USAGE OF DIATOMACEOUS EARTH:

There are two main types, or grades, of diatomaceous earth:

- Food-grade, with less than a percent of crystalline silica, is the only type considered safe around food and can be used inside the home or in a garden. (Do not confuse it with feed-grade products, which are rated only for animal consumption and used around livestock.)
- Pool-grade, which is more crystalline, unsafe to eat, and might contain other ingredients; it is used in water filtration.

THE INDIAN MARKET:

United States led global diatomite production in 2023 with 830,000 metric tons, followed by Denmark at 440,000 metric tons. India is not one of the top producers of diatomite with production ranging from 300-3200 metric tonnes per annum. Based on the grades, India exports as well as imports diatomaceous earth. Indian market is supported by rapid industrialization, urbanization, and increasing demand for sustainable and eco-friendly products for agriculture, food and commodities industries. DE's eco-friendly properties also align with the country's focus on sustainable materials in construction and water treatment as well as in many other industrial applications.

The Indian diatomaceous earth market is likely in the range of USD 60–100 million in 2025, factoring in the country's growth trends and regional market share.



India's diatomaceous earth market growth pattern aligns closely (slightly above the average growth trend) with the global or Asia-Pacific CAGR, potentially in the range of 5-6% from 2024 to 2030, given its role as a significant market player in the region. For context, the global market is expected to grow from USD 1.23 billion in 2025 to USD 1.89 billion by 2033 at a 5.5% CAGR, and India's

growth is likely driven by similar factors, such as increased adoption in pest control, water filtration, and construction, increased consumption of cosmetic items.

Agriculture:

DE is widely used as a natural insecticide and soil conditioner. It controls pests like ants, aphids, bed bugs, and mites by dehydrating them and is mixed with grains to prevent pest infestations during storage. It also enhances soil structure, nutrient uptake, and crop yield.

Market Drivers:
Government initiatives promoting organic farming and sustainable agriculture are boosting DE demand. India's large agricultural sector, with a growing emphasis on eco-friendly pest control, is a significant driver for DE's growth.

Filtration:

DE is a critical filtration aid in the food and beverage industry, particularly for beer, wine, fruit juices, and edible oils. Its high porosity makes it ideal for removing fine particles from liquids. It is also used in water treatment due to stringent quality.

Market Drivers:
Globally, filtration accounts for over 50% of the diatomite market share, and India's expanding food and beverage industry contributes significantly to this growth. Rising consumption of processed foods and beverages, coupled with increasing demand for clean water, drives DE use in filtration.

Construction:

DE is used as a lightweight aggregate and insulator in construction materials, reducing the weight of products and improving energy efficiency.

Market Drivers:
India's booming construction sector, fueled by urbanization and infrastructure development, increases demand for DE in insulation and lightweight materials. The focus on sustainable construction materials further supports growth.

Cosmetics and Personal Care:

DE is used in skincare products (e.g., face masks, exfoliants) and deodorants due to its absorbent and abrasive properties. It reduces drying time in clay masks and acts as a natural ingredient in eco-friendly formulations.

Market Drivers:
The use of DE in cosmetic manufacturing was globally valued at USD 212 million in 2024 and is projected to reach USD 315 million by 2031, with a CAGR of 5.9%. India, with its growing beauty industry (part of the global USD 427 billion market in 2022), contributes to this growth. Increasing consumer preference for natural and sustainable beauty products drives demand in India's cosmetics sector.

Animal Feed and Husbandry:

DE (feed-grade, e.g., Grade AA) is used to control parasites in livestock and poultry, mixed with bedding or applied as a dust. It also supports animal health by preventing infestations.

Market Drivers:
The use of DE in cosmetic manufacturing was globally valued at USD 212 million in 2024 and is projected to reach USD 315 million by 2031, with a CAGR of 5.9%. India, with its growing beauty industry (part of the global USD 427 billion market in 2022), contributes to this growth. Increasing consumer preference for natural and sustainable beauty products drives demand in India's cosmetics sector.

