



Parachute Science 2025 Hands-On STEM Activities

The Suds Lab: DIY Laundry Soap Edition

Overview:

A Cost-Effective, Eco-Friendly Way to Keep Clothes Fresh & Clean! Creating your own DIY laundry soap is simple, sustainable, and a great way to explore the science of cleaning!

Supplies & Equipment Needed:

- 2 Cups Borax – Boosts detergent effectiveness and softens water.
- 2 Cups Washing Soda – Helps remove tough stains and odors.
- 1 Cup Oxyclean – Adds extra stain-fighting power.
- 1 Cup Baking Soda – Helps with odor control
- 1 Cup Epsom Salt – Acts as a natural fabric softener.
- 1 Bar Ivory Soap (Grated) – A gentle cleanser to help lift dirt.
- (OPTIONAL) 1/2 Canister Purex Crystals – Enhances scent and freshness.
- (OPTIONAL) 10-30 Drops Essential Oil – Use lavender, lemon, or tea tree for added freshness.
- Cheese Grater
- Large Mixing Bowl
- Airtight Storage Container
- Spoon or Scoop (old Protein Powder scoops are perfect for this)

Step-by-Step Instructions:

Step 1: Grate the Ivory Soap

1. Use a cheese grater to finely grate the bar of Ivory soap. This helps it dissolve easily in water.

Step 2: Mix the Dry Ingredients

2. In a large mixing bowl, combine Borax, washing soda, Oxyclean, baking soda, and Epsom salt. Stir well.



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Step 3: Add the Grated Soap

3. Slowly add the grated Ivory soap to the mixture, stirring continuously.
4. (Optional) Add $\frac{1}{2}$ Cannister of Purex Crystals
5. (Optional) Add 10-30 drops of essential oil for an extra fresh scent.

Step 4: Mix Thoroughly

6. Stir everything together until the ingredients are evenly distributed.

Step 5: Store & Use

6. Transfer the mixture into an airtight container to keep moisture out.
7. Use 1-2 tablespoons per load, depending on load size and soil level.

Taking It to the Next Level – Experiment Variables

Want to tweak your recipe? Try these variations:

Adjust the Stain-Fighting Power

- Increase Oxyclean for more stain removal.
- Increase baking soda for extra odor control.

Customize the Scent

- Swap essential oils for different fragrance combinations.
- Try scent-free for a hypoallergenic option.

Boost Fabric Softening

- Add white vinegar to the rinse cycle for an extra-soft finish.
- Reduce Epsom salt for a lighter fabric feel.



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The Science Behind the Experiment

This experiment demonstrates chemical reactions, water softening, and stain removal power:

1. How It Cleans Clothes

- **Borax & Washing Soda** increase the pH level of water, which helps break down stains.
- **Oxyclean** releases oxygen when mixed with water, lifting stains from fabrics.

2. Softening & Freshening

- **Epsom salt** helps soften fabric and reduce static cling.
- **Essential oils & Purex Crystals** add a long-lasting scent without synthetic residues.

3. Soap & Surfactants

- The **grated Ivory soap** acts as a surfactant, helping to lift dirt and grease from clothes.

Additional Reading & Information

Explore the science behind cleaning chemistry with these reputable sources:

- **American Cleaning Institute:** <https://www.cleaninginstitute.org/cleaning-tips/clothes/laundry-basics> – Explains how detergents work at a molecular level.
- **National Science Teaching Association:** <https://www.nsta.org/science-teacher/science-teacher-julyaugust-2023/connecting-science-water-students-communities> – Learn how alkaline cleaners help remove stains
- **EPA Green Cleaning Guide:** <https://www.epa.gov/saferchoice> – Tips for eco-friendly and non-toxic laundry practices.

Ready to give it a try? Share your results and tag us with your experiments!  