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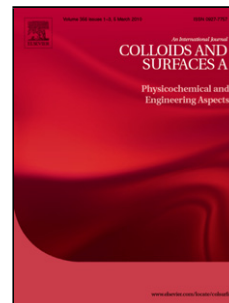
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<AT>The Effect of Calcium on the Foam Behaviour of Aqueous Sodium Alkyl Benzene Sulphonate Solutions. (1). In the Absence of Antifoam. Revised version.

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<ABS-Head><ABS-HEAD>Graphical abstract

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<ABS-HEAD>Highlights ► The decline in foamability of aqueous micellar solutions of sodium dodecyl sulphate and upon addition of a critical concentration of Ca²⁺ may be accompanied by precipitation of a mesophase. ► Removal of the mesophase by filtration does not result in any increase in foamability implying the absence of an antifoam effect by the precipitate. ► Replacement of labile micellar surfactant to form a non-labile mesophase produces a marked reduction in the rates of transport of surfactant to air-water surfaces which results in a reduction of foamability.

<ABS-HEAD>ABSTRACT

<ABS-P>The foam behaviour of solutions of both a sodium p-dodecyl 4-phenyl sulphate and an equivalent commercial sodium linear alkyl benzene sulphate solution have been measured as a function of Ca²⁺ concentration representing a slice, at constant surfactant concentration, through the precipitation phase diagram. Regardless of foam generation methodology foamability is constant in the micellar region, declining markedly with the onset of precipitation of the surfactant as a lamellar phase. Foamability could not then be restored to any extent by filtration to remove the precipitate, which indicates an absence of antifoam action by the lamellar phase. Measurement of dynamic surface tensions however revealed a marked increase with the onset of precipitate formation which corresponded to the decline in foamability. The increase in dynamic surface tension is attributed to the non-labile nature of lamellar phase leading to depleted levels of surfactant adsorption under the conditions of rapid surface formation during foam generation.

<KWD>Keywords: Sodium/dodecyl/benzene/sulphonate; Foam; Calcium; Lamellar/phase; Dynamic/surface/tension

<H1>1. Introduction

Many applications of surfactants involve the formation of copious amounts of foam. However in applications such as shampooing and the hand washing of clothes and dishes, foam formation is adversely affected by the presence of triglyceride-based oily soils which can function as effective antifoams. These soils include sebum in the case of shampooing and clothes washing and fat-based food residues in the case of dishwashing. They variously

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