



## DEPARTMENT OF THE INTERIOR

### OFFICE OF THE SECRETARY

[178D0102DM, DS6CS00000, DLSN00000.000000, DX.6CS25]

#### Draft List of Critical Minerals

**AGENCY:** Office of the Secretary, Interior.

**ACTION:** Notice.

**SUMMARY:** The United States is heavily reliant on imports of certain mineral commodities that are vital to the Nation's security and economic prosperity. This dependency of the United States on foreign sources creates a strategic vulnerability for both its economy and military to adverse foreign government action, natural disaster, and other events that can disrupt supply of these key minerals. Pursuant to Executive Order 13817 issued on December 20, 2017, "A Federal Strategy To Ensure Secure and Reliable Supplies of Critical Minerals," the Secretary of the Interior presents a draft list of 35 mineral commodities deemed critical under the definition provided in the Executive Order. Specifically, an analysis using multiple criteria identified 35 minerals or mineral material groups that are currently considered critical. These include: aluminum (bauxite), antimony, arsenic, barite, beryllium, bismuth, cesium, chromium, cobalt, fluorspar, gallium, germanium, graphite (natural), hafnium, helium, indium, lithium, magnesium, manganese, niobium, platinum group metals, potash, rare earth elements group, rhenium, rubidium, scandium, strontium, tantalum, tellurium, tin, titanium, tungsten, uranium, vanadium, and zirconium. These commodities merit consideration in furthering the policy of the Federal Government to reduce the Nation's vulnerability for the security and prosperity of the United States. A summary report describing the methodologies and data sources used to develop the

draft critical minerals list may be accessed at <https://doi.org/10.3133/ofr20181021>. The Department of the Interior (DOI) seeks comments addressing the following topics: the make-up of the draft list and the rationale associated with potential additions or subtractions to the draft list.

**DATES:** To ensure consideration, written comments must be submitted before [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** You may submit written comments online at <http://www.regulations.gov> by entering "DOI-2018-0001" in the Search bar and clicking "Search," or by mail to Draft Critical Minerals List, MS-1621, U.S. Department of the Interior, 1849 C Street NW, Washington, DC 20240.

**FOR FURTHER INFORMATION CONTACT:** Ryan Nichols, (202) 208-7250, [ryan\\_nichols@ios.doi.gov](mailto:ryan_nichols@ios.doi.gov). Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service (FRS) at 1-800-877-8339 to contact Mr. Nichols during normal business hours. The FRS is available 24 hours a day, 7 days a week, to leave a message or question with this individual. You will receive a reply during normal business hours. Normal business hours are 9:00 a.m. to 5:30 p.m., Monday through Friday, except for Federal holidays.

**SUPPLEMENTARY INFORMATION:** Executive Order 13817 of December 20, 2017 (82 FR 60835, December 26, 2017), section 2(b), directs the Secretary of the Interior, in coordination with the Secretary of Defense and in consultation with the heads of other relevant executive departments and agencies (agencies), to publish a list of critical minerals in the Federal Register. A "critical mineral" as defined by the Executive Order is a mineral identified to be (i) a non-fuel mineral or mineral material essential to the economic and national security of the United States, (ii) the supply chain of which is vulnerable to disruption, and (iii) that serves an essential

function in the manufacturing of a product, the absence of which would have significant consequences for the U.S. economy or national security.

The critical mineral screening methodology developed by the National Science and Technology Council Subcommittee on Critical and Strategic Mineral Supply Chains (CSMSC) in 2016 and updated in 2018, served as the starting point for the development of the draft list. The screening tool was designed to identify and prioritize minerals or mineral materials for in-depth study to evaluate risks to security of supply. Additional tools and sources of information used to produce the draft critical minerals list were as follows: (i) U.S. net import reliance statistics as published annually in the U.S. Geological Survey (USGS) Mineral Commodity Summaries; (ii) USGS Professional Paper 1802 “Critical Mineral Resources of the United States”; (iii) inputs from the Department of Defense; (iv) the National Defense Authorization Act for fiscal year 2018; (v) Department of Energy/Energy Information Administration uranium statistics in the 2016 Uranium Marketing Annual Report; and (vi) the judgment of subject matter experts of the USGS and other U.S. Government agencies, including representatives of other DOI Bureaus and members of the CSMSC Subcommittee.

The draft list of critical mineral commodities has been simplified through categorization. The rare earth elements include the lanthanides and yttrium. The platinum group elements include platinum, palladium, rhodium, ruthenium, and iridium.

Several of the materials on the draft list can only be recovered cost effectively as byproducts of other more common mineral commodities which may not meet the criteria for being included on the draft list. Tellurium, for example, is a byproduct of copper refining. Rhenium is a byproduct of molybdenum processing. Despite these codependences, neither copper nor molybdenum is among the materials designated as critical.

Mineral criticality is not static, but changes over time. This analysis represents a snapshot in time that should be reviewed and updated periodically using the most recently available data in order to accurately capture rapidly evolving technological developments and the consequent material demands.

**Table 1: Draft List of critical minerals**

Mineral commodity	Sectors					Top Producer	Top Supplier	Notable example application
	Aerospace (non-defense)	Defense	Energy	Telecommunications & electronics	Transportation (non-aerospace)			
Aluminum						China	Canada	Aircraft, power transmission lines, lightweight alloys
Antimony						China	China	Lead-acid batteries
Arsenic						China	China	Microwave communications (gallium arsenide)
Barite						China	China	Oil and gas drilling fluid
Beryllium						United States	Kazakhstan	Satellite communications, beryllium metal for aerospace
Bismuth						China	China	Pharmaceuticals, lead-free solders
Cesium and rubidium						Canada	Canada	Medical applications, global positioning satellites, night-vision devices
Chromium						South Africa	South Africa	Jet engines (superalloys), stainless steels
Cobalt						Congo (Kinshasa)	Norway	Jet engines (superalloys), rechargeable batteries
Fluorspar						China	Mexico	Aluminum and steel production, uranium processing
Gallium						China	China	Radar, light-emitting diodes (LEDs), cellular phones
Germanium						China	China	Infrared devices, fiber optics
Graphite						China	China	Rechargeable batteries, body armor



critical or otherwise important (e.g., National Defense Stockpile). In addition, there are many minerals not listed on the draft critical minerals list, but which are still of significant importance to the U.S. economy. Industrial minerals, for example, are the materials that form the physical basis of our nation's infrastructure. The materials for making cement, for example, limestone, clays, shales, and aggregates; materials to reinforce concrete structures such as iron and steel for rebar and steel mesh/wire grids, materials on which to place infrastructure such as base courses composed of crushed stone and aggregates. These construction commodities are the largest (by volume) sectors of the U.S. minerals industries. Other minerals include inputs into the chemical industries or agricultural sector including sulfur, salt, phosphate, and gypsum. The manufacture of products such as glass, ceramics, refractories, and abrasives require quartz, soda ash, feldspar, kaolin, ball clays, mullite and kyanite, industrial diamonds, garnets, corundum, and borates. These materials are not considered critical in the conventional sense because the U.S. largely meets its needs for these through domestic mining and processing and thus a supply disruption is considered unlikely.

Please submit written comments on this draft list by [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER] to facilitate consideration. In particular, DOI is interested in comments addressing the following topics: the make-up of the draft list and the rationale associated with potential additions or subtractions to the draft list. Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you can ask us in your

comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Authority: E.O. 13817, 82 FR 60835 (December 26, 2017).

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