Hard Water

Purpose
To determine what makes water hard.

Materials
• 2 baby-food jars with lids
• Distilled water
• 1/2teaspoon (2.5 ml) Epsom salts
• Spoon
• Eyedropper
• Dishwashing liquid

Procedure
■ Fill both jars 1/2 full with distilled water.
■ To one jar of water, add the Epsom salts. Stir well.
■ Add 3 drops of dishwashing liquid to each jar.
■ Secure the lids on the jars.
■ Shake the jars vigorously back and forth 15 times.
■ Allow the jar to stand for 10 seconds.
■ Observe and describe the appearance of the suds.

Results
Soapsuds form in both jars, but they rise higher in the jar without the Epsom salts.

Why?
Saying that water is “hard” does not mean that it is a solid, but that it contains calcium, magnesium, and/or iron salts. Epsom salt is a magnesium salt. Water without these salts is called “soft.” Hard water does not make suds as well as soft water because the salts and the soap chemically react, forming a slimy film called soap scum.