

With winter coming soon for many of us who live in the colder climates, getting stranded in your car can become a dangerous possibility. As a result, everyone's emergency car kit should contain the ability to heat your car if you were stranded or holed up waiting the passage of a winter storm.

Even if running your engine is an option, you may need to conserve fuel for the return trip. Also, carbon monoxide can build up inside a standing vehicle while the engine is running, even if the exhaust pipe is clear. In this article, I will be demonstrating how you can make your own survival heater for your car that is cheap, safe to use, and easy to construct.

What You'll Need



- **A small empty metal can:** You want this to be slightly taller but thinner than a standard roll of toilet paper. My can of choice is an unused 1 quart aluminum paint can found in most hardware stores. You can also use an empty food can that fits this description.
- **A larger metal can that can easily accommodate the first one:** I use a 1 gallon unused paint can (again found in most hardware stores). Another option is a coffee can, metal bucket and so on.
- **Some type of lid that can be placed over the larger can:** I also like to get a lid for the smaller can for which I will explain later.
- **Toilet paper (unscented)**
- **Six bottles of 70 to 91% isopropyl alcohol (rubbing alcohol)**
- **Matches or some other fire starter**

How to Put it All Together



1. **Prepare the toilet paper:** The first step is to take out the central cardboard tube from the toilet paper roll, leaving only the paper behind.
2. **Squeeze the paper into the smaller can:** Next you'll want to squeeze and roll the paper into the smaller can. If the can is so small that a full-size paper roll has no chance of fitting inside it, then you can remove some of the external sheets (just like you would if you were going to the bathroom) until it does squeeze into the can. It's important that it fills up the entire volume of the can.
3. **Add the fuel:** If you are now ready to use it, simply add the alcohol until the toilet roll inside the can is completely saturated. One of the benefits of using a 1 quart unused paint can is that you can store the stove with the fuel already added by placing the air-tight lid over the can. This saves space and allows you to have more fuel available. The lid can also be used to control the output of the flame which I will explain below.



4. **Place the smaller can into the larger one and position it in your car:** The larger can provides an insulating barrier and some protection for passengers and your car. You'll also want to position it in a place that's far enough from anything combustible. Use the palm check. Put the back of your hand against the surface you're worried about and if you can't keep your hand there without burning it then it's either to close or you'll need to [adjust the flame](#).
5. **Light the stove:** First, open the window just a crack to provide some airflow and then carefully place a match (or throw some sparks using a firesteel) onto the saturated toilet paper and viola! you've got yourself a burning stove. Use caution in lighting as it will combust very quickly. It's best to partially cover the smaller can with a lid to decrease the size of combustion (you can always increase it later (see next section)).

Controlling the Burn Rate



You may notice if you follow the steps above, that a pretty sizable flame results from having the smaller can's opening completely exposed. While this is fine if you want to warm up faster, it does tend to go through the fuel fairly quickly and is not so efficient. A better way is to partially cover the smaller can with a lid. Or if you used a 1 quart paint can, you can make a small hole (about the size of a quarter) in the lid it comes with and place that on top of the can. Both of these methods control the burn rate and allow the stove to provide a constant heat.

Another option is instead of completely saturating the toilet roll (as indicated in step 3 above) you can pour just a few ounces of alcohol on the paper and regularly add more as it burns out. This will also control the size of the flame and conserve fuel. I prefer to use the lid method over this one since you don't have to regularly add alcohol (it's nice to sleep for a stretch of time and not have to regularly add fuel).



A Word on Carbon Monoxide

I'm sure by now many of you are thinking, "What about the dangers of carbon monoxide?"

Carbon monoxide is produced from the partial oxidation of carbon-containing compounds. "Partial oxidation" is just a big word for what happens when combustion (fire) takes place in an area where there isn't much oxygen. This is most apparent when one operates a generator inside a home or if their wood stove is improperly vented.

In the case of this alcohol stove, while there is risk of carbon monoxide emissions (rubbing alcohol contains carbon: C_3H_7OH) the risk is very minimal. Opening your window slightly should provide sufficient oxygen for a clean burn.

If you still are concerned about it, I would recommend purchasing a battery-operated carbon monoxide alarm and turning it on (putting in the batteries) when running the stove. This will provide you ample warning should there be an issue.