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**QUESTION**

Describe the cleaning methods for 4 named laboratory glass wares.

**ANSWER**

1.) MICROSCOPE SLIDES:

Cleaning of microscope slides can be done through the **Initial Glass Cleaning method**.

Steps for **Initial Glass Cleaning method** are as follows:

* Scrape away any thick solid material from the microscope slide if possible.
* Wipe away any grease from the microscope slide with a solvent like acetone which can be used to help remove the grease.
* Put the microscope slide in a warm cleaning solution of detergent and water.
* Use a brush or cleaning pad to clean any residue or contamination.
* Rinse with tap water first, followed by deionized water and allow to dry.

2.) GLASS PETRI DISHES:

Cleaning of petri dishes can also be done using the Initial Glass cleaning method but if the initial cleaning method fails, try **Mild Cleaning Methods**

Steps for **Mild Cleaning Methods** are as follows:

* This involves using gentle solvents for long term soaking.
* When dealing with the gentle aqueous solutions heat soaking or, in some instances, mechanical agitation such as stirring, shaking, or sonication can enhance its productivity.
* The common gentle aqueous cleaning mixtures are listed below:

- Deionized water

- Dilute surfactants

- Protein or saccharide hydrolyzing enzymes

- Metal chelating compounds

- Dilute strong acids

- Concentrated weak acids

- Dilute solutions of Phosphates, Carbonates or Ammonia

3.) PIPETTES:

The insides of pipettes cannot be easily cleaned due to their tiny mouth ends. Hence they are better cleaned by **Using Organic Solvents.**

Steps for **Using Organic Solvents** are as followed:

* Organic solvents are often used to remove contaminants from glass.
* Basically, if it can be readily dissolved in an organic solvent it can be removed by these means.
* The use of organic solvents is complicated due to their flammability and toxicity.
* When working with solvents proper ventilation and appropriate PPE (suitable glove compatibility with the solvent) are necessary.
* Moistening a cloth with solvent is good for easily accessed surfaces.
* Agitating solvent inside of a glass container is another method.

4.) BEAKERS AND CONICAL FLASKS:

Beakers and conical flasks can be used to hold different solutions. Some contaminants or solutions may not be easily cleaned. Hence in such a case, we use the **Oxidizing Contaminants from Glassware method.**

* Often the residue on glass is insoluble to organic solvents, surfactant solutions, or mildly acidic solutions.
* At this point one of the common ways to clean glass is to oxidize the contaminant in order to render it soluble.
* Oxidizing agents include aqua regia(nitric acid and HCl);Chromic acid which is a sulfuric acid based agent; Piranha solution (hydrogen peroxide based agent),fuming sulfuric acid which contains pyrosulfuric acid.