

The effect of bentonite clay on green compression strength for tailing sands from old tin mines in Perak state, Malaysia for making green sand casting mould

ABSTRACT

Clay has an important role in making green sand casting mould beside water. Clay acts as binders, holding the sand grains together. Water is needed to activate the clay bond. Without the addition of water on clay, no strength would be achieved on sand mould, as the sand and clay would be just two dry materials. Bentonite clay was used in this study. Adequate clay content with suitable moisture in moulding sand is important for optimum strength and casting quality. Too little or too much clay will not give proper strength. Green compression strength is one of the mechanical properties to be considered for making green sand casting mould. The green compression strength of foundry sand is the maximum compressive strength that a mixture is capable of sustaining when prepared, rammed and tested according to standard procedure. For this study, test is conducted according to Foundry Sand Testing Equipment Operating Instructions from Ridsdale and Dietert. Result from this study indicates that tailing sand has potential for making green sand casting mould in term of green compression strength. Other factors that must be considered are permeability and shatter index.

Keyword: Tailing sand; Clay; Moisture; Green compression strength