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Filtration and Clarification

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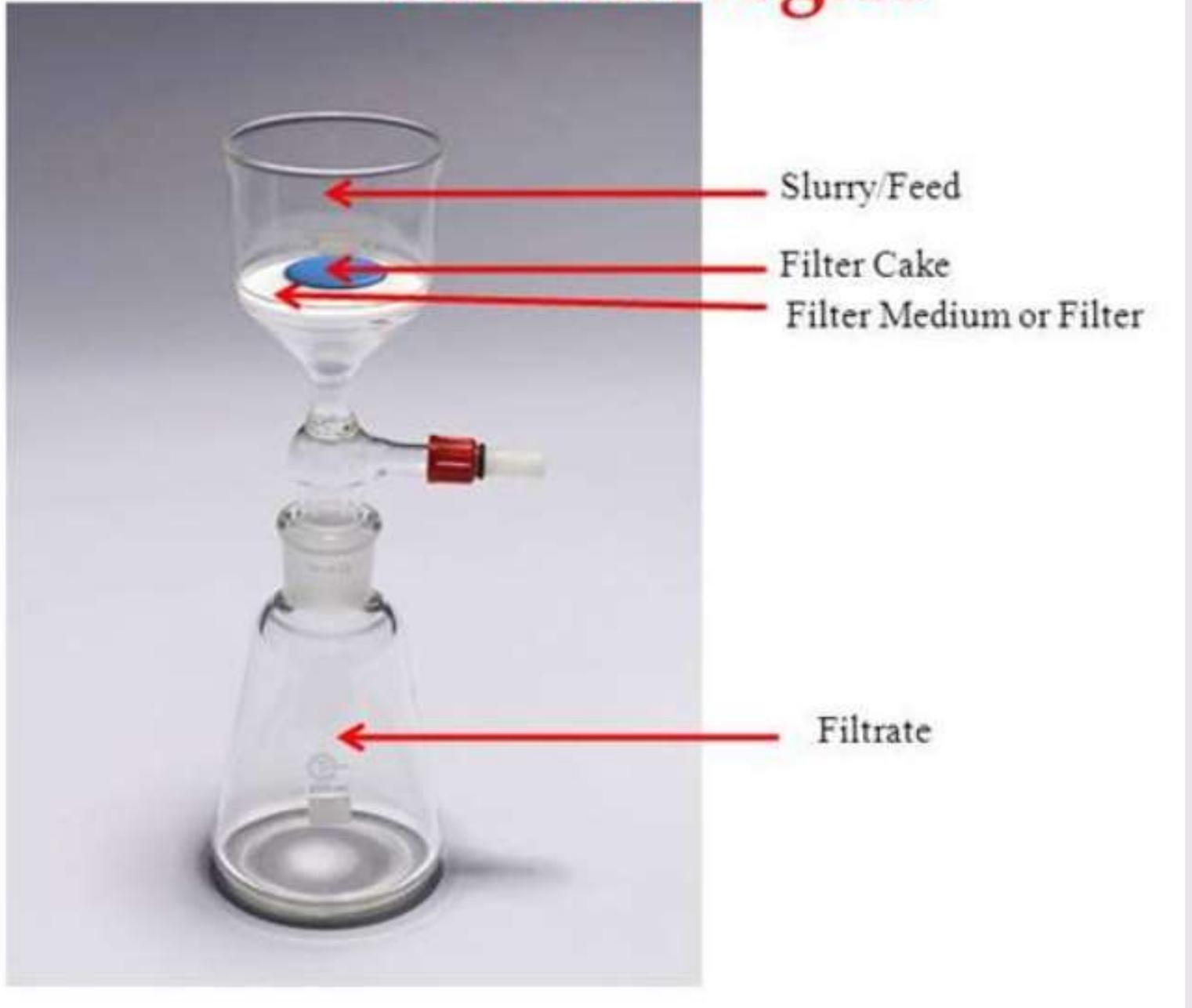
Contents

- 1. Terminologies**
- 2. Factors affecting rate of filtration**
- 3. Filter media and types**
- 4. Filter aids**
- 5. Filtration equipments**



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Terminologies





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Terminologies

- ❖ **Feed or Slurry:** The suspension of solid and liquid to be filtered is known as **the slurry or feed.**
- ❖ **Filter Medium:** The porous medium used to retain the solids is described as **the filter medium.**
- ❖ **Filter Cake:** The accumulation of solids on the filter is referred to as the **filter cake.**
- ❖ **Filtrate:** The clear liquid passing through the filter is the **filtrate.**



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Definitions

- **Filtration:** The separation of solid from a fluid by means of a porous medium that retains the solid but allows the fluid to pass.
- **Clarification:** This term is applied when solid do not exceed 1.0%



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Theory of Filtration

Darcy's law:

$$V = \frac{KA\Delta P}{\eta l}$$

Where,

V= Volume of filtrate

K= Permeability coefficient and is dependent on the nature of the precipitate to be filtered and the filter medium

A= Area of filter bed

ΔP = Pressure difference on the liquid and below the filter medium

η = Viscosity of the liquid

l= Thickness of filter cake



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Factors Affecting Rate Of Filtration

1. Pressure
2. Viscosity
3. Surface area of filter media
4. Temperature of liquid to be filtered
5. Particle size (clogging with fines)
6. Pore size of filter media
7. Thickness of cake
8. Nature of solid material (Porosity of filter cake).



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Thank you

