

LEAD AND ZINC INDUSTRY

STATISTICS FOR 1966 COMPARED WITH OTHER YEARS

ARIZONA, UNITED STATES AND WORLD

COMPILED BY ARIZONA DEPARTMENT OF MINERAL RESOURCES

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LEAD INDUSTRY

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LEAD

PHYSICAL PROPERTIES *

Lead is one of the most important industrial nonferrous metals used in substantial quantities in the metallic form; it is also important for the properties it imparts to its alloys.

Is the softest and heaviest of the common metals. It can be rolled to a foil of less than 0.0005 inches in thickness but is not ductile enough to be drawn into fine wire. Very malleable. Lead cannot be hardened except by alloying.

Some of the physical properties of lead are as follows;

Symbol - Pb. Atomic Weight - 207.21. Spec. Gravity - 11.34

Melting Point - 327.35°C (621.2°F). Boiling Point 1,740°C (3164°F)

Specific Resistance (20°-40°C) (63° - 104°F) - Microhm 20.65

Hardness (Mohs' scale) - 1.5. Tensile Strength #/sq. in. - 3,000

Crystal Structure - Face-centered Cubic Valences - +4 & +2

* U.S.B.M.'s "MATERIALS SURVEY" - September, 1952

Arizona Department of Mineral Resources

METAL DUTIES ON LEAD*

As of December 31, 1966

According to the Tariff Classification Act of 1962, Amended.

Published in American Bureau of Metal Statistics Yearbook, 1966, page 147

As follows:

Lead:

Lead-bearing ores and other lead-bearing materials, dutiable lead content	0.75¢ lb.
Lead dross, dutiable lead content	1.0625¢ lb.
Lead bullion, lead waste and scrap on 99.6% of lead content	1.0625¢ lb.
Refined lead in unwrought forms, Bab-bitt metal and solder, type metal and antimonial lead, lead content	1.0625¢ lb.
Lead pipe, sheets, glaziers' lead and lead wire	1.3125¢ lb.

* The Kennedy Round of Geneva trade agreements was signed June 30, 1967. Tariffs on ^{lead}~~zinc~~ were not cut.

REVIEW OF LEAD INDUSTRY - 1966

For lead consumers, 1966 was a year of lower prices - in two one-cent reductions occurring on May 5 and October 10, the price tag dropped to 14.00 cents New York. And the reductions on both occasions resulted from a wide differential between the New York and London markets. Weakness in the latter market caused domestic producers to trim prices in a move aimed at discouraging a build-up of imports.

It was the first full year since 1958 that imports weren't under quota restrictions - the latter were lifted late in 1965. Total intake of foreign metal in 1966 increased to 432,752 tons from 343,877 tons in the preceding year.

Consumption

In other segments of the industry, domestic consumption, although moving up only slightly, set a new record high - it totaled approximately 1,300,000 tons, equivalent to almost 3,600 tons daily.

Battery requirements for lead - its largest market - were slightly under the record quantity set in 1965, but gains in ammunition, brass, cable covering, and collapsible tubes were sufficient to offset the decline and bring lead usage in metal products to about the level of the preceding year, 832,000 tons.

The major rise in consumption was in antiknock compounds to about 240,000 tons, and to a smaller degree, a continued rise in red lead, litharge, and pigment colors.

Mine production of recoverable lead increased approximately seven percent to 321,000 tons value at \$96 million. The rise was primarily due to steady operation of United States Smelting Refining and Mining Co.'s Utah mines that were idle almost three months in 1965.

Primary refinery lead production continued at approximately the same level as in 1965 (454,897 tons). Production again reflected a decreased availability of imported ore, plus scrap for refining.

Stockpile

The sale of government stockpile lead, conducted monthly, continued through May and then were revised to open sales throughout the month. Industry purchased 59,780 tons through November while government agencies took 780 tons.

A study prepared by the International Lead and Zinc Study Group, indicates that world lead production may top consumption in 1967 by about 55,000 tons if expansion projects underway are completed on schedule.

Source: American Metal Market Co. "Metal Statistics 1967".

T A B L E I

SALIENT U. S. LEAD STATISTICS FOR 1965 AND 1966

ARIZONA, UNITED STATES AND WORLD MINE PRODUCTION OF RECOVERABLE LEAD

	Unit: Short Tons	
	Year	Year
	1965	1966
Producers' Stocks Beginning of Period	84,398	83,443
U. S. Mine Production Recoverable Lead	301,147	327,368
Secondary Lead Recovered from Old & New Scrap	575,819	572,834
Imported Lead in Ore & Matte, Base Bullion	122,661	143,991
Imported Lead in Pigs, Bars	226,883	288,821
Imported Lead in Reclaimed Scrap, etc.	3,612	3,956
 TOTAL SUPPLY	 1,314,520	 1,420,413
 Exported Lead in Ore, Matte & Base Bullion	 N.A.	 N.A.
Exported Lead in Pigs and Bars	7,811	5,435
Exported Lead in Scrap	3,793	498
Producers' Stocks at End of Period	83,443	115,473
 Sub-Total	 95,047	 121,406
 NET APPARENT CONSUMPTION	 1,219,473	 1,299,007
 REPORTED CONSUMPTION	 1,241,482	 1,323,877
 UNACCOUNTED FOR (Stockpiles, etc.)	 -22,009	 -24,870
 PRODUCTION OF REFINED PRIMARY LEAD:		
From Domestic Ores & Base Bullion	305,007	318,646
From Foreign Ores & Base Bullion	113,242	122,089
 ARIZONA MINE PRODUCTION	 5,913	 5,211
 WORLD MINE PRODUCTION	 2,990,000	 3,155,000
 U.S. MINE PRODUCTION AS % OF REPORTED CONSUMPTION	 24.26%	 24.73%
 MINE PRODUCTION & SECONDARY AS % OF REPORTED CONSUMPTION	 70.64%	 68.00%
 Avg. Price of Lead - N. Y. (E&MJ)	 16.00¢	 15.12¢
 Avg. Price of Lead - London	 14.37¢	 11.87¢

