

# FAQ: FLUSH A/C COMPONENTS?

YES, the **Procedure** is to chemically flush the heat exchangers only (see the FAQ's on Flushing the Evaporator & Condenser) to remove debris and waste oils. Other than some hose assemblies, all other A/C system components must be cleaned by other methods or replaced and the system can never be flushed assembled.

Many commercial **A/C flushing Chemicals** are available and other aggressive and even potentially regulated products are also being used. The most concern is with the recovery and removal of "residual solvents", and this will come with the use of the more evaporative solvent-based products. The lower flash point and boiling point the better and always be aware of flammability. Also be aware of what exposure to the product will do to your health and the vehicles paint. Always purge the remaining chemical from the component with dry nitrogen or very dry shop air or employ a vacuum recovery process. If using shop air, a dedicated and large inline filter should be used to insure that you are not contaminating the component with moisture. Purge from the highest point (top down) to allow gravity to assist with chemical removal.

"Refrigerant" flushing is desirable because of past success with now regulated refrigerants and the potential elimination of "residual solvents", but **HFC-134a** is not a flush! According to the manufacturers of 134a, by its chemical nature, it gasses too rapidly to stay in liquid form and perform as a suitable flush. These manufacturers have developed alternative products for "refrigerant" flushing and would not have done so if 134a worked. (see the HECAT H1000)

**Preventive Maintenance:** As an A/C system ages on a high mileage vehicle without a compressor failure or any other apparent problems, the oils will begin to breakdown and lose some of their lubricity, and fine wear particles will accumulate (a.k.a. "black soot"). For whatever service reason, the need occurs to open this high mileage system, flushing out this wear debris and contaminated oil is necessary.

"**Black Death**" refers to a severe compressor "burnout", burning the oils in the system, and forming a hard carbonized buildup, sealing off flow paths in the condenser. Commercial A/C flushes will not breakdown this carbonized buildup. Without evidence of a severe compressor "burnout", the formation of "black soot" is common in high mileage 134a systems and this should not be confused with "Black Death" as in most cases, it can be successfully flushed out.

**Conversions:** Although the majority of older R12 vehicles have already been converted if needed, there are still some out there to be done. Because the mineral oil used with R12 systems must be removed and replaced with proper refrigerant oils for use with R134a, flushing is the only way this can be done effectively.

**Sealants:** If you are attempting a *proper* repair to a system that has had sealants installed, it is critical to flush immediately before any remaining sealant tries to harden in the heat exchanger components. If a volume of sealant is allowed to cure in a component open to atmosphere, it may need to be replaced. It is recommended to use only flush and equipment that is approved for the removal of sealants.

**Your Warranty & Reputation:** Flushing is a proven way to reduce the expense of comebacks and warranty repairs. Keeping your customers repair costs to a minimum, turns quotes into jobs. Providing repairs that give long trouble free service will only strengthen your reputation, profitability, and gain you more referrals.

**Compressor Warranty:** Most compressor manufacturers state the system must be flushed to maintain compressor warranty and it must be done properly. Upon warranty compressor inspection, evidence of not flushing the system (contamination) and evidence of flushing but not properly removing the flushing chemicals (residual solvents), is guaranteed to be a denied warranty claim.

**Screens** are great for providing compressor protection but they should only be installed after flushing and not as an alternative to flushing. If you do not first flush then the screen will rapidly clog with contamination and starve the compressor of oil. Larger mesh screens that can catch large debris and will not so easily clog are recommended.

**Note:** Regardless of what equipment, method, and chemical you choose to use, it is ultimately the **technician's responsibility** that the flush chosen is all removed to be sure this process has a positive, rather than a negative effect on the system. You must choose a product that will readily evaporate and leave little or no residue. It is recommended you use only flush products and processes specifically designed for flushing A/C systems. Always follow or exceed the chemical manufacturer's recommendations on how to purge or recover the remaining flush.

