

LEAD

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

Domestic Production and Use: Five lead mines in Missouri, plus five mines in Alaska, Idaho, and Washington that produced lead as a joint product, accounted for all domestic lead mine production. The value of the lead in concentrates mined in 2017, based on the average North American Market price for refined lead, was \$778 million. It was estimated that the lead-acid battery industry accounted for more than 85% of reported U.S. lead consumption during 2017. 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.

Salient Statistics—United States:	2013	2014	2015	2016	2017^e
Production:					
Mine, lead in concentrates	339	378	370	346	313
Primary refinery	114	—	—	—	—
Secondary refinery, old scrap	1,150	1,020	1,050	1,000	1,010
Imports for consumption:					
Lead in concentrates	(1)	—	—	(1)	—
Refined metal, unwrought	485	593	521	533	700
Exports:					
Lead in concentrates	210	357	350	341	280
Refined metal, unwrought (gross weight)	42	55	56	43	30
Consumption:					
Reported	1,390	1,510	1,630	1,470	1,600
Apparent ²	1,710	1,560	1,520	1,490	1,680
Price, average, cents per pound:					
North American market	110.0	106.2	91.2	94.4	112.9
London Metal Exchange, cash	97.2	95.0	81.0	84.8	102.4
Stocks, metal, producers, consumers, yearend	70	66	64	101	100
Employment, number:					
Mine and mill (average) ³	1,690	1,760	1,840	1,800	1,550
Primary smelter, refineries	290	—	—	—	—
Secondary smelters, refineries	2,000	1,800	1,800	1,850	1,850
Net import reliance ⁴ as a percentage of apparent consumption, refined lead	26	34	31	33	40

Recycling: In 2017, about 1 million tons of secondary lead was produced, an amount equivalent to 60% of apparent domestic consumption. Nearly all secondary lead was recovered from old scrap, mostly lead-acid batteries.

Import Sources (2013–16): Metal, wrought and unwrought: Canada, 50%; Republic of Korea, 19%; Mexico, 14%; India, 4%; and other, 13%.

Tariff: Item	Number	Normal Trade Relations⁵ 12–31–17
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.

Events, Trends, and Issues: During the first 10 months of 2017, the average London Metal Exchange (LME) cash price for lead was \$1.04 per pound, 27% more than that in the same period of 2016. In the second half of 2017, prices reached a 6-year high, owing to a tight supply of concentrate and increased demand for refined lead. Global stocks of lead in LME-approved warehouses were 143,875 tons in mid-December, 26% less than those at yearend 2016.

LEAD

In 2017, domestic mine production was estimated to have decreased from that in the previous year in all four States. Production at one mine in Idaho decreased by 90% owing to an employee strike, which began in March. The United States has become more reliant on imported refined lead in recent years owing to the closure of the last primary lead smelter in 2013.

Permitting and construction of a new secondary lead refinery in Nevada was completed. The plant was expected to have the capacity to produce about 80 tons per day of high-purity refined lead using electrochemical battery recycling technology, and was in the process of ramping up to full capacity. Exports of SLI batteries have been decreasing since 2014. During the first 10 months of 2017, 15.9 million spent SLI lead-acid batteries were exported, 9% less than those in 2016 and 32% less than 2015, indicating that U.S. producers may be using more domestic scrap.

According to the International Lead and Zinc Study Group,⁶ global refined lead production in 2017 increased by 4% to 11.58 million tons, and metal consumption increased by 5% to 11.70 million tons, resulting in a production-to-consumption deficit of about 120,000 tons of refined lead.

World Mine Production and Reserves: Reserves estimate for Peru was revised based on a Government report.

	Mine production		Reserves ⁷
	<u>2016</u>	<u>2017^e</u>	
United States	346	313	5,000
Australia	453	450	⁸ 35,000
Bolivia	75	70	1,600
China	2,340	2,400	17,000
India	147	150	2,200
Mexico	232	230	5,600
Peru	314	300	6,000
Russia	250	250	6,400
Sweden	79	80	1,100
Turkey	76	70	860
Other countries	<u>400</u>	<u>390</u>	<u>7,000</u>
World total (rounded)	4,710	4,700	88,000

World Resources: 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.

^eEstimated. — Zero.

¹Less than ½ unit.

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

³Includes lead and zinc-lead mines for which lead was either a principal product or significant byproduct.

⁴Defined as imports – exports.

⁵No tariff for certain countries owing to special trade agreements. See the Harmonized Tariff Schedule of the United States.

⁶International Lead and Zinc Study Group, 2017, ILZSG session/forecasts: Lisbon, Portugal, International Lead and Zinc Study Group news release, October 30, 5 p.

⁷See [Appendix C](#) for resource and reserve definitions and information concerning data sources.

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