N.A. - Not Available.

Source: U. S. Bureau of Mines

Arizona Department of Mineral Resources

November, 1967

T A B L E II

MINE PRODUCTION OF RECOVERABLE LEAD IN THE UNITED STATES, BY STATES

		Short Tons		
STATE		1964	1965	1966
Arizona	. . . . .	6,147	5,913	5,211
Arkansas	. . . . .	- -	- -	- -
California	. . . . .	1,546	1,810	1,976
Colorado	. . . . .	20,563	22,495	23,082
Idaho	. . . . .	71,312	66,606	72,334
Illinois	. . . . .	2,180	3,005	2,285
Kansas	. . . . .	1,185	1,644	1,109
Kentucky	. . . . .	858	756	484
Missouri	. . . . .	120,148	133,521	132,255
Montana	. . . . .	4,538	6,981	4,409
Nevada	. . . . .	809	2,277	3,581
New Mexico	. . . . .	1,626	3,387	1,596
New York	. . . . .	732	601	1,097
North Carolina	. . . . .	- -	- -	- -
Oklahoma	. . . . .	2,781	2,813	2,999
Utah	. . . . .	40,249	37,700	64,124
Virginia	. . . . .	3,857	3,651	3,078
Washington	. . . . .	5,231	6,328	5,859
Wisconsin	. . . . .	1,742	1,645	1,694
Other States	. . . . .	6	14	195
TOTAL		286,010	301,147	327,368

Source: U. S. B. M. 1964, 1965 and 1966.

Arizona Department of Mineral Resources

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TABLE III

WORLD MINE PRODUCTION OF RECOVERABLE LEAD, BY COUNTRIES
IN THOUSAND SHORT TONS

Year	U.S.	Mexico	Canada	Peru	Australia	Rest of Free World	Total Free World	Soviet Sphere	Total World (Estimated)
1956	353	220	189	142	335	682	1,921	569	2,490
1957	338	237	181	151	373	728	2,008	602	2,610
1958	267	223	186	148	366	728	1,918	642	2,560
1959	256	210	187	127	354	707	1,841	689	2,530
1960	247	210	205	142	341	708	1,853	707	2,560
1961	262	200	233	148	300	708	1,851	809	2,660
1962	237	213	211	147	414	705	1,927	838	2,765
1963	253	209	199	163	459	672	1,955	845	2,800
1964	236	187	206	165	420	727	1,991	744	2,735
1965	301	187	303	170	406	872	2,239	751	2,990
1966	327	197	324	160	405	979	2,392	763	3,155

TABLE IV

TOTAL LEAD IMPORTED INTO THE UNITED STATES, AND EXPORTED FROM U. S.
Short Tons

	IMPORTS	EXPORTS	NET IMPORTS
Avg. 1948-1952	434,909	3,500	431,409
1953	552,278	4,547	547,731
1954	443,243	4,592	438,651
1955	462,208	4,720	457,488
1956	479,875	7,819	472,056
1957	532,055	6,130	525,925
1958	577,110	3,326	573,724
1959	411,087	4,121	406,966
1960	359,656	5,843	353,813
1961	409,402	11,733	397,669
1962	403,027	7,467	395,560
1963	389,081	3,513	385,568
1964	340,993	23,342	317,651
1965	350,110	11,604	338,506
1966	434,824	5,933	428,891

TABLE V

CONSUMPTION OF LEAD IN UNITED STATES

Year	Metal Products	Storage Batteries	Pigments	Tetra- ethyl Lead	Other Uses	Total
1957	448,948	361,015	115,361	177,001	35,790	1,138,115
1958	382,822	312,725	95,901	159,412	35,527	986,387
1959	407,520	380,732	103,671	160,020	39,206	1,091,149
1960	369,731	353,196	98,541	163,826	35,873	1,021,172
1961	359,302	367,998	94,824	169,802	35,290	1,027,216
1962	330,623	419,906	102,968	163,926	37,212	1,109,635
1963	396,797	439,081	99,075	192,811	35,594	1,163,358
1964	363,952	429,898	99,946	223,466	84,876	1,202,138
1965	410,344	455,347	108,883	225,549	41,351	1,241,482
1966	440,117	472,492	119,188	247,493	44,588	1,323,877

Source: U.S.B. M.

