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Subject * Concret Technology

Semister * 2nd

Section * B

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Concret Technology

(1)

Question # 1.

Which Step is taken to prevent flash Setting of Cement? Also write step to prevent false Setting of Concret?

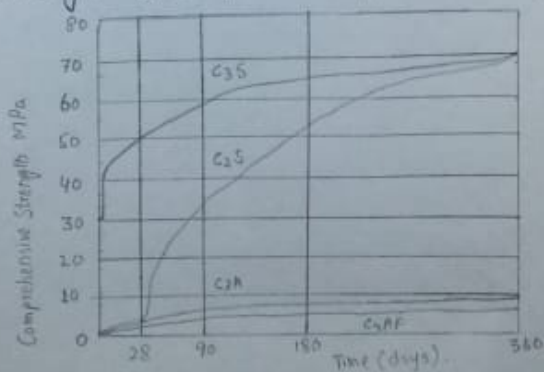
To prevent flash setting of cement
To prevent flash Setting of cement due to Calcium Sulfate Sources such as Gypsum. Gypsum is added to cement clinker while grinding.

To prevent false setting of Concret.

- ⇒ False Setting is a rapid development of rigidity in fresh ^{mix} Concret mixture with Producing much heat. as compare to set.
- ⇒ Hydration of Gypsum.
- ⇒ Water can be added to prevent avoid false Setting.

Question # 2

Graph Showing Strength Development of Pure Compound of Cement.



Question. # 3

②

Why Type III cement is rapid hardening and type IV low heat producing? Draw a graph showing heat of hydration of different types of cement?

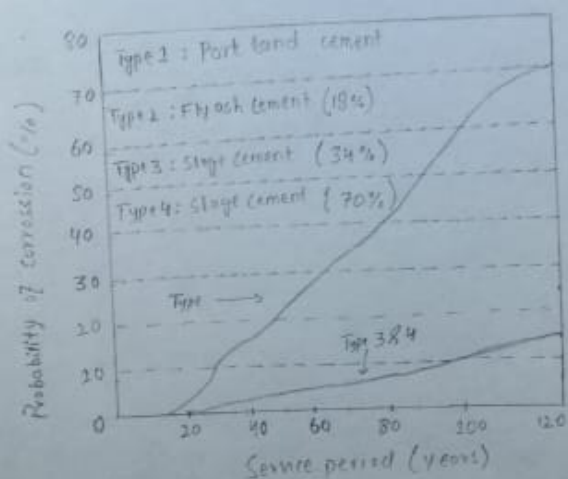
Answer: Rapid Hardening cement (Type III):

Initially this cement develop strength very quickly. The rate of strength occur due to increase of C_3S compound and even sometime upto 70% and it also because of finer grinding of cement clinker.

Low Heat producing cement (Type IV).

This type of cement especially prepared to develop a relatively low amount of heat of hydration during setting and hardening period - and also contain less amount C_3S and C_3A compound which result in slow development of strength & producing less heat.

Graph of Heat of Hydration of Different Cement types.



Question: # 4.

③

What is the effect of compaction on entrapped air of concrete? What will be the effect on strength if concrete is not compacted sufficiently? Explain with graph?

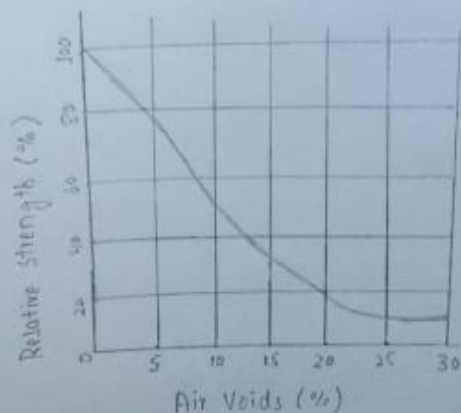
EFFECT OF COMPACTION ON ENTRAPPED AIR OF CONCRETE.

Compaction move entrapped air from fresh placed concrete and pack the aggregate particles together. to increase the density of concrete. due to this it also good the workability of concrete, and increase strength also of the concrete.

EFFECT ON STRENGTH IF NOT COMPACTED SUFFICIENTLY:

If the concrete is not compacted sufficiently. So it will should have entrapped air (voids) which will more reduce it strength.

EXPLANATION WITH GRAPH.



Question # 5 .

(4)

Why is the Percentage of gypsum added to cement limited only to 5% ?

ANSWER:

Generally Gypsum is added in the range of 3% upto 5% , fixed in the cement. and Gypsum is also known as retarding agent of cement. The main purpose of adding gypsum in the cement is to slow down the hydration process of cement.

If we add more gypsum more than 5% then the setting time will be more. and it will be called false set.

QUESTION # 6 .

(5)

Effect of the following on Bond strength of Concrete?

1) Shape OF AGGREGATE.

The first thing we should take care this
An aggregate should have a proper and regular angular shape
So it will give good strength to the concrete mixture.

2) Size of Aggregate:

Aggregate should be smaller in size
it will give proper strength (bond) to concrete.
then the aggregate having larger size.

3) TEXTURE OF AGGREGATE.

This type of aggregate which
have rough texture. It will give good bond strength
to the concrete. and vice versa.

4) Bleeding.

Bleeding in concrete it may effect on it
to decrease the strength, bond strength, and it
weak the bond strength between concrete lifts and
vice versa.

x x x

QUESTION # 7

(6)

What is the effect of the following on workability of concrete?

- 1) POROSITY AND ABSORPTION - Porosity in concrete absorbs water which steps to create cracks in the concrete structure and vice versa.
- 2) AIR ENTRAINING AGENT:- more useable of air entraining agent steps to segregate of concrete particle which low down the workability of concrete and vice versa.
- 3) Coarse Aggregate to Fine aggregate Ratio - For coarse and fine aggregate the most useful ratio is 2:1, if we disturbed^{thn} it leads to loss workability of concrete.
- 4) GRADING OF AGGREGATE - Grading of aggregate should be equal in size with the help of sieves. It will increase the workability of concrete and vice versa.

-----x-----x-----x-----

Question. # 8.

(7)

What is the effect of fineness of cement on the following?

- (1) Strength of cement. (2) Rate of heat evolution during hydration.
(3) Total heat of Hydration. (4) Workability of concrete.

ANSWER: (1) Strength of cement:

Strength of cement is directly proportional to the fineness of cement.

(2) Rate of heat evolution during hydration.

Rate of heat of evolution during hydration decreases due to replacing cement with fly ash of different fineness.

(3) Total Heat of Hydration.

Greater the heat of Hydration will be if the cement particles are more finer.

(4) Workability of concrete.

Fineness of cement leads to make the concrete past more workable.

Question. 9.

(8)

What Steps can be taken during Transportation and placement of concrete to prevent Segregation of concrete?

ANSWER:

Step taken to prevent Segregation of Concrete During Transportation and Placement.

The Concrete mix should be properly designed with normal quantity of water to make it as good mixture. Such concrete will not exhibit any tendency for water Segregation. The angle of ^{Smoothly} / ease of slope should be 1:3 - 1:2, so the concrete will move from the top towards the bottom.

Field quality must be maintained while handling, transporting, placing and finishing.

Admixtures, such as pozzolanic material or air entraining agent should be used to avoid Segregation.

The END.