

## LEAD

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

**Domestic Production and Use:** The value of recoverable mined lead in 2001, based on the average U.S. producer price, was \$404 million. Seven lead mines in Missouri plus lead-producing mines in Alaska, Idaho, and Montana yielded most of the total. Primary lead was processed at two smelter-refineries in Missouri and at a smelter in Montana. Of the 26 plants that produced secondary lead, 15 had annual capacities of 15,000 tons or more and accounted for more than 98% of secondary production. Lead was consumed at about 140 manufacturing plants. The transportation industries were the principal users of lead, consuming 76% of it for batteries, fuel tanks, solder, seals, bearings, and wheel weights. Electrical, electronic, communications uses (including batteries), ammunition, television glass, construction (including radiation shielding), and protective coatings accounted for approximately 22% of consumption. The balance was used in ballast and counterweights, ceramics and crystal glass, tubes and containers, type metal, foil, wire, and specialized chemicals.

<b>Salient Statistics—United States:</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001<sup>e</sup></b>
<b>Production:</b>					
Mine, lead in concentrates	459	493	520	468	420
Primary refinery	343	337	350	341	300
Secondary refinery, old scrap	1,040	1,060	1,060	1,080	1,030
Imports for consumption, lead in concentrates	18	33	12	31	30
Exports, lead in concentrates	42	72	94	117	100
Imports for consumption, refined metal, wrought and unwrought	272	275	323	365	310
Exports, refined metal, wrought and unwrought	53	40	37	49	35
Shipments from Government stockpile excesses, metal	26	50	61	32	30
<b>Consumption:</b>					
Reported	1,620	1,630	1,680	1,720	1,630
Apparent	1,610	1,690	1,760	1,740	1,650
<b>Price, average, cents per pound:</b>					
North American Producer	46.5	45.3	43.7	43.6	44
London Metal Exchange	28.3	24.0	22.8	20.6	21
Stocks, metal, producers, consumers, yearend	101	89	91	123	105
<b>Employment:</b>					
Mine and mill (peak), number	1,200	1,200	1,100	1,100	1,000
Primary smelter, refineries	450	450	450	450	400
Secondary smelters, refineries	1,800	1,800	1,700	1,700	1,600
Net import reliance <sup>1</sup> as a percentage of apparent consumption	14	18	20	18	20

**Recycling:** About 1.1 million tons of secondary lead was produced, an amount equivalent to 67% of domestic lead consumption. Nearly all of it was recovered from old (post-consumer) scrap. About 1 million tons (equivalent to 61% of domestic lead consumption) was recovered from used batteries alone.

**Import Sources (1997-2000):** Lead in concentrates: Peru, 25%; Mexico, 16%; Australia, 10%; Canada, 8%; and other, 41%. Metal, wrought and unwrought: Canada, 64%; Mexico, 15%; Australia, 5%; Peru, 2%; and other, 14%. Total lead content: Canada, 61%; Mexico, 15%; Australia, 5%; Peru, 4%; and other, 15%.

<b>Tariff: Item</b>	<b>Number</b>	<b>Normal Trade Relations<sup>2</sup> 12/31/01</b>
Unwrought (refined)	7801.10.0000	2.5% ad val.

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

### **Government Stockpile:**

#### **Stockpile Status—9-30-01<sup>3</sup>**

<b>Material</b>	<b>Uncommitted inventory</b>	<b>Committed inventory</b>	<b>Authorized for disposal</b>	<b>Disposal plan FY 2001</b>	<b>Disposals FY 2001</b>
Lead	186	11	186	54	24

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**Events, Trends, and Issues:** During 2001, the price for lead decreased in the United States and world markets. The average North American Producer and London Metal Exchange prices for the first 9 months of the year were 0.2% and 4.5%, respectively, below the averages for 2000. Worldwide demand for lead declined by about 1% in 2001, mainly owing to a decrease in demand in the United States. Use of lead in Europe decreased slightly, further contributing to the overall decline. These decreases in demand more than offset the rise in demand for lead in Asia, particularly in China. Total output of refined lead worldwide decreased by about 2% in 2001. Production cutbacks in Belgium, France, Germany, Italy, and the United States more than offset the increases in production of refined lead in China, Israel, and Malaysia. A supply deficit of refined lead was anticipated in the industrialized world in 2001, largely due to an insufficient supply of concentrates, according to a report issued by the International Lead and Zinc Study Group at its 46th Session in New Delhi, India, in October.

U.S. mine production declined by about 10%, mainly as a result of production decreases implemented by one major producer during the year, and secondary refinery production declined by about 5%. U.S. apparent consumption of lead decreased by 5% compared with the previous year, as the lack of temperature extremes in most of the heavily populated regions of the country reduced the rate of automotive-type battery failures and the consequent rate of demand for replacement batteries. In addition, the slowdown in the U.S. economy reduced the demand for automotive-type batteries in new vehicles, as well as industrial-type batteries in telecommunications and motive power applications.

A U.S. company announced the indefinite suspension of operations at its lead smelter, beginning in April 2001. The smelter was constructed in the late 1800s to process the output of lead concentrate from mines located in the northwestern United States. Production capacity of the smelter is about 60,000 tons per year of lead bullion, which then is principally exported for further refining. According to the company, the smelter likely would reopen when market conditions and the supply of lead concentrates and other raw materials improved sufficiently for economic operation.

The development of higher voltage automotive-type lead-acid batteries continued during 2001 in response to the expected need for greater electrical power in automobiles during the next few years. These newly designed batteries will supply sufficient power for a host of automotive features and in-car luxuries, including regenerative power recovery, windscreen heating, and electrically driven power steering.

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

	Mine production		Reserves <sup>4</sup>	Reserve base <sup>4</sup>
	2000	2001 <sup>e</sup>		
United States	468	420	8,700	20,000
Australia	699	700	15,000	28,000
Canada	143	150	1,600	9,000
China	570	560	9,000	30,000
Kazakhstan	40	30	2,000	2,000
Mexico	156	160	1,000	2,000
Morocco	80	82	500	1,000
Peru	271	270	2,000	3,000
South Africa	75	80	2,000	3,000
Sweden	108	100	500	1,000
Other countries	490	420	22,000	33,000
World total (may be rounded)	3,100	2,970	64,000	130,000

**World Resources:** In recent years, significant lead resources have been demonstrated in association with zinc and/or silver or copper in the United States (Alaska), Australia, Canada, China, Ireland, Mexico, Peru, and Portugal. 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, tin, iron, and plastics 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.

<sup>e</sup>Estimated.

<sup>1</sup>Defined as imports - exports + adjustments for Government and industry stock changes.

<sup>2</sup>No tariff for Mexico and Canada for item shown.

<sup>3</sup>See Appendix B for definitions.

<sup>4</sup>See Appendix C for definitions.