T A B L E VI

U. S. LEAD CONSUMPTION - YEARS 1964, 1965 & 1966

Short Tons				
	1964	1965	1966	
Metal Products:				
Ammunition	56,493	57,322	78,345	
Bearing Metals	22,754	21,600	21,588	
Brass and Bronze	23,328	23,699	25,447	
Cable Covering	56,225	59,645	66,491	
Culking Lead	73,628	66,584	63,250	
Casting Metals	6,961	5,046	6,671	
Collapsible Tubes	14,904	10,893	11,987	
Foil	3,976	4,805	6,041	
Pipes, traps and bends	20,480	12,837	19,984	
Sheet Lead	29,605	27,569	28,938	
Solder	71,186	77,319	78,898	
Storage Battery Grids, Posts, etc.	221,594	235,641	240,535	
Storage Battery Oxides	207,754	219,706	231,957	
Terne Metal	1,609	2,109	1,966	
Type Metal	25,374	33,416	30,421	
TOTAL	835,871	865,691	912,609	
Pigments:				
White Lead	8,802	8,414	8,131	
Red Lead & Litharge	74,802	79,853	89,500	
Pigment Colors	11,921	12,553	13,695	
Other <u>1/</u>	8,111	8,063	8,562	
TOTAL	103,636	108,883	119,888	
Chemicals:				
Tetraethyl Lead	223,466	225,203	246,879	
Miscellaneous	451	346	614	
TOTAL	223,917	225,549	247,493	
Miscellaneous Uses:				
Annealing	5,699	5,719	5,441	
Galvanizing	1,592	1,775	1,639	
Lead Plating	179	240	428	
Weights & Ballast	12,760	14,135	18,090	
TOTAL	20,230	21,869	25,598	
Other Uses, Unclassified	18,484	19,490	18,289	
Total Reported <u>2/</u>	1,202,138	1,241,482	1,323,877	

1/ Includes lead content of leaded zinc oxide production.

2/ Includes lead content of scrap used directly in fabricated products.

Source: U.S.B.M.

T A B L E V I I

IMPORTS AND EXPORTS OF LEAD INTO AND FROM UNITED STATES

YEARS 1964, 1965 and 1966

SHORT TONS

Country of Origin	1964	1965	1966
Ore, Matte, etc. (Lead Content)	123,257	122,661	143,991
Canada	27,951	43,622	52,707
Mexico	1,069	760	624
Guatemala	5	18	35
Honduras	6,375	8,712	11,132
Colombia	- - -	677	445
Peru	28,243	26,419	41,610
Bolivia	6,073	5,096	11,136
Republic of South Africa	34,680	10,570	1,394
Australia	19,286	26,658	22,614
Other Countries	175	129	2,294
Base Bullion	4,838	566	2,012
Australia - Oceania	2,786	448	1,283
South America	603	25	- -
North America	1,449	93	809
Other Countries	- - -	- - -	120
Pigs and Bars (Lead Content)	207,844	220,672	285,389
Canada	30,728	31,697	34,283
Mexico	71,728	73,546	75,294
Peru	24,510	26,132	51,593
Belgium-Luxembourg	- - -	197	2,535
West Germany	5,017	1,653	15,499
Spain	949	- - -	- - -
Yugoslavia	30,544	28,640	31,322
Australia	42,158	51,105	44,187
Other Countries	2,210	7,702	30,676
Reclaimed Scrap, etc.	5,054	4,270	3,432
GRAND TOTAL IMPORTS	340,993	348,169	434,824
GRAND TOTAL EXPORTS	23,342	11,604	5,933
EXCESS IMPORTS	317,651	336,565	428,891

Source: U.S.B.M.

Z I N C

PHYSICAL PROPERTIES *

Zinc is a bluish white, hard, brittle metal with a microscopic crystalline structure when broken. The commercial metal is now known in the U. S. as slab zinc, rather than by the older term spelter.

The commercial importance of zinc is based largely upon its properties as a corrosion inhibitor especially as a protective coating on steel in galvanized products and upon its use in alloys. On account of low strength and brittleness, the pure metal, when used alone, has few uses except as sheet metal and other rolled forms.

Zinc compounds are important as pigments, fillers, and chemicals, with a wide range of end uses.

Symbol - Zn. Atomic Weight - 65.38 Specific Gravity - 7.13

Melting Point - °F - 787.03. Boiling Point, °F - 1,663

Electrical Resistivity - Microhm per c.c. - 5.916

Tensile Strength, cast, Lb. per sq. in. - 9,000. Rolled - 21,000

Crystal Structure - close packed hexagonal. Valence - 2

* U.S.B.M.'s "MATERIALS SURVEY" - September, 1952

Arizona Department of Mineral Resources

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Z I N C I N D U S T R Y

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METAL DUTIES ON ZINC*

As of December 31, 1966

According to the Tariff Classification Act of 1962, Amended.

Published in American Bureau of Metal Statistics Yearbook, 1966, page 147

As follows:

Zinc:

Zinc-bearing ores and other zinc-bearing
materials, dutiable zinc content 0.67¢ lb.

Zinc waste and scrap and zinc dross and
skimmings 0.75¢ lb.

Refined zinc in unwrought forms and
zinc dust 0.70¢ lb.

Zinc sheets, rolled and cross rolled 1.0¢ lb.

Zinc sheets, rolled and cross rolled,
coated or plated with metal 1.125¢ lb.

Zinc sheets, rolled in one direction only 19.%

Zinc oxide and leaded zinc oxide con-
taining not over 25% of lead by weight:

Dry	. . . . .	0.6¢ lb.
Other	. . . . .	1.0¢ lb.

