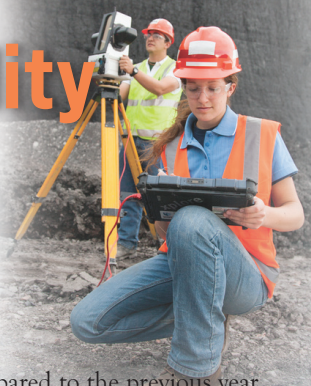
US takes next steps in domestic mining expansion with feasibility surveys and projects



By Helen Widman

The U.S. government has progressed to the next stage of its plans to strengthen domestic supply chains, as described in the annual United States Geological Survey *Mineral Commodity Summaries*.[1]

The USGS *Mineral Commodity Summaries* report spotlights events, trends, and issues from the past year in the nonfuel mineral industry. Every August, the *ACerS Bulletin* shares some of the key facts covered in the report, including statistics on production, supply, and overall market for more than 90 minerals and raw materials.

In 2023, the total value of nonfuel mineral production in the United States was estimated to be $105 billion, an increase of 4% from $101 billion in 2022. The total value of industrial minerals production was $69.9 billion, an increase of 7% from 2022. Of this total, $35.2 billion came from construction aggregates production. Crushed stone accounted for the largest share of total U.S. nonfuel mineral production value in 2023 with 23%.

Operational issues, reduced ore grades, and weather-related issues caused a decrease in production for the metals sector. On the flip side, increased demand for aggregates caused an increase in production value for the industrial minerals sector.

Following two years of focused efforts to update the U.S. Geological Survey's critical minerals list and establish funding avenues to support an expansion of the domestic mining sector, the U.S. government has now started investing in numerous mineral exploration and feasibility surveys and nascent mining projects.

For example, in February 2023, the USGS Earth Mapping Resources Initiative launched the "National Map of Focus Areas for Potential Critical Mineral Resources in the United States," which outlines focus areas of mineral systems and their deposits around the country. Throughout 2023, the U.S. government invested $22.3 million across Alabama, Alaska, Arizona, Montana, New Mexico, New York, and Utah to map resources of critical minerals in those states.

Meanwhile, regarding mining projects, in July 2023, the U.S. Department of Energy announced $32 million in funding to support the construction of facilities that produce rare earth minerals and other critical metals to help alleviate reliance on international sources.[2]

Notably, in November 2023, production was restarted at a high-purity granular polysilicon facility in Washington state, which had not been active in four years. The material produced here will then go to a facility in Georgia that produces silicon ingots, wafers, and cells for solar module production. Solar-grade wafers have not been produced in the U.S. since 2016, so this effort should also help alleviate reliance on foreign sources.

It will take several years to reap the benefits from the projects described above, so for now, the U.S. remains reliant on foreign sources for raw and processed mineral materials. In 2023, the U.S. was 100% net import reliant for 12 of the 50 individually listed critical materials and was more than 50% net import reliant for an additional 29 mineral commodities.

As in 2022, recycling provided the only source of domestic supply for antimony, bismuth, chromium, germanium, tin, tungsten, and vanadium. In 2023, the consumption of many mineral commodities decreased compared to the previous year.

With these programs and initiatives in place to help bolster domestic production, the U.S. government is now taking a more direct stance in its trade war against China. In May 2024, the U.S. announced new Section 301 import tariffs, including one on rare earth magnets.[3] This tariff is the first time that a Section 301 import tariff has been imposed on rare earth materials since the U.S.–China trade and technology war began in 2018.

These tariffs may be a boon for Wyoming, which hosts a plentiful supply of rare earth minerals. Several rare earth minerals companies are already operating in the state, and these tariffs provide them the opportunity to penetrate the rare earths market and regain equal footing with suppliers in China.[4]

On the next two pages, a table summarizes some of the salient statistics and trends for a handful of mineral commodities that are of particular interest in the ceramic and glass industries.

Access the complete USGS report at https://doi.org/10.3133/mcs2024.

References

[1]*Mineral Commodity Summaries 2024*, U.S. Geological Survey, Reston, Va., 2024.

