

210X278MM

Age 10+ Years

CHEMISTRY LABORATORY

WARNING Not suitable for children under 10 years. For use under adult supervision. Contains some chemicals which may present a hazard to health. Read the instructions before use, follow them and keep them for reference. Do not allow chemicals to come into contact with any part of the body, particularly the face and eyes. Keep small children and animals away from experiments. Store the chemistry set out of reach of small children.

WARNING Only for use by children over 10 years old. To be used solely under the strict supervision of adults that have studied the precautions given in the experimental set.

CAUTION! Contains some chemicals which are classified a safety hazard. Store the chemistry set out of reach of small children. Eye protection for supervising adults is not included.

WARNING Causes serious eye irritation. If medical advice is needed, have product container or label at hand. Keep out of reach of children. Wash skin thoroughly after handling. Wear eye protection/face protection. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Local hospital phone number: _____

BATCH NO. 52/20

8. LITMUS IN ACTION PART 4

Lab Equipment:

- Final Red Litmus Solution from Part 3
- Baking Soda
- Vinegar*
- Pipette
- Spoon

Instructions:

- Take the red litmus solution from Part 3. Use the end of the spoon handle to add a small amount of baking soda to the solution.
- Record what happens. The solution should fizz and turn blue. If this is not the case, add more baking soda until desired reaction occurs.
- By adding a base (the baking soda) this alkaline causes the solution to become blue as more is added and becomes more dominant.
- To prove this, add a few more drops of the vinegar with the pipette. By adding more of an acid, the solution turns back to the red indicator for acids.

9. LITMUS IN ACTION PART 5

Lab Equipment:

- Citric Acid
- Test Tube
- Blue Litmus Solution from Part 4 (add more baking soda if needed to return to blue)
- Water*
- 2 Clean Test Tubes
- Spoon

Instructions:

- Use the end of the spoon handle to add a small amount of citric acid to a test tube.
- Pour the blue litmus solution into the citric acid test tube and it should turn to red once again.

10. LITMUS IN ACTION PART 6

Lab Equipment:

- Litmus Solution from Litmus Prep
- Water*
- 2 Clean Test Tubes
- Baking Soda
- Citric Acid
- Pipette
- Spoon

Instructions:

- Use the end of the spoon handle to add a small amount of citric acid to a test tube.
- Pour the blue litmus solution into the citric acid test tube and it should turn to red once again.

11. FOOD FOR THOUGHT

Lab Equipment:

- Litmus Solution from Litmus Prep
- Beaker
- Flask
- Red Cabbage*
- Lemon*
- Spinach*
- Apple*
- Kale*
- Tomato*
- Distilled Water*
- 2 Cups*
- Pipette

Instructions:

- Ask your adult lab partner for assistance.
- Cut up the produce you are using for the experiment.
- Place the kale, cabbage, apple, and spinach into their own separator cups.
- Use the pipette to add 30 mL of water to every cup.
- Mash down the produce to get as much juice out as possible, then remove the produce from the liquid.
- Squeeze the tomato juice into the beaker.
- Squeeze the lemon juice into the flask.
- Use the pipette to drop some of the litmus solution into each container. What color changes do you observe?

12. HYDRATION STATION

Lab Equipment:

- Baking Soda
- Tap Water*
- Tonic Water*
- Flat Mineral Water*
- Bottled Water*
- Litmus Solution from Part 6
- Pipette
- 2 Test Tubes
- Spoon

Instructions:

- Add 5 spoonfuls (approximately 2.5g) of baking soda to 1st test tube and fill it halfway with tap water. Secure cap and swirl until all baking soda is dissolved.
- In the second test tube, fill halfway with tonic water. Add 5 drops of litmus solution, cap, and swirl. What is the reaction?
- Add drops of solution until it stays blue for 5-10 seconds.

13. HYDRATION STATION ALT.

Instructions:

- Repeat same steps from previous experiment, except use flat mineral water. What changes?

14. HYDRATION STATION ALT.

Instructions:

- Repeat same steps again from first experiment using bottled water instead. What are the results?

15. BOILING OVER

Lab Equipment:

- White Vinegar*
- Large Cooking Pot*
- Tablespoon*
- Baking Soda

Instructions:

- Adult lab partner supervision required. Experiment in a well-ventilated kitchen.
- Add 4 cups of vinegar into a pot and bring to a boil on the stove-top. Once boiling, slowly add 4 tablespoons of baking soda, one at a time, and stirring frequently after each addition. Keep stove-top on.

16. KEEP CONCENTRATION

Lab Equipment:

- Sodium Acetate Solution from Previous Experiment
- Dot*
- Heat-safe Glass Container*

Instructions:

- Boil solution from previous experiment until 1/2 cup of solution has dissolved. About 1 cup of liquid should remain in the pot. This can take 30-60 minutes.
- You should see white powder crystals begin to form around the top edges.
- If crystals turn brown or yellow, reduce temperature.
- Once boiled down, pour concentrated liquid into heat-safe glass. DO NOT shake the solution!
- Place aside to cool or speed up the process and place in fridge.
- Once completely cooled, you will have a concentrated, solid sodium acetate.

17. HOT & COLD

Lab Equipment:

- Concentrated/Solid Sodium Acetate from Previous Experiment
- Petri Dish
- Mixing Stick

Instructions:

- Use the mixing stick to carefully scrape about 1 teaspoon of solid sodium acetate from pot and place in the center of petri dish. This is the beginning seed for the crystal to form.
- Carefully take the cooled solid sodium acetate and pour slowly onto the crystal seed. The hot ice will start to form. The slower the pour the larger the crystals.

