

Answer #01

"Submitted to. Engr Usama Ali"

Flash setting:-

Flash set is an early loss of workability in paste, mortar, usually accompanied by the evolution of considerable heat resulting primarily from the rapid aluminates if the proper amount of or form of calcium sulfate is not available to control the Ca hydration, rapid stiffening takes place.

Steps to Prevent setting time:-

Gypsum prevent flash setting of cement during manufacturing. It retards the setting time of cement. Allows a longer working time for mixing, transporting and placing when water mixed to cement Aluminates and sulfate get react and evolve some heat but gypsum acts as coolant and brings down the heat of hydration.

False setting :-

False setting occur when too much of gypsum dehydrates in the cement manufacturing plant. This lead to stiffing due to the rapid reformation of gypsum with interlocking needle-like crystals.

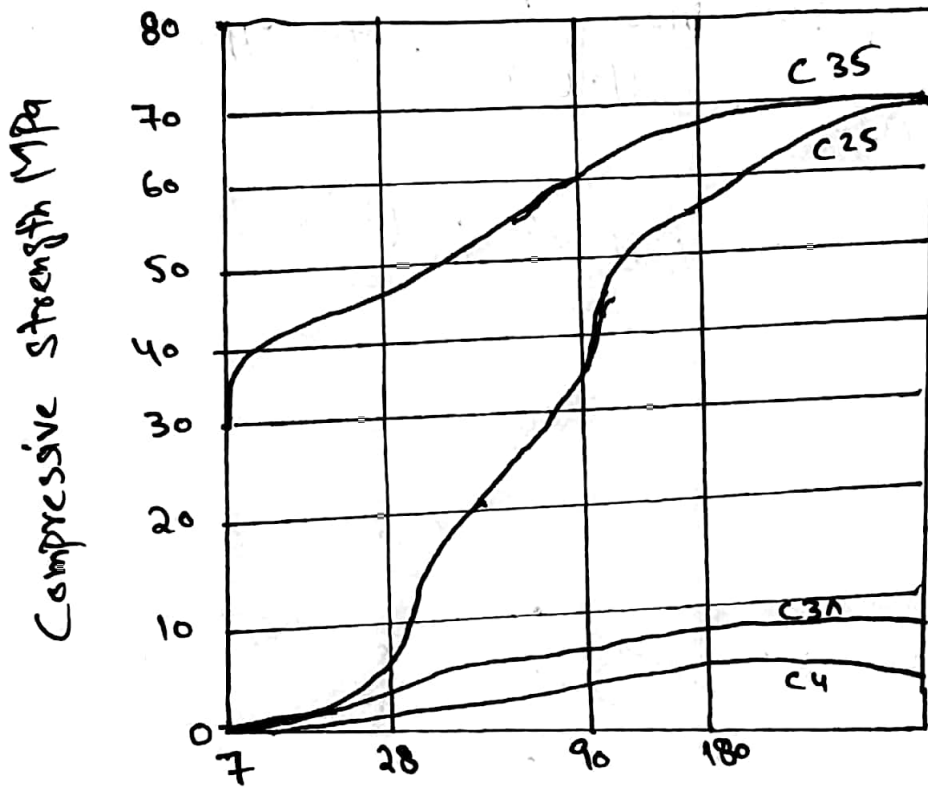
Step to Prevent False setting :-

To prevent this from happening gypsum is added to cement during grinding.

