



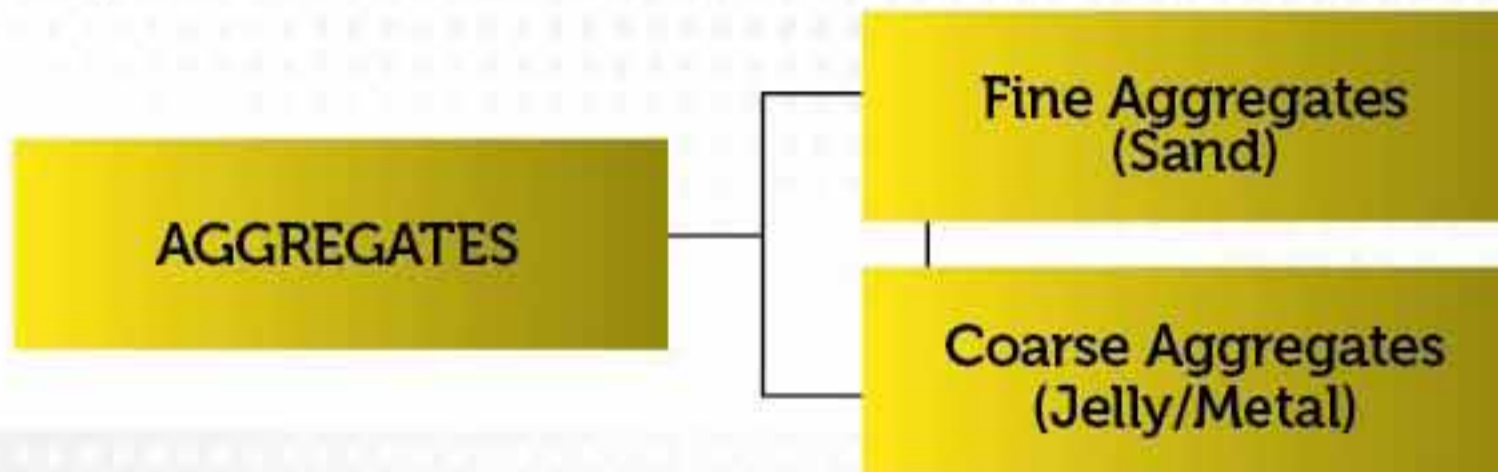
MATERIALS FOR DURABLE AND STRONG CONCRETE

UltraTech
C E M E N T

The Engineer's Choice

Aggregates contribute about 70-80% of the concrete volume. Good quality aggregates provides better strength, stability and durability for the structures

Physical, chemical and thermal properties of aggregates greatly influence the properties and performance of concrete.



THINGS TO REMEMBER

- ✓ Select aggregates that are hard, strong, durable, dense, free from dust/dirt, clay/silt, vegetable matter etc
- ✓ Organic matter like tree leaves, dry tobacco, grass roots, sugar substances should be removed – as they
 - **slow down the setting time**
 - **hamper the binding properties of concrete**
- ✓ Use aggregates that are free from clay/silt particles - as they
 - **reduce bond**
 - **increase water demand**
 - **hamper durability**
- ✓ Presence of clay/silt particle should not be more than 4%, if it exceeds 4% wash before use
- ✓ Use **Rough/Coarser aggregate** for concreting, as it **improves bond** with the cement paste
- ✓ Select coarse aggregates that are **roughly cubical** with a combination of different sizes
- ✓ A combination of 10mm & 20mm in the ratio 60:40 to 70:30 provides denser concrete & hence higher strength
- ✓ Store different sized aggregates separately in storage bins to **avoid mixing up of the aggregates**
- ✓ The nominal maximum size of the aggregate shall not be more than 1/5 to 1/4 of the minimum thickness of the member or at least 5mm smaller than the spacing of the reinforcement
- ✓ Do not use **FLAKY or ELONGATED** coarse aggregate particles - as they affect **strength & durability** of concrete. Flaky and elongated aggregates should not be more than 30% by mass and individually should not be more than 10-15% by mass
- ✓ Aggregates should be stacked on a clean, hard and impervious surface



Sand Heap



Roughly Cubical Shaped Aggregate Particles



Here is a simple field test to be carried out before accepting the sand from the supplier:

- ✓ Take a handful of sand from a heap, squeeze it between your hands and drop it back
- ✓ Take a look at your palm; there should be no fine particles sticking to the palm and no stains should appear
- ✓ Sticking of the fine particles to palm indicate the presence of silt and staining indicate the presence of clay



Step 1



Step 2

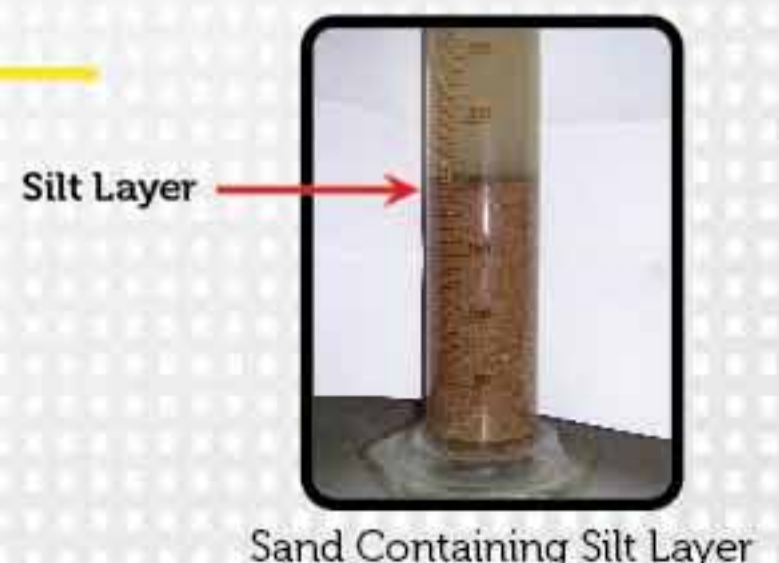


Step 3

SILT CONTENT TEST

- ✓ Take a measuring jar, fill 1/3 of the jar with sand
- ✓ Add water till the water level reaches 2/3 of the jar. Add a pinch of salt (about 1gm) to the water
- ✓ Close the jar with palm and shake it vigorously by turning upside down repeatedly
- ✓ Allow the mixture in the jar to settle for about 2 hours

The silt layer should not be more than 4% of the volume of sand.



WATER

- ✓ Water is an important ingredient of concrete, the quality of the water affects the strength and durability of the concrete
- ✓ Should be free from any contaminations like oil, alkalies, acids, sugar, salts, and other impurities that are harmful to concrete
- ✓ Water fit for drinking is most suitable for making concrete. Sea water should not be used for making RCC
- ✓ Do not add more than 26 litres of water with each bag (50 kg) of cement. Lower the water, more the strength and durability of concrete



Water



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1800-425-2525**

- To talk to our Mobile Concrete Expert *
- For Technical /General assistance
- For RMC Bookings

UltraTech Cement Limited

*Conditions apply. Services available in select cities/locations only

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