GRANULATION

- Granulation is the process in which primary powder particles are made to adhere to form larger, multi particle entities called granules.
- Pharmaceutical granules typically have a size range between **0.2 and 4.0 mm.**
- Granules are used in the production of tablets or capsules.
- Granules in such cases are made as an intermediate product and have a typical size range between **0.2 and 0.5 mm.**
- **Mostly effervescent granules are available.**
- **E.g. Urodonal, Brufen 600mg granules , urisol , Utix.**

Reasons for Granulation

To prevent segregation of the constituents of the powder mix.

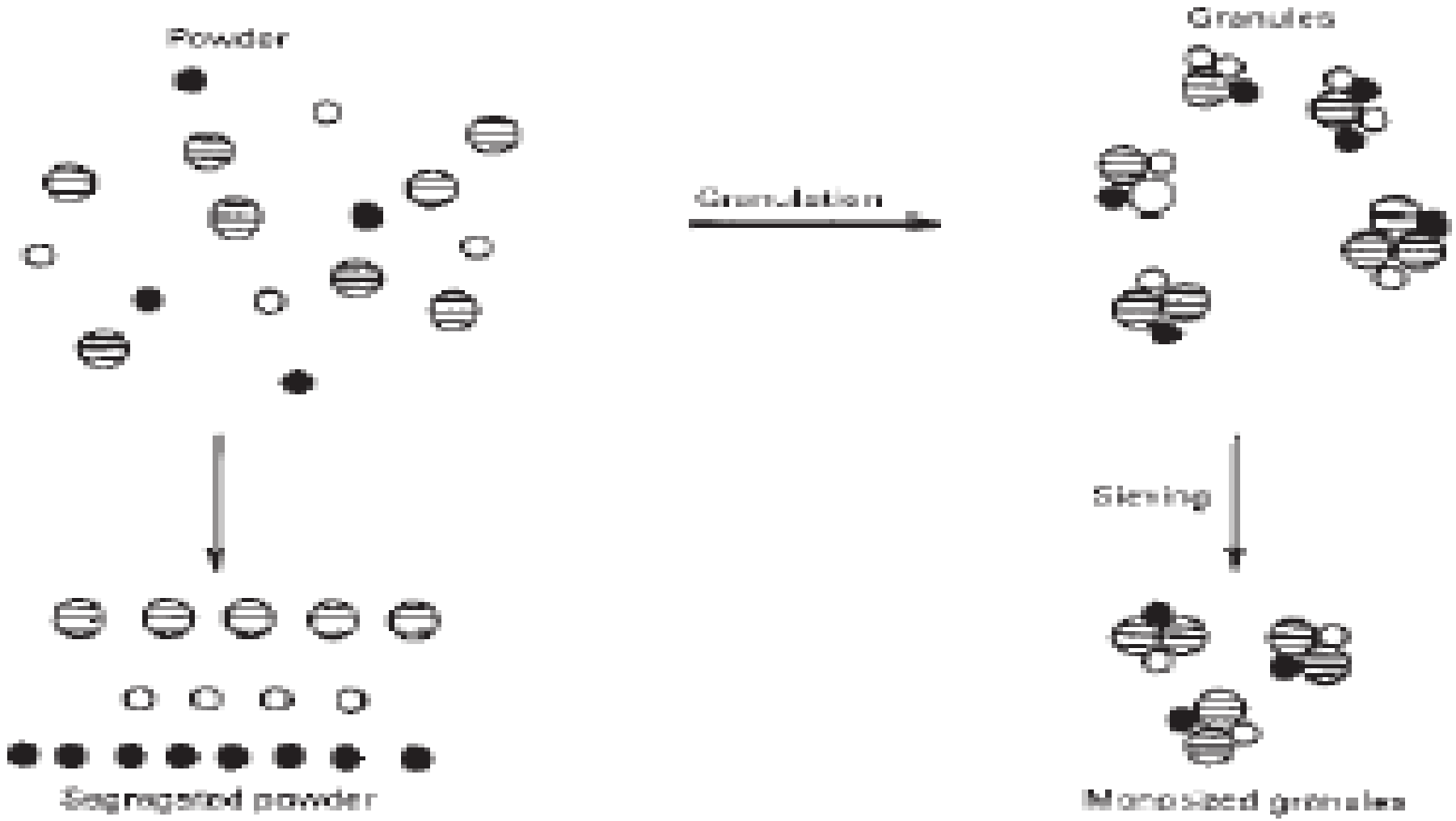
–Segregation (or demixing) is due primarily to differences in the size or density of the components of the mix.

–The smaller and/or denser particles concentrating at the base of a container

–The larger and/or less dense ones above them.

–An ideal granulation will contain all the constituents of the mix in the correct proportion in each granule and segregation of the ingredients will not occur

Granulation prevent segregation



Reasons for Granulation

To improve the flow properties of the mix

–Many powders, because of their small size, irregular shape or surface characteristics, are cohesive and do not flow well.