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Answer # 02

Development of strength of Pure Compound



Answer #03

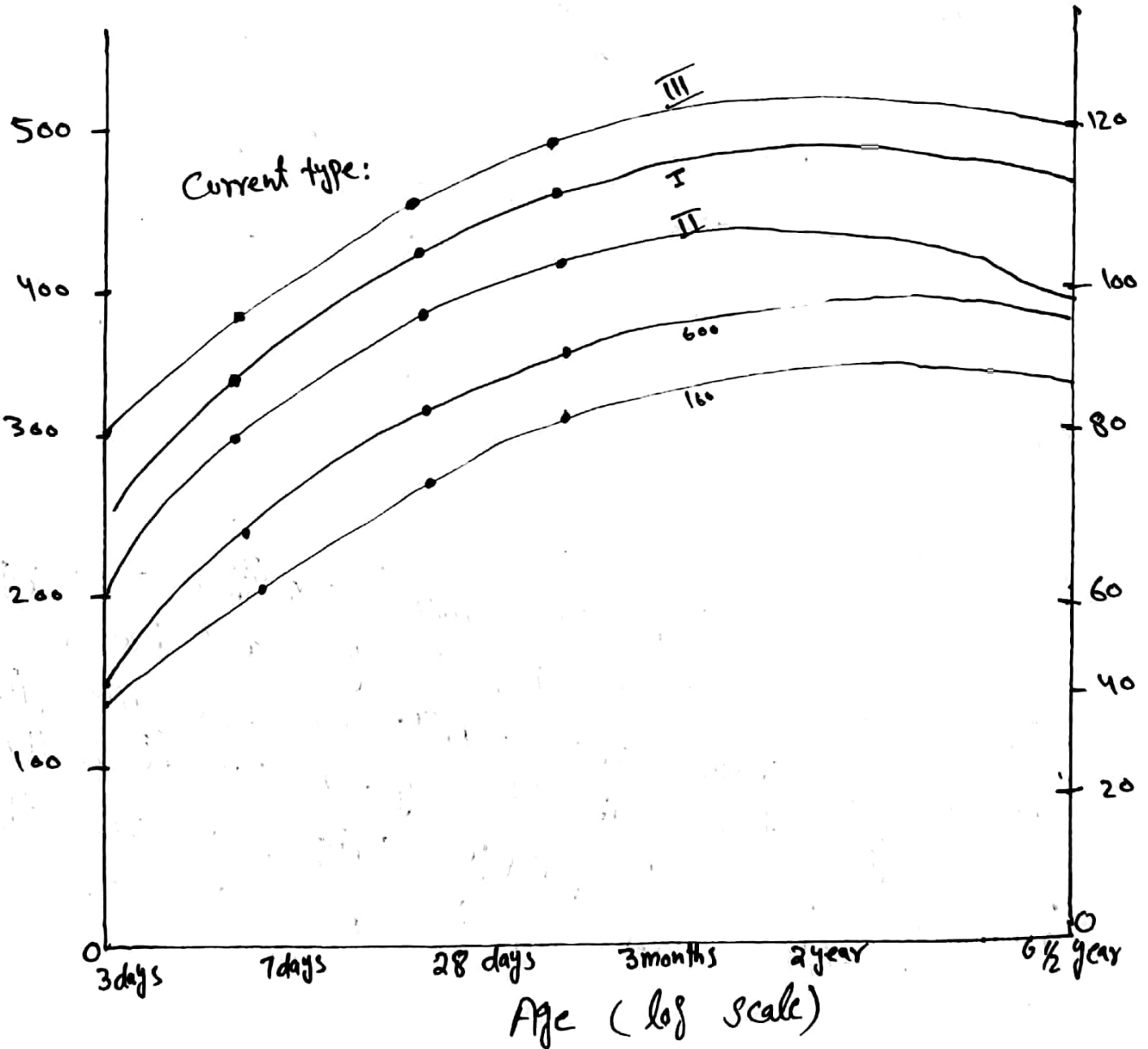
Type of cement :-

Type III cement classified as a rapid hardening cement. It is finer than type and has a higher C₃S content and sulphite level. It also gain "28" days strength in 7 days. useful where the formwork must be quickly stripped or areas that allow traffic easily on the road surface.

Type IV

The type IV is a low heat of hydration cement for use where the rate amount of heat generated must be minimized. It develops strength at a slower rate than type cement.

