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Influence of moisture content on the flow properties of *basundi* mix

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ABSTRACT

In this study, flow and flow-related properties namely morphology, angle of repose, moisture sorption, glass transition and sticky point temperature of *basundi* mix powder were determined. The bulk and tapped densities decreased from 690.71 to 622.71 kg/m³ and 819.10 to 729.31 kg/m³, respectively as moisture content increased from 3 to 9 % (d.b.).

Cohesiveness, expressed in terms of Hausner ratio and Carr index, increased with increase in moisture content. The sticky point temperature also decreased from about 40°C at 2% moisture content to 10°C at 8% moisture content, suggesting that the product was very much susceptible to caking. The basic flow energy values increased from 783.39 kPa at 3% moisture content to 1883.2 kPa at 9% moisture content. Shear tests showed that *basundi* mix was relatively more flowable at 3% (or less moisture content) than at 9% moisture content. It could be concluded that dynamic flow tests were better in characterizing flowability of *basundi* mix than static flow indicators such as angle of repose and Hausner ratio. Overall, *basundi* mix could be classified as a cohesive material, and to have better flowability and less stickiness, this powder is recommended to be stored at less than 30°C and 40% RH. This characterization will help to understand the behavior of *basundi* mix during processing, and will be useful in the design of handling, processing and storage equipment.

Keywords: *Basundi* mix, Flow properties, Glass transition, Moisture content, Sticky point temperature

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