

LEAD

(Data in thousand metric tons of contained lead unless otherwise noted)

Domestic Production and Use: Lead was produced domestically by five lead mines in Missouri plus as a byproduct at two zinc mines in Alaska and two silver mines in Idaho. The value of the lead in concentrates of ore mined in 2022 was an estimated \$710 million, 3% less than that in 2021. Nearly all lead concentrate production has been exported since the last primary lead refinery closed in 2013. The value of the secondary lead produced in 2022 was \$2.4 billion, essentially unchanged from that in 2021. The lead-acid battery industry accounted for an estimated 92% of reported U.S. lead consumption during 2022. Lead-acid batteries were primarily used as starting-lighting-ignition (SLI) batteries for automobiles, as industrial-type batteries for standby power for computer and telecommunications networks, and for motive power.

<u>Salient Statistics—United States:</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022^e</u>
Production:					
Mine, lead in concentrates	280	274	306	294	280
Primary refinery	—	—	—	—	—
Secondary refinery, old scrap	1,140	1,070	1,030	975	950
Imports for consumption:					
Lead in concentrates	—	(1)	(1)	1	(1)
Refined metal, unwrought	563	501	382	613	700
Exports:					
Lead in concentrates	251	259	265	262	270
Refined metal, unwrought (gross weight)	67	25	17	22	25
Consumption, apparent ²	1,640	1,550	1,400	1,570	1,600
Price, average, cents per pound: ³					
North American market	110.9	99.9	91.2	113.0	115
London Metal Exchange (LME), cash	101.8	90.6	82.7	100.0	97
Employment, mine and mill (average), number ⁴	1,800	1,770	1,750	1,860	1,900
Net import reliance ⁵ as a percentage of apparent consumption, refined metal	30	31	26	38	42

Recycling: In 2022, an estimated 950,000 tons of secondary lead was produced, an amount equivalent to 59% of apparent domestic consumption. Nearly all secondary lead was recovered from old scrap, mostly lead-acid batteries.

Import Sources (2018–21): Refined metal: Canada, 42%; Mexico, 18%; Republic of Korea, 14%; and other, 26%.

<u>Tariff:</u>	<u>Item</u>	<u>Number</u>	<u>Normal Trade Relations</u>
			<u>12–31–22</u>
	Lead ores and concentrates, lead content	2607.00.0020	1.1¢/kg on lead content.
	Refined lead	7801.10.0000	2.5% on the value of the lead content.
	Antimonial lead	7801.91.0000	2.5% on the value of the lead content.
	Alloys of lead	7801.99.9030	2.5% on the value of the lead content.
	Other unwrought lead	7801.99.9050	2.5% on the value of the lead content.

Depletion Allowance: 22% (domestic), 14% (foreign).

Government Stockpile: None.

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Events, Trends, and Issues: During the first 10 months of 2022, the average LME cash price for lead was 97 cents per pound, essentially unchanged from the annual average price in 2021. Global stocks of lead in LME-approved warehouses were 27,625 tons at the end of October, which was 49% less than those at yearend 2021.

In 2022, domestic mine production and production of secondary lead decreased by an estimated 5% and 3%, respectively, from that in 2021. U.S. apparent consumption of refined lead increased slightly from that in 2021, and the net import reliance increased to 42% from 38%. In the first 9 months of 2022, 24.6 million spent SLI lead-acid batteries were exported, 4% less than exports in the same period in 2021.

According to the International Lead and Zinc Study Group,⁶ global refined lead production in 2022 was forecast to decrease by 0.3% to 12.34 million tons and refined lead consumption to increase by 0.8% to 12.42 million tons.

World Mine Production and Reserves: Reserves estimates for China, Peru, Russia, Sweden, and the United States were revised based on new information from company or Government reports.

	Mine production		Reserves⁷
	<u>2021</u>	<u>2022^e</u>	
United States	294	280	4,600
Australia	485	440	⁸ 37,000
Bolivia	93	90	1,600
China	1,960	2,000	12,000
India	215	240	2,500
Iran	^e 50	50	2,000
Mexico	272	270	5,600
Peru	264	250	5,300
Russia	^e 200	200	6,000
Sweden	65	65	1,700
Tajikistan	^e 56	55	NA
Turkey	^e 75	75	860
Other countries	<u>510</u>	<u>510</u>	<u>5,900</u>
World total (rounded)	<u>4,550</u>	<u>4,500</u>	<u>85,000</u>

World Resources:⁷ Identified world lead resources total more than 2 billion tons. In recent years, significant lead resources have been identified in association with zinc and (or) silver or copper deposits in Australia, China, Ireland, Mexico, Peru, Portugal, Russia, and the United States (Alaska).

Substitutes: Substitution by plastics has reduced the use of lead in cable covering and cans. Tin has replaced lead in solder for potable water systems. The electronics industry has moved toward lead-free solders and flat-panel displays that do not require lead shielding. Steel and zinc are common substitutes for lead in wheel weights. Lithium-ion, nickel-cadmium, and nickel-metal hydride batteries are common alternatives to lead-acid batteries in certain applications. Currently, most all-electric vehicles and plug-in hybrid electric vehicles use lithium-ion batteries.

^eEstimated. NA Not available. — Zero.

¹Less than ½ unit.

²Defined as primary refined production + secondary refined production from old scrap + refined imports – refined exports.

³Source: S&P Global Platts Metals Week.

⁴Includes lead and zinc-lead mines for which lead was either a principal product or significant byproduct. Data from the Mine Safety and Health Administration.

⁵Defined as refined imports – refined exports.

⁶Source: International Lead and Zinc Study Group, 2022, ILZSG session/forecasts: Lisbon, Portugal, International Lead and Zinc Study Group press release, October 24, [4] p.

⁷See Appendix C for resource and reserve definitions and information concerning data sources.

⁸For Australia, Joint Ore Reserves Committee-compliant or equivalent reserves were 12 million tons.