

Subject-Chemistry

Activity4- Hardness of water

Chapter 4-Carbon and its Compounds

Class-X

Duration-40 mins

Nature of the Activity- Individual

Learning Outcome-

Students will be able to differentiate between hard water and soft water

What we have to do?

To show that the hardness of water is caused due to the presence of salts of calcium and magnesium.

What do we require?

Test tubes, Test tube stand, Test tube holder, soft water (distilled water), soap solution, detergent solution, calcium and magnesium bicarbonates, two small pieces of curry stained cloth.

What do we need to know?

Hard water is water that has high mineral content (in contrast with "soft water"). In domestic settings, hard water is often indicated by a lack of foam formation when soap is agitated in water, and by the formation of lime scale in kettles and water heaters.

How will you proceed?

➤ Teacher's Activity

Teacher will brief the activity and make necessary arrangements for the activity

➤ Student's Activity

1. Take one test tube, label it as A add a small amount of distilled water (5 ml) to it followed by addition of five drops of soap solution to the test tube.
2. Shake the contents of the test-tube.
3. Observe and record the lather formed in the test-tube A and keep it aside in the test tube stand.
4. Now take another test tube and label it as B, add small of distilled water (5 ml) to the test tube. To this water add one spatula each of salts of calcium and magnesium bicarbonates and shake properly.

5. To the above prepared sample add five drops of soap solution and shake properly.
6. Compare the level of the lather formed in test tube A and test tube B.
7. Observe and record the formation of scum in both the samples.

What have you observed?

	Sample A	Sample B
Lather formation		
Scum formation		

NOTE- Put a tick indicating lather formation and scum formation in Sample A and Sample B

What have you learnt?

- a. How is sample A different from sample B?
- b. Analyze and write the reason for the difference in the level of foam formation in both the samples of water.
- c. Categorize sample A and B as hard and soft water based on above observations.

What you would be interested or curious about?

- a) What are the various types of hardness of water.
- b) How to remove both the types of hardness of water?

