OFFICE OF TECHNICAL ASSISTANCE & TECHNOLOGY

Antifreeze Recycling

Antifreeze (coolant) commonly contains ethylene glycol – an environmentally regulated chemical. The safer alternative, propylene glycol, is not considered toxic but can become contaminated with other regulated substances such as cadmium and chromium during use in the vehicle. Your shop can save money by investing in technology to recover and reuse antifreeze onsite or by sending antifreeze off-site to be recycled. By doing so, you can avoid both costs associated of purchasing 100 percent virgin antifreeze as well as managing used antifreeze as hazardous waste. It is important to note that use of recycled antifreeze must conform to requirements of vehicle warranties. (See also: fact sheet on "Hazardous Waste Management").

Things to Consider

Quantities of spent antifreeze generated
Auto shops typically have three options for recycling their used antifreeze: (1) send it offsite to a recycler (2) hire a company to come to your shop to recycle your spent antifreeze onsite, or (3) purchase technology to perform in-shop recycling (aka coolant exchange systems). The most cost-effective option for your shop will depend on the amount of spent antifreeze generated, the types of vehicles serviced, and other factors such as the amount of floor space in the shop.

Warranty and liability concerns
Shops can become liable for damages or risk losing their customer's vehicle warranty if the purity and effectiveness of the antifreeze does not meet American Society for Testing Material (ASTM) standards for purity. Some shops feel that this risk is too great to ever use recycled antifreeze, however many manufacturers allow for use of recycled coolant as long as it meets ASTM standards.

A designated barrel for used antifreeze that can be picked up by the offsite recycler

Photo courtesy of Madison Park Vocational Technical High School

Offsite recycling
Whether you hire a company to pick up your spent antifreeze or have a company recycle it onsite, recycled antifreeze must meet required ASTM standards. Recycled antifreeze product is categorized as "light duty" or "heavy duty" to indicate the types of vehicle for which it is intended. Additionally, some recyclers provide a service prescribing correct additive package(s) already blended into the base glycol product, according to shop needs. Companies that provide onsite service will remove contaminants from the spent antifreeze and then blend the additives to the finished product while in your shop. Be sure to ask about this service in case additional additives must be purchased from another supplier. To assure quality, the recycler should periodically send samples out to test labs and provide the results to you.

Even though recyclers are capable of providing a product that matches the purity of virgin antifreeze, shops are responsible for adhering to vehicle warranty requirements and must be proactive about researching the correct additive packages and obtaining evidence of testing from their recycler. Industry experts indicate that the best recyclers use ion exchange or fractional distillation (more widely-used and highly-regarded method). The ASTM standards that recyclers adhere to are:

- ASTM 3306 - Standard Specification for Glycol Base Engine Coolant for Automobile and Light-Duty Service
- ASTM 6210 - Standard Specification for Fully-Formulated Glycol Base Engine Coolant for Heavy-Duty Engines

Onsite recycling
In-shop antifreeze exchange and recycling (or coolant exchange) systems, are designed to remove contaminants and restore the quality of antifreeze so that it is within acceptable ranges. "Universal" units can handle varying brands and grades of antifreeze because they are equipped with interchangeable tanks. These units can test antifreeze purity and blend additives to restore effectiveness of the finished product. Some closed-loop recycling units directly attach to the vehicle to clean and replenish additives to the spent fluid before being put back in the engine.

Talk to your supplier about liability concerns and to identify the best technology for your shop. Obtain a copy of the ASTM D6471 and the ASTM D6472 for more specific information on the purity standards for recycled antifreeze. Note that ASTM is currently finalizing a new standard for the properties of recycled antifreeze. Your supplier may be able to share a copy with you while you consider your options.

Antifreeze Recycling: The Benefits

Reduce the need to purchase new antifreeze
Virgin antifreeze is costly. Purchasing recycled antifreeze, recycling antifreeze in-shop and/or hiring a company to recycle spent antifreeze can save you money.

Reduce hazardous waste disposal and transport costs
In Massachusetts, spent antifreeze must be managed as hazardous waste due to the high likelihood that it contains either ethylene glycol, a hazardous waste, and/or oil and heavy metal contaminants (See the "Hazardous Waste Management" fact sheet). Your hazardous waste hauler may be able to recycle antifreeze. If your shop uses enough antifreeze to warrant the purchase of an in-shop unit, it will help reduce the need, frequency, and costs for hazardous waste pick-ups.

An in-shop antifreeze recycler
Photo courtesy of Madison Park Vocational Technical High School

Restore the antifreeze to a usable condition
Onsite recycling services or purchasing your own unit will remove the contaminants in used antifreeze. Recycling services usually use either distillation or nanofiltration and deionization to remove contaminants. While in-shop units make use of various technologies, they generally use additives to stabilize the pH, inhibit rust, reduce water scaling, and restore the effectiveness of the antifreeze active ingredients.

For free and confidential technical assistance or questions, contact:
MA Office of Technical Assistance 100 Cambridge St. Suite 900, Boston, MA, 02114
Phone: 617.626.1060 Fax: 617.626.1095 E-mail: maota@state.ma.us

Next Steps

Ask about options
Talk with your supplier or hazardous waste management company for antifreeze recycling options and coolant exchange systems. If you are interested in an in-shop unit, be sure to ask your supplier about "universal" systems that can safely handle varying types of antifreeze.

Contact the Office of Technical Assistance (OTA):
OTA's Tiffany Skogstrom (617-626-1086) and Marina Gayl (617-626-1077) have expertise in auto shop environmental safety. They can offer free and confidential assistance and advice.

Get a reference
MassCAR partner Madison Park Technical Vocational High School uses an antifreeze recycling service and formerly recycled their own antifreeze. For more references, contact the MA Office of Technical Assistance at 617-626-1060.

Check Warranties
Make sure that using recycled antifreeze will not void vehicle warranties. Many car manufacturers allow for use of used antifreeze as long as the product complies with the ASTM standards.

Find Additional Information

- See the Iowa Waste Reduction Center's fact sheet on Onsite Closed-Loop Antifreeze Recycling.
- The California Department of Toxic Substances Control produced a fact sheet on antifreeze recycling that includes a detailed cost analysis of the benefits.

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