* The Kennedy Round of Geneva trade agreements was signed
June 30, 1967. Tariffs on zinc were not cut.

REVIEW OF ZINC INDUSTRY - 1966

The U. S. zinc industry again shattered production and consumption records in 1966.

Domestic smelter production increased two percent to approximately 1,100,000 tons, marking the second consecutive year of record output.

Slab zinc consumption increased to 1,400,000 tons, exceeding the previous year's record high by three percent. Here's how zinc's two largest consuming outlets performed in 1966:

Markets

Die Castings: Total zinc usage in the metal's largest marketing outlet was approximately 600,000 tons, down from the 630,000 tons consumed in 1965 during which the automotive industry had an outstanding production year.

Galvanizing: Shipments of galvanized sheet and strip estimated at 5,000,000 tons set a new all-time record. Total zinc consumption for galvanizing purposes in 1966 is estimated at a record 500,000 tons.

In another zinc consuming category - brass - usage increased to 180,000 tons representing a 21-year high.

Stocks Rise

Although consumption and smelter production established new records in 1966, unsold inventories at smelters' plants climbed. At the start of the year, stocks stood at 32,250 tons and by the end of December were about double at 64,049 tons but still were less than a month's smelter production that averaged 92,536 tons monthly in 1966.

Slab zinc stocks at consumer plants increased from a high level of 145,000 tons at the start of the year, rose to a record 166,000 tons in March, then fell to 140,000 tons in the third quarter.

Zinc imports, which were free of quota restrictions for the first time since 1958, increased to a record high of 798,708 tons from 578,834 tons in 1965.

Sales of zinc from the government stockpile for commercial accounts totaled 41,852 tons from January through November. Approximately 56 percent of the stockpile sales were consummated during the first quarter.

Price Stability

As in 1965, the quoted price of Prime Western grade zinc held at 14.50 cents per pound, East St. Louis, and at 15.00 cents delivered New York, in 1966. And demand during the year in the U.S. precluded any downward change in price, although a tapering off in Europe brought about voluntary cutbacks of 10 percent in production by European and other foreign producers.

TABLE I

STATISTICS OF THE UNITED STATES ZINC INDUSTRY

Unit: Short Tons

	1965	1966
Stocks of Slab Zinc at Start of Period:		
Producers	31,178	28,622
Consumers	108,411	150,763
Sub-Total	139,589	179,385
Production:		
Smelter, Slab Zinc, from		
Domestic Ores	551,215	523,580
Foreign Ores	443,187	501,486
Redistilled Secondary		
(Slab Zinc from Scrap)	83,619	83,263
Sub-Total	1,078,021	1,108,329
Imports: Slab Zinc	152,990	278,175
GRAND TOTAL	1,370,600	1,565,889
Exports - Slab, Pigs, Blocks	5,939	1,406
Stocks of Slab Zinc, end of Period		
Producers	28,622	64,798
Consumers	150,763	129,466
Sub-Total	179,385	194,264
Apparent Consumption	1,185,276	1,370,219
Reported Consumption		
Slab Zinc	1,354,092	1,410,197
Consumed directly in ores	122,892	126,696
TOTAL	1,476,984	1,536,893

Source: U.S.B.M.

Arizona Department of Mineral Resources

November, 1967

T A B L E I I

MINE PRODUCTION OF RECOVERABLE ZINC, BY STATES, IN 1964-1966

Short Tons

STATE	1964	1965	1966
Arizona	24,690	21,757	15,985
Arkansas	- - -	- - -	- - -
California	143	225	335
Colorado	53,682	53,870	54,822
Idaho	59,298	58,034	60,997
Illinois	13,800	18,314	15,192
Kansas	4,665	6,508	4,769
Kentucky	2,063	5,654	6,586
Missouri	1,501	4,312	3,968
Montana	29,059	33,786	29,120
Nevada	582	3,858	5,827
New Jersey	32,926	38,297	25,237
New Mexico	29,833	36,460	29,296
New York	60,754	69,880	73,454
North Carolina	- - -	- - -	- - -
Oklahoma	12,159	12,715	11,237
Pennsylvania	30,754	27,635	28,080
Tennessee	115,943	122,387	103,117
Utah	31,428	27,747	37,323
Virginia	21,004	20,491	17,666
Washington	24,296	22,230	24,772
Wisconsin	26,278	26,993	24,775
Oregon	- - -	- - -	- - -
TOTAL	574,858	611,153	572,558

Source: U.S.B.M.

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TABLE III
WORLD MINE PRODUCTION OF RECOVERABLE ZINC, BY COUNTRIES

In Thousand Short Tons

Source: U.S.B.M.

