

## LEAD

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

**Domestic Production and Use:** The value of recoverable mined lead in 2008, based on the average U.S. producer price, was \$1.23 billion. Five 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 21 plants that produced secondary lead, 12 had annual capacities of 15,000 tons or more and accounted for more than 99% of secondary production. Lead was consumed at about 110 manufacturing plants. The lead-acid battery industry continued to be the principal user of lead, accounting for 88% of the reported U.S. lead consumption for 2008. 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 systems; and as traction batteries used in airline ground equipment, golf carts, industrial forklifts, mining vehicles, etc. About 10% of lead was used in ammunition; casting material; pipes, sheets (including radiation shielding), traps and extruded products; building construction, cable covering, and caulking lead; solder; and oxides for ceramics, chemicals, glass, and pigments. 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>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008<sup>e</sup></b>
Production:					
Mine, lead in concentrates	445	437	429	444	440
Primary refinery	148	143	153	123	136
Secondary refinery, old scrap	1,130	1,150	1,160	1,180	1,210
Imports for consumption:					
Lead in concentrates	—	—	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Refined metal, wrought and unwrought	208	310	343	267	300
Exports:					
Lead in concentrates	292	390	298	300	300
Refined metal, wrought and unwrought	83	65	68	56	50
Shipments from Government stockpile excesses, metal	42	29	24	—	—
Consumption:					
Reported	1,480	1,490	1,560	1,570	1,620
Apparent <sup>2</sup>	1,470	1,480	1,580	1,540	1,600
Price, average, cents per pound:					
North American Producer	55.1	61.0	77.4	124	131
London Metal Exchange	40.2	44.2	58.0	117	107
Stocks, metal, producers, consumers, yearend	59	47	54	49	54
Employment:					
Mine and mill (peak), number <sup>3</sup>	1,020	1,100	1,070	1,100	1,200
Primary smelter, refineries	240	240	240	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	E	E	E	E	E

**Recycling:** About 1.20 million tons of secondary lead was produced, an amount equivalent to 74% of reported domestic lead consumption. Nearly all of it was recovered from old (post-consumer) scrap.

**Import Sources (2004-07):** Metal, wrought and unwrought: Canada, 69%; Mexico, 8%; Peru, 7%; China, 6%; and other, 10%.

<b>Tariff: Item</b>	<b>Number</b>	<b>Normal Trade Relations<sup>5</sup></b>
Unwrought (refined)	7801.10.0000	<b>12-31-08</b> 2.5% ad val.

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

**Government Stockpile:** None.

**Events, Trends, and Issues:** Prices for refined lead began to drop in the second half of 2008 and continued to decline until yearend, reflective of global demand that weakened during the same period. The average North American Producer and London Metal Exchange cash prices in September were nearly 30% lower than they were at the beginning of 2008. Use of lead worldwide was estimated to have increased by about 5% in 2008, driven primarily

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by strong economic growth in the information technology, telecommunications, and transportation sectors in China.

Global mine production of lead concentrate increased by about 7% in 2008. Mine production rose in Bolivia, Canada, China, India, Mexico, and Russia owing to new projects coming online, along with expansions at some existing operations. Global production of refined lead in 2008 was expected to be 7% higher than that of the previous year, owing to production increases in Australia, Canada, China, Kazakhstan, the Republic of Korea, Malaysia, the United Kingdom, and the United States. China continued to be both the largest producer and consumer of refined lead in the world. The Chinese trade balance for refined lead has shifted during the past year as a result of export tax increases that were implemented in 2007. Chinese exports of refined lead declined by more than 20% during the first half of 2008 compared with those of the same period of the previous year. Conversely, Chinese exports of lead-acid batteries, which are not subject to the higher export taxes, have increased in 2008 compared with those of the previous year.

According to Battery Council International statistics, demand for replacement SLI batteries in 2008 was expected to be up slightly from that of 2007, whereas original equipment SLI demand was down, the latter being consistent with lower new vehicle sales figures.

In October, the Environmental Protection Agency (EPA) issued a final rule that substantially strengthened the national ambient air quality standards (NAAQS) for lead. The revised standards, which must be attained no later than January 2017, are significantly tighter than previous standards and are intended to improve health protection for at-risk groups. In conjunction with the strengthening of the NAAQS, the EPA was planning to expand the existing lead monitoring network to ensure monitors are assessing air quality in areas that might violate the new standard.

**World Mine Production, Reserves, and Reserve Base:** Reserves estimates for Australia, Canada, and the United States were revised based on information released by producers in the respective countries.

	Mine production		Reserves <sup>6</sup>	Reserve base <sup>6</sup>
	2007	2008 <sup>e</sup>		
United States	444	440	7,700	19,000
Australia	641	576	24,000	59,000
Canada	82	95	400	5,000
China	1,500	1,540	11,000	36,000
India	78	85	NA	NA
Ireland	54	56	NA	NA
Kazakhstan	40	47	5,000	7,000
Mexico	120	145	1,500	2,000
Morocco	45	35	500	1,000
Peru	329	335	3,500	4,000
Poland	85	53	NA	5,400
South Africa	42	48	400	700
Sweden	62	69	500	1,000
Other countries	248	300	24,000	30,000
World total (rounded)	3,770	3,800	79,000	170,000

**World Resources:** In recent years, significant lead resources have been demonstrated in association with zinc and/or silver or copper deposits in Australia, 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, cans, containers, and electrical cable covering. 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 bismuth, copper, silver, and tin.

<sup>e</sup>Estimated. E Net exporter. NA Not available. — Zero.

<sup>1</sup>Less than ½ unit.

<sup>2</sup>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 lead and zinc-lead mines for which lead was either a principal or significant product.

<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 C for definitions.