FLAMELESS FIRE

Make a homemade chemical hand warmer.

THE SETUP

You can get inexpensive chemical hand warmers at many winter sports stores. Chemical hand warmers are the small packets of material that become hot after you rip open the outside wrappers and expose them to the air. They’re just the right size to insert in your mittens and can keep your hands warm for five or six hours. But with our secret recipe, you don’t have to buy them, you can make them yourself.

You will need:

• 2 tablespoons iron powder (available from a machine shop, chemical supply house, or hobby shop)
• 2 tablespoons pulverized, activated charcoal (available at pet stores, used for aquarium filters)
• 3 tablespoons fluffy, fine sawdust (ask at your local lumberyard or try the shavings from a pencil sharpener)
• 2 tablespoons vermiculite (available at garden stores or other places where plants are sold)
• 1 teaspoon salt
• 2 tablespoons water
• Measuring spoons
• A sandwich-sized self-closing plastic bag
If you read the list of ingredients on the labels of commercial hand warmers, you'll see there is nothing exotic or magical in them. It may be a bit of a scavenger hunt to locate all the ingredients. If you can’t get exactly what you need, you can improvise. For instance, if you can only get coarse activated charcoal, put some in a plastic bag and smash it to a powder with a hammer.

Mix all the ingredients together in an open plastic bag. We didn’t put air on the list but it is absolutely necessary so don’t squeeze the bag tightly when you close the top. It only takes a few minutes for the heat to turn on. Your homemade hand warmer will generate heat for hours. Put the bag in your pocket. When it starts to cool, open the bag and shake the contents to add more air and then reseal the bag.

INSIDER INFORMATION
The heat comes from a chemical reaction when iron combines with oxygen to form rust. The same kind of reaction occurs when fuels burn, only they give off heat rapidly enough to produce a flame. Rusting is a much slower reaction. These reactions are called exothermic because they emit heat. Each ingredient has its own special role in the chemical reaction. The iron, of course, is the fuel. The salt and the activated charcoal speed up the reaction. The water brings the reacting materials together. The vermiculite holds and distributes the water evenly. The sawdust is a heat insulator to hold the heat in.

The reaction will continue until all the iron has rusted. Most of the heat is given off in the first few hours. After twenty-four hours the reaction is completed. Dead hand warmers, commercial and homemade alike, are environmentally friendly. They are nontoxic and biodegradable. You can feed the contents to your iron-loving azalea or holly plants.