Experiment No.1

Laboratory Glassware cleaning and Sterilization

Introduction/Principle:

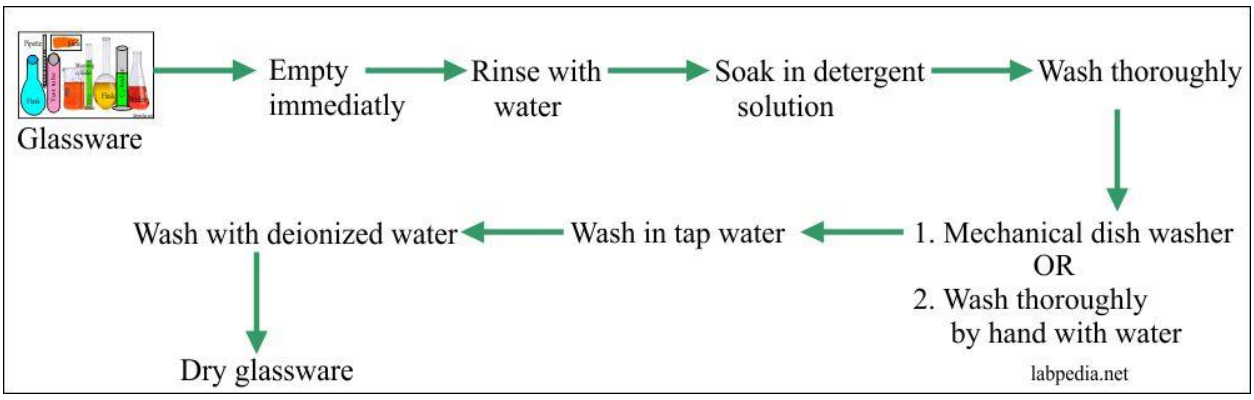
1. In any laboratory, the proper cleaning of the glassware is the key to get the correct result.

The best test to see the cleanliness of the glassware is:

1. Observe the glass surface as the final rinse water drains off.
2. The water should move with a sheeting action, leaving a thin film over the whole surface.
3. If the film breaks up into droplets, or if the surface is unevenly wet, it means the piece is not clean.

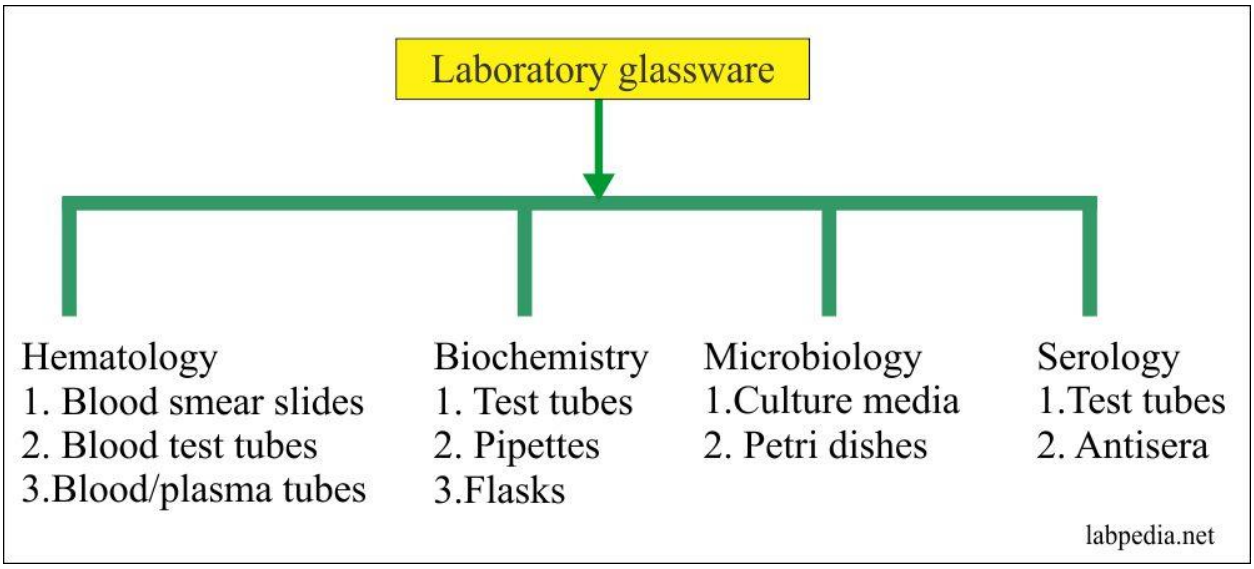
This process can be made easy if:

1. Empty all the glassware after the tests.
2. Rinse with water.
3. Soak in the solution of detergent.



Glassware washing flow chart (Easy way to clean the glassware)

For the sensitive tests, use the disposable test tubes.



Mineral deposits

Soak glassware in concentrated sulfuric, hydrochloric or nitric acid. Follow all precautions for the handling of these solutions. Hydrochloric acid diluted to 1 M in water is often used to remove mineral scales built up in water. Nitric acid is useful for cleaning stainless steel and removing rust strains.

Protein Contamination

Usually proteins can be removed scrubbing with detergent, but occasionally protein defies removal. In that event, you can proceed to the more aggressive acidic solutions, or you can prepare a peptidase solution (an enzyme that degrades proteins). The enzymatic approach is a bit slower than the forcing methods, but it is gentler and so can be used in situations that the contaminated item is incompatible with acid.

Apparatus:

Flasks, beakers, cylinders

Reagents:

Sodium dichromate or Potassium dichromate, sulfuric acid, sodium hydroxide

Precautions:

Chromic acid solution is strongly acidic and will burn the skin severely.Use care in handling it.

Procedure:

Follow all normal safety precautions when using concentrated acids and acid solutions. Acids can severely burn the skin. Dispose of all acids

properly. A chromic acid wash has hydrolytic and oxidative capabilities for the chemical decomposition of biological molecules. The acid may also dissolve mineral deposits. To prepare a chromic acid wash, mix 20 g of sodium or potassium chromate with sufficient distilled water to make a paste of chromate salt. Add 300 ml of concentrated sulfuric acid. Increase the proportions to make larger amounts. Use the mixture until it turns green in color. It may be necessary to let heavily soiled items soak overnight.

Observation and calculations:

Glassware after washing was free from marks and stains.

Result:

Clean glassware can be used for laboratory experiments.