RheoSense
Simply Precise®

Measuring Extensional Viscosity with m-VROC II®

m-VROC II® viscometer is a high-precision instrument ideal for measuring both shear and extensional viscosity across a wide range of fluid viscosities.

Extensional viscosity is a critical parameter for characterizing fluids, such as paints, coatings, and inks, that experience extensional deformation during manufacturing, processing, or application. The m-VROC II provides reliable data to support formulation, quality control, and process optimization in these and other applications. The m-VROC II measures extensional viscosity using a small sample volume (<1.5 mL) and offers a wide dynamic range under precise temperature control.

In this application brief, we tested an off-the-shelf paint across a wide range of extensional rates at a controlled temperature of 25 °C. The test was conducted as follows:

1. Two chips were used for testing: EB20 and EE20.
2. For the EB20, ~100 µL of sample was loaded into the syringe. For the EE20 chip ~1.5 mL of sample was front- loaded into a 2.5 mL syringe.
3. Extensional viscosity was measured across a broad range of extensional rates using the software's automatic measurement features.
4. The cleaning solvent order on CCS includes 2.5 % Aquet, DI water, and Acetone.

The paint exhibits non-Newtonian extensional thinning behavior, with viscosity decreasing from ~270 Pa-s to 4 Pa-s as the extensional rate increases from 0.9 s^{-1} to 14,000 s^{-1}. The data demonstrates high measurement repeatability with the m-VROC II, showcasing the capability of VROC technology to accurately and reliably measure challenging samples such as paint.