

NATIONAL

R-1234yf - The story behind the next generation Refrigerant for Automotive Air-Conditioning

This year will see another 1.2 million new cars hit the road with the new Solstice R1234yf air-conditioning gas in them. New legislation introduced in January 2017 forced all car makers in Europe to adopt new technology to reduce the Global Warming Potential (GWP) of the refrigerant used in the air-con system.

This change means that all new cars must run on technology containing refrigerant with a GWP of less than 150 in order to comply – by comparison, the refrigerant previously used was R-134a which has a GWP of 1,430.

Chemical manufacturers introduced (2) options in order to comply – R-1234yf which has a GWP of less than 1 or CO₂ which has a GWP of 1. Both clearly conform to the new regulation in terms of GWP. However, the majority of car makers have chosen R-1234yf as their preferred solution, namely for the following 3 reasons:



- R-1234yf offers similar cooling performance to existing R-134a in all climates vs. CO₂ which has differing performance in different climates – thus it's a global solution
- R-1234yf is generally more efficient vs. CO₂ because it uses less fuel and thus produces less emissions (approx. 20%-30% fewer)
- R-1234yf has a lower cost to implement vs. CO₂ as parts used in the air-con system are identical or similar to that of existing parts used today in conventional R-134a systems

So what is R-1234yf and what's different to R-134a?

R-1234yf is part of the chemical family known as HFO (hydrofluoro-olefin) and was jointly developed by chemical companies Honeywell and Chemours, under the Solstice® and Opteon™ trade names respectively. R-134a is a HFC (hydrofluorocarbon) – both are composed of Hydrogen, Fluorine and Carbon atoms but conventional HFC's are connected by single bonds between the atoms, whereas HFO R-1234yf contains at least one double bond between the carbon atoms. It's a small difference in chemistry that makes a huge difference in GWP.

The other main difference is that R-134a is classed as A1 non-flammable, whereas R-1234yf is classed as A2L – mildly flammable and thus requires additional safety measures during charging and service.

Honeywell awarded National Refrigerants the 2018 Solstice yf European Distributor of the Year award at their spring cooling conference in Valencia in April. The award was presented to Paul Mottram, MD of National Refrigerants (pictured left below) "In recognition of exceeding all business objectives, winning new business and driving growth" by Richard Winick VP and general manager to Honeywell Automotive Refrigerants (pictured right below). Paul commented "We are delighted to receive this award and look forward to a continued successful partnership with Honeywell throughout 2019."

National wins Honeywell Distributor of the Year award



Visit us at Automechanika 2019 stand number L164 or call 01455 630 790