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Mineralogical and Chemical Evaluation of Sri Lankan Calcite and Dolomite

Kahawatta K.M.R.T.B.[1*] and Hewathilake H.P.T.S.[1]

[1]*Department of Applied Earth Sciences, Faculty of Applied Science, Uva Wellassa University, Badulla (90000), Sri Lanka.*

Calcite and dolomite are the most abundant minerals in carbonatite, limestone and marble in Sri Lanka. Primarily, they are used in ceramic, steel, cement, paint and coating, food additives, pharmaceutical, PVC and latex manufacturing industries as essential raw materials. However, mineralogical and chemical composition and the impurity incorporations of the selected calcite/ dolomite raw materials have a specific action in the manufacturing process and the final product quality. Importantly, different aspects of the manufacturing processes have critically depended on the $CaCO_3$ and $MgCO_3$ content. Previous studies have only focused on the geological occurrence and distribution of the calcite and dolomite deposits. Therefore, the present study aims to conduct a mineralogical and chemical evaluation of currently mining calcite and dolomite deposits in Sri Lanka. Mineralogical and chemical analyses were performed by X-ray diffraction and X-ray fluorescence techniques respectively. Except few, most of the selected deposit compositions have shown the 2:1 ratio of Calcite: Dolomite. Further, quartz is present as the major impurity mineral while forsterite, phlogopite, iron-oxide, kaolinite, and illite, are present as associated impurity minerals. Considering the industrial suitability, Kolambagearaba, Moratuwagama, Ulpathaha and Okkampitiya deposits are suitable for the ceramic, paint, PVC and latex industry due to the high Ca with low Mg and silica content. Though silica is present, raw materials from Naula, Palapathwala, Kaudupalella and Ulpathaha deposits are suitable for the ceramic industry.

Keywords: Calcite, Dolomite, Mineralogy, Chemical composition

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*Corresponding author: thiloshana9@gmail.com