

API CJ-4 / Sooted Oil MRV

ASTM D 6896

SPECIFICATIONS

This test is approved for API CJ-4.

SIGNIFICANCE AND USE

This method measures the yield stress and viscosity of engine oils after cooling at controlled rates over a period of 43 or 45 hours to a final test temperature of -20 or -25°C . The viscosity measurements are made at a shear stress of 525 Pa over a shear rate of 0.4 to 15 s^{-1} . The method is suitable for measuring viscosities ranging from 4000 mPas to $> 400,000$ mPas and is suitable for yield stress measurements of 7 pa to >350 Pa.

APPARATUS

A mini-rotary viscometer is used. This apparatus consists of one or more viscometric cells in a temperature-controlled aluminum block. Each cell contains a calibrated rotor-stator set. The rotation is achieved by applied load acting through a string wound around the rotor shaft.

TEST METHOD / SUMMARY

A used engine oil sample is heated at 80°C and then vigorously agitated. The sample is then cooled at a programmed cooling rate to a final test temperature. A low torque is applied to the rotor shaft to measure yield stress and a high torque is applied to determine apparent viscosity of the oil.

PASS / FAIL CRITERIA

180-Hour sample from Mack T-11 or T-11A	
Viscosity @ -20°C , max	25,000 mPa•s
Yield Stress	< 35 Pa

