# 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 2021 was an estimated $750 million, 21% more than that in 2020. 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 2021 was $2.4 billion, 17% more than that in 2020. The lead-acid battery industry accounted for an estimated 92% of reported U.S. lead consumption during 2021. 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. During the first 9 months of 2021, 107 million lead-acid automotive batteries were shipped by North American producers, 8% more than those shipped in the same period of 2020.

| **Salient Statistics—United States:** | **2017** | **2018** | **2019** | **2020** | **2021[e]** |
|---|---|---|---|---|---|
| Production: | | | | | |
| Mine, lead in concentrates | 310 | 280 | 274 | 306 | 300 |
| Primary refinery | — | — | — | — | — |
| Secondary refinery, old scrap | 1,140 | 1,140 | 1,070 | 1,030 | 990 |
| Imports for consumption: | | | | | |
| Lead in concentrates | ([1]) | — | ([1]) | ([1]) | — |
| Refined metal, unwrought (gross weight) | 658 | 563 | 501 | 382 | 620 |
| Exports: | | | | | |
| Lead in concentrates | 269 | 251 | 259 | 265 | 250 |
| Refined metal, unwrought (gross weight) | 24 | 70 | 25 | 17 | 22 |
| Consumption, apparent[2] | 1,770 | 1,640 | 1,550 | 1,400 | 1,600 |
| Price, average, cents per pound:[3] | | | | | |
| North American market | 114.5 | 110.9 | 99.9 | 91.3 | 110 |
| London Metal Exchange (LME), cash | 105.1 | 101.8 | 91.0 | 82.7 | 99 |
| Employment, mine and mill (average), number[4] | 1,890 | 1,860 | 1,690 | 1,810 | 1,900 |
| Net import reliance[5] as a percentage of apparent consumption, refined metal | 36 | 30 | 31 | 26 | 38 |

**Recycling:** In 2021, about 990,000 tons of secondary lead was produced, an amount equivalent to 62% of apparent domestic consumption. Nearly all secondary lead was recovered from old scrap, mostly lead-acid batteries.

**Import Sources (2017–20):** Refined metal: Canada, 43%; Mexico, 19%; the Republic of Korea, 17%; India, 4%; and other, 17%.

| **Tariff: Item** | **Number** | **Normal Trade Relations 12–31–21** |
|---|---|---|
| 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 2021, the average LME cash price for lead was 98.9 cents per pound, 20% more than the average price in 2020, owing to the worldwide shipping delays and decreased supply of the refined lead available on the market. The average monthly LME cash price peaked in August at 110.2 cents per pound and declined through November. Global stocks of lead in LME-approved warehouses were 57,800 tons in November 2021, which was 57% less than those at yearend 2020.

In 2021, domestic mine production was estimated to have decreased slightly from that in the previous year. Domestic production of secondary lead decreased by 4% from that in the previous year owing to a reduction in production of several secondary lead smelters and a closure of one secondary lead smelter in South Carolina in 2021. U.S. apparent consumption of refined lead increased by 14% from that in the previous year, and the net import reliance increased from 26% to 38%, owing to the forementioned domestic secondary plants' closures and subsequent 62% increase in the imports of the refined lead. In the first 9 months of 2021, 25.5 million spent SLI lead-acid batteries were exported, 29% more than that in the same time period in 2020.

According to the International Lead and Zinc Study Group,[6] global refined lead production in 2021 was forecast to increase by 4.4% to 12.4 million tons and metal consumption to increase by 5.5% to 12.4 million tons.

**World Mine Production and Reserves:** Reserves estimates for Australia and Peru were revised based on new information from Government reports.

| | Mine production | | Reserves[7] |
|---|---|---|---|
| | 2020 | 2021[e] | |
| United States | 306 | 300 | 5,000 |
| Australia | 494 | 500 | [8]37,000 |
| Bolivia | 65 | 90 | 1,600 |
| China | 1,900 | 2,000 | 18,000 |
| India | 204 | 210 | 2,500 |
| Kazakhstan | 30 | 40 | 2,000 |
| Mexico | 260 | 270 | 5,600 |
| Peru | 242 | 280 | 6,400 |
| Russia | 210 | 210 | 4,000 |
| Sweden | 70 | 70 | 1,100 |
| Tajikistan | 46 | 46 | NA |
| Turkey | 63 | 60 | 860 |
| Other countries | 490 | 220 | 5,900 |
| World total (rounded) | 4,380 | 4,300 | 90,000 |

**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.

[e]Estimated. NA Not available. — Zero.

[1]Less than ½ unit.

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

[3]Source: S&P Global Platts Metals Week.

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

[5]Defined as imports – exports.

[6]International Lead and Zinc Study Group, 2021, ILZSG session/forecasts: Lisbon, Portugal, International Lead and Zinc Study Group press release, October 12, [5] p.

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

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