

AMSOIL Synthetic ATF Excels in MERCON® V Aluminum Beaker Oxidation Test

Automatic transmission technology has quickly evolved in recent years, and automakers are demanding higher quality, longer lasting transmission fluids to protect these transmissions in extreme conditions. In fact, Ford Motor Company recently retired its MERCON® automatic transmission fluid specification. Its current MERCON V specification requires significantly improved anti-oxidation, antiwear and anti-shudder properties over previous specifications.

The MERCON V Aluminum Beaker Oxidation Test (ABOT) is a 300-hour oxidation test in which a gear pump circulates and shears the test lubricant in an aluminum beaker. Fluid temperature is maintained at 155° C (311° F), and samples are drawn and analyzed at intervals throughout the test. In addition, metal catalysts are submerged in the lubricant to evaluate its tendency to attack metal materials commonly found inside transmissions.

To show the superior performance of AMSOIL Synthetic Automatic Transmission Fluid (ATF) in extreme operating conditions and over extended drain intervals, an independent laboratory subjected both AMSOIL Synthetic ATF and Texaco Havoline petroleum ATF, a MERCON V product, to extended ABOT testing, which includes tests for viscosity increase and total acid number (TAN). A Brookfield Viscosity Test, as stipulated by MERCON V, was also performed to determine the cold temperature performance of the lubricants.



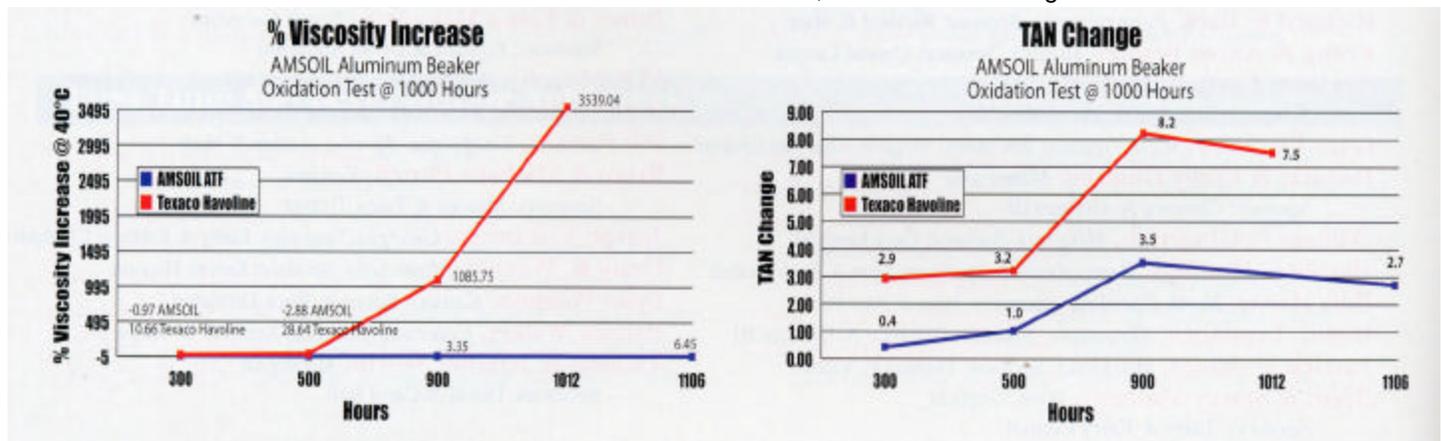
Viscosity Increase Test

In order to pass the requirements of MERCON V, automatic transmission fluids must not exceed a 25 percent viscosity increase following 300 hours of testing. AMSOIL Synthetic ATF easily passed the 300-hour ABOT test, exhibiting no viscosity increase. The test was allowed to continue for 1,106 hours, over three times the standard test length. Even after 1,106 hours, AMSOIL Synthetic ATF exhibited a minimal 6.45 percent viscosity increase, still easily passing MERCON V requirements for 300 hours.

Texaco Havoline ATF did not fare as well. Although it passed the 300-hour test requirements with a 10.66 percent viscosity increase, viscosity increased significantly as the test was allowed to continue. It exceeded the 25 percent viscosity increase mark after 500 hours, then soared to a 3,539.04 percent viscosity increase after 1,012 hours.

Total Acid Number (TAN) Test

MERCON V requirements do not allow a total acid number exceeding 3.5 mg following 300 hours of testing. Measured at 0.4 mg following 300 hours of testing, AMSOIL Synthetic ATF easily passed this portion of the test. Even after 1,106 hours of extended testing, AMSOIL Synthetic ATF easily passed MERCON V test requirements for 300 hours. In fact, its TAN of 2.7 mg after 1,106 hours was lower than the 3.2 mg TAN of Texaco Havoline ATF after 300 hours. Although Texaco Havoline ATF passed 300-hour ABOT test requirements, it again showed its inability to provide protection over extended intervals, climbing to a TAN of 7.50 mg after 1,012 hours of testing.



Brookfield Viscosity Test

The Brookfield Viscosity Test involves preheating the test lubricant and allowing it to stabilize at room temperature before transferring it to a glass cell with a special spindle. The glass cell is placed into a cold cabinet for 16 hours at a predetermined temperature of between 5 and -40° C. A viscometer rotates the spindle within the lubricant at the speed giving a maximum torque reading on the viscometer, and the reading is used to calculate the viscosity of the lubricant. The lower the cold temperature viscosity (measured in cP), the better the cold temperature protection. The MERCON V specification requires a maximum Brookfield viscosity of 13,000 cP.

The Brookfield viscosity of the automatic transmission fluids was measured before the test began and again at the conclusion of the test. The Brookfield viscosity of the AMSOIL Synthetic ATF measured 8,770 cP at the beginning of the test, easily meeting MERCON V requirements of 13,000 cP. Following 1,106 hours of extended testing, the Brookfield viscosity of the AMSOIL Synthetic ATF was 9,570 cP, still easily passing MERCON V requirements.

Texaco Havoline, on the other hand, exhibited a Brookfield viscosity of 14,400 cP at the beginning of the test, failing to fulfill the requirements of MERCON V. Following 1,012 hours of testing, its Brookfield viscosity exceeded 1,000,000 cP.

Conclusions

Oxidation and shearing forces seriously affect transmission and lubricant performance and life. The ability of AMSOIL Synthetic ATF to resist oxidation and shearing forces and maintain its protective qualities throughout the extended ABOT test clearly demonstrates the superior transmission protection and performance it provides over extended drain intervals.

AMSOIL Synthetic Automatic Transmission Fluid (ATF) exceeds the performance requirements for domestic and foreign automatic transmission fluid applications, providing automatic transmissions, power steering units and hydraulic equipment with excellent lubricating protection and better performance over a wider temperature range than conventional automatic transmission fluids.

- Resists thermal and oxidative degradation
- Ensures cool transmission operation
- Provides outstanding low temperature protection
- Improves fuel economy
- Provides smooth shifting
- Maximizes transmission performance and service life
- Reduces maintenance costs
- Offers extended drain intervals



AMSOIL Synthetic ATF left no deposits following 1,106 hours of extended ABOT testing.



Texaco Havoline ATF left a covering of deposits following 1,012 hours of extended ABOT testing.