YEARS	U.S.	CANADA	MEXICO	PERU	ITALY	AUSTRALIA	REST OF FREE WORLD	TOTAL FREE WORLD	SOVIET* SPHERE	TOTAL WORLD ESTIMATED
1955	515	433	297	183	132	287	776	2,623	587	3,210
1956	542	423	274	193	135	312	865	2,744	676	3,420
1957	532	414	268	170	145	326	917	2,772	738	3,510
1958	412	424	247	142	151	295	904	2,575	775	3,350
1959	425	396	291	158	145	279	880	2,574	786	3,360
1960	435	406	289	149	141	325	938	2,683	827	3,510
1961	464	416	296	194	146	323	947	2,786	934	3,720
1962	505	502	276	183	146	342	946	2,900	970	3,870
1963	529	497	266	200	118	394	996	3,000	970	3,970
1964	575	730	261	255	128	387	1,007	3,343	1,052	4,395
1965	611	911	257	231	127	391	1,188	3,766	929	4,695
1966	573	1,042	257	284	121	409	1,252	3,938	982	4,920

* Soviet Sphere: U.S.S.R., Bulgaria, E.Germany, Poland, N.Korea, China, Cuba.

TABLE IV
TOTAL ZINC IMPORTED INTO UNITED STATES, AND EXPORTED FROM U. S.

In Short Tons

YEARS	ORES	IMPORTS	TOTAL	EXPORTS	NET IMPORTS
		Blocks, Pigs or Slabs		Slabs, Pigs or Blocks	
1955	478,044	195,696	673,740	18,069	655,671
1956	525,350	244,978	770,328	8,813	761,515
1957	526,014	269,007	795,021	10,785	784,236
1958	462,003	195,199	657,207	1,736	655,471
1959	496,381	156,860	653,241	11,636	641,605
1960	456,221	120,767	576,988	75,144	501,844
1961	415,485	127,503	542,993	50,054	492,939
1962	469,152	141,959	611,111	36,102	575,009
1963	372,769	144,757	517,526	33,853	483,673
1964	357,145	118,340	475,485	26,515	448,970
1965	428,040	152,990	581,030	5,939	1/ 575,091
1966	521,320	278,175	799,495	1,406	2/ 798,089

1/ 28.1% increase over 1964; 2/ 33.8% increase over 1965.

TABLE V

CONSUMPTION OF SLAB ZINC IN UNITED STATES

Source: U.S.B.M.

Short Tons

Year	Galvan- izing	Brass Products	Zinc Base Alloy	Rolled Zinc	Zinc Oxide	Other Uses	Total Con- sumption
1950	441,686	139,373	289,527	68,444	18,187	9,917	967,134
1951	400,279	143,292	296,434	64,085	18,223	11,658	933,971
1952	377,688	155,608	236,689	51,318	17,205	14,275	852,783
1953	406,988	178,182	307,445	54,649	20,675	17,988	985,927
1954	403,463	108,268	290,846	47,486	18,701	15,535	884,299
1955	451,141	146,243	430,807	51,589	22,433	17,599	1,119,812
1956	439,146	124,004	360,507	47,359	19,160	18,614	1,008,790
1957	367,757	112,390	376,039	41,269	20,428	17,737	935,620
1958	381,229	101,375	316,830	40,616	13,331	14,946	868,327
1959	361,027	129,278	389,331	42,949	18,248	15,364	956,197
1960	371,589	99,023	338,373	38,696	15,593	14,610	877,884
1961	382,077	128,523	341,766	41,204	18,137	19,506	931,213
1962	388,570	129,305	423,608	42,233	18,517	29,088	1,031,821
1963	420,287	128,237	468,619	42,166	16,037	29,767	1,105,113
1964	456,336	135,095	524,582	44,181	19,991	27,083	1,207,268
1965	482,421	126,848	637,970	45,882	25,781	35,190	1,354,092
1966	495,967	185,552	606,036	52,612	28,438	41,592	1,410,197

TABLE VI-A

SALIENT ZINC STATISTICS OF THE UNITED STATES

Short Tons

	1965	1966
Production:-		
Mine, recoverable zinc	611,153	572,558
Smelter, slab zinc	1,078,021	1,108,329
Stocks of slab zinc, end of period:		
Producer	28,622	64,798
Consumer	150,763	129,466
Total	179,385	194,264
Imports (general)		
Ores and concentrates (zinc content)	428,040	521,320
Slab zinc	152,990	278,175
Total	581,030	799,495
Exports:		
Slab zinc	5,939	1,406
Consumption:		
Slab zinc	1,354,092	1,410,197
Zinc in ores consumed directly (recoverable)	122,892	126,696
Zinc-base scrap (recov.zinc content)	96,193	94,580
Copper-base scrap " " "	162,053	167,615
Aluminum & magnesium base scrap (recov. zinc content)	6,837	7,455
Total	1,742,067	1,806,543

ARIZONA AND WORLD MINE PRODUCTION OF RECOVERABLE ZINC

TABLE VI-B

Arizona Mine Production	21,757	15,985
U. S. Mine Production	611,153	572,558
World Mine Production	4,695,000	4,920,000
U. S. Mine Prod. as % of U.S. Reported Consumption	41.4%	37.3%
Avg. Price of Zinc, E.St.Louis,(E&MJ)	14.5¢	13.9¢

TABLE VI-C

U. S. CONSUMPTION OF SLAB ZINC

	1964	1965	1966
GALVANIZERS	456,336	482,421	495,967
DIE CASTERS	524,582	637,970	606,036
BRASS PRODUCT	135,095	126,848	185,552
ROLLED ZINC	44,181	45,882	52,612
ZINC OXIDE & OTHER	47,074	60,971	70,030
TOTAL SLAB ZINC CONSUMPTION	1,207,268	1,354,092	1,410,197

Source:- U.S.B.M.

