

**Q. Can you explain the basic composition of a transmission fluid?**

A. In most cases, automatic transmission fluid consists of 85-90% base oil and 10-15% of a transmission fluid additive package.

Because the base oil is the largest component of an ATF, it has a dramatic effect on the performance of the fluid over the life of the transmission. The biggest change in fluids over the last decade has been the unilateral move to base stocks that will improve the ability of the transmission fluid to flow at very low temperatures, in great part, due to the use of electronic controls. At the same time, retention of high temperature viscosity is required for maintaining film strength for the operation of continuous slip torque converter clutches as well as enhancing pump performance by reducing pressure losses (a problem in high temp front wheel drive applications).

The additive packages used to blend ATF's are the most sophisticated of all lubricant packages. They require about 15-20 different chemical components that are finely balanced to provide the protection and performance required by the OEM specifications.

The exact chemical compounds and amounts used for that additive package are specific to the additive manufacturer. Additive packages have had to change to keep up with the demands of today's automatic transmissions. There has been a move away from additive chemistry dependant on heavy metals like zinc. Recent zinc-free additive technology has been shown to better meet the changing requirements of new automatic transmission designs.