

Bentonite Is Clay Of Many Uses

THE FIRST settler in Wyoming probably cussed a blue streak when a critter bogged down in a "soap hole," crusty and dry on the surface, but a sticky mass below—not realizing he was dealing with bentonite, one of the state's most important minerals today.

Some more recent settlers in Casper were to cuss this same contrary mineral, swelling with moisture in the gumbo, causing their footings and basement walls to crack.

Bentonite is one of the slickest, gooiest materials found in nature, when wet, but becomes a dry, smooth powder when refined, an ingredient that keeps chocolate bars from melting, takes the cloudiness out of bottled wine, keeps the toothpaste creamy in the tube and the drillstem rotating smoothly in an oilwell.

It is known today as "the clay of a thousand uses," the basis of at least a \$5 million industry in Wyoming. The state contains half of the nation's bentonite ore, and practically all of the high grade stuff.

Its greatest use is in the manufacture of "drilling mud," which takes up to 85 per cent of the material mined and processed. This is due to its swelling properties.

A tablespoon of bentonite holds more than 10 billion particles. It will swell in water to nine times

its volume. So tiny are the particles that 500 of them make a speck barely visible.

Processing of high quality bentonite is expected to increase sharply in Wyoming, due to the abundance of easily mined deposits, and the emergence of another big customer, the low grade iron ore industry now opening up at Atlantic City.

Low grade taconite iron ore is crushed into a powder high in iron content. But a binder must be employed. In this case, bentonite is added to the iron-rich concentrate. The mixture is moistened and fed into a balling drum, from which pellets of a sticky consistency are discharged.

The moist pellets are baked in a hearth furnace to evaporate the moisture. The result is a tough shell around each pellet, protecting it in handling and transportation. When the pellets are smelted in a blast furnace, the bentonite burns off and does not affect the composition of the steel.

The animal feed industry also uses bentonite as a binder for pelletized feeds, and the chemical fertilizer industry uses it for pelletized fertilizers.

The North Western Railroad, whose trackage lies close to major bentonite deposits, estimates the industry pays out \$500,000 in royalties and \$3 million in wages and salaries in Wyoming each year.

About 1,000,000 tons of ore are mined each year. In color it may be brown, greenish yellow, bluish grey or cream-colored.

Deposits close to the surface are found in Natrona and southern Johnson Counties of central Wyoming, the Big Horn Basin, the Lander area on the east flank of the Wind River mountains, and in the northern Black Hills region of northeastern Wyoming.

True bentonite is found almost exclusively in Wyoming. The term is also applied to clays found in other states which do not measure up to the Wyoming product in swelling and selling qualities.

In a bentonite mill, such as that of the Benton Clay Co. near Casper, the ore is processed for industrial use by crushing, drying, grinding and bagging. Material is reduced in size by a clay slicer before entering the drier. The crushed bentonite passes through the drier under temperatures of 1,500 to 1,600 degrees F., at a rate of 10 to 12 tons per hour. After drying it is conditioned at temperatures between 150 to 180 degrees.

The dried material is ground in roller mills to the desired degree of fineness, usually so 95 per cent of the particles pass through a 200-mesh screen. Some plants produce a 90-mesh grade for use in earth dams.

From the roller mills the finely ground material is air-blown to collectors and discharged into packing and storage bins. The finished product is either shipped in bulk cars or packaged in 100 pound paper bags.



Bentonite is ready for processing at mill of Benton Clay of Casper.

—Tribune Star Photo

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Refining Process For Bentonite Explained

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