[2]"Biden-Harris Administration invests $32 million to strengthen nation's critical minerals supply chain," Department of Energy, 13 July 2023. https://bit.ly/4e5DkbN

[3]"US to impose 25% import tariffs on Chinese rare earth magnets in 2026," *Fastmarkets*, 15 May 2024. https://bit.ly/4aH0AKk

[4]"Wyoming's rare earths industry may see boost from Chinese tariffs on imports," *Cowboy State Daily*, 14 May 2024. https://bit.ly/3V6cKa0

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USGS MINERAL COMMODITY SUMMARIES

Leading producer highlights

	END-USE INDUSTRIES	TREND GLOBAL PRODUCTION	US PRODUCTION	US IMPORT/ EXPORT	WORLD RESERVES	LEADING PRODUCER
ABRASIVES (fused aluminum oxide and silicon carbide)	Bonded and coated abrasive products	0.76% decrease for fused aluminum oxide; no change for silicon carbide	20,000 metric tons fused aluminum oxide; 40,000 metric tons silicon carbide	>95% net import reliance for fused aluminum oxide; 73% net import reliance for silicon carbide	Fused aluminum oxide: adequate; Silicon carbide: more than adequate	Fused aluminum oxide; Silicon carbide
BAUXITE AND ALUMINA	Bauxite: refined for alumina or aluminum hydroxide, abrasives, cement, chemicals, proppants, refractories, slag adjuster in steel mills Alumina: used in production of aluminum, abrasives, ceramics, chemicals, refractories	No change for bauxite or alumina	Bauxite production information withheld 780,000 metric tons alumina	>75% net import reliance for bauxite; 59% net import reliance for alumina	Between 55 billion and 75 billion metric tons bauxite	Bauxite; Alumina
CEMENT	Construction	No change for cement production or clinker capacity	91,000 metric tons cement; 77,000 metric tons clinker	22% net import reliance	Reserves of lime and stone (crushed) are very large and plentiful, respectively	
CLAYS	Tile, sanitaryware, absorbents, fillers and extenders, drilling mud, construction, paper, refractories	2.0% decrease for bentonite; 4.8% increase for Fuller's earth; 1.7% decrease for kaolin	26,000 metric tons (50.0% common clay, 17.0% kaolin, 18.1% bentonite, 8.9% Fuller's earth, 6.4% other)	Net exporter	Extremely large	Bentonite; Fuller's earth; Kaolin
FELDSPAR	Glass, tile, pottery	1.5% increase	590,000 metric tons (marketable production)	12% net import reliance	More than adequate	

	END-USE INDUSTRIES	TREND GLOBAL PRODUCTION	US PRODUCTION	US IMPORT/ EXPORT	WORLD RESERVES	LEADING PRODUCER
GALLIUM	Integrated circuits, optoelectronic devices	No change	None (primary)	100% net import reliance	Gallium contained in world resources of bauxite is estimated to exceed 1 million tons, and a considerable quantity could be contained in world zinc resources. However, less than 10% of the gallium in bauxite and zinc resources is potentially recoverable.	
GRAPHITE (natural)	Batteries, brake linings, lubricants, powdered metals, refractory applications, steelmaking	4.9% decrease	None	100% net import reliance	>800 million metric tons	
INDIUM	Flat panel displays, alloys, solders, compounds, electrical components, semiconductors	0.9% decrease	None	100% net import reliance	Estimate unavailable	
IRON and STEEL	Construction, automotive, machinery and equipment, appliances	No change for pig iron; 1.1% increase for raw steel	21 million metric tons pig iron; 80 million metric tons raw steel	13% net import reliance	N/A	Iron and steel
KYANITE	Refractories, abrasives, ceramic products, foundry products	Cannot be calculated	85,000 metric tons	Net exporter	Significant	Kyanite Andalusite
LITHIUM	Batteries, ceramics and glass, lubricating greases, air treatment, mold flux powders, medical uses	21% increase	Withheld	>25% net import reliance	Identified lithium resources total ~105 million metric tons worldwide	
MICA (scrap and flake)	Joint compound, oil- well-drilling additives, paint, roofing, rubber products	3.7% increase for scrap and flake	38,000 metric tons sold and used; 65,000 metric tons ground	28% net import reliance	More than adequate	
RARE EARTHS	Catalysts, ceramics, glass, metallurgical applications, alloys, polishing	15.4% increase	43,000 metric tons mineral concentrates	>95% net import reliance for compounds and metals; net exporter of mineral concentrates	Relatively abundant in earth's crust, but minable concentrations less common	
SODA ASH	Glass, chemicals, distributors, flue gas desulfurization, soap and detergents, pulp and paper, water treatments	No change	11,000 metric tons	Net exporter	About 47 billion metric tons of identified natural soda ash resources; synthetic soda ash is practically inexhaustible but costlier to produce	
TITANIUM DIOXIDE (pigment)	Paints, plastic, paper, catalysts, ceramics, coated textiles, floor coverings, inks, roofing granules	N/A	920,000 metric tons	Net exporter	Data not available	
YTTRIUM	Catalysts, ceramics, electronics, lasers, metallurgy, phosphors	Between 10,000 and 15,000 metric tons	N/A	100% net import reliance	Reserves may be adequate, but worldwide issues could affect production	
ZEOLITES (natural)	Animal feed, odor control, water purification, wastewater treatment, absorbent, fertilizer, aquaculture, pesticide	20% increase	84,000 metric tons	Net exporter	Estimate not available, but likely large	