

Severe Gear[®] Synthetic Gear Lubes Demonstrate Superior Shear Stability

The extreme pressures and temperatures generated by modern vehicles increase stress on gear lubricants and can lead to a serious condition known as thermal runaway. As temperatures in the differential climb upward, gear lubricants lose viscosity and load carrying capacity. When extreme loads break the lubricant film, metal-to-metal contact occurs, increasing friction and heat. This increased friction and heat, in turn, results in further viscosity loss, which *further* increases friction and heat. As heat continues to spiral upward, viscosity continues to spiral downward. Thermal runaway is a vicious cycle that leads to irreparable equipment damage from extreme wear, and ultimately catastrophic gear and bearing failure.

In order to ensure continued viscosity protection in high-shear conditions, it is required that SAE 75W-140 automotive gear lubes stay in grade throughout the CEC L-45-A-99 (KRL) 20-Hour Shear Test. AMSOIL recently subjected Severe Gear 75W-140 Synthetic Gear Lube (SVO) and four competing 75W-140 gear lubes to KRL shear stability testing.

SAE J306 standards dictate SAE 140 gear lubes maintain a minimum 24.0 cSt viscosity. Although each of the test oils met this standard before testing began, each competitor failed to stay in grade following the test. In fact, two experienced viscosity losses so dramatic that they dropped well below SAE 140 requirements and all the way down to an SAE 85 viscosity. AMSOIL Severe Gear, on the other hand, easily retained its viscosity within SAE J306 requirements, indicating its superior ability to protect against thermal runaway by maintaining its protection qualities in severe, high shear operating conditions.

Brand	cSt Before		cSt After	Viscosity Loss (%)
AMSOIL SVO 75W-140	24.90		24.56	1.37
Redline 75W-140	26.27	Failed	21.59	17.81
Royal Purple 75W-140	33.70	Failed	21.06	37.51
Lucas 75W-140	27.39	Failed	8.94	67.36
Torco 75W-140	29.33	Failed	8.75	70.17

AMSOIL also took the opportunity to subject Severe Gear 75W-110 Synthetic Gear Lube (SVT) to KRL testing. SAE J306 standards dictate SAE 110 gear lubes

maintain a minimum 18.5 cSt viscosity. Like Severe Gear 75W-140, SVT demonstrated its superior protection qualities by easily retaining its viscosity and staying in grade.

Brand	cSt Before	cSt After	Viscosity Loss (%)
AMSOIL SVT 75W-110	19.92	19.73	0.95

The graph indicates the viscosity losses experienced by each of the tested gear lubes:



The superior viscosity protection, viscosity index and shear stability properties of AMSOIL Severe Gear Synthetic Gear Lubes effectively protect equipment from the devastating effects of thermal runaway. Severe Gear Synthetic 75W-90, 75W-110 and 75W-140 Gear Lubes are ideal for severe-duty applications, including towing, hauling, steep hill driving, commercial use, plowing, racing, off-road use, rapid acceleration, frequent stop-and-go operation and high ambient temperatures.

