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THE USE OF COMMON SALT AS A ROAD SURFACE

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(Abstract)

The ancient mineral "Common Salt" played an important part in the early history of mankind. In addition to its chief uses as an article of diet

and as a preservative, salt now has some 1,000 other specialized uses. About four years ago it was accidentally discovered to be a valuable and economical road surfacing material.

Reports of the successful use of salt for road surfacing led the Oklahoma Geological Survey to construct a few short experimental salt roads in an endeavor to advance a new use of a natural resource. The facilities of the State Mineral Survey, a WPA project, sponsored by the State Geological Survey, were available and were used for the road construction. Two salt roads were built in the western part of the State. The roads, each about one-half mile in length, were graded and the salt mixed with the native soil by blading. On one road salt was applied at the rate of about 12 tons per mile, while on the other approximately 30 tons per mile were used. In October, 1936, both roads were reported to be in excellent condition after some four months use by heavy traffic.

Experimental salt roads in the eastern states are mainly salt-soil-stabilized roads in which clay, fine sand, salt, gravel, and salt forms the aggregate. The relative amounts of the various materials depending somewhat on local availability. This type of road maintains a hard, smooth surface free from dust in dry weather and mud in rainy weather. Some of these roads have withstood the wear of heavy traffic for a number of years with but little maintenance and have proved superior to other types of soil-stabilized roads. On this type of road the salt is either applied dry or directly to the road surface in the form of a saturated brine.

Laboratory experiments indicate that salt does not appreciably change the cohesion of clay as shown by the fact that it does not materially alter its plasticity. Upon drying, salt-treated clay and soil-stabilized mixtures shrink less than those not treated with salt. This is explained by finely crystalline salt replacing the air spaces left by normal shrinkage. The moisture retaining quality of clay is decidedly increased by treating it with salt. As water evaporates from the surface of a salt-soil mixture, minute crystals of salt form a dense, hard crust which closes the pores and retard further evaporation.

The results indicated in the foregoing paragraphs lead to the belief that salt will be increasingly used in the future as a road building material, particularly near areas in which plentiful supplies may be obtained. In this connection it is interesting to note that in addition to the great salt plain in Woods and Alfalfa counties, and the brine streams along the Cimarron River in western Oklahoma, and Elm Fork in northern Harmon County, great quantities of saturated brine are produced daily as a waste product from the oil fields of Oklahoma. This brine could undoubtedly be used for the construction of many secondary and "Farm to Market" roads throughout the oil fields and adjacent areas within the State.