PILOT CHEMICAL COMPANY

Technical Bulletin:

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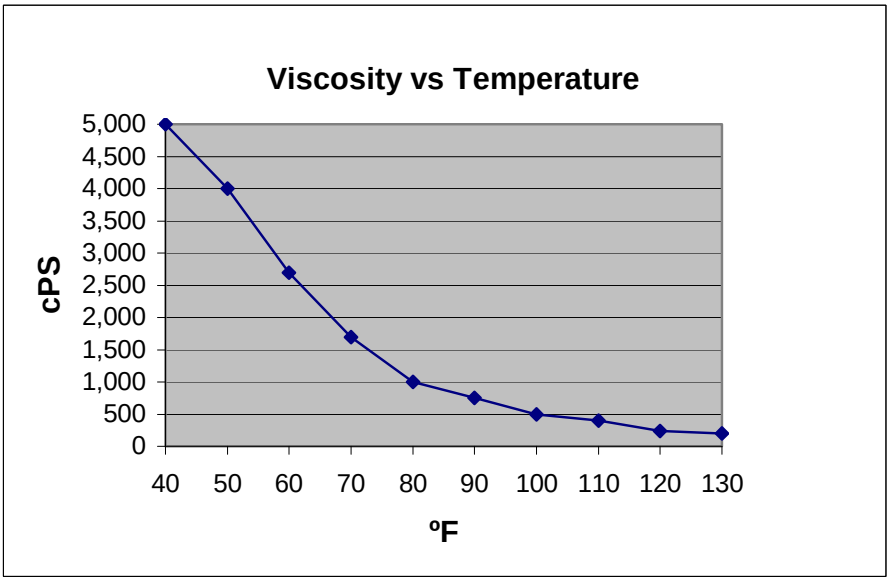
Calsoft® LAS-99

Bulk Storage and Handling Information

Viscosity

The viscosity of Calsoft® LAS-99 is inversely related to the temperature of the material. The following graph and table illustrates the viscosity and temperature relationship of Calsoft® LAS-99.



Temperature (°F)	Viscosity[1] (cPs)	Temperature (°F)	Viscosity[1] (cPs)
130	200	80	1,000
120	240	70	1,700
110	400	60	2,700
100	500	50	4,000
90	750	40	5,000

[1]Viscosity is measured by a Brookfield Viscometer, mode. RVT with #1 spindle at 10 rpm

Storage Tank Materials

The main consideration in storing alkylbenzene sulfonic acids is to avoid the possibility of iron contamination and ensure adequate temperature control. Various tank materials are rated as follows:

- Glass lined . . . . . Excellent
- Fiberglass . . . . . Good, Heating is a problem
- T/316 SS . . . . . Good
- T/304 SS . . . . . Fair
- Mild Steel . . . . . Poor

It is possible to use mild steel storage tanks and lines for Calsoft® LAS-99; however Pilot Chemical does not recommend this because of the dangers of picking up moisture. The addition of a minimal amount of moisture from the atmosphere increases the corrosiveness of sulfonic acid, which results in iron contamination of mild steel tanks and lines.

Temperature of Storage

Pilot recommends maintaining the temperature of Calsoft® LAS-99 between 70°F and 85°F, which keeps it warm enough to pump easily without causing the material to darken rapidly. If heating is available, the temperature should never go above 130°F or held at 110°F or above for an extended period of time.

The best methods for heating Calsoft® LAS-99 are external or a jacketed tank. Steam coils are not advisable because of the possibility of discoloration of the material adjacent to the coils. There is also the change for water contamination.

Piping and Pump Materials

See the recommendations above for storage tank materials.

Line and Pump Sizes

The temperature and total travel distance of Calsoft® LAS-99 determines line size and pumping capacity required to properly handle and store Calsoft® LAS-99. We recommend a 3-inch, 100 gallon per minute (GPM) gear pump and 3 inch lines. If the material is warm and with a short pumping distance (less than 50 feet), a 2-inch, 50 GPM pump and 2 inch lines can be used.

Special Handling Instructions

Calsoft® LAS-99 is a strong acid; review the Material Safety Data Sheet and Product Data Sheet before handling and storing Calsoft® LAS-99.