

Antifreeze



Used antifreeze is toxic to humans and animals and should be managed carefully. Disposing used antifreeze into a river or stream can cause serious water quality problems. Dumping antifreeze on the ground may contaminate groundwater and can also result in significant warming and/or melting of permafrost. Some of the contaminants that may be present in used antifreeze are benzene and heavy metals such as lead, mercury, cadmium, chromium, copper and zinc.

Tips



Don't change your antifreeze until it's necessary.



Never mix your antifreeze with solvents, oils, or other wastes. If your used antifreeze is mixed with other wastes, it can't be recycled.



Use propylene glycol instead of ethylene glycol. Antifreeze/coolant is generally made from either ethylene glycol or propylene glycol. Propylene glycol is far less toxic than ethylene glycol. Propylene glycol is used in other products besides antifreeze such as food, cosmetics, and certain medicines. New propylene glycol has a lower toxicity to plants and animals. However, used propylene glycol may still contain some hazardous containments (gas and heavy metals). Propylene glycol appears to have a similar performance to ethylene glycol for freeze protection and some research has shown that propylene glycol may be less corrosive to cast iron. If projects or specific equipment in your village require antifreeze, talk to the project manager or the manufacturer about using propylene glycol instead of ethylene glycol.



What you can do with your used antifreeze

If your community generates enough antifreeze, you could purchase an antifreeze recycling machine. Or you could pay to ship it out of your community. This document focuses on Antifreeze Recycling Machines. But if you need to ship out a drum of used antifreeze, you could contact the companies listed below to get a quote and talk to them more about their services. Note -- this is not an exhaustive list of companies.



Emerald Services

800 East Ship Creek Avenue
Anchorage, AK 99501
(907) 258-1558
www.emeraldnw.com

Total Reclaim (only accepts some materials)

12101 Industry Way, Unit #C4
Anchorage, AK 99515
(907) 561-0544
www.totalreclaim.com/alaska.html

ANTIFREEZE RECYCLING MACHINES

Why get one?

Using an antifreeze recycling machine can save your community money by:

- Reducing the amount of new antifreeze that needs to be purchased
- Avoiding disposal costs
- Avoiding cleanup and liability costs



How do they work?

There are different types of antifreeze recycling machines, but in a typical machine, here are the steps:

1. Used antifreeze is poured into the machine tank.
2. Antifreeze is pumped through the machine and special filters "clean" the antifreeze.
3. Once the antifreeze is cleaned, you add anti-corrosion chemicals.

You then have antifreeze which can be used as you need it!

How much do they cost?

1. The machine cost varies with different models. It is generally about \$2,000 to \$5,000.



2. Also, coolant additives are necessary to use the recycled antifreeze. The price of coolant additives also varies with the brand of the antifreeze recycler. A good average cost to use is about \$240 for every 80 gallons of filtered antifreeze. Usually, coolant additives can be purchased from the same place where you order the antifreeze unit.

3. The filters in the antifreeze recycling unit will need to be replaced from time to time. Like the coolant additives, prices of filters vary with different brands of antifreeze recycling units. A good average cost to use is \$60 for every 80 gallons of antifreeze put through the unit.

4. To total cost to operate: About \$300 per 80 gallons, or \$3.75/gal.

How many gallons do I need to recycle before the machine pays for itself?

That depends on the cost of your machine, and the cost of antifreeze in your village. To calculate, divide the cost of the machine by the cost difference between new antifreeze and the operating cost or recycling:

Number of gallons needed =

$$\text{Cost of Machine} \div (\text{Cost of New Antifreeze} - \text{Operating Cost of Machine})$$

For example, let's say the machine cost \$4,000 including shipping, and to buy antifreeze it is \$20 per gal. Operating costs as we said are about \$3.75 per gallon. If your Council wants to know how many gallons of antifreeze they need to recycle for the machine to pay off, you can tell them:

$$\text{Needed gallons} = \$4,000 / (\$20 - \$3.75) = 246 \text{ gallons.}$$

After you've recycled 246 gallons of antifreeze, you are making money!

You can even sell your recycled antifreeze to Projects! You can pass an ordinance that says that contractors must use recycled antifreeze when available. You can also charge them to leave their used antifreeze with you! That money can pay for the coolant additives and you will have free antifreeze.

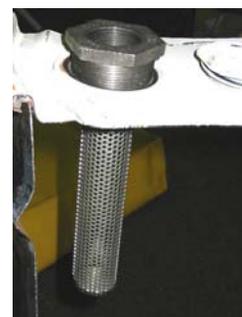
What about operation and maintenance?

All antifreeze recycling units will come with operation, maintenance, and set-up guides for you to read. One of the most important rules to follow is to make sure the antifreeze you're putting into your machine is free of dirt, grit, and debris and that your used antifreeze is never mixed with solvents, oils, or other wastes. If your used antifreeze is mixed with other wastes, it can't be recycled and it may need to be disposed of as hazardous waste. If your used antifreeze is full of grit and debris, breakdowns can occur and the internal filters will have to be replaced more frequently.

