PILOT CHEMICAL COMPANY
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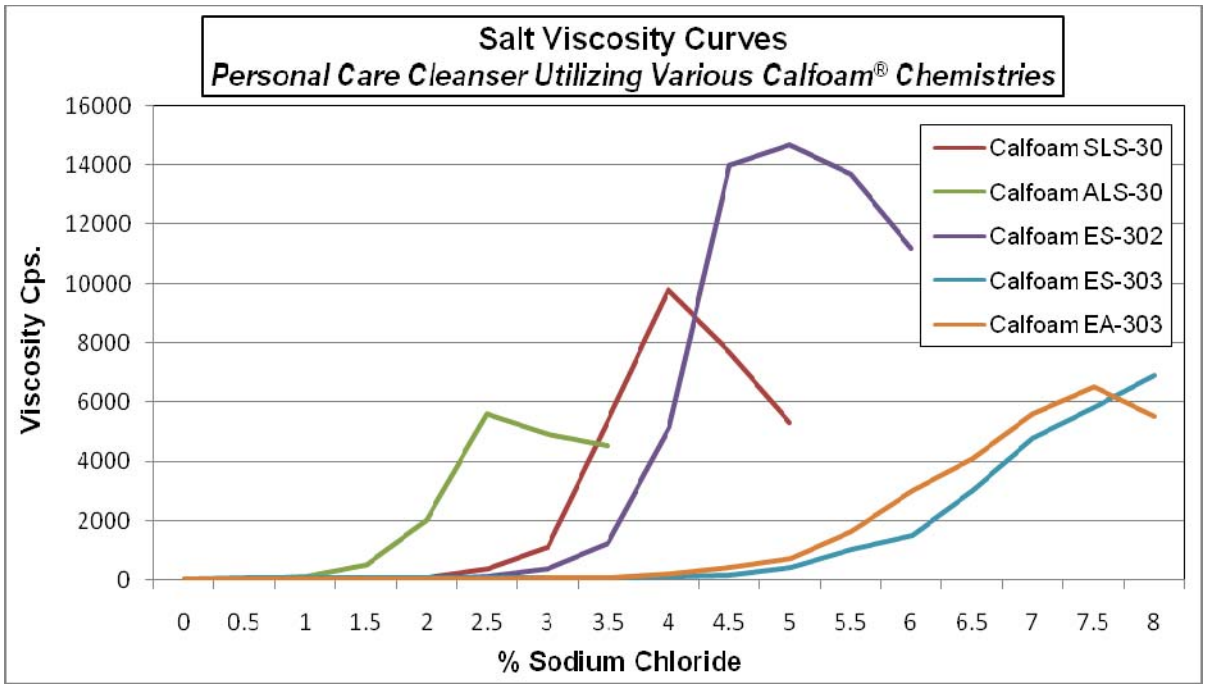
Calfoam® Salt - Viscosity Curves

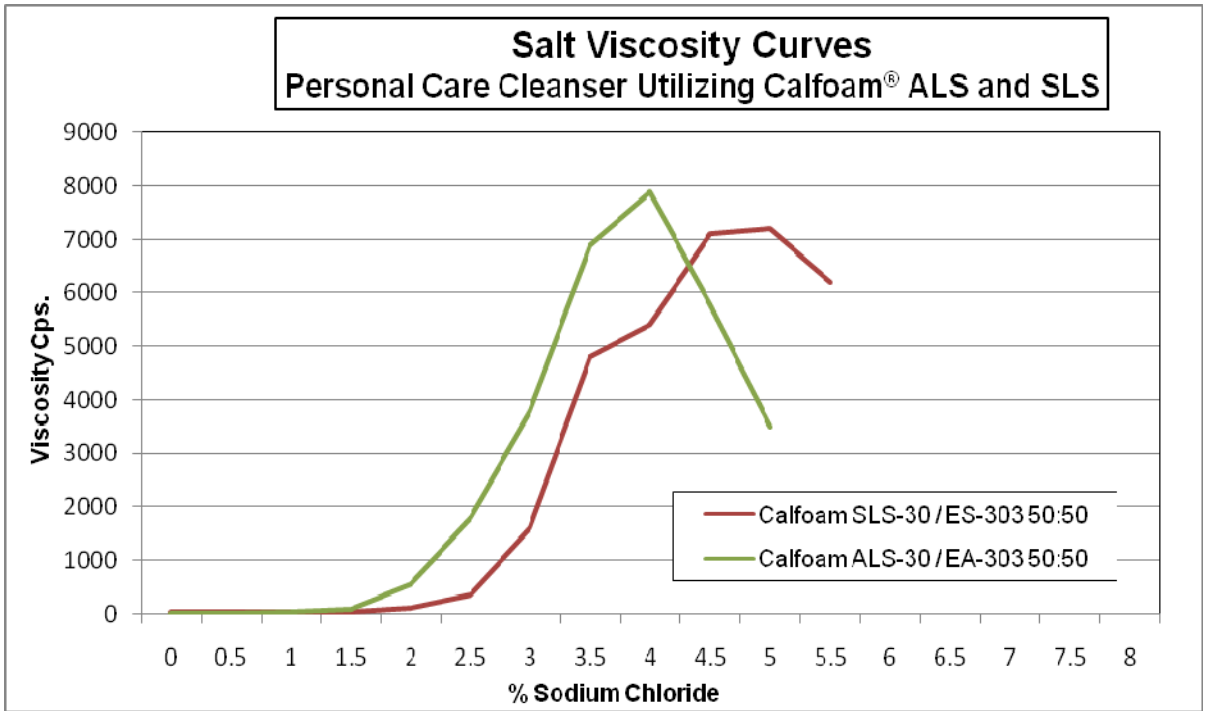
Personal care applications such as shampoo, body wash, hand soap and pet shampoos commonly incorporate Calfoam® lauryl sulfates and lauryl ether sulfates. One physical property of these products which is highly desirable is appropriate viscosity. Formulations typically combine alkanolamides like Calamide® C, betaines like Caltaine® C-35 and sodium chloride to build viscosity to the desired amount. This bulletin illustrates the salt-viscosity response with various Calfoam® chemistries in the following general personal cleanser formula.

Calfoam®	6% active material
Calamide® C	1% as is
Caltaine® C-35	1% as is
Water	to 100%

The graphs below illustrate the salt-viscosity responses for numerous Calfoam® chemistries. Some conclusions from the personal care cleanser formulation above utilizing various salt additions and Calfoam® chemistries include:

- Calfoam® SLS-30 builds higher viscosity than ALS-30
- The highest viscosity (about 15,000 cp.) is achievable by using Calfoam® ES-302
- Ether sulfates containing three moles of EO, like Calfoam® ES-303 (SLES) and EA-303 (ALES) give lower viscosities than their 2 mole counterparts.
- A 50:50 blend of SLS and SLES (3-mole) brings the viscosity in about the middle of their individual viscosity responses.





For More Information and Samples

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