

Processing instructions V 10.0

RETARDER No. 1

Note: This document describes the storage and application procedures for the setting **RETARDER No. 1** for cementitious refractory concretes.

The instructions contained in this document must be complied with during processing and installation of the respective refractory concrete. Modification of or deviations from the processing instructions can lead to major problems during installation, and possibly to total failure of the installed refractory material. These instructions provide general guidelines for storage, processing, and installation of the specific refractory material. If, due to specific site conditions, it appears necessary to deviate from the procedures described here, please consult Refratechnik Steel GmbH before starting work.

Storage

- In general: Store under cool, dry, and frost-free conditions.
- The shelf life stated in the product information sheet is valid from the production date, and only if storage is in accordance with our recommendations. The production date is stated on the packaging label.
- Under certain circumstances, material that has been properly stored may still be usable even after expiry of the stated shelf life. In such a case, conduct a setting test with a sample before using the material. In case of doubt, the expired material can be checked by Refratechnik Steel GmbH.
- Incorrect storage can greatly reduce shelf life, and can impair product quality.
- The original pallet wrapping foil should be left intact for as long as possible to protect the product. However, the foil is not a substitute for storage under cover.
- Also standing water, e.g. due to inadequate drainage of the storage area, can damage the material.

- Stacking of the goods supplied by us (in sacks, Big Bags, etc.) is done under the sole responsibility of the shipping company or customer. Refratechnik Steel GmbH accepts no liability for possible consequential damage (damaged packaging, personal injury, etc.).

Health and safety

- Always wear suitable safety goggles, dust mask, protective clothing, and working gloves.
- Always wash thoroughly after working with the material.
- Observe the information in the safety data sheet.

General information

- This product is a setting retardant for hydraulically setting refractory concretes. Delivered dry in buckets or other containers, the product is mixed dry on site with the refractory concrete whose setting is to be retarded. Moreover, the retarder lengthens the on-site processing time of the respective refractory concrete.

- Before using the **RETARDER No. 1**, please consult Refratechnik Steel GmbH to determine whether the product is suitable for the refractory concrete in question.
- Only use clean drinking water, as otherwise the setting behaviour may be affected.
- Low temperatures can retard or even stop the setting process. Therefore, the temperature of material and mixing water must be at least 5 °C. It might be necessary to heat the installation site.
- On the other hand, the setting process may be significantly accelerated at temperatures above 25 °C.
- Please take the expansion of the refractory material for your specific furnace application into account. The reversible and irreversible expansion values and the respective material properties are given in the product information sheet. Depending on the furnace operating conditions and the specific characteristics of the refractory material, any arising stresses and pressures must be compensated by suitably designed expansion joints.

- During installation of the monolithic refractory material, please ensure correct anchoring to the existing furnace structure and/or to the existing or adjacent refractory material (e.g. with steel anchors, ceramic anchoring systems, etc.).
- Suitable measures must be taken to ensure that the water or water vapour generated during the drying & heat-up process is removed from the refractory lining without pressure build-up.
- With certain kiln structures and refractory linings, the drying process can cause the generated water or water vapour to diffuse outwards in the direction of the furnace shell instead of inwards to the hot side (kiln chamber). Therefore, suitable measures must be taken to ensure that the water or water vapour can escape to atmosphere. For this purpose, 10-mm holes drilled into the kiln's outer steel shell (at least 5 per m²) have proved to be successful.
- Regarding the build-up of water vapour pressure, attention must be given to the entire wall structure of the lining (wear lining/permanent lining/insulation). In the area behind the wear lining, it must also be ensured that only such materials are used, which provide an adequate (highest possible) permeability to the steel shell.
- If the permanent lining/insulating layers are used several times and only the wear lining is replaced, they can become

clogged in the course of time due to moisture transport with dust contaminations, salts, etc., thereby also impeding moisture transport. Consequently, multiple use of such layers must be seen as counterproductive in terms of dewatering performance. It might even be safer also to replace the permanent lining, in order to ensure perfect flowthrough to the cold side.

- To ensure a continuous drying process, the complete kiln chamber must always be flushed with an adequate amount of fresh air during the entire drying and heat-up procedure. The air circulating in the kiln chamber may never be saturated with moisture.
- During heat-up, it is essential that flames do not impinge on the refractory lining only in small areas. Local overheating can result in severe damage of the refractory material. Therefore, it must be ensured that the entire lining surface is heated uniformly and without significant temperature differences.

Mixing

- Mixer, tools, conveying equipment, etc. must be clean and free from any form of contamination.
- Proportioning instructions:
Based on the weight of the dry concrete material, the following amounts should be added:

Between 0,02 and max. 0,06 % by weight.

- Do not exceed the stated maximum amount.
- Use of a positive mixer is essential.
- **RETARDER No. 1** is mixed into the dry concrete material (mixing time: 30 seconds). Subsequently, continue mixing in accordance with the processing instructions of the respective refractory concrete.

Processing

- Please observe the processing instructions for the refractory concrete in question.

Setting and curing

- Please observe the processing instructions for the refractory concrete in question.
- Use of **RETARDER No. 1** will lengthen the processing time, setting time, and time before formwork removal. These times can be determined by means of a trial mixture performed under on-site operating conditions.

Drying and heating up

- Please observe the processing instructions for the refractory concrete in question.