


# Hand warmer


Cm2j




[https://wiki.lowtechlab.org/wiki/Chaufferette\\_pour\\_main/en](https://wiki.lowtechlab.org/wiki/Chaufferette_pour_main/en)

Dernière modification le 13/02/2020

 Difficulty **Medium**

 Duration **1,5 hour(s)**

 Cost **0.60 EUR (€)**

## Description

Small hot water bottle easy to carry and reusable! Perfect to warm up your hands quickly!

# Summary

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Comments

# Introduction

This tutorial is based on the principle of hot ice. With 1L of vinegar, you can make about 2 to 3 heaters.

We will need:

- a watertight container that does not get too hot (example : compotes gourds, water bottles, ...)
- a funnel or a container with a spout
- a large pot
- one liter of vinegar
- 5 tablespoons of baking soda.

Fabric to customize it (sock, old scarf etc).

## Materials

## Tools

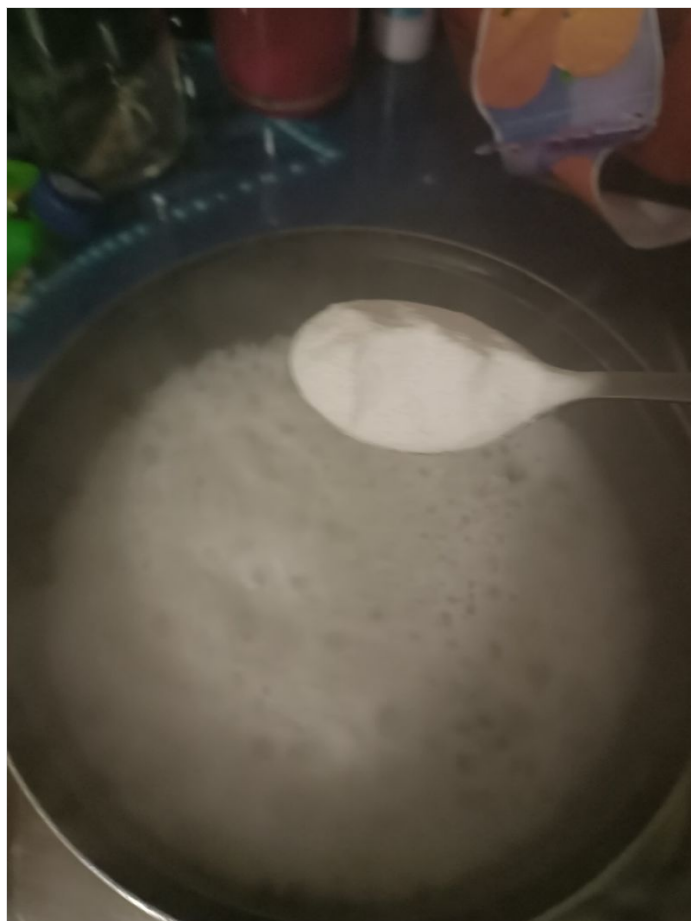
### Step 1 - Boil the vinegar

In the large pan, bring the vinegar to a boil.



### Step 2 - Add the baking soda

**WARNING:** put on gradually so as not to overflow the pan.

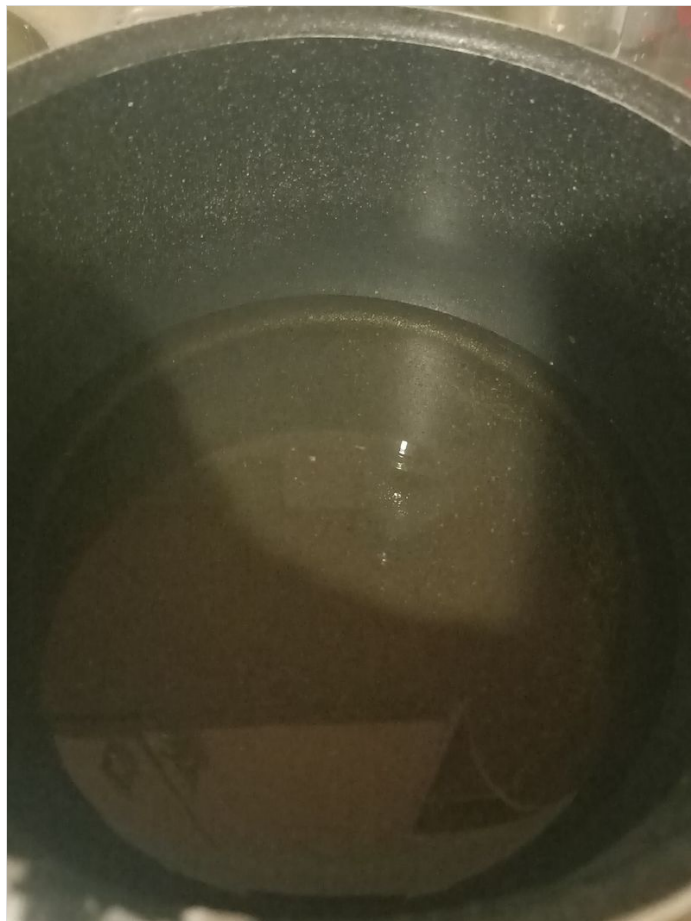


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### Step 3 - Wait for the reaction water to evaporate.

