



Significant events affecting lead prices since 1958

1961-1969	Lead and Zinc Mining Stabilization Program in effect
1971-1973	Price controls
1976-1979	Post-Vietnam War boom—highest historical price
1982-1986	More stringent environmental controls imposed on production
1986-1991	Industry retrenchment—attendant cost reductions
1992-1996	Increasing demand, particularly in lead-acid battery sector
1997-1998	Moderate weather in more populated regions—demand for replacement automotive batteries slowed

Lead is a very dense, ductile, malleable, corrosion resistant, blue-gray metal that has been used for at least 5,000 years. Early uses of lead were in building materials, water pipes, and pigments for glazing. The castles and cathedrals of Europe contain considerable quantities of lead in roofs, windows, pipes, and decorative fixtures (Shea, 1996, p. 1). In the United States, lead was first mined in Virginia in 1621.

During the colonial period, mining was carried out in New York, North Carolina, and several New England States. By the late 1860's, most of the mine production of lead came from the lower and upper Mississippi Valley regions. A westward expansion of mining began soon thereafter. Many gold and silver mines were developed, some of which contained significant concentrations of lead. In addition, the

Missouri Lead Belt, in southeastern Missouri, was developed, as well as the Tri-State Lead District, which included Kansas, Missouri and Oklahoma. By the late 1950's, depletion of lead reserves in the Lead Belt and discontinuation of mining in the Tri-State region, encouraged the discovery and development of the Viburnum Trend mining region in southeast Missouri, thus establishing the framework of the current domestic primary lead industry. Missouri has been the foremost lead-mining State since 1907 and has retained that status throughout the century, except for 1962 when mine output was curtailed by a prolonged strike (Hofman, 1918, p. 1-6; Howe, 1980, p. 1-5).

In conjunction with the mining of lead, numerous primary lead smelters and refineries have been operated in the United States since primary lead production was first recorded in 1825. By 1887, annual production of primary refined lead had reached 132,000 metric tons and had increased to a high of 725,000 tons by 1926, representing 87% of the total refined lead production. As the production of secondary lead increased, production of refined lead from primary sources gradually decreased. In 1997, annual production of primary refined lead was 343,000 tons, representing 24% of the total refined lead production. The price of primary refined lead increased from \$0.04 per pound in the early 1900's to \$0.12 per pound in 1959, reaching a high of about \$0.18 per pound during the post-World War II economic boom from 1946 to 1948 and the Korean conflict in the early 1950's. Between 1959 and 1973, lead prices remained fairly stable, ranging from \$0.12 to \$0.16 per pound. This stability was due, in part, to the enactment of Public Law 87-374, the Lead and Zinc Mining Stabilization Program, in 1961. The program, which remained in effect through 1969, authorized payments to qualified miners when the market price of lead dropped below \$0.145 per pound. In the early 1970's, movement in the price of lead was restrained by anti-inflation price controls. With the lifting of price controls in December 1973, the price of lead quickly increased, reaching a historic high in 1979 during the post-Vietnam War economic boom. By the late 1990's, the price of lead had increased tenfold compared with the price at the beginning of the century. In terms of 1992 dollars, however, the price of primary refined lead was \$0.39 per pound in 1998 compared with \$0.59 per pound in 1959.

Historically, lead has not been and is not a price-elastic commodity. Its significant uses in any given era have not depended on price and, for the most part, other metals cannot substitute for lead in these cases. Prior to the early 1900's, uses of lead were primarily for shot, bullets, water lines and pipes, pewter, brass, glazes, paints or other protective

