R1234yf: Are You Prepared?

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CPS Automotive
Refrigerant Change

- **Basis of Change**
  - Reduction of C02/C02 Equivalents “Greenhouse Gases”
    - R134a GWP of 1,430 (C02 Equivalence)

- **EU mandated that all “new” YMM use GWP<150 by January 2011; All production by January 2017** *(Directive 2006/40/EC)*

- **US EPA published new SNAP/SNUR rules in 2015 regarding the use of R134a and R1234yf**
  - R134a banned from New Vehicle use after January 1, 2021
  - R134a may be used for servicing existing R134a fleet
Refrigerant Change Comparison

- **R12** → **R134a**
  - R12 was phased out of production; End date set by EPA
  - Anticipation that many R12 vehicles would need “retrofit”
  - R12 was Ozone Layer Threat
  - R134a similar handling to R12

- **R134a** → **R1234yf**
  - R134a will not be phased out. No production end date set by EPA
  - No anticipation that a vehicle equipped with R134a will need “retrofit”
  - R134a Global Warming threat
  - R1234yf Flammable
OEMs Already Installing R1234yf?

**Why?**
- Carbon Credit—EPA providing Carbon Credits for move to R1234yf; helps OE’s offset penalties under CAFE
- Marketing—Appearance of Earthly Stewardship

**Who?**
- Cadillac, Fiat/Chrysler, Jaguar, Toyota, BMW, Tesla, Honda, Ford (2016), Chevy (2016) and Kia (2016)
OEMs Already Installing R1234yf?

- **When?**
  - Certain Dealership/warranty service, Body Repair, and Fleet (Taxis, Rental Car, Police, Etc) already service vehicle containing R1234yf
  - If performing mechanical repair service for any of the above, it is already upon you
  - Early adopting R1234yf vehicles will begin rolling into your bays in 2016, growing in numbers each year thereafter.
2015 FCA NAFTA R-1234yf Phase in

**Sales Code - XFC = Built with R-1234yf A/C Refrigerant**

- Alfa Romeo 4C
- FIAT 500 & 500L (FF/BF)
- Ram 1500 (DS)
- Jeep Grand Cherokee (WK)
- Jeep Wrangler (JK)
- Jeep Cherokee (KL)
- Chrysler 200 (UF)
- Chrysler 300 (LX)
- Dodge Durango (WD)
- Dodge Challenger (LA)
- Dodge Charger (LD)
- Dodge Dart (PF)

### Calendar year

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Preparing for R1234yf

- Technician Education
  - Safe Handling
    - R1234yf is flammable
    - Heavier than air—sits close to the ground
  - New Oil(s)
    - New PAG oils fortified to protect compressors in systems using R1234yf (HFO)
    - ND12 and PSD1 to name two
    - May use new oils in R134a systems
  - Expensive ($62-80 per pound wholesale)
  - Recertification under Section 609 is advised
Tools and Equipment

- **R1234yf RRR (SAEJ2843)**
  - Ref ID Required—Internal or External
  - Charge sequence includes Vacuum and Electronic Leak Test prior to charging
  - Must exchange air inside and around machine; alarm if air flow drops below minimum

- **Dual-Gas (SAE J3030)**
  - R134a/R1234yf RRR now available
Tools and Equipment (cont’d)

- **Electronic Leak Detector (SAE J2913)**
  - Improved sensitivity to 4g/yr leak
  - Reduces false positives
  - Detects R1234yf and R134a

- **UV Leak Detection**
  - Dyes certified to SAE J2297

- **A/C Oil Integration**
  - J2843 nor J3030 allow for oil/dye injection through the machine
  - Premium on clean, air free and accurate injection
Protect Against R1234yf Loss

- **R1234yf is Expensive**—$600+ for 10 lb virgin cylinder
- **Ways to protect against loss**
  - Store refrigerant and RRR machine in secure area if possible
  - Track refrigerant use—let everyone in your shop know
  - Turn tank valves off when storing machine
  - Leak test machine periodically
  - Does one tech frequently diagnose an empty R1234yf AC system? Could be a problem.
Thanks to Daimler, R744 (C02) is still standing

Odds are long that R744 will be installed in US vehicles

Other refrigerants, such as AC6, are now out of contention
Conclusion

- R1234yf is coming

Prepare by:
- Training Techs/Advisors
- Acquiring the right tools and equipment
- Make a plan for protecting refrigerant supply
Section 609 of the Clean Air Act: Motor Vehicle Air Conditioning