



## Erode-Resistant Protective Coat for Ceramic Roller

### 1. Introduction

AMI exploited Erode-Resistant Protective Coat for ceramic roller since 2002. The Erode-Resistant Protective Coat are composed of Base Coating and Cover Coating. The Base Coat is heat-endurance which will not make chemical reactivity with exterior of ceramic rollers and Cover Coat in high temperature (1000~1300 centigrade). The Cover Coat can be sintered quickly and stiffen to form a rigid protective layer, which attach to the Base Coat, while the Base Coat will stick onto the surface of the ceramic roller in some extent. Both Base Coat and Cover Coat form the protective layer to protect the surface of the ceramic roller away from the erosion by caustic gas and pollution by impurity in kiln, such as drops of the glaze or frits. When the coat becomes dirty and being replaced, the coat will be stripped easily as the shell of cooked eggs. Then clean the surface of the rollers, spread the new batch of protective coat onto the rollers again. After the coat is dry, the rollers can be recycled.



### 2. Preparation of Coat Slurry

#### 2.1 Base Coat slurry (White Color)

To prepare the Base Coat slurry, the dry power is first mixed with water at a weight ratio of 1:1.3. The mixture is then grinded in a mill in order to thoroughly mix the power and water (an alternative is to stir the mixture in a high speed stirring machine for one or two hours). Finally, the slurry is sieved with a 60-mesh sieve and stored for future use with the density controlled at a value between 1.35 and 1.45g/m<sup>3</sup>.

#### 2.2 Cover Coat slurry (Grey Brown)

The Cover Coat slurry is prepared using the same procedure with the Base Coat as mentioned at item 2.1, except that the ratio between the power and water is 1:1.1 instead. Additionally, the density of the final product should be controlled at a value between 1.50 and 1.60g/m<sup>3</sup>.

#### 2.3 Both Dry powder and the Slurry are available for customers

### 3. Application of Coat

3.1 Before application, the slurry for each coat shall be stirred thoroughly. The surface of the ceramic roller should be cleaned to obtain a smooth surface.

3.2 The coat slurry can be poured or brushed onto the roller surface. The Base Coat shall be applied first with the thickness between 0.2 and 0.3mm, let the Base Coat dried in the air for at least 30 minutes. Then apply the Cover Coat slurry onto the dried Base Coat layer with thickness between 0.4 and 0.6mm. To obtain desired thickness, both Coats can be applied more than one time and the number of application times can be adjusted accordingly.

3.3 The ceramic rollers with coat applied shall be placed close a kiln so that the Coat can be dried enough after application.

3.4 Before the rollers are inserted into the kiln, the coat should be double checked to make sure it is dry. The coated rollers shall be installed onto the firing zone directly. By this way, the separation of the coat from the roller can be avoided, which usually happens when the roller is installed into the preheated zone.

3.5 When the coat surface become dirty, the rollers shall be pulled out from the kiln, the eroded coat can be peeled off the roller easily like the cooked egg shell after the rollers are cool down. The roller then can be resumed for use after its surface is cleaned and new coat is applied with the same procedure described as above.

#### 4. Attention

4.1 The Cover Coat and Base Coat should never be mixed together, because they are made of different materials and will loss the function when mix two kinds of coats together. Separate sets of tools for coat application must be used as well in order to avoid mixing these two coats.

4.2 The slurry should be fully stirred before application to avoid the deposition of the slurry. Additionally, the density should be controlled at the suitable range to obtain the best coat property (Density of Base Coat: 1.35-1.45g/m<sup>3</sup>, Density of Cover Coat: 1.50-1.60g/m<sup>3</sup> ).

#### 5. Comparison

Comparative content	Usage of the coatings of the rollers	Usage of the traditional polishing machine
Usage effect	The protective coatings for ceramic rollers protect the rollers against the ceramic glaze cautery. It is so efficient to prolong the working life of the rollers to reduce the usage coat of the rollers.	After the rollers are polished, the surface of the rollers is not so slick, and the caliber will become small. So the frame of rollers damage increasingly to reduce the working life.
Disposal time	Each branch need 2-3 minutes	Each branch need 5-8 minutes
Disposal mode	strip the coating of rollers after the rollers is cooling	Put in the polishing machine to heat and polish.
Exhaust disposal	none	The machine will damage about 10~30% after polishing
Disposal cost( ∅ 40*3000, 100 branch as example)	It is no need to add the professional equipment. Each usage cost is about 200~300RMB	It need to add the professional equipment (the input of the equipment and depreciation and wastage electricity did not take in account). Wastage is about 1000~2000RMB each time.

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