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# **INSTRUCTIONS**

## **FOR PROCESSING REFRACTORY MATERIALS APPLIED BY RAMMING**

### **DELIVERED IN DRY CONDITION**

These instructions are to be followed when using RUDOPLAST refractory materials applied by ramming that are supplied as a ready-mixed powder and are to be mixed with water or liquid bonds delivered together with them before processing.

#### **Packing**

RUDOPLAST dry materials are supplied in paper moisture-proof bags on pallets. Bonds are usually dispatched in PE cans. Both the material and the bond must be stored in dry stock protected against frost.

#### **Material mixing**

The material must be mixed to the consistency that is optimal for the given application before processing. Pour a determined amount of dry mix into a forced-action mixer and after one-minute mixing, pour in approximately 9/10 of the specified amount of water or bond carefully. The material is mixed for about 3 minutes and then the rest of the amount of water or bond is added to the optimal consistency suitable for ramming. The optimal consistency is to be selected according to a shape and mass of the rammed product, power and force of ramming tools, etc. It can be generally said that the wetter material, the easier ramming operation, however, worse resulting parameters are achieved. Materials can also be applied by trowelling with higher water or bond content, but parameters are lowered considerably in this case.

#### **Ramming process**

Ramming should be performed especially intensively, best with pneumatic ramming machines in order to achieve a dense and homogenous consistency. Ramming should be performed in solid shuttering and forms to prevent in deformation of their walls by pressure resulting from ramming. Ramming should take place gradually in layers with the thickness of approximately 5 cm; the next layer should only be added after thorough compacting. A grooved end foot should be used for ramming to achieve perfect joining of the layers being rammed. A smooth foot may only be used for finishing of the surface of the walling.

#### **Stripping**

Small shapes may be stripped immediately after ramming; in case of large shapes and vertical layers, it is often necessary to leave shuttering installed 'till the next day. In order to

achieve a sufficient stripping strength, it is sometimes necessary to heat the material up to approximately 80°C.

### **Drying and the first heating of the rammed shapes**

Good and safe drying and the first heating of the rammed shapes made of RUDOPLAST material is of a great importance for their next functionality. Discharge of water (vapours) that has been used for material mixing and, consequently, chemical and ceramic processes that lead to strengthening of the fire resistant shapes occur during this process. General specification of the rate of the first heating is very difficult as it depends on many circumstances, e.g. on the thickness of the rammed shape, initial humidity of the material, size of free areas, etc. Only approximately, the rate of heating of approximately 20 °C / hour up to reaching the operational temperature of the aggregate can be considered.

### **Working safety and health protection**

When pouring dry RUDOPLAST materials into a mixer, wear a protective mask. Liquid bonds for ramming materials are usually weak caustic agents (of either acid or alkaline nature). For that reason, it is necessary to protect the eyes with suitable goggles and wear rubber gloves and apron while handling them.