

Instructions for Casting and Heating Low-Cement and Ultra-Low-Cement Castables

Compared with conventional castables, the most important characteristic of low-cement and ultra-low-cement castables is their high compaction high bulk density, resulting from the use of special additives and optimized grain distribution. These characteristics provide the cast product with excellent mechanical properties. More importantly, these mechanical properties deteriorate only minimally during heat treatment.

1. Mold Features

Since the placement of these castables requires vibration, the mold shall have adequate structural strength. It shall also be sufficiently watertight to prevent leakage of water through the joints. In addition, the surfaces of wooden molds shall be oiled before use to prevent the wood from absorbing water from the castable.

2. Castable Preparation

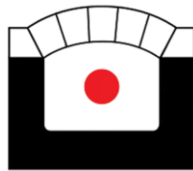
The mixing water shall be potable and at a temperature of 15–25°C. In cold weather, relatively warm water should be used, whereas in hot weather, cold water should be used to maintain the specified temperature range. A high-powered paddle mixer shall be used for mixing. The castable shall first be dry-mixed for 1 minute. Then, three-quarters of the required amount of water specified in the technical data sheet shall be added. Mixing shall continue while the remaining water is added gradually. The mixing time should be approximately 3–6 minutes.

The following points are particularly important. First, the amount of mixing water shall never exceed the amount specified in the technical data sheet. Second, the appearance of the castable before vibration is not a reliable indicator of whether the water content is adequate. Failure to observe this may lead to the addition of excess water, preventing the castable from achieving the desired properties. Third, the total time for mixing and placing the castable should not be exceed 15–20 minutes.

3. Casting

In general, these castables shall be placed using vibration, either by external vibration (using a vibrating table) or internal vibration (using a poker vibrator). Vibration should be continued until the surface becomes nearly smooth and uniform.

After casting, the exposed surface shall be covered with a plastic sheet to retain the moisture required for bond development. The castable shall then remain in the mold for approximately 24 hours at 15–25°C. The mold shall subsequently be removed, and the cast piece shall be

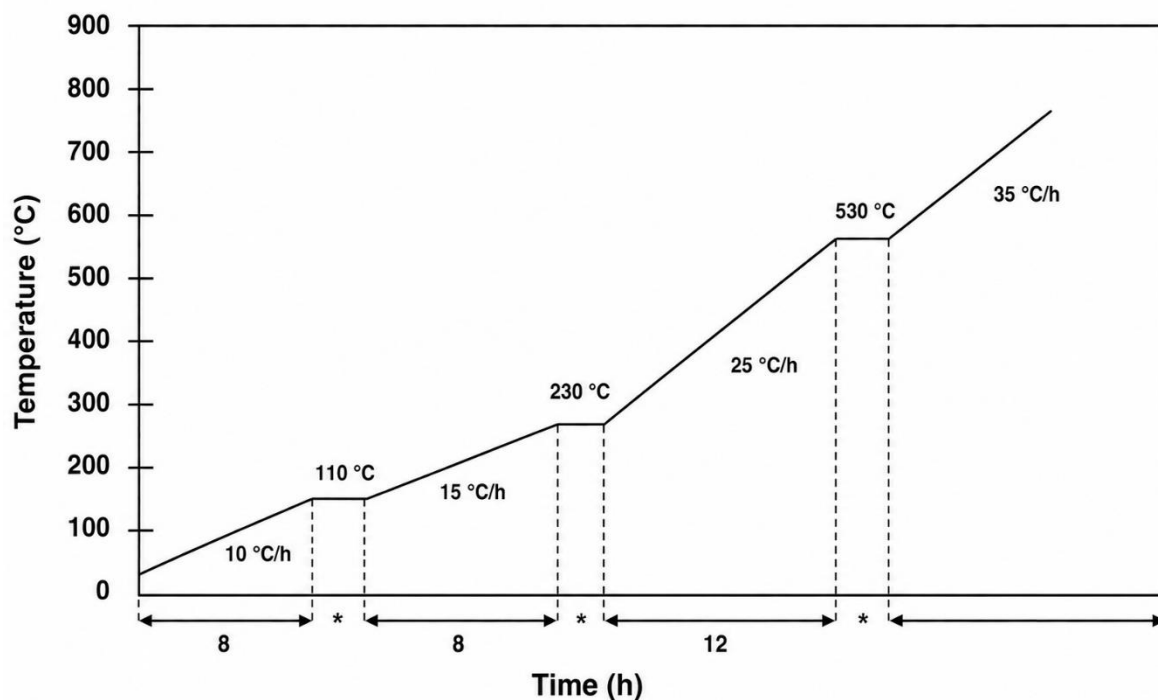


kept under normal ambient conditions and covered with plastic sheeting for an additional 24–48 hours. It should be noted that, during this stage, the ambient temperature plays a critical role in bond development.

4. Heating Cycle

Since these castables achieve a relatively high degree of compaction after casting, greater care shall be exercised during heating. In addition, several factors — including the dimensions of the cast piece, the type of castable, and the presence of fibers in the castable — affect the heating schedule.

The below diagram illustrates the recommended heating cycle for cast pieces:



* Low-cement castables: Hold for 1 hour per 2.5 cm of thickness.

* Ultra-low-cement castables: Hold for 2 hours per 2.5 cm of thickness.

Dear Customer,

If you require further technical assistance or additional information regarding the use of low-cement or ultra-low-cement castables, please contact our company.