Industrial Applications:

DE is used as a filler in paints, coatings, rubber, and plastics, and as an anti-blocking agent in plastic films. It is also employed in oil spill cleanup and waste remediation due to its absorbent.

Market Drivers:
Rapid industrialization in India, particularly in chemicals, paints, and plastics, supports DE demand.

The Asia-Pacific region, including India, accounts for about 31% of the global DE market, with India being one of the key growth drivers due to its agricultural and industrial sectors. India's market is expected to grow at a faster CAGR than the global average, potentially aligning with China's high growth rate, driven by consumer awareness and industrial expansion.

PRICING INSIGHT:

Sl. No.	Type of DE	Price (INR/kg)
1.	Agricultural Grade	9-12
2.	Feed grade DE	40-50
3.	Pest control grade	120-130
4.	Industrial grade	45-60
5.	Food grade	330-360
6.	Animal feed grade	6-12

CONCLUSION:

The diatomaceous earth market in India is a dynamic and growing sector, driven by its applications in agriculture, filtration, construction, cosmetics, and animal husbandry. While exact market size figures for India alone are not explicitly available, the country's contribution to the Asia-Pacific region's 31% share of the global USD 1.2–1.4 billion market (2023–2024) underscores its importance. With a projected global CAGR of 5.0–6.0% through 2030–2032, India's market is likely to grow faster due to its agricultural and industrial expansion. Key players along with supportive government policies and sustainability trends, position India as a significant player in the DE market.



DIATOMACEOUS EARTH EXPORT FROM INDIA

India's Export of Diatomaceous Earth (2024-25):

Export in MT: 4750 MT

Export in USD: USD 1.60 million

Top Destination:

- Australia
- Bhutan
- China
- France
- Indonesia
- Morocco
- Nepal
- Netherlands
- Qatar
- Singapore
- Spain
- Sri Lanka
- Taiwan
- Vietnam

The top exporters are:

- Agripower Fertilisers India Private Limited
- Balaji Enzyme And Chemical Private Limited
- Gem Corpochem Private Limited
- Neelam Aqua And Speciality Chem Private Limited
- Seema Minerals And Metals



TECHNICAL SECTION

Decoding Minerals Data Sheet for Newbies

The Purity Puzzle

How can you tell if a product is pure or if it's been diluted? The secret lies in the chemical composition section of the data sheet.

Here's a handy trick: compare the listed chemical composition to the theoretical values of a pure mineral. Let's take kaolin as an example. If you Google "theoretical composition of pure kaolin", you will find that pure kaolin should have about 46% silica and 39% alumina. If the values on your data sheet are close to these, you're likely dealing with a high-purity product. What to look for when checking mineral purity:

- Compare the chemical composition to the theoretical values
- Check for unexpected elements or impurities

One of the first things you might wonder about a mineral is its purity. For instance, a high-quality kaolin might show 47% silica and 37% alumina – that's pretty close to the ideal! On the other hand, if you see values like 24% alumina and 67% silica, you know you're looking at a less pure, milled kaolin with significant silica impurities.

This principle applies to other minerals too. For talc, pure samples should have around 63% silica and 31% magnesium oxide. Keep an eye out for unexpected elements like high levels of calcium oxide. That could indicate the presence of calcium carbonate as an impurity, or used to dilute the talc to make it cheaper.

Decoding Calcination

Ever wondered if a product has been calcined? The answer is hiding in plain sight – just look for the LOI value! LOI stands for Loss on Ignition, and it's a key indicator of whether a mineral has been heat-treated or not.

LOI (Loss on Ignition) tells you about calcination:

Low LOI (< 1%): Indicates calcined product
Higher LOI: Suggests presence of water or volatile components
Zero LOI: Potentially fully processed or synthetic material

For non-calcined products, the LOI will typically be a significant percentage. This represents the weight lost when the sample is heated, usually due to the loss of water or other volatile components in the crystal structure. However, for calcined products, you'll see a very low LOI – often less than 1%. This is because the calcination process has already driven off most of the volatile components.

