

# Petrophysical and Microhardness Characterisation of the Sans Souci Formation, Trinidad

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**Abstract:** Since 1907, the Sans Souci Formation, the only igneous outcrop in Trinidad, has been investigated using scientific procedures such as lithology, stratigraphy, petrology, paleomagnetism, microscopic analysis and mineralogy. The approach taken in this work revolved around mineralogical, topographical, elemental and microhardness distribution characteristics using various laboratory analysis techniques, including x-ray diffraction (XRD), scanning electron microscopy, physical properties characterisation and vickers hardness methods. This is an attempt at quantitatively characterising the mineralogy as well as determining the elemental distribution within the rocks of the Formation. The results are expected to contribute to existing knowledge with respect to the petrophysical and microhardness characterisation of the Sans Souci Formation. Qualitative and quantitative XRD analyses of three (3) outcrop samples studied established that the minerals calcite, chlorite and albite featured predominantly in the Sans Souci Formation. Physical characteristics such as apparent porosity, bulk density and water absorption were also determined and their values ranged 0.91-1.97%, 0.58-1.29% and 1.50-1.69g cm<sup>-3</sup>, respectively. The average Vickers Hardness value for sample SS3 was determined to be 833.9.

**Keywords:** Petrophysics; microhardness; mineralogy; Sans Souci; Scanning Electron Microscopy