Pre-filtering your used antifreeze

It is a good idea to filter your antifreeze before it goes into your recycling unit. You can do this by pouring the used antifreeze through a piece of cheesecloth (the cloth will catch any debris etc.). You can also pour your used antifreeze through an inexpensive plastic or metal filter/strainer. Pre-filters/strainers can be purchased at some hardware stores or companies that sell spill or containment materials for under \$20.

Also, you can check out this website to view different types of strainers and filters
<http://www.flowezyfilters.com/>



Do you have drums of used antifreeze that have been sitting around for some time? Definitely filter this antifreeze because the drums can collect dirt and grit over time. This grit usually settles to the bottom of the drum. So it is especially important to filter the used antifreeze in the bottom half of the drum. If it is still gritty, filter it again.



For information about container management and how to properly store used antifreeze, see http://www.zendergroup.org/reuse_shed.html

Replacing the internal antifreeze recycling unit filters

As mentioned above, the filters in the antifreeze recycling unit will need to be replaced from time to time. How often you need to replace the filters also depends on how dirty the used antifreeze is. Like most things, the dirtier the used antifreeze, the more often the filters will need to be replaced. Filters can usually be bought at the same place where you order the antifreeze unit.

Tips on adding the coolant additives to your new antifreeze

As we mentioned before, you need to add some anti-corrosion chemicals, called "coolant additives" to the clean antifreeze that comes out of your machine. You can buy the coolant additives from the same company that you buy your recycling machine from. The amount of coolant additives you need to add depends on the amount of antifreeze you have. A measurement guide comes with the additives when you buy them.

If you can, it is helpful to purchase a new transparent drum to put your cleaned antifreeze into. This way you can see exactly how much antifreeze you have and how much of the coolant additives will need to be added. Whether you use a see-through drum or not, make sure you use a new or clean drum. You don't want to re-contaminate your newly cleaned antifreeze by using a dirty drum!

Transparent drums can be ordered through:

Grainger

6240 B Street

Anchorage, AK 99518

Phone: 907 562 5400 <http://www.grainger.com>

Ask for item number 19H059. It is a 55 gallon drum with gradation marks.



Where can I purchase an antifreeze recycling machine?

Call or visit the website of any of the distributors or vendors listed below. Ask them about the types of antifreeze recycling units they sell and their prices. Also ask how much the coolant additives and filters cost for the specific brand they sell. It never hurts to shop around!

Alaska Distributors

Far North Supply, Anchorage (you can ask for Mike Kelly bigmike50ak@msn.com)

907 278 1553 www.carquest.com/

They sell the Kleen-tec brand

Napa Auto Parts, Anchorage
907 563 3637 www.napaonline.com/ak/anchorage/genuine-parts7
They sell the Robinair brand

Vendors

Kleentec/Kleer-flo www.kleentec.com (Changed to Fountain Industries)
922 East 14th Street, Albert Lea, MN 56007
Phone: 800-328-3594

Automotive Service Equipment www.asedeals.com/ARU2.html
379 Cardinal Circle Torrington, CT 06790
800-229-6218

Mile X Equipment www.mile-x.com/cleanmaster-cm250-coolant-recycler.aspx
801 N. 2nd Street Coldwater, OH 45828
1-800-837-3818

Would you like to talk to people that currently use antifreeze recycling machines?

When you call the antifreeze recycling distributors or vendors, you can ask who else they've sold units to. They can give you references to call. Then you ask people first-hand what they like or don't like about their recycling unit. You might get some good advice that the vendor doesn't know. A few communities that we know have purchased antifreeze recycling units are:

Pedro Bay

Through an ANTHC Community Environmental Demonstration Project Grant, Pedro Bay purchased an Antifreeze Recycling Machine in 2013. The model they bought is a Kleen-tec CM250 from Far North Supply (for company contact details, see prior page) and the actual costs are as follows:

- Antifreeze Recycling Machine: \$4675
- Shipping to Alaska: \$730 (estimated shipping time is 2-3 weeks)
- Supplies for maintenance:
 - Prepall 25 & 26 solution 4 gal per case \$257/case (ordered 4 cases)
 - #193576 pre filters \$137/case (ordered 8 cases)

Once they install the machine, they are planning on making a short video which will detail the process of antifreeze collection in the community, and show how the recycling machine works. Their main goal of the project is to prevent antifreeze spills. The video will also highlight how using the recycling machine is much cleaner and more efficient than what they did with antifreeze prior (backhauling it out).

If you would like more information about this project or to view a copy of their video once it is complete, or to talk to Pedro Bay directly about how they like their antifreeze recycling unit,



contact Gabrielle Baalke at 907-242-3076 g.baalke@pedrobay.com or Ben Foss at 907-850-2342. You could also contact Desirae Roehl at ANTHC for information about the project 907-729-3496 droehl@anthc.org

Ugashik

The Native Village of Ugashik uses a Kleentec Antifreeze/Coolant Recycler. It was purchased for about \$1,500 several years ago. You can contact the Village Council to ask them about their unit at: 338 7611

Selawik

The Native Village of Selawik also purchased a Kleentec Antifreeze/Coolant Recycler back in 2003. You can contact Lucy Snyder to ask about their unit at: 464 2006

Tuluksak

The Native Village of Tuluksak is looking to purchase an Antifreeze Recycling Machine in 2013. You can contact Margaret in Tuluksak for more information once they have made their purchase 907 695-6420.