The Upsizing Opportunity

Here's a little-known secret that could save you money: upsizing. This involves using a slightly coarser grade of a mineral to replace a finer grade in your formulations. Since finer grades are usually more expensive, this can lead to significant cost savings.

Potential benefits of upsizing:

- Cost savings
- Potentially similar performance
- Reduced processing requirements
- Broader application flexibility

For example, you might find that a 10-micron calcium carbonate with a D50 (median particle size) of 6.5 microns could potentially replace a 5-micron product in some applications. It's not guaranteed to work in every case, but it's certainly worth experimenting with!

Navigating Particle Size Measurements

Particle size information can be confusing because it's not always presented in the same way. You might see sizes given in microns or mesh sizes, depending on the supplier. A micron is one-thousandth of a millimeter – for reference, a human hair is about 50 microns in diameter. Mesh sizes, on the other hand, refer to the number of openings per inch in a filter cloth. The relationship between mesh and microns is inverse – a higher mesh number means a smaller particle size.

You can download a free Mesh-to-Micron Conversion Table app from the net.

The conversion table is particularly useful when dealing with minerals from suppliers in countries like India and China, who often report particle sizes in mesh rather than microns. It covers a wide range of sizes, from 4 mesh (equivalent to 4,000 microns) all the way down to 2,500 mesh (equivalent to 5 microns). Remember, when using the conversion table, it's important to know which mesh standard is being used (e.g., British, American, or others), as this can affect the conversion. The supplier should specify this on their data sheet.

By using this conversion table, you'll be able to make more informed decisions about the minerals you're considering, regardless of how the particle size is reported. It's just one more tool to help you unlock the secrets hidden in mineral data sheets!

The Whiteness Conundrum

For many industries, especially paint manufacturing, the whiteness of a mineral is crucial. However, comparing whiteness across products can be tricky because it's measured and reported in various ways.

Whiteness measurement considerations:

- Different measurement scales (e.g. R457, Ry)
- Closer to 100% indicates higher whiteness
- Titanium dioxide typically scores around 99%
- Always compare using the same measurement standard

You might see terms like whiteness, brightness, or reflectance. These are measured at different wavelengths, such as R457 or Ry. To make accurate comparisons, make sure you're looking at the same measurement type. If in doubt, don't hesitate to ask the supplier for the specific value you need.

Remember, the closer to 100% the whiteness value is, the whiter the product. Titanium dioxide, known for its exceptional whiteness, typically scores around 99% on most scales.

Armed with these secrets, you're now ready to decode mineral data sheets like a pro!

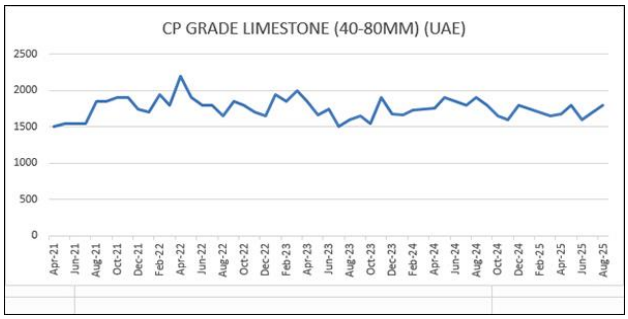
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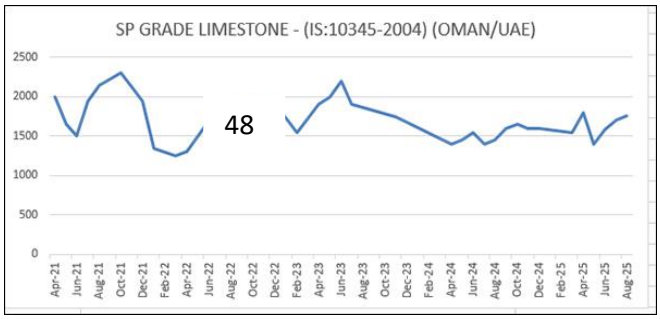
China's Export of White Fused Alumina (mt):

