



Instructions for Preparing and Using Mortars

1. General Description

Refractory mortars are generally manufactured and supplied in two types: heat-setting and air-setting. In heat-setting mortars, a weak bond is initially formed between the bricks under ambient conditions, and this bond is subsequently replaced by a ceramic bond upon exposure to heat. In air-setting mortars, a relatively strong bond is initially formed between the bricks under ambient conditions, depending on the type of bonding agent used. Subsequently, upon exposure to heat, this bond breaks down and is replaced by a ceramic bond.

2. Type of Bonding Agent

One of the bonding agents used in the production of air-setting mortars is neutral sodium silicate. This material is either added directly to the mortar in powder form during production or is first diluted with potable water from a 40⁰ Be solution. The resulting solution, which typically consists of one part liquid sodium silicate and three parts water by volume, is then used to prepare air-setting mortar. Increasing the proportion of liquid sodium silicate in the solution enhances the bond strength between the bricks after drying; however, it also reduces the refractoriness of the mortar. Therefore, the proportion of liquid sodium silicate in the solution should be kept as low as practicable. It should be noted that the final bond strength is achieved after about 12 hours.

3. Mortar Preparation

Normally, the prepared sodium silicate solution is added to the dry mortar in a mortar mixer until the mortar reaches a creamy consistency. When mixing the mortar, it should be noted that the mixer and all containers used are completely clean and free of any contamination. For optimum performance, the mortar should preferably be prepared one day before application.. To prevent the mortar from hardening, the container should be kept closed, or contact between the mortar and air should be prevented by adding a small amount of water to the surface of the mortar.

In certain cases, a stiffer or more fluid mortar may be required; in such cases, the amount of water and sodium silicate solution added should be adjusted as needed.

4. Mortar Application

When installing bricks with mortar in situations where the brick are subject to falling or displacement, a support should be used. Hardened mortar cannot be retempered by adding water.