

## LEAD

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

**Domestic Production and Use:** The value of recoverable mined lead in 2005, based on the average U.S. producer price, was \$575 million. Six lead mines in Missouri plus lead-producing mines in Alaska, Idaho, Montana, and Washington yielded most of the total. Primary lead was processed at one smelter-refinery in Missouri. Of the 22 plants that produced secondary lead, 14 had annual capacities of 15,000 tons or more and accounted for more than 99% of secondary production. Lead was consumed at about 120 manufacturing plants. The lead-acid battery industry continued to be the principal user of lead, accounting for 85% of the reported U.S. lead consumption for 2005. Lead-acid batteries were primarily used as starting-lighting-ignition (SLI) batteries for automobiles and trucks. Lead-acid batteries were also used as industrial-type batteries for uninterruptible power-supply equipment for computer and telecommunications networks and hospitals; for load-leveling equipment for commercial electrical power system; and as traction batteries used in airline ground equipment, industrial forklifts, mining vehicles, golf carts, etc. About 10% of lead was used in ammunition; casting material; sheets (including radiation shielding), pipes, traps and extruded products; cable covering, calking lead, and building construction; solder; and oxides for glass, ceramics, pigments, and chemicals. The balance was used in ballast and counter weights, brass and bronze, foil,terne metal, type metal, wire, and other undistributed consumption.

<b>Salient Statistics—United States:</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005<sup>e</sup></b>
Production:					
Mine, lead in concentrates	466	451	460	445	440
Primary refinery	290	262	245	148	145
Secondary refinery, old scrap	1,040	1,070	1,120	1,100	1,100
Imports for consumption, lead in concentrates	2	( <sup>1</sup> )	—	—	—
Exports, lead in concentrates	181	241	253	292	300
Imports for consumption, refined metal, wrought and unwrought	284	218	183	202	287
Exports, refined metal, wrought and unwrought	35	43	123	83	61
Shipments from Government stockpile excesses, metal	41	6	60	42	27
Consumption:					
Reported	1,550	1,440	1,390	1,480	1,540
Apparent <sup>2</sup>	1,640	1,450	1,470	1,440	1,490
Price, average, cents per pound:					
North American Producer	43.6	43.6	43.8	55.1	61.0
London Metal Exchange	21.6	20.5	23.3	40.2	43.4
Stocks, metal, producers, consumers, yearend	100	111	85	59	60
Employment:					
Mine and mill (peak), number <sup>3</sup>	1,100	930	830	880	870
Primary smelter, refineries	400	320	320	240	240
Secondary smelters, refineries	1,600	1,600	1,600	1,600	1,600
Net import reliance <sup>4</sup> as a percentage of apparent consumption	8	E	E	E	E

**Recycling:** About 1.1 million tons of secondary lead was produced, an amount equivalent to 72% of reported domestic lead consumption. Nearly all of it was recovered from old (post-consumer) scrap.

**Import Sources (2001-04):** Metal, wrought and unwrought: Canada, 77%; China, 10%; Australia, 4%; Mexico, 4%; and other, 5%.

<b>Tariff: Item</b>	<b>Number</b>	<b>Normal Trade Relations<sup>5</sup></b>
		<b>12-31-05</b>
Unwrought (refined)	7801.10.0000	2.5% ad val.

**Depletion Allowance:** 22% (Domestic), 14% (Foreign).

**Government Stockpile:**

<b>Material</b>	<b>Stockpile Status—9-30-05<sup>6</sup></b>				<b>Disposals FY 2005</b>
	<b>Uncommitted inventory</b>	<b>Committed inventory</b>	<b>Authorized for disposal</b>	<b>Disposal plan FY 2005</b>	
<b>Lead</b>	29	—	29	54	27

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**Events, Trends, and Issues:** During 2005, the price of refined lead increased in the U.S. and world markets. The average North American Producer and London Metal Exchange prices for the first 9 months of the year were 60.66 cents per pound and 43.17 cents per pound, respectively. These averages represent a 10% and a 7% increase, respectively, from the annual average prices for 2004. Estimated world use of lead rose by between 3% and 4% in 2005. The main driver behind this world growth, as it had been for several years, was higher use in China for vehicle fleet expansion, production of automotive batteries for export, and investment in telecommunications and information technology. European lead use decreased by about 2%. Global mine production was projected to increase by approximately 4% in 2005. The world refined lead production in 2005 was approximately 1% less than world consumption, and a minor production deficit was forecast to continue into 2006.

U.S. lead mine production in 2005 decreased by about 1% compared with production in 2004. Production of secondary refined lead, mostly derived from spent lead-acid batteries, decreased by about 1%, and U.S. reported consumption of lead increased by about 4%. Through the first half of the year, there was a significant increase in shipments of original equipment and replacement SLI batteries.

The lead-acid battery industry recycled a little more than 99% of the available lead scrap from spent lead-acid batteries during the period 1999 through 2003, according to a report issued by the Battery Council International (BCI) in June 2005. The lead recycling rate ranked higher than that of any other recyclable material. The BCI report tracked lead recycling from spent SLI batteries—used in automobiles, trucks, motorcycles, boats, and garden tractors—as well as spent industrial batteries used in a variety of motive and stationary battery applications.

### **World Mine Production, Reserves, and Reserve Base:**

	Mine production		Reserves <sup>7</sup>	Reserve base <sup>7</sup>
	2004	2005 <sup>e</sup>		
United States	445	440	8,100	20,000
Australia	678	760	15,000	28,000
Canada	77	77	2,000	9,000
China	950	950	11,000	36,000
India	40	50	NA	NA
Ireland	65	70	NA	NA
Kazakhstan	40	40	5,000	7,000
Mexico	139	143	1,500	2,000
Morocco	65	65	500	1,000
Peru	306	310	3,500	4,000
South Africa	37	40	400	700
Sweden	34	35	500	1,000
Other countries	<u>275</u>	<u>300</u>	<u>19,000</u>	<u>30,000</u>
World total (rounded)	3,150	3,280	67,000	140,000

**World Resources:** In recent years, significant lead resources have been demonstrated in association with zinc and/or silver or copper deposits in Australia, Canada, China, Ireland, Mexico, Peru, Portugal, and the United States (Alaska). Identified lead resources of the world total more than 1.5 billion tons.

**Substitutes:** Substitution of plastics has reduced the use of lead in building construction, electrical cable covering, cans, and containers. Aluminum, iron, plastics, and tin compete with lead in other packaging and protective coatings, and tin has replaced lead in solder for new or replacement potable water systems in the United States. In the electronics industry, there has been a move towards lead-free solders with varying compositions of tin, bismuth, silver and copper.

<sup>e</sup>Estimated. E Net exporter. NA Not available; included in Other countries. — Zero.

<sup>1</sup>Less than ½ unit.

<sup>2</sup>Apparent consumption series revised to reflect a total raw material balance. Apparent consumption defined as mine production + secondary refined + imports (concentrates and refined) – exports (concentrates and refined) + adjustments for Government and industry stock changes.

<sup>3</sup>Includes only mines for which lead was the primary product. In 2005, approximately 510 people were employed at zinc mines where lead was a significant byproduct or coproduct.

<sup>4</sup>Defined as imports – exports + adjustments for Government and industry stock changes. Includes trade in both concentrates and refined lead.

<sup>5</sup>No tariff for Mexico and Canada for item shown.

<sup>6</sup>See Appendix B for definitions.

<sup>7</sup>See Appendix C for definitions.