



Environmental Protection Agency
Final Clean Air Act Rule:
Protection of Stratospheric Ozone
Revision of Refrigerant Recovery Only Equipment Standards



Summary:

Title VI of the Clean Air Act (CAA) regulates the operation and use of motor vehicle air conditioning (MVAC) refrigerant handling equipment. Title VI requires standards be at least as stringent as the applicable standards of the Society of Automotive Engineers (SAE). SAE periodically updates its standards to incorporate changes in industry best practices and/or technology improvements, and the Environmental Protection Agency (EPA) subsequently updates its regulations to reflect changes to SAE standards.

On June 18, 2008, the EPA issued a direct final rule (73 FR 34644) to update MVAC refrigerant recovery only equipment standards in response to an update by SAE of its corresponding standard for this equipment. Specifically, the rule revises Appendix D of 40 CFR Part 82 Subpart B, "Standard for HFC-134a Recover-Only Equipment" establishing the minimum requirements for the recovery of HFC-134a (sometimes referred to as R-134a) refrigerant that has been directly removed from mobile air conditioning (A/C) systems. The final rule is available at: <http://www.hss.energy.gov/nuclearsafety/nsea/oepa/rules/73/73fr34644.pdf>.

The new SAE Standard J2810, "HFC-134a (R-134a) Refrigerant Recovery Equipment for Mobile Automotive Air Conditioning Systems," provides minimum performance and operating feature requirements for the recovery of HFC-134a (R-134a) refrigerant to be returned to a refrigerant reclamation¹ facility or allow for recycling² of the recovered³ refrigerant to SAE specifications by using SAE J2788-certified equipment. Refrigerant removed from a mobile A/C system with this equipment may not be directly returned to a mobile A/C system. This standard applies to equipment used to service automobiles, light trucks, and other vehicles with similar HFC-134a (R-134a) A/C systems. J2810 encompasses the earlier SAE standard (J1732) in its entirety, but also adds new standards to improve equipment refrigerant recovery performance by requiring minimum refrigerant recovery rates at specified ambient temperatures.

Important aspects of the rule include:

- All new MVAC refrigerant handling equipment manufactured or imported after October 31, 2008, that recovers, but does not recycle, HFC-134a (R-134a) refrigerant must be certified to meet the revised 40 CFR Part 82 Appendix D requirements.
- The equipment must be certified by an EPA-listed laboratory as meeting J2810 standards, and clearly labeled to indicate both compliance with J2810 requirements and the prohibition against direct re-use of recovered refrigerant. Refrigerant may not be re-used without it first being processed to meet appropriate Air Conditioning and Refrigeration Institute (ARI) and SAE specifications.
- The equipment must comply with applicable federal, state, and local requirements related to the handling of HFC-134a (R-134a) material, and comply with applicable safety standards for electrical and mechanical systems.
- The equipment must meet specific performance standards and be operated in accordance with operational specifications.

- The equipment must be capable of continuous operation in ambient temperatures of 50° - 120°F, and be able to recover (extract) 95% of HFC-134a (R-134a) refrigerant from an MVAC system in 30 minutes or less without prior engine operation or external heating at ambient temperatures of 70° - 75° F, and 85% of refrigerant at ambient temperatures of 50° - 55°F.
- Prior to conducting performance testing under the standard, the MVAC recovery equipment must be preconditioned with a minimum of 13.6 kg of standard contaminated HFC-134a (R-134a) at an ambient temperature of 70° F (21° C) before starting the test cycle. Sample amounts are not to exceed 1.13 kg with sample amounts to be repeated every 5 minutes.

Importance to Department of Energy (DOE) Operations:

DOE facilities with fleet maintenance shops that purchase MVAC equipment manufactured or imported after October 31, 2008, must ensure the equipment is certified as meeting SAE J2810 specifications. The rule introduces new MVAC system performance testing requirements and maximum allowable equipment response times.

Although the use of J2810-compliant equipment may result in additional incremental costs relative to J1732-compliant equipment, the new procedures should reduce the amount of time technicians spend for equipment servicing and performance testing. In addition, because as much as 30% of refrigerant remained in an MVAC system when J1732 recovery equipment indicated all refrigerant had been recovered, the use of J2810-compliant MVAC refrigerant recovery systems may reduce operational costs by more effectively managing refrigerant inventory, and will act to reduce emissions of R-134a which is a known greenhouse gas.⁴

Contacts for Technical Assistance:

The Office of Environmental Policy and Assistance collaborates with DOE programs and sites to identify assistance needs and opportunities in the area of air quality. This office is available to provide assistance in maintaining and improving an air quality compliance management program within the Department. Please contact Mr. Emile Boulos of the Office of Environmental Policy and Assistance at: (emile.boulos@hq.doe.gov; 202-586-1306) with requests for technical assistance regarding Clean Air Act-related policy, guidance, implementation, and demonstration of compliance with regulations.

¹ **Reclamation:** involves purifying used refrigerant beyond that provided by on-site recycling equipment to meet industry product specifications, and requires chemical analysis to verify specification values meet or exceed product standards. It is typically used when refrigerants will be charged into equipment other than the equipment it was removed from, or into equipment owned by a different company.

² **Recycling:** involves processing used refrigerants to reduce contaminants that can result in early system failure, and then reusing the refrigerant. Common contaminants include lubricating oil, moisture, acid, chlorides, particulates, and non-condensable gases. Recycled refrigerant is typically recharged in equipment operated by the same organization which removed it.

³ **Recovery:** is conducted by service technicians, equipment operators and/or appliance disposal facilities. It involves the use of a machine to physically remove the refrigerant charge from the system, and the placement of that refrigerant into a container for subsequent recycling and/or reclamation. The recovery process includes removal of refrigerant vapor (heels) to established vacuum levels to maximize the amount of refrigerant captured and minimize releases.

⁴ **R-134a:** is a refrigerant that is being used as a replacement for R-12. While it has a negligible ODP (*the capacity to destroy ozone molecules*) relative to R-12, it has a significant global warming potential (GWP). R-134a's GWP of 1300 means one pound of R-134a is believed to be equivalent to 1300 lbs of CO₂ in terms of its ability to warm the atmosphere. Thus actions and activities that allow for the more effective management and recovery of R-134a will necessarily also reduce greenhouse gas emissions, and in so doing have a positive climate change/global warming impact.

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