Refrigerants

What's wrong with used Refrigerants?

Refrigerants containing chlorofluorocarbons (CFCs), such as CFC-12, are suspected of contributing to the depletion of the stratospheric ozone layer. The ozone layer acts as a blanket in the stratosphere that protects us from harmful ultraviolet (UV) radiation from the sun. Scientists worldwide believe that man-made chemicals such as CFC-12 (also known by the trade name freon) are rapidly destroying this layer of gas 10 to 30 miles above the earth’s surface. Strong UV radiation breaks the CFC-12 molecules apart, releasing chlorine. A single chlorine atom can destroy over one hundred thousand ozone molecules. Ozone loss in the atmosphere is likely to lead to an increase in cataracts and skin cancer, which is now one of the fastest growing forms of cancer, and could weaken the immune system. In the U.S., one person dies of skin cancer every hour. The U.S. has joined over 160 countries as a party to the international treaty known as the Montreal Protocol in which all developed countries agreed to phase out production of most ozone depleting substances, including CFCs, by the end of 1995. Many cleaning solvents are flammable, produce costly hazardous waste, and are harmful to the health of workers and the environment. Moreover, they are often the largest automotive fluid waste generated in repair shops.

CFCs and the Clean Air Act

The 1990 Clean Air Act Amendments incorporated this production ban date and Sections 608 and 609 of the Clean Air Act prohibit the release of refrigerants during servicing and requires recycling of refrigerants, either on-site or off-site. This means vehicle maintenance and repair shops must use refrigerant recycling equipment to work on vehicle air conditioners. Further, EPA regulations require that if you deal with air conditioners, you must be certified, and use EPA approved CFC recovery and recycling equipment. See the following factsheets: [EPA Approved Technician Certification Programs](https://www.epa.gov/airmarkets/tech-cert) [63k PDF] and [EPA Approved Equipment](https://www.epa.gov/airmarkets/equipment-cert) [88k PDF]. There are a number of viable substitutes for CFC refrigerants. Before switching over to an alternative refrigerant, make sure it is an EPA-approved refrigerant and has been approved by the vehicle or air conditioning manufacturer. See the factsheet [EPA Approved Refrigerants](https://www.epa.gov/airmarkets/refrigerants-cert) [55k PDF].

Alternative Refrigerants

There are a number of viable substitutes for CFC-12 refrigerants, such as HFC-134a, a hydrofluorocarbon, on the market today. Note that other than HFC-134a, all EPA-accepted refrigerant substitutes are blends that contain ozone-depleting hydrochlorofluorocarbons (HCFC), such as R-22, R-142b and R-124. Review the [Material Safety Data Sheet](https://www.epa.gov/airmarkets/msds-cert) (MSDS) of the alternative in which you are interested and avoid it if it contains CFCs or HCFC.

Ventilation of All Refrigerants Prohibited
Section 608 of the Clean Air Act prohibits the venting of any of these alternatives, including HFC-134a, into the atmosphere. The prohibition on venting these ozone-depleting blends has been in effect since 1992.

**Recycling of HFC-134a Required**

Effective in 1998, the EPA passed a rule requiring recycling of HFC-134a. Technicians who repair or service HFC-134a must recover the refrigerant and either recycle it on-site or send it off-site to a reclamation facility so that it may be purified.

**EPA-Approved Equipment Required for All Refrigerants**

The technician must use EPA-approved equipment to perform the refrigerant recovery and recycling. Such equipment cleans the refrigerant so that oil, air and moisture contaminants reach acceptably low levels. As of 1998, EPA allows recycling of refrigerant blends used in motor vehicle air conditioning systems, provided that: recycling equipment meets a new Underwriters Laboratories (UL) standards; and refrigerant is returned to the vehicle from which it was removed.

**Training for Technicians Required for All Refrigerants**

Technicians who repair or service HFC-134a or any of the refrigerant blends must be trained and certified by an EPA-approved organization. If a technician is already trained and certified to handle CFC-12, he does not need to be recertified.

**Record Keeping Required for All Refrigerants**

Service shops must certify to EPA that they own approved CFC-12, HFC-134a equipment or own approved equipment designed to service refrigerant blends. Note that this certification is a one-time requirement. If a shop purchased a piece of CFC-12 recycling equipment in the past and sent the certification to EPA, the shop does not need to send a second certification to EPA when it purchases a second piece of equipment, no matter what refrigerant that equipment is designed to handle. If the refrigerant is recovered and sent to a reclamation facility, the shop must retain the name and address of that reclamer.

*This factsheet has been adapted from Montgomery County, Maryland - Department of Environmental Protection
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