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REFRATECHNIK

Processing instructions V 12.0
REFRAPRIMER

Note: Please read the product information sheet first, to ensure that these are the right processing instructions for your product. This document describes the processing procedure for **REFRAPRIMER**, a liquid primer for worn, loose, or crumbling refractory substrates. **REFRAPRIMER** creates a firm, load-bearing substrate, thereby providing the conditions necessary for a permanent bond between high-quality repair materials and the substrate.

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 provides an inorganic chemical bond for adhesive bonding/bridging as a pre-treatment of worn refractory linings. It does this by consolidating the loose parts of the substrate and at the same time creating an adhesive bridge for the refractory concrete that is to be gunned onto the surface. The purpose hereby is to consolidate loose, crumbling substrates by applying **REFRAPRIMER** before gunning the repair concrete. This creates a solid, load-bearing substrate (adhesive base) that also forms an adhesive bridge (anchor) for the gunned refractory material.
- **REFRAPRIMER** can be applied on a wide range of refractory substrates (refractory bricks, refractory concretes etc.).Before using it for the first time, we recommend carrying out an individual suitability test in representative test bays.
- **REFRAPRIMER** is delivered ready-for-use in drums, and therefore requires no further on-site processing.

- **REFRAPRIMER** must not be stored in galvanized or aluminium containers. Only suitable plastic containers may be used for storage.

- **REFRAPRIMER** can also be applied on hot substrates. In this case, we recommend 2 or max. 3 layers of material, whereby the individual drying times must be observed.

- 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 & heating up process is removed from the refractory lining without pressure build-up.

- With certain furnace structures and refractory linings, the drying process can cause water or water vapour to diffuse outwards in the direction of the furnace shell instead of inwards to the hot side (furnace 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 outer furnace surface (at least 5 per m²) have proved to be successful.

- In order to ensure a continuous drying process, the entire furnace chamber must always be flushed with an adequate amount of fresh air during the entire drying and heating up procedure. The air circulating in the furnace chamber may never be saturated with moisture.

Processing

- Maintenance repairs (cold and hot repairs) of worn refractory linings cover a wide range of possibilities. The substrates may be brittle, cracked and crumbly, and could therefore be considered unsuitable for applying high-quality repair materials. The same as with refurbishment work on buildings (outer façade, rendering), the first step here involves the creation of a load-bearing substrate (adhesive base), which is sufficiently stable for a permanent bond with the gunned repair material (generation of an adhesive bridge). Moreover, the use of a suitable refractory primer reduces the substrate's surface porosity, which in turn reduces the capillary suction. This effect also plays an important role in multi-layer wall construction. For example, if free-flowing concrete (permanent safety lining) is applied on a lightweight refractory (insulating) brick, this can have a considerable negative effect on the flow and bonding characteristics of the concrete, due to the absorption of mixing water into the surface pores of the adjacent lightweight refractory brick. A suitable primer applied to the surface of the lightweight refractory bricks seals the surface, thereby reducing the capillary suction and suppressing the negative effects.

- Depending on the suction and porosity of the surface to be treated, **REFRAPRIMER** can be applied by means of immersion (dipping), brushing, spraying, flooding or injecting. If several layers are applied, practice-oriented drying times should be observed.

- Amount of material required
  Depending on surface temperature and surface quality: 0,5 to 0,8 l/m² (0,65 to 1,05 kg/m²).

- **REFRAPRIMER** can be applied to cold surfaces (> 5 °C) as well as hot surfaces (< 500 °C).

- Caution: **REFRAPRIMER** is not suitable for surface treatment of fibrous materials (calcium silicate panels, etc.).

- Please first perform a test on a representative surface area to determine whether **REFRAPRIMER** is suitable for the intended application under the existing operating conditions. If in doubt, consult Refratechnik Steel GmbH before applying the primer.

- The health and safety precautions listed in the safety data sheet must always be observed during processing. Always wear suitable safety glasses, dust masks and safety gloves, etc.

Setting and curing

- **REFRAPRIMER** consolidates the porous brick materials / refractory concretes to be repaired, primarily through silification. Solidification occurs in various ways, including dehydration, shift of the pH value, protecting against atmospheric carbonic acid and/or reaction with the materials to be treated.

- Curing begins as soon as the treated surface is dry to the touch. Generally, installation of the refractory material on the surface treated with **REFRAPRIMER** can be started 30…60 minutes after application.

Drying and heating up

- Dying times depend on the substrate quality and surface temperature, and

must therefore be determined individually in practice.

- There is no specific drying or heating up procedure for **REFRAPRIMER**. Regarding the drying and heating up procedures of the respective base material (bricks, refractory concretes, etc.), the corresponding data sheets must be observed.

REFRAPRIMER product description

REFRAPRIMER consolidates worn, loose, porous, crumbling refractory substrates, thereby providing a primed surface (adhesive base) for the application of a repair material. Furthermore, it creates an adhesive bridge on the surface, which ensures an optimum bond with the applied refractory repair material. **REFRAPRIMER** creates a firm, load-bearing substrate, there by providing the conditions necessary for a permanent bond between high-quality repair materials and the substrate. **REFRAPRIMER** reduces the substrate's surface porosity, which in turn reduces the capillary suction. The application on hot surfaces is also possible. In this case, we recommend repeating the procedure 2 or max. 3 times, whereby the practice-oriented drying times must be observed.

Physical data

Bulk density:	1,25 to 1,35 kg/l
Solids content:	approx. 30% by weight
Viscosity:	20…30 mPas at 20 °C
Max. temp.:	1600 °C, depending on the respective base material (substrate)
Amount of material required:	depends on the substrate's condition (typical value: 0,65 to 1,05 kg/m^2)

General data

Description:	clear liquid, odourless, solvent-free, non-flammable
Storage time:	12 months under normal storage and ambient conditions
Storage:	free of frost in suitable, tightly closing plastic containers
Application:	immersion (dipping), brushing, spraying, flooding or injecting
Substrate:	inorganic, mineral-based substrates
Reaction time:	depends on individual surface temperature and surface quality: