

Onsite Antifreeze Batch Recycling

Onsite antifreeze batch recycling equipment transfers used antifreeze from one container, cycles it through the recycling unit and deposits the recycled liquid into another container. This type of recycling may be more time-efficient than closed-loop recycling, being that recycling can be done whenever there is enough used antifreeze collected to warrant recycling, instead of when a single vehicle requires service. Batch recycling can be done while employees are performing other tasks. This method, however, requires that antifreeze be removed from the vehicle and containerized. This simple act automatically designates it as a waste, therefore requiring a hazardous/non-hazardous waste determination be done. Used antifreeze determined to be hazardous may still be recycled onsite, the quantity generated must simply be included in the facility's monthly hazardous waste generation rate.

Batch recycling may employ filtration or distillation technology, or both. Filtration equipment only removes sediment and does not remove dissolved solids and chemicals from the antifreeze. But it also incurs the lowest capital cost. Distillation evaporates the used antifreeze and then re-condenses it, in the process removing any dissolved contaminants. Distillation involves a higher capital investment than filtration, but consumes less employee labor time⁽¹⁾.

Both filtration and distillation produce small amounts of recycling wastes that may be hazardous. The filters themselves can be laden with heavy metals, and distillation produces a small amount of sludge. Contact the IWRC for additional information on performing a hazardous/non-hazardous waste determination on recycling wastes.

Recycling used antifreeze onsite is a smart move, both environmentally and economically. Antifreeze is derived from petroleum products, and is not a renewable resource. Antifreeze can be recycled and reused indefinitely, so recycling makes sense. Recycling also ensures that waste antifreeze is



managed safely, that it is not improperly dumped down the drain or sewer or into a septic system, where it can contaminate drinking water. Recycling onsite also eliminates transportation-related pollution from the delivery of new antifreeze and the shipping of waste antifreeze to a recycling plant. It also eliminates production-related pollution and energy consumption by both production and recycling plants⁽²⁾.

The biggest potential cost benefit to recycling onsite is eliminating or greatly reducing the amount of virgin antifreeze purchased.

Use our [Onsite Batch Recycling Cost-Benefit Calculator](#) to determine if purchasing equipment would be cost-effective for you.

References

- (1) *United States Environmental Protection Agency, Department of Solid Waste and Emergency Response, 'Comprehensive Procurement Guidelines, Buy-Recycled Series, Vehicular Products.'* May 2004. <http://www.epa.gov/epaoswer/non-hw/procure/products/engine.htm>
- (2) *Silverspot Consulting,* silverspot@optonline.net

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Antifreeze Recycling Worksheet - Onsite Batch Recycling

	CURRENT USED ANTIFREEZE HANDLING	YOUR FACILITY	EXAMPLE
A	On average, how many gallons of used antifreeze do you generate per year?		1,200
B	How do you currently dispose of your used antifreeze? 1. Down the Drain* 2. Recycle Onsite (Closed-Loop System) 3. Offsite Recycling Service		Off-site Recycling
C	How much do you currently pay per gallon for antifreeze disposal/treatment?		\$0.75
D	Has used antifreeze from your facility undergone TCLP testing?		No
E	How much money do you spend annually to purchase virgin/recycled antifreeze?		\$5,400
F	Total Current Annual Cost (A x C) + E		\$6,300
G	Total Current Cost Including One-Time TCLP Testing for Used Antifreeze: Average Testing Fee = \$425 (F + \$425)		\$6,725

* Dumping used antifreeze down the drain is not an acceptable method of disposal.

Switch to onsite or offsite recycling and contact the IWRC (at 1-800-422-3109) for additional information/assistance.

	ONSITE BATCH RECYCLING	YOUR FACILITY	EXAMPLE
H	Average time (hours) required to recycle one batch (1 Batch = 55 gallons)		11
I	Approximate number of batches recycled annually (A / 55 Gallons)		22
J	Annual maintenance/repair costs, if any		0
K	Unit purchase and shipping costs		\$5,800
L	Unit installation costs, if any		0
M	Annual cost for additives [(A / 30) x \$48]		\$1,920
N	Annual cost for filters		\$800
O	Unit voltage (volts)		240
P	Unit current (amperes)		16
Q	Energy cost per kilowatt-hour		\$0.12
R	Annual cost to dispose of recycling wastes (other than antifreeze)		0
S	Total Capital Cost (K + L)		\$5,800
T	Total Annual Cost for Onsite Batch Recycling [(E x 25%) + J + M + N + R + ((O x P)/1000 x Q x H x I)]		\$4,181
U	Total Annual Cost Including One-Time TCLP Testing for Filters: Average Testing Fee = \$425 (T + \$425)		\$4,606
V	Annual cost difference between onsite batch recycling and current disposal methods (T - F)		-\$2,119
W	Payback period in years for onsite batch recycling (S / V)		2.74 yrs.

❖ Information derived from the fact sheet 'Antifreeze Recycling, Best Environmental Practices for Auto Repair and Fleet Maintenance,' United States Environmental Protection Agency, Department of Toxic Substances Control, November 2001.

❖ This worksheet is meant to give only an approximation of costs and payback periods.