

Effect of Calcium Chloride in Improving Cement-soil Stabilization

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As technology advances and economic conditions change, many more chemical agents will be introduced into the soil for stabilization. Cement has been one of the most widely used construction materials in the world and as a material it continues to occupy a key position and will be extensively used for decades to come. Owing to its hygroscopic nature, Calcium Chloride has been used as a dust palliative on gravel and dirt roads. This research studied the impact of adding Calcium Chloride with Portland cement in soil stabilization. Three different soils from different locations with varying plasticity indices were studied. The geotechnical properties of stabilized soils were investigated through a series of laboratory tests including percent fines, Atterberg limits, compaction characteristics and unconfined compressive strength. It was found that adding Calcium Chloride and cement to plastic soils exhibited a reduction of Plasticity Index and a significant increase in strength as well as an early gain in strength. Non-plastic soils showed early gain in strength and moderate increase in strength. The above results showed that cement content could be reduced with the addition of Calcium Chloride offering economic advantages in soil stabilization with Portland cement.