1.6 GRADING REQUIREMENTS

Grading of aggregate means particle size distribution of the aggregate. If all the particle of an aggregate were of one size, more voids will be left on the aggregate mass.

Properly graded aggregate produces dense concrete and needs smaller quantities of fine aggregate and cement.

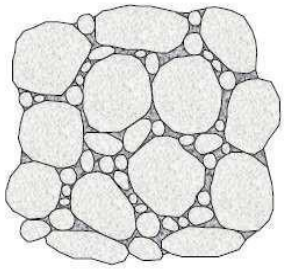
Grading determines the workability of the mix, which controls segregation, bleeding, w/c ratio, handling, placing and other characteristics of the mix.

Types of gradation of aggregate.

a) Well graded
b) Poor / Uniform graded
c) Gap graded

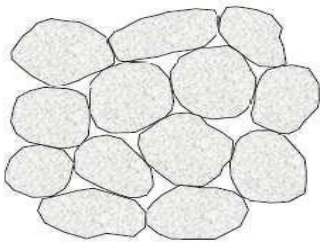
Well graded

Incorporates a combination of particles of many sizes. Hence, it has Low void content, Low permeability and High stability but increases the particle surface area. This is the preferred gradation for making a good concrete.



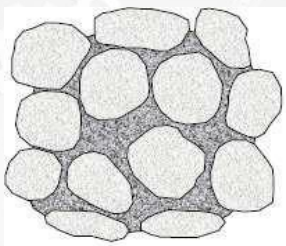
Poor / Uniform graded

All particles are of same size. It produces a large volume of voids irrespective of particle size. Hence the paste requirement for this concrete is high.



Gap graded

This involves grading in which one or more sizes are omitted. It has low stability, moderate voids content and permeability than well graded aggregate. This type of concrete is generally used for architectural or aesthetic purposes.



Factors affecting particle size distribution

- Workability
- Mix proportioning
- Freeze-thaw resistance
- Flow ability
- Pumpability
- Carbonation
- Durability
- Rigidity
- Permeability
- Compressive strength