

FLUORSPAR

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Fluorspar.

Commercial Value.—Fluorspar is a mineral of relatively low value as compared with metallic ores mined under similar conditions. Under the most favourable conditions, therefore, the margin of profit can never be expected to be large, and it requires exceptionally good management to conduct any spar mining operations profitably, especially in the western states. In 1910 there were 69,427 short tons of domestic fluorspar, including gravel, lump, and ground varieties marketed in the United States at an average value of about \$6.20 per short ton. Of this total, 61,136 short tons were sold as gravel and lump spar, at an average value of \$5.58 per ton at the mines, and 8,291 short tons were sold ground, at an average value of \$10.72 per ton, f.o.b. cars.

Uses and Requirements of fluorspar.—Fluorspar is used in the manufacture of glass and of enamelled and sanitary ware, in the electrolytic refining of antimony and lead, the production of aluminum, the manufacture of hydrofluoric acid, and in the iron and steel industries, in which it is used as a flux in blast furnaces and in basic open hearth steel furnaces. It is estimated that about 80 per cent. of the American fluorspar output, mainly in the form of gravel spar, is consumed in the manufacture of basic open hearth steel. The use of fluorspar is increasing in practically all of these industries. The western market for fluorspar is more limited than that of the central and eastern states, but it is nevertheless increasing. Recently the iron and steel works at Irondale, Washington, and in Shasta County, California, have been enlarged.

Supplies of spar mined in the west have heretofore not been sufficient to supply the western market for more than a few months at a time. This has been due to several conditions, the most important of which is that most of the western spar thus far produced has not been of as high a grade as that produced in the Illinois-Kentucky district. Fluorspar for iron and steel making should carry at least 85 per cent. calcium fluoride and preferably it should be purer. For most other chemical uses it should contain from 95 per cent. to 98 per cent. calcium fluoride.

Production.

The total quantity of domestic fluorspar reported to the Survey as marketed in the United States in 1910 was 69,427 short tons, valued at \$430,196, as compared with 50,742 short tons, valued at \$291,747, in 1909, an increase in quantity of 18,685 short tons, and in value of \$138,449. This increase represented nearly 37 per cent. of the quantity and 47 per cent. of the value of the production of 1909. The production in 1910 was the largest ever recorded. The average value per ton for the whole country, considering all grades of fluorspar, was about \$6.20 in 1910 as compared with \$5.75 in 1909. This value represents the selling price on board cars at railroad or water shipping points, and with reference to the product from Colorado, New Mexico, and Kentucky the price reported for much of the spar includes the cost of a long wagon haul—\$1.50 to \$3 a ton. In Illinois the

principal producing mines are near river transportation, and the cost of long wagon hauls has not entered into the reported value of the fluorspar.

Fluorspar was produced in 1910 in Illinois, Kentucky, New Mexico, and Colorado in the order named, each state, except Colorado, reporting an increased production. The product of Colorado and New Mexico has been classed as gravel spar, although much of the New Mexico product was equal to the grade of lump spar. Both Illinois and Kentucky produced gravel, lump, and ground spar.

In 1910 Illinois produced a total of 47,302 short tons of spar, valued at \$277,764, or \$5.87 per short ton on board cars. The gravel spar amounted to 35,477 short tons, valued at \$178,880, or \$5.04 per ton. The sales of lump spar in Illinois were 6,151 short tons, valued at \$38,415, or \$6.25 per ton. The ground spar sold in this state amounted to 5,674 short tons, valued at \$60,469, or \$10.66 per ton. Kentucky reported total sales of 17,003 short tons of spar, valued at \$124,574, or an average price of \$7.33 per ton, distributed as follows: Eleven thousand four hundred and fourteen short tons of gravel spar, valued at \$75,823, or \$6.64 per ton; 2,972 short tons of lump spar, valued at \$20,359, or \$6.85 per ton; and 2,617 short tons of ground spar, valued at \$28,392, or \$10.85 per ton. Colorado and New Mexico together produced 5,122 tons of gravel spar, valued at \$27,858, or \$5.44 per ton. The total stocks of fluorspar reported on hand in all the states December 31, 1910, were less than 2,000 tons.

Trade Conditions.

The demand for American fluorspar at Pittsburg, Birmingham, and other cities during 1910 was apparently greater than the capacity of the mills operating in the Illinois-Kentucky district. Prices advanced a little, but not enough to pay many of the smaller companies for operating, and consequently many of them were idle in both states. As a consequence of the increased demand, large stocks left over from previous years were practically cleaned up in localities within reach of transportation lines. Many steel plants purchased reserve stocks in anticipation of possible future scarcity of fluorspar. The steel plant at Pueblo, Colo., took the whole output of the Colorado and New Mexico producers in 1910, besides some spar from Illinois, but did not consume the total quantity purchased. Although, as noted on another page, the imports were exceedingly high, notwithstanding the import duty of \$3 per ton imposed in 1909, the market for domestic spar does not appear to have been seriously affected by the quantities of fluorspar imported.

The conditions in the open hearth steel industry have a most direct bearing on the production of fluorspar, since the greater part of the gravel spar produced is used in the manufacture of basic open hearth steel. The increase in the quantity of basic open hearth steel in 1910, as compared with 1909, amounted to 1,874,857 long tons, or nearly 14 per cent. The following table* shows the production of open hearth steel during the last three years

*Ann. Statis. Report Am. Iron and Steel Association, Philadelphia, Pa., July 25, 1911.

*Abstracted from advance chapter Mineral Resources of the United States.