

# AGGREGATES

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# What is Aggregates?

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- Inert or Chemically inactive materials
- Bulk of Cement concrete or mortar
- Bound together by binding materials

These act as fillers or volume increasing components on the one hand and are responsible for the strength, hardness, and durability of the concrete on the other hand.

It is defined as: “Aggregates are the inert materials that are mixed in fixed proportions with a **Binding Material** to produce concrete”.

# Aggregate Classification | Types of Aggregates.

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**(1.) Aggregate Types on the basis of Grain Size. - (Fine and Coarse).**

**(2.) Types on the Basis of origin.-Natural, Bye-product, Processed**

**(3.) Types on the Basis of Density.-Standard or Normal, High-Density Aggregates, Light weight Aggregate:**

(source: <https://civilseek.com/aggregate-definition-aggregates-types/> )

# Fine Aggregates.

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- In the **Fine Aggregates**, the grain-size lies between 4.75 mm and 0.15 mm.
- In other words, these pass-through from sieve with the mesh size of 4.75 mm and are retained on a sieve of 0.15 mesh size.
- Sand is the most universally available natural Fine Aggregate.

# Coarse Aggregates

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- Coarse aggregates are those that are retained on the sieve of mesh size 4.75 mm.
- Their upper size is generally around 7.5 mm.
- Gravels from river bed are the best coarse aggregates in the making of **Common Concrete.**
- In those situations, if they are not easily available, Suitable rock types are crushed to the desired particle sizes for making coarse aggregates.

# Grading of Aggregates

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- Grading refers to **the determination of the particle-size distribution for aggregate.**
- Grading limits and maximum aggregate size are specified because these properties affect the amount of aggregate used as well as cement and water requirements, workability, pumpability, and durability of concrete.
- The aggregate sample is sieved through a set of sieves and weights retained on each sieve in percentage terms are summed up.
- It is only six in the case of fine aggregates.
- Sieve Size for Grading of Aggregates.
- **Coarse Aggregates:** 80 mm, 40 mm, 20 mm, 10 mm, IS Nos. 480
- **Fine Aggregates:** IS No. 480, 240, 120, 60, 30 and 15.
- **All in aggregates:** 80 mm, 40 mm, 20 mm, 10 mm, Nos: 480, 240, 120, 60, 30 and 15.

(Source: <https://civilseek.com/grading-of-aggregates/> )