

Praxis “Making Science Fun”

Classroom Chemistry – 5 Minute Hand Warmers

Can you make portable hot packs?



Materials:

- Medium sized higher quality double zip-lock bag
- Calcium chloride ice melt pellets or crystals
- Snack or sandwich sized leak proof single zip zip-lock bag
- Rubber gloves.
- Water
- Duct tape

Procedure: (Remember to be sure to have your parent’s permission and they have the time to watch and help you.)

- Fill the larger zip-lock bag until it is $\frac{1}{4}$ full of calcium chloride (ice melt crystals or pellets available from most hardware stores). Caution: Wear rubber gloves when handling the calcium chloride or make sure your hands are dry and have no cuts or openings in your skin. Don’t get any of the calcium chloride dust in your eyes.
- Fill the smaller zip lock bag half way with water, squeeze out the air and make sure it doesn’t leak.
- With the zip end facing the calcium chloride put the smaller bag into the larger bag, squeeze out the air and zip it up.
- Duct tape the seal on the larger bag so it won’t accidentally open.
- Activate the “hand warmer” that is, squeeze the bags until the small bag breaks open.
- It should produce heat for 20 to 60 minutes.
- Note: If you get any of the mixture on yourself, wash it away with plenty of water.

What's happening?

The calcium chloride isn’t just dissolving it’s reacting with the water to form hydrochloric acid (HCl) and calcium oxide (CaO). Heat is given off. When a reaction gives off heat we say it is exothermic (**exo** means as in leave like an **exit** sign and **thermic** as in **heat** like in a **thermometer**.) Dispose of the contents by washing the liquid down the drain with plenty of water – deposit the rest in the garbage.

Extension:

Experiment with differing quantities of calcium carbonate to vary the amount of time that heat is produced. This experiment may be found at <http://www.instructables.com/id/The-5-minute-instant-hand-warmer/>

This activity is based on our “Classroom Chemistry” kit that is currently under development. Our teaching kits (described on our website) are loaned out FREE to provide classroom teachers and parents of home schooled children an opportunity to explore Science in interesting ways. Please consider volunteering as one of our classroom speakers or allow your business as a field trip location.



The next major event that Praxis is involved with will be the Summer Camps for Kids put on by Medicine Hat College. Praxis developed and supplies the kits that are used in the both the Medicine Hat and Brooks camps. For more information check out <http://www.praxismh.ca/MHCsummercamp.html>.

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PRAXIS, “Making Science Fun”. Contact Praxis at praxis@praxismh.ca, www.praxismh.ca, Tweet or follow us @PraxisMedHat, or friend us on Facebook. Address: c/o 200 7th Street S.W., Medicine Hat, AB, T1A 4K1 Phone: 403-527-5365, Fax: 403-527-6570.