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TITLE: Trinidad Porcellanite: A Possible Source of Mullite

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In the as-mined state, Trinidad porcellanite is comprised mainly of the minerals leucite [$K(AlSi_2O_6)$], kalsilite [$K(AlSiO_4)$], silica and to a lesser extent hematite (Fe_2O_3). However, on firing to sufficiently high temperatures the leucite dissociates into silica and alumina which combine at higher temperatures to form mullite ($3Al_2O_3 \cdot 2SiO_2$), an important and widely used industrial refractory. During the process however, additional kalsilite which is undesirable in refractories for high-temperature applications is formed. This project explores the possibility of producing kalsilite-free mullite from the porcellanite. Additionally, the results showed that caustic soda is a possible leaching agent.