

# AMSOIL 10W-30 Excels in API Sequence IIF Test

The Sequence IIF test is a stringent API SL, ILSAC GF-3 test designed to measure oil thickening and piston deposits in high temperature service, as well as provide information on valve train wear. The test is designed to emulate high-speed service under high ambient conditions.

## OBJECTIVE

Subject [AMSOIL 10W-30 Synthetic Motor Oil \(ATM\)](#) to an independent API Sequence IIF Test to determine its effectiveness in preventing deposit formation and providing wear protection in high temperature conditions.



## SPECIAL CONDITIONS

Because AMSOIL is formulated to provide superior performance over extended drain intervals, testing was allowed to continue for 240 straight hours, three times the length of the standard Sequence IIF test.

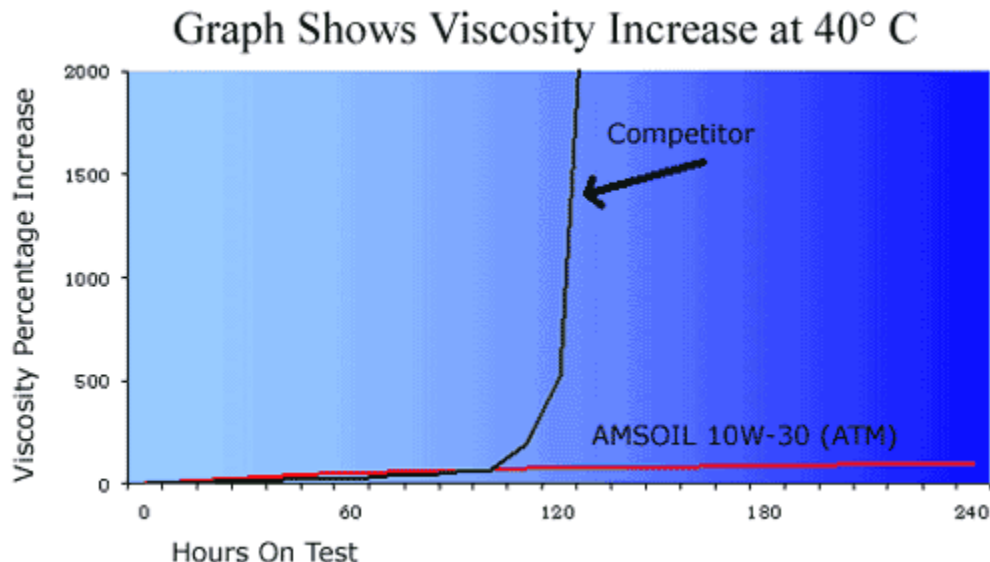
## TEST PROCEDURE

Testing is conducted with a 1996 model Buick 3800 Series II, water-cooled, four-cycle, V-6 engine. The test engine is an overhead valve design (OHV) with a single camshaft operating the intake and exhaust valves through pushrods and hydraulic valve lifters in a slider-follower arrangement, and it has one intake and one exhaust valve per cylinder. Induction is performed through a modified GM port fuel injection system with the air-to-fuel ratio set to 15:1.

Running unleaded gasoline, testing begins with a 10-minute initial oil leveling procedure before slowly working its way up to test speed, temperature and load conditions. Testing continues at 100 bhp, 3600 rpm and 155 C oil temperature for 80 hours with oil checks performed every 10 hours. Kinematic viscosity increase and wear metals (Cu, Pb and Fe) are evaluated at every 10-hour interval.

At the end of 80 hours, all six pistons are inspected for deposits and varnish, camshaft and lifters are measured for wear and oil screen plugging is evaluated.

Sequence IIF Test Parameters	AMSOIL 10W-30 (ATM) Triple Length (240 hr.)	API SL Limits (80 hr.)
Kinematic Viscosity, % Increase at 40 C	90.42	275 max.
Weighted Piston Deposit Rating	4.51	4.0 min.
Average Piston Skirt Varnish Rating	9.50	9.0 min.
Cam Plus Lifter Wear Average m	11.8	20 max.
Hot Stuck Rings	0	None



## TEST RESULTS

deposits and varnish to a minimum. The pictures below demonstrate the superior protection provided by AMSOIL Motor Oil throughout 240 straight hours of Sequence IIIF testing.

While conventional motor oils tend to thicken and lose their lubricating effectiveness, AMSOIL Motor Oils are formulated to maintain their viscosities over extended drain intervals. The results of the Sequence IIIF test clearly demonstrate the long drain capability of AMSOIL 10W-30 Motor Oil. Even after being subjected to a triple length Sequence IIIF test, AMSOIL 10W-30 performed three times better than the standard test limits. The competitor's motor oil shows dramatic viscosity increase in less than half the time.



The greatest overall load concentration and stress are placed on the piston skirts and rings on the thrust sides of the pistons as they move down, contributing to heavier deposits than the anti-thrust sides. Even after being subjected to the Sequence IIIF test for three times the standard test length, the pistons (above) lubricated by AMSOIL 10W-30 Motor Oil show minimal deposits and varnish. In fact, upon close inspection, the original piston machine markings are still visible on both sides of the pistons. This superior protection provided by AMSOIL Motor Oils extends the lives of both old and new vehicles, even in severe driving conditions.



Even at three times the standard Sequence IIIF test length, the oil pan, screen and valves showed no signs of deposits, oxidation or plugging. By keeping engines clean and deposit-free, AMSOIL Motor Oils effectively reduce wear and keep engines running smoothly for extended drain intervals.