BAUXITE AND ALUMINUM.

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USES.

Bauxite, the ore of the widely useful metal aluminum, has also an important use in the manufacture of artificial abrasives, which are of wide application in all metal industries, at present particularly in the finishing of guns, cartridge cases, and motor parts. Bauxite is also the basis of an extensive chemical industry, being the crude material from which alum, aluminum sulphate, and several other chemicals used particularly in water purification, dyeing, and tanning are made. Owing to the greatly enhanced price of aluminum sulphate, several municipal and industrial waterworks have recently installed small plants to make it for use in purifying their water supplies. A use for bauxite that is expanding at a rapid rate is in the manufacture of bauxite brick, more properly called, according to the United States Geological Survey, high-alumina refractories. For furnace linings, these refractories are reported to be replacing the more expensive magnesite and other refractory materials.

The uses of aluminum are myriad, but as some are more essential than others, it is likely that the minor articles formerly made from aluminum will for the present be made in smaller quantity, because the available supply of aluminum will probably be diverted to more urgent uses.

PRODUCTION.

In statistics for years prior to 1916 published by the United States Geological Survey the output of aluminum abrasives has been included with that of other artificial abrasives and can not now be separated, but the domestic production in 1916 amounted to 30,708 short tons, having a value of $2,139,230. The following table shows the steady growth of the industries that consume the greater part of the crude bauxite produced in the United States. No figures are available concerning the quantity of high-alumina refractories manufactured.

Bauxite products in the United States, 1905–1916.

Year.	Unmanufactured aluminum consumed (pounds).	Aluminum salts produced.				Imports.[a]	
		Alum.		Aluminum sulphate.			
		Quantity (short tons).	Value.	Quantity (short tons).	Value.	Quantity (short tons).	Value.
1905	11,347,000	10,114	$289,716	93,917	$1,660,515	1,282	$26,242
1906	14,910,000	15,613	450,125	89,246	1,613,050	1,183	23,193
1907	17,211,000	10,404	361,900	106,821	2,008,046	1,562	35,191
1908	11,152,000	7,700	236,710	97,255	1,835,213	1,407	24,929
1909	34,210,000	9,237	295,682	115,366	2,214,122	1,459	29,061
1910	47,734,000	9,090	300,763	126,792	2,447,552	2,127	53,671
1911	46,125,000	10,468	329,686	134,077	2,743,336	2,283	56,833
1912	65,607,000	9,246	293,995	150,427	2,909,495	3,342	84,606
1913	72,379,000	9,605	312,822	157,749	2,977,708	2,702	66,549
1914	79,129,000	18,238	565,989	164,954	2,942,572	2,891	73,028
1915	99,806,000	24,915	699,256	169,153	3,224,495	1,408	34,320
1916	123,708,000	27,257	1,177,881	153,860	4,410,741	1,247	68,660

[a] Includes alumina, aluminum hydrate, or refined bauxite, alum, alum cake, aluminum sulphate, aluminous cake, and alum in crystals or ground.

The growth of the American aluminum industry has been steady heretofore, but it is probable that the production in 1917 will show a pronounced increase, owing to the operation of the new plant at Badin, N. C., which is practically completed and which made a small output in 1916. This project, started by French capital,[1] was taken over by American interests in 1915 and pushed to completion.

CONSUMPTION.

The consumption of bauxite in the United States has increased steadily because of increase both in the consumption of aluminum and in the output of other products made from bauxite. It is particularly gratifying to know that although the consumption of bauxite in the United States in 1916 amounted to 425,130 long tons, an increase of 41 per cent over the consumption in 1915 and of 74 per cent over the consumption in 1914, practically all domestic requirements were met by the American producers. This bears out the forecast made by the Geological Survey in 1914,[2] that the domestic deposits would be more actively developed to supply the demand formerly met by French bauxite.

[1] Smith, G. O., Our mineral reserves: U. S. Geol. Survey Bull. 599, p. 26, 1914.
[2] Idem, p. 27.

Bauxite consumed in the United States, 1905–1916.

Year.	Domestic production.		Total value.	Imports.		Consumption.	
	Georgia and Alabama (long tons).	Arkansas and Tennessee (long tons).		Quantity (long tons).	Value.	Quantity (long tons).	Value.
1905	15,173	32,956	$240,292	11,726	$46,517	59,855	$286,809
1906	25,065	50,267	368,311	17,809	63,221	93,141	431,532
1907	34,271	63,505	480,330	25,066	93,208	122,842	573,538
1908	14,464	37,703	263,968	21,679	87,823	73,846	351,791
1909	22,227	106,874	679,447	18,688	83,956	147,789	763,403
1910	33,096	115,836	716,258	15,669	65,743	164,601	782,001
1911	30,170	125,448	750,649	43,222	164,301	198,840	914,950
1912	33,760	126,105	768,932	26,214	95,431	186,079	864,363
1913	27,409	182,832	997,698	21,456	85,746	231,697	1,083,444
1914	18,547	200,771	1,069,194	24,844	96,500	244,162	1,165,694
1915	25,008	272,033	1,514,834	3,420	17,107	300,461	1,531,941
1916	46,151	378,949	2,296,400	30	87	425,130	2,296,487

BAUXITE DEPOSITS OF THE UNITED STATES.

Deposits of bauxite in Pulaski and Saline counties, Ark., have yielded the larger part of the domestic output. The deposits in the bauxite field of northern Georgia and Alabama have contributed a considerable quantity, and in recent years the fields in central Georgia and Tennessee have made additions to the output.

Bauxite was first mined from the Georgia-Alabama field in 1889, and the Arkansas deposits were discovered in 1891 but apparently were not extensively developed till 1899. Small deposits of bauxite are known in southwestern New Mexico and Texas but have not been put on a producing basis. The central Georgia field has been under development since 1907; the fields near Chattanooga, Tenn., since 1906; and the deposits in Carter County, Tenn., since 1912.

The Georgia-Alabama field, centered about Rome and Cave Springs, Ga., and Rock Run and Piedmont, Ala., has been studied geologically, and the location of bauxite bodies in this field can be predicted with a fair degree of certainty. The Arkansas deposits are also well understood, and the reserves in this field have been estimated with considerable exactness. The central Georgia field has been recently studied in detail by the State Geological Survey, and the results of this investigation will soon be published. It is felt that further detailed examination, based on a thorough understanding of the geology of these deposits, which are in all places associated with kaolin deposits of Cretaceous or younger age, will result in greatly increasing the known reserves. The examination should not only include the well-known areas in Wilkinson, Meriwether, and Sumter counties but should be extended along the belt of Cretaceous and Tertiary sediments northeastward into North and South Carolina and westward into Alabama.

OTHER SOURCES OF ALUMINA.

The extent to which alumina will be recovered in the treatment of alunite for potash can not now be predicted. So far as known to the United States Geological Survey, none of the many proposed methods for treating ordinary clays and kaolins to produce aluminum salts have been proved successful on a commercial scale, but this problem may yet be solved.