

CHEMISTRY HONORS DESIGN A HAND WARMER LAB ACTIVITY

Prior to 4/3

1. Copy Question
2. Read purpose
3. Create Safety Table for every Chemical you'll be using in the lab (Example at bottom of page)
 - a. NaOH
 - b. NH_4NO_3
 - c. CaCl_2
 - d. LiCl
 - e. NaCH_3CO_2
 - f. Na_2CO_3
 - g. NH_4Cl
4. Copy Cost of Chemicals

Solid	NH_4NO_3	CaCl_2	LiCl	NaCH_3CO_2	Na_2CO_3	NH_4Cl
Cost	19.50	11.25	68.30	27.30	8.05	12.11
(\$)/Kg						

5. Copy Pre Lab Procedure into Lab book in a procedure/observation t chart (paraphrase the procedure. You do not need to write it word for word)

The links of the SDS is found below

<https://facimage.fishersci.com/msds/21300.htm>

<http://archpdfs.lps.org/Chemicals/Ammonium%20Nitrate.pdf>

http://www.flinnsci.com/globalassets/flinn-scientific/all-free-pdfs/sds196_calcium-chloride.pdf/

<https://www.fishersci.com/store/msds?partNumber=L121100&productDescription=LITHIUM+CHLORIDE+CE RTIFIED+100G&vendorId=VN00033897&countryCode=US&language=en>

<http://archpdfs.lps.org/Chemicals/SodiumAcetateAnhydrous.pdf>

https://www.flinnsci.com/globalassets/flinn-scientific/all-free-pdfs/sds716_sodium-carbonate.pdf/

https://www.flinnsci.com/globalassets/flinn-scientific/all-free-pdfs/sds53_ammonium-chloride.pdf/

DESIGN A HAND WARMER LAB

Question: Which chemical should be used in the making of a hand warmer?

Purpose:

Your team is in charge of designing a hand warmer with the following criteria:

1. The hand warmer must contain 10 g of an ionic solid and an inner pouch filled with 40 mL of water.
2. Activating the hand warmer must increase the temperature of the resulting solution by at least 20 °C
3. Cost effectiveness and safety

Safety Precautions

Prior to experiment, a basic understanding of chemical hazards is needed. In general, avoid contact of all chemicals with eyes and skin. Wear chemical splash goggles. Wash hands thoroughly with soap and water before leaving the laboratory.

Pre Lab Procedure

- A. Working in pairs, determine the heat energy change for the dissolving of NaOH (ΔH_{soln})
 1. Determine the safety hazard for NaOH. Record the safety hazard in your lab book

Designing A Hand Warmer Pre Lab Answers

Christian Drosten



Designing A Hand Warmer Pre Lab Answers:

Typography and Design for Newspapers Rolf F. Rehe, 1985
Chronicle, 1953-03

Hi-fi News, 2006

The Commercial and Financial

Delve into the emotional tapestry woven by Emotional Journey with in Dive into the Emotion of **Designing A Hand Warmer Pre Lab Answers** . This ebook, available for download in a PDF format (PDF Size: *), is more than just words on a page; it is a journey of connection and profound emotion. Immerse yourself in narratives that tug at your heartstrings. Download now to experience the pulse of each page and let your emotions run wild.

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