Soap Making - Cold Process

Sections

Joey Scouts
Cub Scouts
Scouts
Venturer Scouts
Rover Scouts

Scouts VICTORIA

Last updated: April 17, 2024, 10:03 p.m.

Challenge Areas

COMMUNITY
CREATIVE
OUTDOOR
PERSONAL GROWTH

Scout Method Elements

COMMUNITY INVOLVEMENT
LEARNING BY DOING
NATURE AND THE OUTDOORS
PROMISE AND LAW
PERSONAL PROGRESSION
PATROL SYSTEM
SYMBOLIC FRAMEWORK
YOUTH LEADING, ADULTS SUPPORTING

SPICES Growth Areas

CHARACTER
EMOTIONAL
INTELLECTUAL
PHYSICAL
SOCIAL
SPIRITUAL

The Adventure

Learn how to use chemical reactions to make soap that you can use.

Plan

1. Investigate the main methods of soap-making - melt and pour, cold process, and hot process.
2. Investigate the key ingredients of cold process soap - oils and lye/caustic soda (sodium hydroxide) - and their properties. Investigate different soap receipes and how different types of oils change the properties of the soap.
3. Investigate saponification - what is it and why is it important for soap making.
4. Read the safety information and discuss with your leaders or another appropriate adult what safety equipment, precautions, and supervision may be required. Ensure that you have these safety measures in place before starting the 'Do' section. In particular, this activity will use caustic soda that is poisonous and very corrosive.
5. Gather all the equipment that you need to make your soap. You will need the following:

Ingredients
Coconut oil, conola oil, olive oil, water, caustic soda, fragrance (such as essential oils or soap fragrances) (optional), and colourings (optional - see variations for ideas).

Equipment
2 large plastic jugs (at least 1L), a large plastic bowl (at least around 4 L with high sides), kitchen scales, a silcone spatula, a plastic spoon, a thermometers (ideally an infared thermometer but a candy thermometer would also work), a paper bowl, moulds such as silicone baking trays, and a stick blender or silcone whisk.

Safety
Nitrile gloves, long sleeve top or a lab coat, long sleeve pants, enclosed shoes, and ***safety glasses***. You may also like to have some vinegar on hand to neutralise any spills.

Do

1. Make sure everyone is aware of the safety requirements and is wearing the correct personal protective equipment.
2. Pour 1 and a half cups of cold water into one of the plastic containers.
3. Measure out 150 g of caustic soda into a paper bowl using a plastic spoon. Be careful to avoid spillage.
4. Slowly add the caustic soda to the water and stir with a plastic spoon or spatula. It is very important that you add the caustic soda to the water rather than the water to the caustic soda. This solution will get quite hot and form vapours. Make sure to avoid inhaling the vapours and ensure that the area is free of pets and young children.
5. Allow the solution to cool to approximately 40°C. This may take some time so put the jug in a safe place to do this.
6. Weigh out 500 g of coconut oil into the other plastic jug and heat to melt. You may heat the coconut oil in a saucepan on the stove or in the jug in the microwave.
7. Add 250 g canola oil and 250 g olive oil to the coconut oil, and mix well.
8. Allow the oil mixture to cool to approximately 40°C. If the mixture cools too much, you may need to reheat it either on the stove or in the microwave.
9. Make sure that your mixtures are both around 40°C. It does not matter if it is not precise but you want your two mixtures to be as close in temperature as possible and within 4°C of each other. If there is too much difference in temperature, your mixture may "curdle".
10. Pour the oil mixture into the big plastic bowl.
11. Carefully add the caustic soda mixture into the big plastic bowl with the oils.
12. Using the silcone whisk or the stick blender, mix until the two solutions are completely emulsified and have a very thin cake batter consistency. If you are using a stick blender, this will only take a few seconds but if you are using a silcone whisk, it may take up to 30-45 minutes.
13. If desired, add colours and scents and mix.
14. Pour your soap into your moulds and place the moulds somewhere safe to set. At this stage, you can also add decorations such as rose petals.
15. After about 48 hours, you can unmould your soap. If you have made a soap loaf then it is at this point that you would want to cut it into bars.
16. Place your unmoulded soap somewhere safe and leave it to cure for at least 6 weeks. This will allow them harden and last longer with use, as well as ensuring that it is safe to use.

Review

1. Did you manage to successfully make soap? If not, what went wrong? How well does your soap function as soap?

2. What did you learn in making your soap? What did you enjoy the most?
3. What would you do differently if making soap in the future?
4. How do you think different oils and additives might impact the soap?

Safety

- Whilst caustic soda can be brought from the supermarket or hardware store, it is still quite dangerous. Make sure that you read the safety data sheet before starting and follow the safety instructions. It can produce severe burns.
- Caustic soda will attack organic matter. Do not use wooden or paper based products while making your soap. Avoid working on wooden surfaces.
- Be mindful of allergies particularly around different types of oils (such as peanut oil) and fragrences.
- Make sure any additives are body and soap safe. You may need to research some of these.

Variations

- You can try various types of oils and experiment with these. However, they cannot be mineral oils - such as baby oil - as these will not saponify.
- Different oils have different saponification factors so you may like to use a lye calculator to work out how much caustic soda you need in the water. The fragrence calculator is also useful.
- If running this Challenge Card as group, you may wish for each Youth Member to only make around a fifth of the recipe and preparing the caustic soda solution in advance.