

Preparation, characterization, morphological and particle properties of crystallized palm-based methyl ester sulphonates (MES) powder

ABSTRACT

Methyl ester sulphonates (MES) have been considered as an alternative green surfactant for the detergent market. Investigation on the purification of methyl ester sulphonates (MES) with various carbon chains of C12, C14, C16 and C16–18 derived from palm methyl ester is of great interest. These MES powders have been repeatedly crystallized with ethanol and the purity of MES has increased to a maximum of 99% active content and 96% crystallinity index without changing the structure. These crystallized MES with high active content have 1.0% to 2.3% moisture content and retained its di-salt content in the range of 5%. The crystallized MES C16 and C16–18 attained excellent flow characteristics. Morphology, structural and its crystallinity analyses showed that the crystals MES had good solubility properties, stable crystal structure (β polymorphic) and triclinic lateral structure when it is in high active content. The brittleness of MES crystals increased from a β' to a β subcell. Crystal with high brittleness has the potential to ease production of powder, which leads to a reduction in the cost of production and improves efficiency.

Keyword: Methyl ester sulphonates; Purification; Solvent crystallization; Oleochemicals