



ELASTOMER COMPATIBILITY

AeroShell





In a race to meet the ever increasing demand of modern day turbine engines with higher operating temperatures and higher pressures requirement, oil manufacturers have had to use an effective anti-oxidant system to develop a high thermal stability oil.

Now here lies the problem for lubricant development chemists. Some anti-oxidants can provide excellent thermal stability and low coking propensity, but they can be aggressive to certain elastomer materials used in some engine oil systems. This can result in swelling or deterioration of rubber 'O' rings, leading to leaks and high oil consumption. The trick is to find a balance with an additive system that provides excellent thermal stability, but is fully compatible with elastomer materials in the engine.

In an elastomer compatibility test in SAE AS5780, oils are tested for 24 and 120 hours at a temperature of 200 deg C, and tested for the percentage weight change. For the more aggressive testing of 120 hours, the below results showed that a competitor's HTS/HPC oil has about twice the swelling rate compared to ASTO 560 and AeroShell Ascender on Viton GLC seals.

ASTO 560



Sealing rings in excellent condition throughout, including this oil spray nozzle

	Fluorocarbon (Viton A)		LCS Fluorocarbon (Viton GLC)	
	24 hours	120 hours	24 hours	120 hours
HPC specifications	11% change max	15% change max	12% change max	20% change max
AeroShell Ascender	9	10	6.5	8
HPC competitor oil	9.5	11.5	8	15
ASTO 560	7.5	9	6	8

Examples of elastomer seal degradation with a competitor's TEO in a GE CF34-3

