

Research on the characterization and suitability of Malaysian granitic rocks as a source of feldspar

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The commercial source of feldspar is generally from pegmatites and aplites. Although both are commonly associated with granitoids in Peninsular Malaysia, most of the occurrences are of limited size to be of any commercial significance. Presently, Malaysia's feldspar requirements, mainly for the ceramic and glass making industries are wholly met by imports which amount to about RM20 millions annually.

However, granitic rocks are appropriate source materials, particularly those medium- to coarse-grained, leucocratic varieties containing more than 60% feldspar and less than 10% iron-bearing minerals, as shown by the results of this research exercise whereby a feldspar recovery efficiency exceeding 60% has been achieved.

31 quarries/outcrops (out of the 72 studied) have been characterised as "ideal" source of feldspar conforming to the "**preferred**" feldspar specification of $> 18\% \text{Al}_2\text{O}_3$, $> 11\% (\text{Na}_2\text{O} + \text{K}_2\text{O})$ and $< 0.3\% \text{Fe}_2\text{O}_3$. Characterization was based on feldspar extracted from rocks, quarry dust samples being non-optimal for this purpose. Nonetheless, several quarry dust stockpile fall within the "ideal" category.

Despite the positive and encouraging indication that the extracted feldspar samples of different chemical compositions are found to be suitable for making ceramic bodies and glaze, the chemical content of feldspar, nevertheless, could be critical for the manufacture of specific end products. At $1,170^\circ\text{C}$ feldspar samples extracted from some "Central Belt granites" remained unfused, but at $1,250^\circ\text{C}$ all feldspar samples tested were fused.

Feldspar extracted from the Eastern Province granites generally show good fusion characteristics — their fused feldspar buttons, from quarry dust and rock samples, are unblemished, signifying their good glazing property. By contrast, the fused buttons from even some "ideal" quarries within the Main Range Province contain black spots. It is to be noted also that silica sand is a valuable by-product of the feldspar extraction process.