–Poor flow will often result in a wide weight variation within the final product owing to variable fill of tablet dies etc

Reasons for Granulation

To improve the compaction characteristics of the mix

–Some powders are difficult to compact even if a readily compactable adhesive is included in the mix and some are compacted easily.

–This is associated with the distribution of the adhesive within the granule and is a function of the method employed to produce the granule.

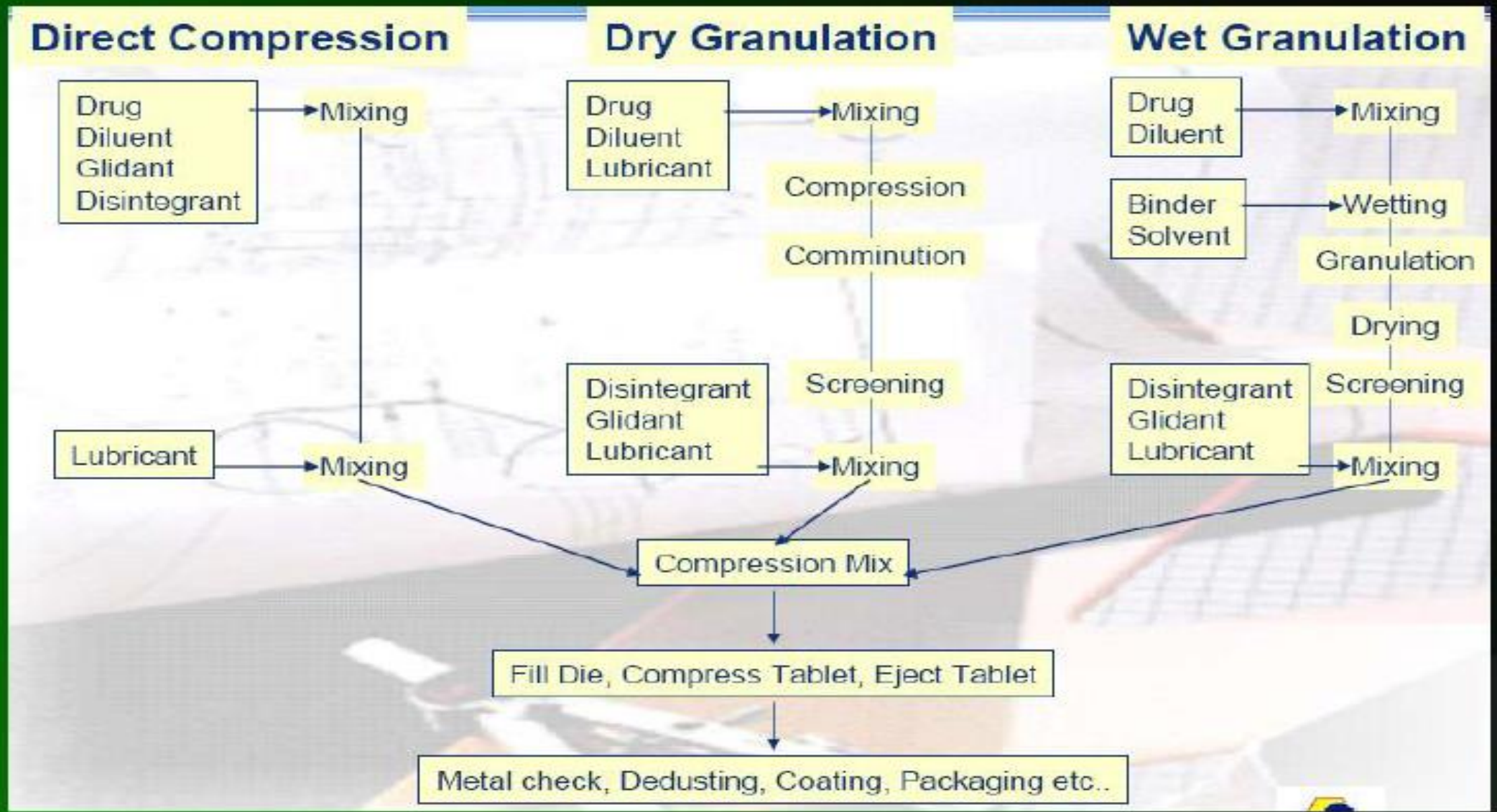
–Solute migration occurring during the postgranulation drying stage results in a binder-rich outer layer to the granules.

–This in turn leads to direct binder–binder bonding, which assists the consolidation of weakly bonding materials.

Other Reasons

- The granulation of toxic materials will reduce the hazard associated with the generation of toxic dust that may arise when handling powders.
- Materials which are slightly hygroscopic may adhere and form a cake if stored as a powder. Granulation may reduce this hazard, as the granules will be able to absorb some moisture and retain their flow ability because of their size.
- Granules, being denser than the parent powder mix, occupy less volume per unit weight. They are therefore more convenient for storage

Granulation technology on large scale by various techniques




Thank you