TABLE VII

IMPORTS AND EXPORTS OF ZINC INTO AND FROM UNITED STATES

YEARS 1964, 1965 & 1966

SHORT TONS			
Country of Origin	Year 1964	Year 1965	Year 1966
Ores (Zinc Content)	357,145	428,040	521,320
Australia	3,238	2,667	4,334
Bolivia	3,540	4,093	5,738
Canada	156,385	201,353	272,950
Guatemala	3	4	318
Honduras	7,709	6,786	10,776
Mexico	103,879	117,354	114,677
Peru	62,864	73,721	78,254
Spain	- -	- -	- -
Republic of South Africa	6,086	11,267	12,565
Other Countries	13,441	10,795	21,658
Blocks, Pigs or Slabs	118,340	152,990	278,175
Australia	385	1,120	27,007
Belgian Congo	10,878	12,614	12,814
Belgium-Luxembourg	5,807	8,889	27,469
Canada	75,712	88,554	116,778
West Germany	265	230	6,062
Italy	- -	2,129	- - -
Mexico	12,791	12,787	22,702
Peru	7,569	10,323	30,805
Rhodesia-Nyasaland	62	- -	- -
Yugoslavia	441	887	551
Other Countries	4,430	15,457	33,987
TOTAL IMPORTS	475,485	581,030	799,495
TOTAL EXPORTS (Slab Zinc)	26,515	5,939	1,406
EXCESS IMPORTS	448,970	575,091	798,089

Source: U.S.B.M.
U. S. Dept. of Commerce

LEAD - ZINC

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Excerpt from "Review of Economic Situation" in
statement of Clark L. Wilson before the United
States Senate Committee on Finance, Oct. 19, 1967.

... "effective October 22, 1965 the President terminated the Quota Proclamation on entry of lead and zinc ores and concentrates and 30 days later on the entry of lead and zinc metal.

"The President terminated the quota with no provision for a continuing lead-zinc minerals policy. He did refer the industry to the Tariff Commission for any needed future relief and urged the Commission to expedite its procedures and proceedings. This avenue of 'help' has been thoroughly explored in 20 cases, including one from the lead-zinc industry, all with negative results. The provisions of the Trade Expansion Act of 1962 eliminate any practical possibility of the Commission being able to come up with a finding of injury to the industry due to excessive imports.

"In the discussion of releases from the stockpile, reference was made to improvements in lead-zinc consumption in the United States and around the world. The final figures for 1966 show that current economic conditions for both lead and zinc here and abroad, were good.

"The domestic lead price held constant through 1965 at 16¢ per pound, f.o.b. New York. This was reduced to 15¢ on May 5, 1966 and again to 14¢ on October 10, 1966, closing the year at that level. Both price reductions were made to 'restore the world balance' in pricing the metal, reflecting the decrease in quotes on the Londo Metal Exchange. 1966 domestic consumption set a new record. The additional metal supply came from increased mine production (six percent), an increase in imports of lead ore (eighteen percent) and lead metal (thirty-one percent) and stockpile sales of 73,000 short tons (not all delivered in 1966). These offset a temporary reduction in smelter production. Producers' and consumers' metal stocks did not show much change during the year.

"The domestic price for zinc during 1966 remained at 14.5¢ per pound, f.o.b. East St. Louis but dropped 1¢ per pound during May and June of 1967.

"The producers' price outside the United States, 13.75¢ (110£) per pound at the beginning of the year, was reduced to 12.75¢ (102£) per pound in March and to 12.25¢ (98£) in June. The London Metal Exchange responded to these changes, from a high of 17.5¢ in July 1964. As in lead, domestic zinc consumption set a new annual record in 1966. Zinc production in 1966 was affected by mine strikes in Tennessee, a smelter strike in Illinois, a new zinc mine placed in operation in the State of Washington and an electrolytic refinery reopened in Montana in the latter part of the year.

"Slab zinc production was 3% above 1965. General imports were entered at substantially increased rates, 22 percent for ores and a startling 82 percent for metal. Stockpile sales totaled 42,000 short tons, compared to 219,000 short tons in 1965. Mine production in 1966 was six percent under 1965, due to strikes, but will probably increase well above this figure in 1967. Consumers' stocks were fairly stable during the year, but producers' stocks have now increased from 40,000 short tons in January 1966 to 133,000 short tons on September 30, 1967. This is equal to 150% of one month's shipments, the normal minimum stock levels.

"We would hope that the present economic situation (assuming settlement of the current strikes) could be extended, but such a projection will be affected by announce expansion of the mining and smelting industry around the world during the next three years.

"The lead and zinc world surplus balance forecast in 1967 was without any sales that might be made from the United States stockpile."