Item	H1 2025	H1 2024	% Change
January 2025	28500	37200	-28.39
February 2025	17850	36850	-51.56
March 2025	39050	42000	-7.02
April 2025	48100	37900	26.91
May 2025	50850	42200	-20.5
June 2025	37800	39800	-5.03

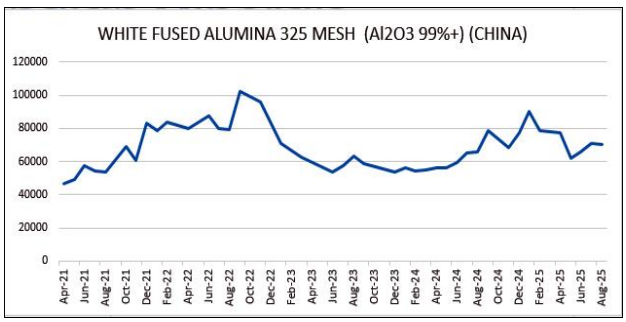
Production Capacity of Indian DRI Industry:

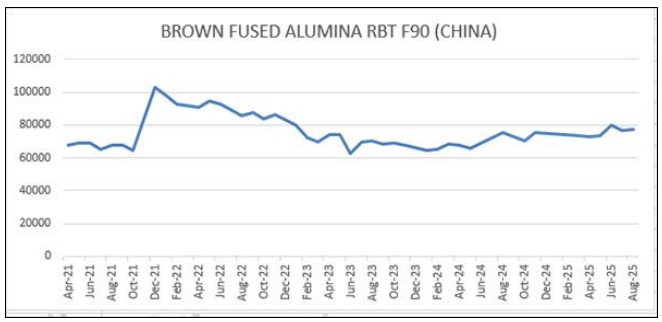
Process Route	No. of Units	Capacity (MTPA)
Coal Based	283	37.073
Gas Based	5	12.20
Total	288	49.273