*NOT INCLUDED 4

CHEMISTRY LABORATORY

KIT INCLUDES:

- CHEMISTRY STATION
- 2 BEAMS
- 3 CLIPS
- 2 TEST TUBES
- PETRI DISH
- SPON
- 2 MIXING STICKS
- SYRINGE
- 0.59oz (17g) CITRIC ACID, CAS 77-92-9
- 0.02oz (0.7g) LITMUS POWDER, CAS 1393-92-6
- 0.28oz (8g) CALCIUM CHLORIDE, CAS 10043-52-4
- 1.41oz (40g) BAKING SODA, CAS 144-55-8
- FLASK
- BEAKER
- PIPETTE
- PAIR OF GLOVES
- STICKER SHEET
- EXPERIMENT LOG
- GOGGLES

1. BOIL & BUBBLE

Lab Equipment:

- Baking Soda
- Vinegar*
- Dish Soap*
- Pipette
- Test Tube
- Spoon

Instructions:

- Add 5 spoonfuls (approximately 2.5g) of baking soda to a test tube.
- Fill pipette with vinegar and drip slowly into the test tube as reaction occurs.
- When vinegar reacts with baking soda, it creates carbon dioxide gas.
- Continue adding vinegar until baking soda is completely dissolved.

2. BIGGER BUBBLES

Lab Equipment:

- Baking Soda
- Vinegar*
- Dish Soap*
- Pipette
- Test Tube
- Spoon

Instructions:

- Repeat steps from Experiment #1, except add a drop of dish soap to the pipette of vinegar before adding to baking soda tube.
- Notice the bubbles enhanced by the soap.

3. FIZZ & FOAM

Lab Equipment:

- Litmus Powder
- Test Tube
- Water*
- Pipette
- Spoon

Instructions:

- Mix 5 spoonfuls of (approximately 2.5g) baking soda and 6 spoonfuls of citric acid (approximately 3g) in a clean, dry test tube.
- Add 2mL of water into the test tube. Observe the foaming reaction.
- Continue adding water until remaining chemicals react.

4. LITMUS PREP

Lab Equipment:

- Litmus Powder
- Test Tube
- Water*
- Pipette
- Spoon

Instructions:

- Scoop less than a full spoonful of litmus powder into a test tube.
- Add water until test tube is halfway filled.
- Secure cap and shake well to mix.
- Set mixture aside for 1 day while solution forms. Keep stored in a dark place for best results.

5. LITMUS IN ACTION PART 1

Lab Equipment:

- 2 Test Tubes
- Vinegar*
- Litmus Prep Solution from #4
- Beaker
- Pipette
- Vinegar*

6. LITMUS IN ACTION PART 2

Lab Equipment:

- Test Tube of Litmus Solution from Part 1
- Citric Acid
- Spoon

Instructions:

- Carefully use the end of the spoon to add a small amount of citric acid to the test tube with the litmus solution.
- Note any color change. The solution should turn red because citric acid is also, as the name says, an acid.

7. LITMUS IN ACTION PART 3

Lab Equipment:

- Beaker of Litmus Solution from Part 1
- Pipette
- Orange Juice*

Instructions:

- Using the pipette, add a few drops of orange juice to the beaker with the litmus solution.
- Note any color change. It should turn a light red because orange juice is acidic.

*NOT INCLUDED 2

18. CRYSTALISE!

Lab Equipment:

- Mixing Stick
- Concentrated/Solid Sodium Acetate from Previous Experiment

Instructions:

- Use the mixing stick to carefully scrape about 1 teaspoon of solid sodium acetate and slowly place it in the center of the cooled, concentrated sodium acetate.
- Watch as the entire dish crystallizes!

19. CITRIC ACID SWIRL

Lab Equipment:

- Test Tube
- Citric Acid
- Water*

Instructions:

- Dissolve 4 spoonfuls (approximately 3g) of citric acid in a test tube filled halfway with water. Cap and shake.

20. FOAM IT UP

Lab Equipment:

- Test Tube
- Liquid Soap*
- Water*
- Citric Acid Solution from Previous Experiment
- Pipette

Instructions:

- Use the pipette to add 2 drops of soap to test tube and fill with water. Securely cap and shake to mix.
- Clean pipette, and use to add a few drops of the citric acid solution.
- Note that the foam does not disappear.

21. FOAM IT DOWN

Lab Equipment:

- Citric Acid Solution from Previous Experiment
- Soap Shavings*
- Test Tube
- Distilled Water*
- Spoon
- Vegetable Peeler*
- Pipette

Instructions:

- Use the vegetable peeler to carefully shave about 1/2 cup of soap shavings into a test tube.
- Add 3 spoonfuls (approximately 1.5g) of the bag of calcium chloride to 1/8 cup of water into the resealable plastic bag.
- Now note what happens. The outside of the bag is warm to the touch.

22. I'M MELTING!

Lab Equipment:

- CaCl₂
- CaCl₂ Calcium Chloride

Instructions:

- Sprinkle 2 spoonfuls (approximately 1g) of the bag of calcium chloride onto an ice cube. What happens?

23. SENDING SHIVERS

Lab Equipment:

- Baking Soda
- Vinegar*
- Resealable Plastic Bag*
- Spoon

Instructions:

- Add 10 spoonfuls (approximately 5g) of baking soda and 4 spoonfuls of vinegar into the resealable plastic bag.
- Notice the temperature change? The bag should feel cold to the touch!

24. THINGS ARE HEATING UP

Lab Equipment:

- Water*
- Resealable Plastic Bag*
- CaCl₂ Calcium Chloride

Instructions:

- Add 3 spoonfuls (approximately 1.5g) of the bag of calcium chloride to 1/8 cup of water into the resealable plastic bag.
- Now note what happens. The outside of the bag is warm to the touch.

*NOT INCLUDED 6