

THE DIFFERENCE BETWEEN PAG & POE

The two common oils in heavy-duty mobile R-134a systems are PAG (polyalkylene glycol) and POE (Polyol ester). They are very different, yet we still see confusion over which oils to use.

PAG is a synthetic oil used by most compressor manufacturers for their original fills. PAGs come in a range of viscosities and additive packages designed to enhance properties such as lubricity or thermal stability.

A “double” end-capped PAG is one with no alcohol groups on the ends of its polymer chain, which greatly increases its stability and moisture tolerance. Even at high temperatures, the end-capped PAG will not react with moisture to form harmful acids.

POE is a popular synthetic aftermarket lubricant because it is compatible with R-134a, R12 and R410a. Hydrolysis is the main issue with POE oils: in the presence of water, the oil will decompose into acid and alcohol. The degree of hydrolysis is driven by the amount of water present; the speed at which hydrolysis occurs is dependent on temperature and the acid content (acids can act as a catalyst). Either way the result is bad news for a moisture-contaminated A/C system.

Check Viscosity

PAGs and POEs both mix and circulate with R-134a. Whether or not they will provide adequate lubrication is the issue.

Always check with the compressor OEM to verify the type and viscosity of oil you need. Using too much or too little oil, or the wrong type, can lead to increased wear, premature component failure and the loss of your warranty. If the OEM lubricant is not available, a double end-capped PAG of the same ISO viscosity as the original is the best choice.

Recommended Practices

Some aftermarket compressors today are shipped dry while others are prefilled with either PAG or POE oil. Installers must be certain not to intermix oils or use the wrong type of oil for the application. To get the service life you expect (and to preserve the warranty), check with the compressor supplier and verify that you are using an OE-specified lubricant type and viscosity.