coatings, burial vault liners, and leaded glass or crystal. With the advent of the electrical age and communications accelerated by technological developments in World War I, cable lead and solders became preeminent. With the growth in production of public and private motorized vehicles and the associated use of starting-lighting-ignition (SLI) lead-acid storage batteries and terne metal for gas tanks after World War I, demand for lead increased. In addition to their continued use in SLI applications, new uses of storage batteries have included motive sources of power for industrial forklifts, airport ground equipment, mining equipment, and a variety of other electrical-powered, non-road utility vehicles, as well as stationary sources of power in industrial-type applications, such as uninterruptible electrical power supply equipment for hospitals, computer and telecommunications networks, and load-leveling equipment for commercial electrical power systems. Most of these uses continued to expand with the population and the national economy, and total demand accelerated further with electronic developments (primarily television and video display tubes) and demand for leaded gasoline after World War II, peaking between 1977 and 1979. With the near phaseout of lead in gasoline, paints, solders, and water systems, and the imposition of expensive environmental production controls, the industry experienced hard times between 1982 and 1986. However, the industry made a dramatic recovery by the late 1980's, owing to massive retrenchment in the primary and secondary producing sectors with attendant cost reductions, and to expansion in demand for industrial-type battery systems, and record SLI battery shipments. Growth in the battery industry continued into the 1990's. By 1997, lead-acid storage batteries represented a record-high 87% of reported U.S. consumption of lead. Demand for lead in the battery sector is associated, to a significant extent, with the demand for replacement automotive batteries. In 1997 and 1998, there was some softness in the price of lead owing to 2 consecutive years of moderate temperatures in the more-populated regions of the United States that reduced the rate of failure of automotive-type batteries.

References Cited

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- Howe, W.B., 1980, *Viburnum Trend, Missouri—The geology and ore deposits of selected mines*: Rolla, Missouri Department of Natural Resources Report of Investigation 58, 56 p.
- Shea, E.E., 1996, *Lead regulation handbook*: Rockville, MD, Government Institutes, Inc., 240 p.

Annual Average Lead Price
(Dollars per pound¹)

Year	Price	Year	Price	Year	Price	Year	Price
1909	0.043	1932	0.032	1955	0.151	1978	0.337
1910	0.044	1933	0.039	1956	0.160	1979	0.526
1911	0.044	1934	0.039	1957	0.147	1980	0.425
1912	0.045	1935	0.041	1958	0.121	1981	0.365
1913	0.044	1936	0.047	1959	0.122	1982	0.255
1914	0.039	1937	0.060	1960	0.119	1983	0.217
1915	0.047	1938	0.047	1961	0.109	1984	0.256
1916	0.069	1939	0.051	1962	0.096	1985	0.191
1917	0.088	1940	0.052	1963	0.111	1986	0.221
1918	0.074	1941	0.058	1964	0.136	1987	0.359
1919	0.058	1942	0.065	1965	0.160	1988	0.371
1920	0.080	1943	0.065	1966	0.151	1989	0.394
1921	0.045	1944	0.065	1967	0.140	1990	0.460
1922	0.057	1945	0.065	1968	0.132	1991	0.335
1923	0.073	1946	0.081	1969	0.149	1992	0.351
1924	0.081	1947	0.147	1970	0.157	1993	0.317
1925	0.090	1948	0.180	1971	0.139	1994	0.372
1926	0.084	1949	0.154	1972	0.150	1995	0.423
1927	0.068	1950	0.133	1973	0.163	1996	0.488
1928	0.063	1951	0.175	1974	0.225	1997	0.465
1929	0.068	1952	0.165	1975	0.215	1998	0.453
1930	0.055	1953	0.135	1976	0.231		
1931	0.042	1954	0.141	1977	0.307		

¹ To convert to dollars per kilogram, multiply by 2.20462.

Note:

1909-36, Primary producer price, New York (Common lead, 99.94% pure), *in* Engineering and Mining Journal.

1937-66, Primary producer price, New York (Common lead, 99.94% pure), *in* E&MJ Metal and Mineral Markets.

1967-70, Primary producer price, New York (Common lead, 99.94% pure), *in* Metals Week.

1971-85, Primary producer price, delivered (Minimum 99.97% pure), *in* Metals Week.

1986-93, North American producer price, delivered (Minimum 99.97% pure), *in* Metals Week [through June 14, 1993].

1993-99, North American producer price, delivered (Minimum 99.97% pure), *in* Platt's Metals Week.