

## Effect of Temperature on Investigation of Index Properties of Red Clay Soil

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**Abstract :** The knowledge of temperature effect on index properties and, thus, the understanding of its behavior may be essential for a complete understanding of the various cases of Geotechnical Engineering problems and for conducting meaningful practical research, analysis, and design in tropical regions, such as the Ethiopian environment. The scarcity of the proper geotechnical information on the subsoil makes foundation and engineering works risk able, difficult, and sometimes hazardous. Seasonal variations, environmental effects, terrain challenges, and temperature effects all affect the quality of soil. Simada is a city which is found in south Gondar and it is developing rapidly both in horizontal and vertical construction. Rapid urbanization in the city area has led to an increased interest in the basic properties of soils that are present within the city area. There has been no previous research that looks into the effect of temperature on the investigation of clay soil index qualities in Simada. This work focuses mainly on investigating the Index and some other properties of soil in Simada Town with varying temperatures. To explore the influence of temperature change, samples were collected from various regions of the city, and routine laboratory tests were performed on the collected samples at various temperatures. Disturbed samples were taken at intervals where an average depth of 1.5-2m depths below natural ground level. The standard laboratory tests performed on all twenty-four soil samples were the water content, gradation analysis, Atterberg limits, specific gravity, and compaction test. All specimens were tested at different temperatures (25°C, 35 °C, 45 °C, 65 °C, 75 and 105 °C). The variation of the plasticity characteristics of the soils has been determined based on the temperature variation. From the test result, we can conclude that temperature has a significant effect on the index properties of clay soil, in our case, red clay soil.

**Keywords :** airdried, oven dried, soils index properties, compaction test

**Conference Title :** ICU 2024 : International Conference on Ultrasonics

**Conference Location :** Houston, United States

**Conference Dates :** October 24-25, 2024