TABLE I

U. S. AND ARIZONA MINE PRODUCTION OF RECOVERABLE LEAD
VALUE OF PRODUCTION BY YEARS FROM 1947 to 1966 INCLUSIVE

<u>L E A D</u>					
Year	Avg. Price cts./lb	U. S. Mine Production		Arizona Mine Production	
		Tons	Value	Tons	Value
1947	14.673	384,221	\$112,750,000	28,566	\$ 8,383,000
1948	18.043	390,476	140,907,000	29,899	10,789,000
1949	15.364	409,908	125,957,000	33,568	10,315,000
1950	13.296	430,827	114,566,000	26,383	7,016,000
1951	17.500	388,164	135,857,000	17,394	6,088,000
1952	16.467	390,162	128,496,000	16,520	5,441,000
TOTAL		2,393,758	\$758,533,000	152,330	\$48,032,000
6 YR. Avg.	15.844	398,960	\$126,422,000	25,388	\$ 8,005,000
1953	13.489	342,644	92,438,000	9,428	2,543,000
1954	14.054	325,419	91,470,000	8,385	2,357,000
1955	15.138	338,025	102,340,000	9,817	2,972,000
1956	16.013	352,826	112,996,000	11,999	3,843,000
1957	14.658	338,216	99,151,000	12,441	3,647,000
1958	12.109	267,377	64,753,000	11,890	2,880,000
1959	12.211	255,586	62,419,000	9,999	2,442,000
1960	11.948	246,669	58,944,000	8,495	2,030,000
1961	10.871	261,921	56,947,000	5,937	1,291,000
1962	9.631	236,956	45,642,000	6,966	1,342,000
1963	11.137	253,369	56,435,000	5,815	1,295,000
1964	13.596	286,010	77,772,000	6,147	1,611,000
1965	16.000	301,147	96,367,000	5,913	1,892,000
1966	15.115	327,368	98,963,000	5,211	1,575,000
TOTAL/1965		3,806,155	\$1,017,674,000	113,232	\$30,145,000
TOTAL/1966		4,133,523	\$1,116,637,000	118,443	\$31,720,000
14 YR. U.S. AVG. Ariz.	13.507 13.390	295,293	\$ 79,760,000	8,460	\$ 2,266,000
Annual Loss 14 Yr. Period		103,667	\$ 46,662,000	16,928	\$ 5,739,000

TABLE II

U. S. AND ARIZONA MINE PRODUCTION OF RECOVERABLE ZINC

VALUE OF PRODUCTION BY YEARS FROM 1947 to 1966 INCLUSIVE

Z I N C

Year	Avg. Price cts./lb	U. S. Mine Production Tons	Value	Arizona Mine Production Tons	Value
1947	10.500	637,608	\$ 133,898,000	54,644	\$ 11,475,000
1948	13.589	629,977	171,215,000	54,478	14,806,000
1949	12.144	593,203	144,077,000	70,658	17,161,000
1950	13.866	623,375	172,874,000	60,480	16,772,000
1951	13.000	681,189	245,228,000	52,999	19,080,000
1952	16.215	666,001	215,984,000	47,143	15,288,000
TOTAL		3,831,353	\$1,083,276,000	340,402	\$ 94,582,000
6 YR. AVG.	14.137	638,559	\$ 180,546,000	56,734	\$ 15,764,000
1953	10.855	547,430	\$ 118,847,000	27,530	\$ 5,977,000
1954	10.681	473,471	101,143,000	21,461	4,584,000
1955	12.299	514,671	126,599,000	22,684	5,580,000
1956	13.494	542,340	146,367,000	25,580	6,904,000
1957	11.399	531,735	121,225,000	33,905	7,730,000
1958	10.309	412,005	84,947,000	28,532	5,883,000
1959	11.448	425,303	97,377,000	37,325	8,546,000
1960	12.946	435,427	112,741,000	35,811	9,272,000
1961	11.542	464,390	107,200,000	29,585	6,829,000
1962	11.625	505,648	117,563,000	32,888	7,646,000
1963	11.997	529,254	126,989,000	25,419	6,099,000
1964	13.568	574,858	155,993,000	24,690	6,716,000
1965	14.500	611,153	177,234,000	21,757	6,310,000
1966	14.500	572,558	166,042,000	15,985	4,636,000
TOTAL		7,140,243	\$1,760,267,000	383,152	\$ 92,712,000
14 YR. AVG.	(U.S.) 12.326 (Ariz) 12.098	510,000	\$ 125,732,000	27,368	\$ 6,622,000
Annual Loss 14 YR. Period		128,559	\$ 54,814,000	29,366	\$ 9,142,000

ARIZONA LEAD AND ZINC PRODUCTION IN 1966

Arizona's mine production of lead in 1966 fell to the lowest tonnage since 1934 and was 12 per cent below 1965. Its zinc production declined 27 per cent from 1965 and was the lowest since 1940. Its 1966 lead production was only 15 per cent and its zinc was only 23 per cent of its respective 1949 tonnage figures. The decrease from 1965 was due to the drop of 0.9 cent in the average price for lead, increase in costs; and in the case of zinc, to suspension of production at the Old Dick mine of Cyprus Mines Corp. near Bagdad in mid-year because of depletion of its developed ore body. The company proceeded with development of its new, deeper ore body.

For more than a decade, Yavapai County has produced the bulk of Arizona's lead and zinc output, and the Iron King mine of Shattuck Denn Mining Corp. near Humboldt has accounted for the bulk of the county's production of both metals. The Iron King produced more than 95 per cent of Arizona's lead, over 90 per cent of the state's zinc in 1965, and in 1966 it ranked 13th in lead, 15th in zinc, 15th in gold and 19th in silver among the United States mines producing these metals.

The value of the lead production of Yavapai County was \$1,452,294. Six other counties produced lead, but none of them produced as much as \$100,000 worth. The value of Yavapai County's zinc production was \$3,945,218. Five other counties accounted for a total of \$690,432, of which nearly half was from Pima County and principally from the Mission mine of Asarco.

