R-1234yf - FAQs

2011

SPX

Why the Change?

- The change to a new refrigerant first began with a new European Directive

  - European Directive = 2006/40/EC
  - This new direct banned using hydrofluorcarbons (HFCs) with a global warming potential(GWP) number higher than 150.
    - R134a has a GWP number of 1430
  - The new Directive went into effect January 1, 2011
    - It affects only new vehicle models(platforms) introduced after January 1, 2011.
  - The directive also states that by 2017, all new vehicles sold will be required to use a low GWP refrigerant

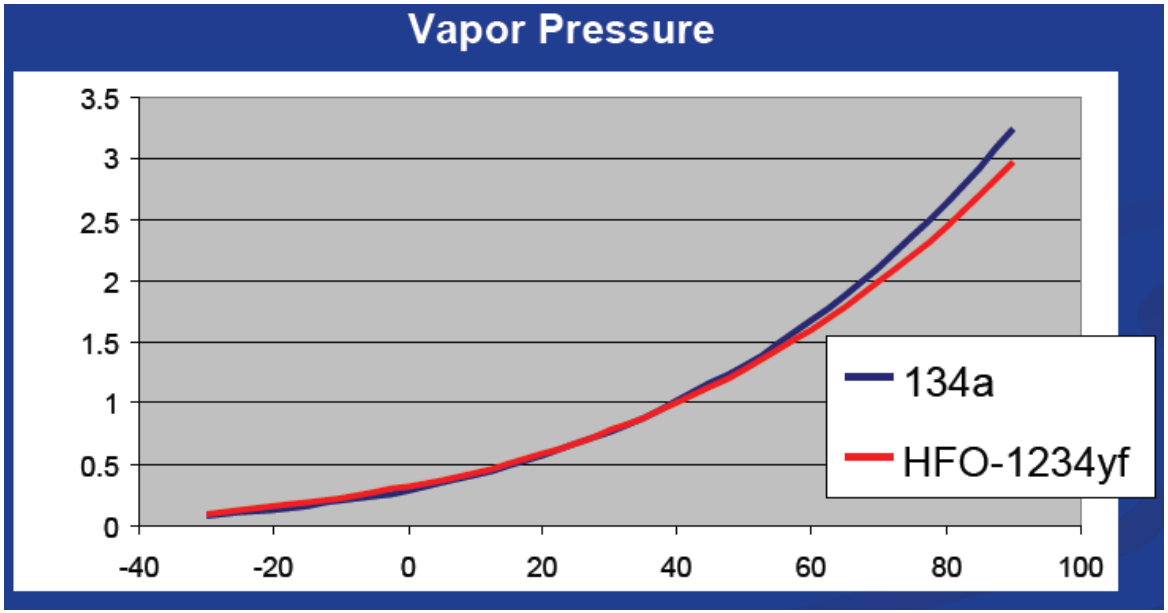
Why R1234yf?

- Why R1234yf?
  - It has a low GWP = 4 (which meets the “below 150” requirement)
  - Other advantages it has over other alternatives that were being considered:
    - OEMs don’t need to completely redesign the A/C system.
      - Operating pressures and refrigerant characteristics are pretty close to R134A.
    - Lower energy consumption due to higher energy efficiency which helps achieve better vehicle fuel economy
      - Less energy being consumed to run the vehicle’s A/C system

Why R1234yf?

- The charts show R1234YF is similar to R134A with one significant difference –
- R1234YF has been classified as a mildly flammable refrigerant.

Properties	1234yf	134a
P_{vap}, MPa (25°C)	0.677	0.665
P_{vap}, MPa (80°C)	2.44	2.63
GWP (100 ITH)	4	1410
Toxicity	A-Low	A-Low
Flammability	Mild	None



Will New Equipment Be Needed?

- Will new equipment be needed and if so - Why?
  - The answer is YES and the main reason is:
    - Since R1234yf is classified as **mildly flammable** new equipment is needed to address safety concerns that arise when working with the refrigerant
    - New **SAE J2843** requirements for A/C service equipment, couplers, leak detectors, and refrigerant identification equipment.
    - Also, in some cases new procedures are added to service operations to ensure service is done properly and limits potential for errors

What Else Will Be Different?

- There will be a bigger emphasis on Technician training and making sure techs are certified to service R1234YF A/C systems

  - SAE**J2845** covers Technician Training
    - Service topics
      - Understanding differences between 134a and HFO-1234yf
      - Identification
      - How to use refrigerant identification equipment
      - Servicing practices
    - Safety and Environment topics
      - Vehicle manufacturer recommendations
      - Promote technician safety
      - Using the right equipment

So When?

- Honeywell/DuPont announce late in 2010 that they'd begin global manufacturing in Q4 2011.

- As far as seeing vehicles with R1234YF A/C systems
  - The European market will be first
    - First vehicles hitting the market sometime Aug-Sept 2011
  - In U.S.A
    - It could possibly by as early as Q1 2012

What is SPX Doing?

Global design team worked in 2010 to develop a R-1234yf Refrigerant Recovery and Recharge unit.

- Goal was to be as common a platform as possible across the globe.
- CE/TUV compliant in EMEA and UL/SAE in Americas.
- German VDA approval.

Units in the field being tested

R-1234yf Service Support Products

Electronic Leak detection- Robinair 22791

Features

- Advanced infrared sensor designed to last a minimum of 10 years.
- Three sensitivity levels down to 0.15 oz./year.
- Automatically recalibrates in highly contaminated areas to help pinpoint the exact location of the leak
- Won't trigger on oil or moisture.
- Senses CFC, HFC and HCFC blend refrigerants.
- 8-hour lithium Ion battery lasts all day long and beyond.
- Visual alert and peak button make it easy to find leaks in noisy environments.
- Audible alert with mute button.
- Magnetic hanger to easily hang the unit during leak repair.
- Durable carrying case let's you easily leak detector and accessories.
- Meets NEW SAE J2791 leak detection standard.