

Chlorofluorocarbon (CFC) Recovery and Recycling Frequently Asked Questions

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What is a CFC?

CFCs are a class of synthetic chemicals that are odorless, non-toxic, non-flammable and chemically inert. Their stability and apparently harmless properties made CFCs popular as propellants for aerosols and as refrigerants in air conditioning units. Some common CFCs are Dichlorodifluoromethane, 1,1,1,2 Tetrafluoroethane and Chlorotrifluoromethane. When CFCs are released into the atmosphere, they drift up slowly into the stratosphere, where, under the influence of ultraviolet radiation from the Sun, they react with ozone (O₃) to form free chlorine (Cl) atoms and molecular oxygen (O₂), thereby destroying the ozone layer which protects the Earth's surface from the Sun's harmful ultraviolet rays. The chlorine liberated during ozone breakdown can react with still more ozone, making the CFCs particularly dangerous to the environment. CFCs can remain in the atmosphere for more than a hundred years. Researchers continue to look for replacements for CFCs, and safe methods for destroying existing CFCs.

What is Recovery?

The process of recovery involves removing refrigerant in any condition from a vehicle or appliance and storing it in an external container without necessarily testing or processing it in any way.

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What is Recycling?

The process of recycling involves extracting refrigerant from the vehicle or appliance and clean refrigerant for reuse without meeting all of the requirements for reclamation. In general, recycled refrigerant is refrigerant that is cleaned using oil separation and single or multiple passes through devices, such as replaceable core filter-driers, which reduce moisture, acidity, and particulate matter.

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What equipment is approved?

Air conditioning work must be performed using approved CFC recycling equipment that meets the standard of SAE J-1990. To verify that CFC recovery and recycling equipment meets this standard, [see approved equipment list](#) or contact the ETL Testing Laboratories at (800) 967-5352 and Underwriter's Laboratory at (847) 272-8800.

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Can I vent HFC-134a or other substitutes?

Air conditioning work must be performed using approved CFC recycling equipment that meets the standard of SAE J-1990. To verify that CFC recovery and recycling equipment meets this standard, [see approved equipment list](#) or contact the ETL Testing Laboratories at (800) 967-5352 and Underwriter's Laboratory at (847) 272-8800.

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How was HFC-134a selected as a replacement refrigerant for CFC-12 in automobile air-conditioning systems?

Engineers for automotive manufacturers conducted research and testing on many potential substitutes for CFC-12 before selecting HFC-134a. As part of this research and testing, they reviewed the potential health effects, toxicity, flammability, and corrosivity of each potential substitute, evaluated the effect of each compound on the life and performance of the air-conditioning components in the various models made by each manufacturer and investigated the effect of each compound on the system's cooling capacity. They determined that HFC-134a was the most suitable alternative.

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Does HFC-134a pose cancer risk?

HFC-134a is regarded as one of the safest refrigerants yet introduced based on current toxicity data. The chemical industry's Program for Alternative Fluorocarbon Toxicity Testing (PAFT) tested HFC-134a in a full battery of laboratory animal toxicity studies. The results indicate that HFC-134a does not pose a cancer or risk.

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Is HFC-134a flammable?

HFC-134a is considered as safe as or safer than CFC-12 in motor vehicle uses, including in collisions. Like CFC-12, HFC-134a is not flammable at atmospheric temperature and pressure. However, HFC-134a service equipment and vehicle A/C systems should not be pressure tested or leak tested with compressed air. Some mixtures of air and HFC-134a have been shown to be combustible at elevated pressures. These mixtures may be potentially dangerous, causing injury or property damage.

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Are there any substitutes other than HFC-134a that have been approved by EPA?

Several refrigerants have been designated as acceptable for motor vehicle use. All of these, including HFC-134a, must be used in accordance with several conditions on their use. For full details of these requirements, see EPA's factsheet "[Choosing and Using Alternative Refrigerants for Motor Vehicle Air Conditioning](#)." In addition, in order to comply with the Clean Air Act, technicians must recover any alternative refrigerant using separate recovery equipment dedicated to that refrigerant.

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Has EPA already declared any alternatives to CFC-12 for use in vehicles to be unacceptable?

Yes. EPA has determined that two CFC-12 substitutes, OZ-12 and HC-12a, both manufactured by OZ Technology, Inc. of Post Falls, Idaho, are unacceptable for use in motor vehicle air conditioners because of unanswered flammability concerns. EPA regulations also state that all flammable substitutes are unacceptable for use in vehicle a/c conversions. Other refrigerants have also been found unacceptable for environmental reasons. See EPA's factsheet "[Choosing and Using Alternative Refrigerants for Motor Vehicle Air Conditioning](#)" for more details.

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