TABLE I

PRODUCTION OF LEAD AND ZINC IN ARIZONA

Year	No. of Mines Est. By U.S.B.M.	Tons Material Treated	Tons Lead Produced	Tons Zinc Produced	Value of Lead Produced	Value of Zinc Produced	Average Price Lead	Average Price Zinc
1948	139	797,292	29,899	54,478	\$10,703,842	\$14,491,148	17.9¢	13.3¢
1949	174	968,301	33,568	70,658	\$10,607,488	\$17,523,184	15.8¢	12.4¢
1950	139	888,099	26,383	60,480	\$ 7,123,410	\$17,176,320	13.5¢	14.2¢
1951	136	954,985	17,394	52,999	\$ 6,018,324	\$19,291,636	17.3¢	18.2¢
1952	112	819,752	16,520	47,143	\$ 5,319,440	\$15,651,476	16.1¢	16.6¢
1953	68	452,660	9,428	27,530	\$ 2,470,136	\$ 6,331,900	13.1¢	11.5¢
1954	45	346,313	8,385	21,461	\$ 2,297,490	\$ 4,635,576	13.7¢	10.8¢
1955	46	408,486	9,817	22,684	2,925,466	\$ 5,580,264	14.9¢	12.3¢
1956	46	452,191	11,999	25,580	\$ 3,767,686	\$ 7,008,920	15.7¢	13.7¢
1957	45	481,327	12,441	33,905	\$ 3,558,126	\$ 7,865,960	14.3¢	11.6¢
1958	31	388,987	11,890	28,532	\$ 2,782,260	\$ 5,820,528	11.7¢	10.2¢
1959	22	449,166	9,999	37,325	\$ 2,299,770	\$ 8,584,750	11.5¢	11.5¢
1960	22	515,075	8,495	35,811	\$ 1,987,830	\$ 9,239,238	11.7¢	12.9¢
1961	22	433,680	5,937	29,585	\$ 1,291,000	\$ 6,804,550	10.9¢	11.5¢
1962	16	487,115	6,966	32,888	\$ 1,342,000	\$ 7,630,016	9.6¢	11.6¢
1963	17	419,853	5,815	25,419	\$ 1,256,000	\$ 5,846,000	11.1¢	12.0¢
1964	17	447,372	6,147	24,690	\$ 1,611,000	\$ 6,716,000	13.1¢	13.6¢
1965	16	425,895	5,913	21,757	\$ 1,892,000	\$ 6,310,000	16.0¢	14.5¢
1966	13	342,279	5,211	15,985	\$ 1,575,000	\$ 4,636,000	15.115¢	14.5¢

MINE PRODUCTION OF GOLD, SILVER, COPPER, LEAD AND ZINC IN ARIZONA, 1966, BY CLASSES
OF ORE OR OTHER SOURCE MATERIALS, IN TERMS OF RECOVERABLE METALS

Source	Number of Mines ^{1/}	Material sold or treated (short tons)	Gold (troy Ounces)	Silver (troy Ounces)	Copper (pounds)	Lead (pounds)	Zinc (pounds)
Lode ore:							
Dry gold	2	21	2/ 32	2/ 35	300	-----	-----
Dry gold-silver	4	103,572	213	6,936	1,702,800	-----	-----
Dry silver	15	19,576	39	72,227	104,000	3,100	-----
TOTAL	21	123,169	284	79,198	1,807,100	3,100	-----
Copper	45	101,558,298	127,431	5,595,644	1,359,481,200	5,400	2,586,000
Copper-zinc and uranium ^{2/}	3/ 4	4/ 19,426	75	28,335	2,065,500	10,600	2,214,500
Lead	7	556	16	4,720	9,100	90,700	7,500
Lead-zinc	4	320,674	13,627	589,841	564,500	10,136,800	26,641,500
Zinc	2	1,623	4	4,812	58,400	67,100	519,000
TOTAL	61	101,900,577	141,153	6,223,352	1,362,178,700	10,310,600	31,968,500
Other "lode" material:							
Gold tailings	1	5	2	-----	-----	-----	-----
Gold-silver tailings and silver tailings ^{2/}	3	42,813	1,058	34,070	86,700	-----	-----
Copper cleanup	(5/)	474	30	684	99,700	-----	-----
Copper precipitates	19	82,684	-----	-----	114,265,800	-----	-----
Lead assay office cleanup	(5/)	2	-----	-----	-----	2,000	-----
Lead tailings	2	1,350	1	1,392	-----	106,300	1,500
TOTAL	25	127,328	1,091	36,146	115,152,200	108,300	1,500
TOTAL "lode" material	92	102,151,704	142,528	6,338,696	1,479,138,000	10,422,000	31,970,000
Placer	1	-----	(2/)	(2/)	-----	-----	-----
TOTAL all sources	93	102,151,704	142,528	6,338,696	1,479,138,000	10,422,000	31,970,000

- ^{1/} Detail will not necessarily add to totals because some mines produce more than one class of material.
^{2/} Combined to avoid disclosing individual company confidential data. ^{3/} Copper-zinc mines only.
^{4/} Excludes uranium-ore tonnage. ^{5/} From properties not classed as mines.

Source: U.S.B.M.