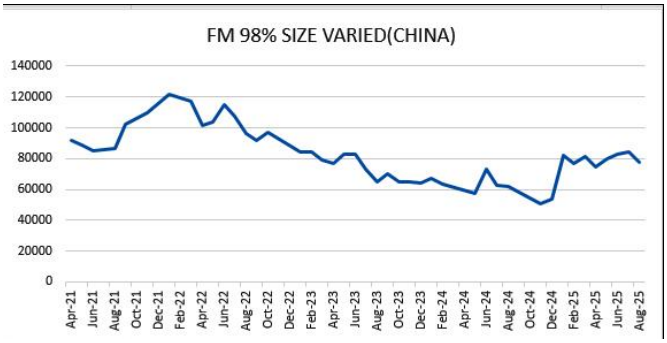


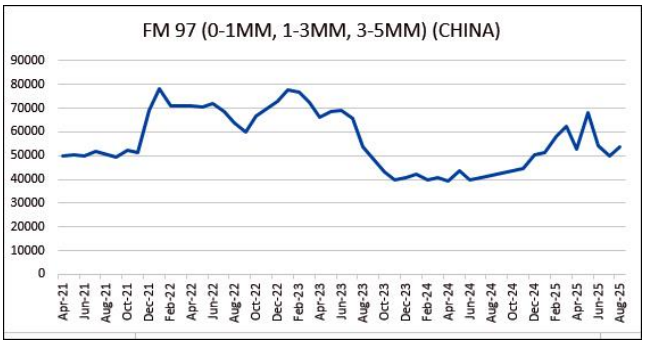


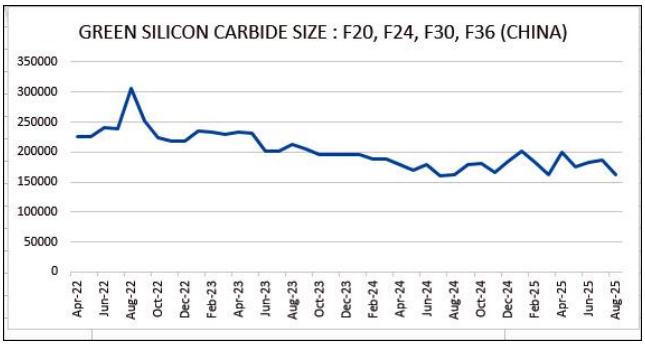
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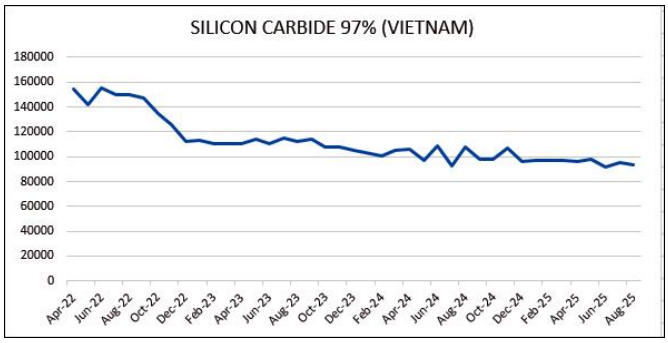












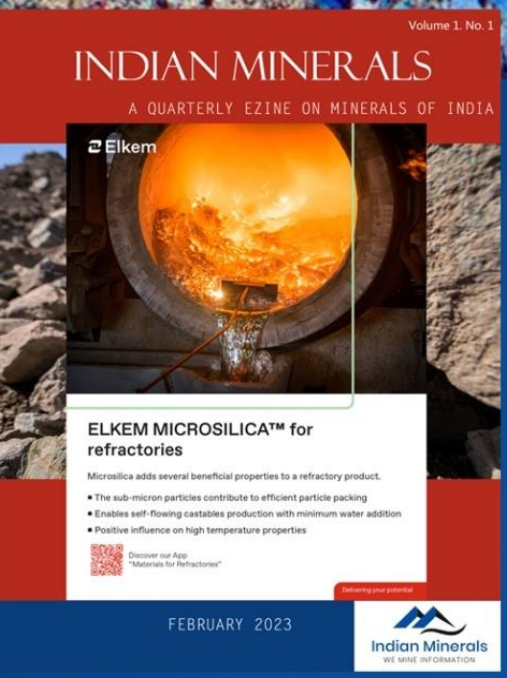
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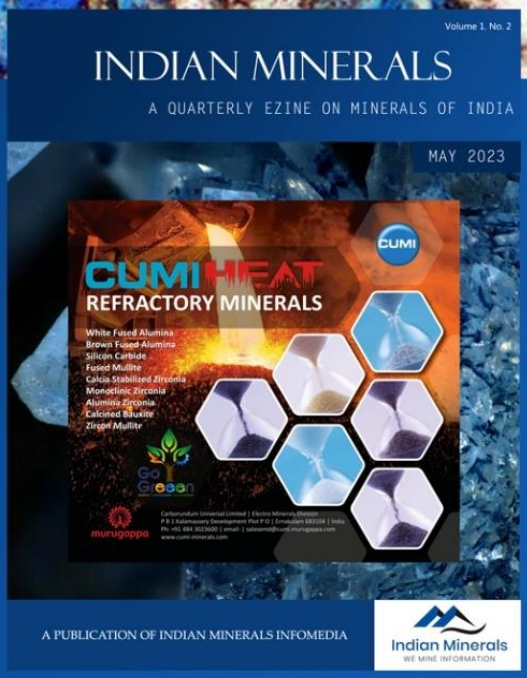
1.the prices of imported raw material are based on "assessable value" as per customs at the landed port
2. Prices of domestic raw materials are based on company notifications, export prices (fob) and market reports
3. Within the same grade, prices may significantly differ as per particle size, impurity content, sudden hike in container tariff etc. Hence an average of prices has been taken where price fluctuation within the same grade has been noticed. Yet differences may still persist.
4. For the above reason, the prices mentioned here are at best indicative ones.

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