[Data in metric tons of rare-earth oxide (REO) content unless otherwise noted]

Domestic Production and Use: Rare earths were mined by one company in 2013. Bastnäsite, a rare-earth fluocarbonate mineral, was mined as a primary product at Mountain Pass, CA. Rare-earth concentrates produced at Mountain Pass were further processed into rare-earth compounds and metal products. The United States continued to be a major consumer, exporter, and importer of rare-earth products in 2013. The estimated value of refined rare earths imported by the United States in 2013 was \$260 million, a significant decrease from \$519 million imported in 2012. Based on reported data through September 2013, the estimated 2013 distribution of rare earths by end use was as follows, in decreasing order: catalysts, 65%; metallurgical applications and alloys, 19%; permanent magnets, 9%; glass polishing, 6%; and other, 1%.

Salient Statistics—United States: Production, bastnäsite concentrates Imports: ²	<u>2009</u> —	<u>2010</u> —	<u>2011</u> —	2012 800	<u>2013</u> ^e 4,000
Cerium compounds Ferrocerium, alloys Mixed rare-earth chlorides	1,500 102 411	1,770 131 956	1,120 186 382	1,390 267 495	1,100 320 360
Mixed REOs Rare-earth oxides, compounds Rare-earth metals, alloy	4,750 5,080 226	5,480 3,980 525	1,830 3,770 468	537 2,840 240	2,500 5,800 390
Exports: ² Cerium compounds Rare-earth metals, alloys	840 4,930	1,350 1,380	1,640 3,030	992 2,080	730 1,000
Other rare-earth compounds Ferrocerium, alloys Consumption, apparent ³	455 2,970 W	1,690 3,460 W	3,620 2,010 W	1,830 951 NA	5,400 1,400 NA
Price, dollars per kilogram, yearend: Bastnäsite concentrate, REO basis Mischmetal, metal basis, metric ton quantity ⁴	5.73 8–9	6.87 45–55	NA 47–50	NA 28–30	NA 12–13
Stocks, producer and processor, yearend Employment, mine and mill, number at yearend Net import reliance ⁵ as a percentage of	W 110	W 220	W 230	NA 283	NA 380
apparent consumption	100	100	100	NA	NA

Recycling: Small quantities, mostly permanent magnet scrap.

Import Sources (2009–12): Rare-earth metals, compounds, etc.: China, 79%; France, 6%; Japan, 5%; Austria, 3%; and other, 7%.

<u>Tariff</u> : Item	Number	Normal Trade Relations 12–31–13
Thorium ores and concentrates (monazite) Rare-earth metals, scandium and yttrium	2612.20.0000	Free.
whether or not intermixed or interalloyed Cerium compounds	2805.30.0000	5.0% ad val.
Oxides	2846.10.0010	5.5% ad val.
Other	2846.10.0050	5.5% ad val.
Other rare-earth compounds		
Lanthanum oxides	2846.90.2005	Free.
Other oxides	2846.90.2045	Free.
Chlorides	2846.90.2080	Free.
Mixtures of other chlorides	2846.90.2090	Free.
Lanthanum carbonates	2846.90.8070	3.7% ad val.
Mixtures of other carbonates	2846.90.8075	3.7% ad val.
Other rare-earth compounds	2846.90.8090	3.7% ad val.
Ferrocerium and other pyrophoric alloys	3606.90.3000	5.9% ad val.

Depletion Allowance: Monazite, 22% on thorium content and 14% on rare-earth content (Domestic), 14% (Foreign); bastnäsite and xenotime, 14% (Domestic and foreign).

Government Stockpile: None.

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RARE EARTHS

Events, Trends, and Issues: The rare-earth mine and separation plant at Mountain Pass continued to produce bastnäsite concentrates and other rare-earth intermediates and refined products throughout 2013. The company neared completion of new processing facilities at Mountain Pass and demonstrated a capacity rate of 15,000 tons per year of REO. The operation was expected to continue to increase its production rate in 2014.

Domestic consumption of rare-earth imports in 2013 increased to 10,500 tons compared with 5,770 tons in 2012. Improved economic conditions and lower prices of rare-earth materials resulted in increased consumption of REOs. Prices for most rare-earth compounds declined in 2013. Prices for neodymium oxide used to produce magnets began the year at \$78 per kilogram, but fell to \$73 per kilogram by yearend.

China continued efforts to restrict the supply of REOs and consolidate its rare-earth industry. China's rare-earth production and export quotas for 2013 were 93,800 tons and 31,000 tons, respectively. In Malaysia, the commissioning and debottlenecking of a REO processing plant was underway. As of September, the Malaysian operation had produced 397 tons of REO-equivalent products. In Australia, a second concentration plant was being commissioned at the Mount Weld, Western Australia, operation, although production was limited by demand from the Malaysian processing operation.

Exploration efforts to develop rare-earth projects continued in 2013. Exploration and development assessments in the United States included Bear Lodge, WY, Bokan Mountain, AK, Diamond Creek, ID, Elk Creek, NE, La Paz, AZ, Lemhi Pass, ID-MT, Pea Ridge, MO, Round Top, TX, and Thor, NV. Additional assessments were underway in Australia, Brazil, Canada, China, Finland, Greenland, India, Kyrgyzstan, Madagascar, Malawi, Mozambique, South Africa, Sweden, Tanzania, Turkey, and Vietnam.

<u>World Mine Production and Reserves</u>: Reserves for Australia and Brazil were revised based on information from Government reports.

	Mine pr	Reserves ⁶	
	2012	<u>2013</u>	
United States	800	4,000	13,000,000
Australia	3,200	2,000	2,100,000
Brazil	140	140	22,000,000
China	100,000	100,000	55,000,000
India	2,900	2,900	3,100,000
Malaysia	100	100	30,000
Russia	2,400	2,400	$\binom{7}{}$
Vietnam	220	220	(7)
Other countries	NA	NA	41,000,000
World total (rounded)	110,000	110,000	140,000,000

World Resources: Rare earths are relatively abundant in the Earth's crust, but discovered minable concentrations are less common than for most other ores. U.S. and world resources are contained primarily in bastnäsite and monazite. Bastnäsite deposits in China and the United States constitute the largest percentage of the world's rareearth economic resources, and monazite deposits constitute the second largest segment. Apatite, cheralite, eudialyte, loparite, phosphorites, rare-earth-bearing (ion adsorption) clays, secondary monazite, spent uranium solutions, and xenotime make up most of the remaining resources. Undiscovered resources are thought to be very large relative to expected demand.

Substitutes: Substitutes are available for many applications but generally are less effective.

^eEstimated. NA Not available. W Withheld to avoid disclosing company proprietary data. — Zero.

¹Data include lanthanides and yttrium but exclude most scandium. See also Scandium and Yttrium.

²REO equivalent or contents of various materials were estimated. Data from U.S. Census Bureau.

³Defined as production + imports – exports + adjustments for industry stock changes. In 2012 and 2013, insufficient data were available to determine stock changes used to calculate apparent consumption.

⁴Price range from Elements—Rare Earths, Specialty Metals and Applied Technology and Web-based High Tech Materials, Longmont, CO, Metal-Pages Ltd., and Hefa Rare Earth Canada Co. Ltd., Richmond, British Columbia, Canada.

⁵Defined as imports – exports + adjustments for industry stock changes. In 2012 and 2013, insufficient data were available to determine stock changes used to calculate net import reliance.

⁶See Appendix C for resource/reserve definitions and information concerning data sources.

⁷Included with "Other countries."