

CIMENT FONDU®

Mixes with adjustable setting time

- Mixtures of CIMENT FONDU® and Portland cements produce rapid setting mixes. The setting time is adjusted by modifying the proportions of the two cements.
- These mixtures are not advised for use in structural concrete works, corrosion resistant concretes, heat resistant or refractory concretes,...
- Presented in this chapter are the results of a study undertaken on various Portland cements mixed with CIMENT FONDU®. The tests relate to setting time and the mechanical strength.

1 Setting times

The average setting time of all the Portland cements used is 4h50 (without any addition of CIMENT FONDU®).

1-1 Mortars with 10% of CIMENT FONDU®

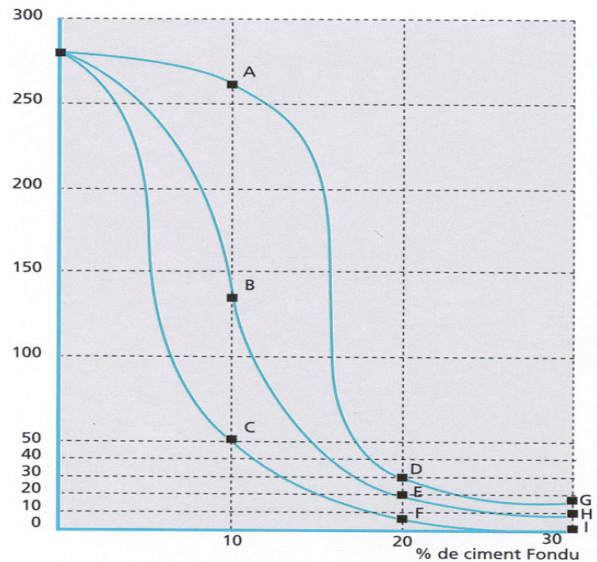
The initial setting times at this dosage are very variable and lie between 45 minutes and 4 hours 45 minutes. (Points A B C on the graph).

1-2 Mortars with 20% of CIMENT FONDU®

All the mixes have an initial setting time less than 30 minutes. The difference between the various Portland cements is less dramatic. One mix has an initial set less than 10 minutes. (Points D E F on the graph).

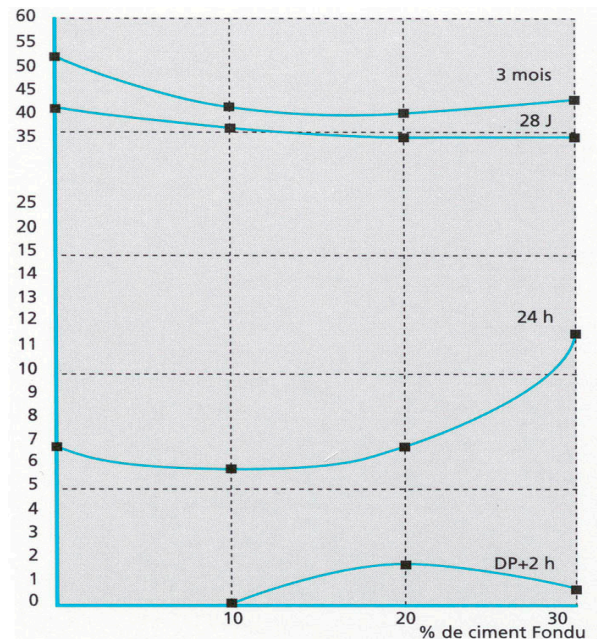
1-3 Mortars with 30% of CIMENT FONDU®

All of the mixes exhibit very fast setting times, ranging from 3 minutes to 15 minutes. (Points G H I on the graph).



2 Mechanical strength

The mechanical strengths for each mix were measured at the following times: 2 hours after the setting time, at 24 hours, 28 days and 3 months. Typical results are shown on the graph below, which compares the strengths at the various CIMENT FONDU® additions.



3 Practical viewpoint

Only the mixes with 20% or 30% of CIMENT FONDU® gave reliable results with the Portland cements used.

3-1 Workability or Working Time

Under site conditions, it is noted that workability, or working time, is shorter than the initial setting time. This is the time during which the mortar is workable before reaching a level of stiffening which makes placing difficult.

Practical working times, without additional water, are:

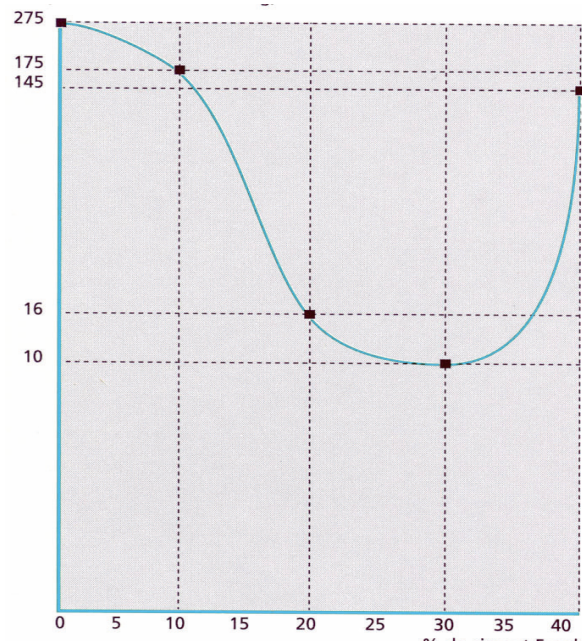
- for mixes at 20%, working time is around 7 to 8 minutes, i.e. sufficient time to place 12 litres of mortar.
- for mixes at 30%, working time is approximately 2 minutes, ideal for small quantities of mortar intended primarily for rapid repairs.

Within the composition of the mortar, the granulometry of the sand is very important. It must be well graded, containing both fine and coarse particles to ensure good mortar properties.

3-2 Setting Time

The variability of the setting time is due essentially to the source of Portland cement (most noticeable on the mixes with 10% addition).

- Mixes with 20% of CIMENT FONDU® demonstrate setting times around 10 to 20 minutes, with most Portland cements. This allows sufficient time for work such as: temporary support work, bedding in machinery, renders and fixing in barriers and fences.
- Mixes with 30% of CIMENT FONDU® demonstrate rapid setting within 3 to 10 minutes, useful in particular for patch repairs, fixing in hinges and bolts, repairing precast elements, water stops...
- Beyond 30% of CIMENT FONDU®, setting times with Portland mixes may increase.



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