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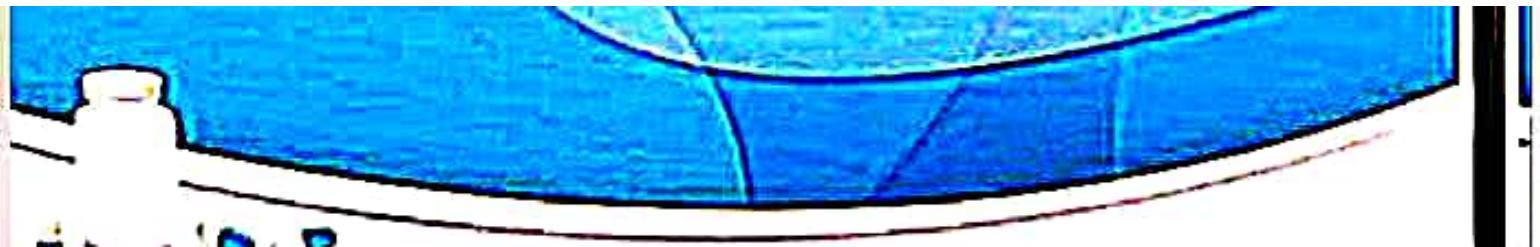


## Process of size reduction:

- Size reduction may be achieved by two methods:
  1. Precipitation method: Substance + solvent —— Mixture + another solvent —— Precipitation of material —— reduced size  
( e.g. calcium carbonate, yellow mercuric oxide, bulk drugs etc.)
  2. Mechanical process: Substance + mechanical force (grinding equipments like Ball mill, Colloid mill etc.) —— reduced size  
( e.g. Dry grinding in tablets and capsules, Wet grinding in suspension, emulsion and ointments etc.)

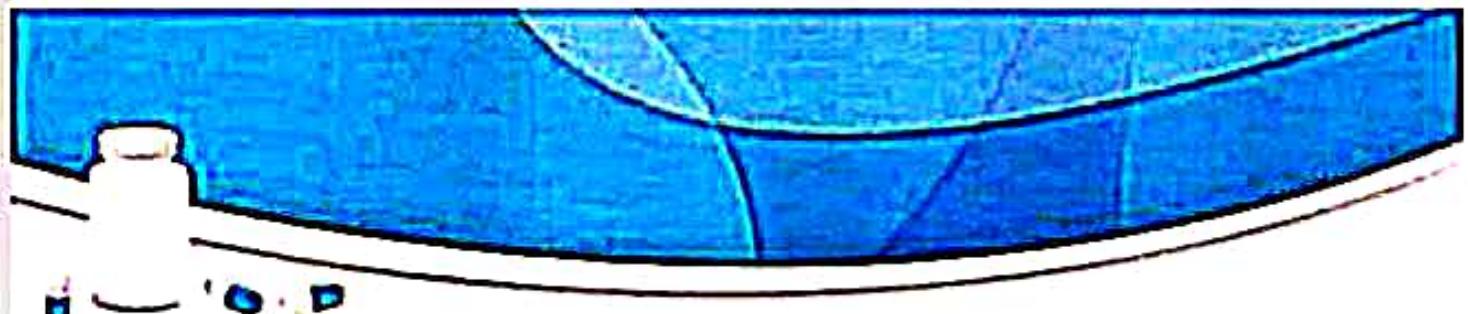
## **OBJECTIVES OF SIZE REDUCTION**

- In the materials processing industry, size reduction or comminution is usually carried out in order to:
  - Increase the surface area because, in most reactions involving solid particles, the rate of reactions is directly proportional to the area of contact with a second phase.
  - Break a material into very small particles in order to separate the valuable amongst the two constituents.
  - Achieve intimate mixing.
  - To dispose solid wastes easily .
  - To improve the handling characteristics.
  - To mix solid particle more intimately.



## **Advantages/ Applications/Significance and objectives of size reduction:**

- Content uniformity
- Uniform flow
- Effective extraction of drugs
- Effective drying
- Improved physical stability
- Improved dissolution rate
- Improved rate of absorption



## Disadvantages of size reduction

- Drug degradation
- Contamination

## **FACTORS AFFECTING ON SIZE REDUCTION**

- 1) Hardness
- 2) Toughness
- 3) Abrasiveness
- 4) Stickiness
- 5) Softening temperature
- 6) Material structure
- 7) Moisture content
- 8) Physiological effect
- 9) Purity required
- 10) Ratio of feed size to product ratio
- 11) Bulk density

Reference 1- <https://www1.slideshare.net/mobile/Amarravalli/size-reduction-67081485>