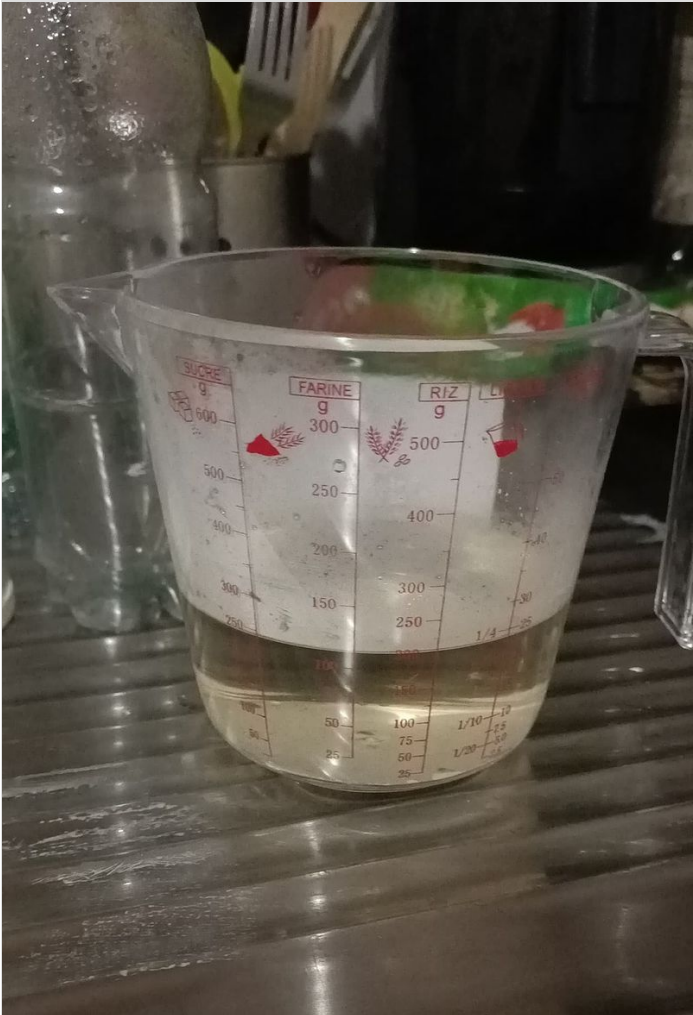
Boil the solution for about 40 min.

Small residues appear at the edge of the pan.



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### Step 4 - Pour the solution into the sealed container using the funnel.





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## Step 5 - Wait for the solution to cool

To go faster, you can place it in the fridge or in a cool place, but it can cool in the open air if it is not too hot.

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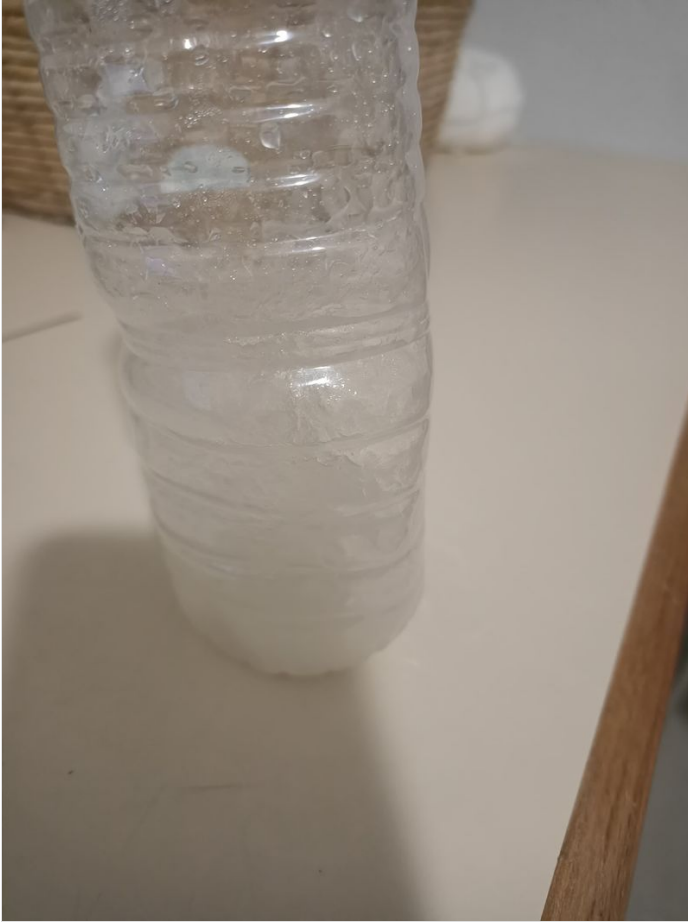
## Step 6 - Creating a disruption

Once cold, the hot water bottle is ready to use. To use it, you have to create a disturbance. Paper clips can be placed in the pompote, and folded in the pompote to create the disturbance. Or else open the bottle, and shake it without spilling or stirring it with a rod. The reaction forms a more rigid, opaque white thing. If the reaction does not occur, the solution must be re-boiled (repeat from step 3).

To make the hot water bottle more aesthetic, you can customize it with a sock or a piece of fabric.







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## Step 7 - Reuse of the hot water bottle

It couldn't be simpler!

We need to reheat the solution. You can do this by placing the container in a water bath. Wait until the solution is liquid (about 15 min). Then let it cool down!

The hot water bottle is reusable as long as you can make disturbances again.