Development of heat of Hydration of diff cement type



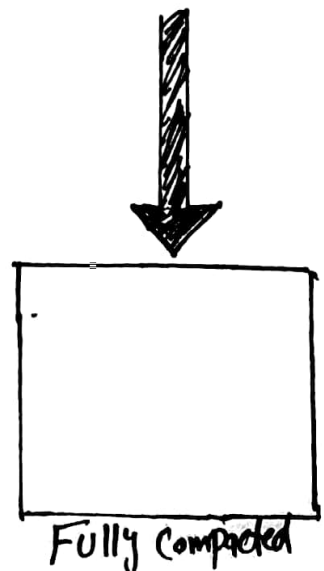
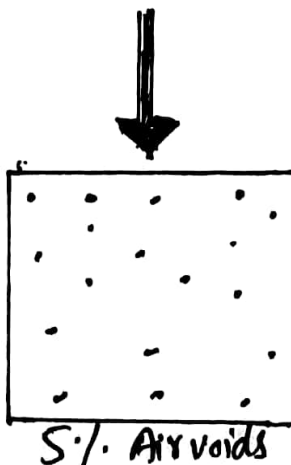
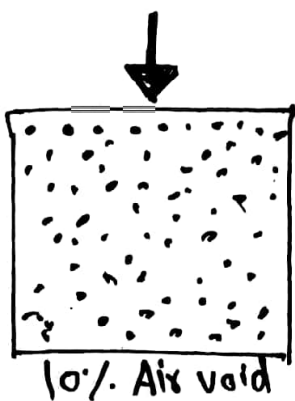
Answer #04

Effect of Compaction on entrapped Air concrete :-

The effect of compaction on compressive strength is dramatic. For example the strength of concrete containing 10% of entrapped air may be as little as 50% that of the concrete when fully compacted. This reduces the permeability of the concrete and hence improves its durability.

Effect of strength if not compacted :-

Compaction of concrete is an important component in the process of laying a concrete slab. If compaction is not carried out as required a series of defects may become apparent and the concrete slab will suffer from sufficient loss of strength.



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Answer #5

Gypsum ::

Gypsum is a mineral and is hydrated calcium sulfate in chemical form. Gypsum plays a very important role in controlling the rate of hardening of the cement. Generally gypsum is added in the range of 3% — 5% to cement for delaying the setting time of cement. If it is added in excess it accelerates the setting time of cement because gypsum generates its own setting agent resulting in quick setting of cement. It also results in weaker strength.

Answer #06(i) SHAPE OF AGGREGATE'S:-

The shape of aggregates is an important characteristics since it affects the workability of concrete.

(ii) Size of Aggregates:-

on the basis of size it is divided into two parts. coarse and fine aggregates. 80mm size is the maximum size that could be conveniently used for concrete.

(iii) Texture of Aggregates:-

Surface texture depends upon the hardness, grain and size & pore characteristics of the parent rock.

(iv) Bleeding:- In the process of bleeding the accumulation of water creates a water voids and reduce bond between the aggregates and cement paste.

Answer #07

(i) Porosity and absorption:-

The porosity of an aggregate effect the workability of concrete. If the aggregate can also absorb a great deal of water. Some of the aggregate are porous and absorptive. Porosity and absorption of aggregates will effect the water or cement ration and here the workability of concrete as well as the bond between it.

(ii) GRADING of AGGREGATE:-

Grading of aggregates is determining the average grain size of the aggregates before they are used in construction. This is applied to both coarse and fine aggregates. The aggregate sample is sieved through a set of sieve and weight retained on each sieve in percentage terms are summed up.

(iii) Air Entraining Agent:-

Air entrainment effects compressive strength of concrete and its workability. At increase the workability of concrete without much increase in water cement ratio, in this case air entraining is added to increase workability without adding water.

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(iv) Course Aggregate to Fine Aggregate Ratio :-

The effect of course to fine aggregates ratio on the fresh and hardness properties of Roller compacted concrete pavement. The test result demonstrate that increasing the C/F ratio from 0.6 to 1.8 increased the Cement content from 9% to 12% decreased web time by 12%.

Answer # 8

(i) Strength of Concrete :-

Concrete with or without entrained air increase with an increase in cement finess.

(ii) Rate of Heat Evolution during Hydration :-

The peak rate of heat evolution increase as the finess of the cement increase.

(iii) Total Heat of Hydration:- The fineness of cement affects hydration rate and in turn the strength. Increasing fineness causes an increased rate of hydration. Bleeding can be reduced by increasing fineness.

(iv) Workability of Concrete:- The workability of non air-entrained concrete is increased by increasing the cement fineness. In air-entrained concrete the effect of fineness of cement on workability is very much less.

Answer #09

Ans Segregation of concrete can be prevented by carefully proportioning mix and using the recommended water cement ratio so as to prevent using excess water care should be taken while handling placing transporting compacting and also its finishing stages.

