MasterCoat® 430

Mineral and Corundum Aggregated Surface Hardener

Material Description

MasterCoat® 430 is a cement based, mineral and corundum aggregated surface hardener designed to be applied as a dry shake over freshly floated surface concrete which will be exposed to heavy duty.

Areas of Application

MasterCoat® 430 is designed to ensure durability in applications where floor is subject to medium and heavy traffic and where a non-dusting surface is required. It will improve and enhance the performance of all concrete floors.

- Used in workshops
- In energy stations
- In garages
- In car parks
- In storage areas
- In loading bays
- In factories
- In shipyards
- In aircraft hangars
- In car wash shops
- In helicopter landing sites

Characteristics and Benefits

MasterCoat® 430 has the following properties;

- Easily applied on freshly floated surface concrete.
- With its modified polymers, it absorbs the water of the surface concrete on which it has been applied and forms a monolithic structure with bare concrete.
- Do not oxidize.
- Hardener applied surface is 4-6 times more resistant to abrasion than bare concrete.
- Contains properly sized and graded corundum aggregate.
- Resistant to freeze-thaw circle.
- Resistant to flaking due to the salt application against freezing.

Processing Method

The concrete or screed design on which surface hardener is to be applied should be prepared according to the loads and condition of the surface. The surface hardener application aims to increase abrasion, dusting and impact strengths of the concrete or screed on the upper parts and does not have any effect on compressive, flexural and tensile strengths of the concrete. The cracks which may occur on the screed concrete due to the incorrect design;application and service loads will reflect exactly in the same way on the surface hardener. MasterCoat® 430 surface hardener should be applied by designing according to the below mentioned conditions.

1) To concrete or screed directly on the ground,
2) On a bearing BA floor,
   a) On floating screed
   b) On monolithic screed

Technical Properties	
Structure of the Material	Mineral Polymer, Quartz Aggregate and Special Cement
Color	Natural, Red, Green, Grey
Compressive Strength (EN 13982-2)	C40 (28 days)
Flexural Strength (EN 13982-2)	F5 (28 days)
Abrasion Resistance - BOHME (EN 13982-3)	A6 (max. 6cm³/50 cm²)
Fire Resistance	$A1_{fl}$
Release of Corrosive Substance	CT (Cement Based Screed)
Impact Resistance (IR)(EN ISO 6272-1 (EN 1504-2))	Class I

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(A) Preparation of Substrate

If **MasterCoat® 430** surface hardener is going to be applied on a screed which is poured on the existing concrete; floating or monolithic screed application should be chosen depending on the project requirements, after the concrete surface is cleaned. The surface should be roughened where necessary with various methods and any grout should be removed. The existing concrete surface should be saturated with water at least for one day before the application begins and surplus water on the surface should be prevented. The application should be carried out on a saturated concrete surface. Before starting the application, the concrete forms should be placed to form squares, crack control joints should be determined and the pouring of screed should be done according to the project. If box shaped forms are used, the mortar used for anchoring should be removed while the screed is poured. While the screed concrete is poured, it should be separated from the existing walls and columns by using 1 cm width extrusion plates and gaps/ joints thus enabling the screed concrete to work and also to expand and contract freely without cracking. The gaps left after the completion of the application should be filled with suitable sealants. In order to achieve smooth edged screed concrete, the concrete forms should be cleaned prior to each application and **MasterFinish® 235 J** form release agent should be used. The concrete forms used while screed concrete is poured should have the same height as the designed screed height. Forms having a tongue and a groove system will prevent the slumping and separation of the concrete from the cold joints under heavy load. Using tie rods between slabs will prevent the screed concrete from moving longitudinal, therefore will not create shear force on the joint sealant and thus the sealant life will be prolonged.

Spacer

The steel reinforcement which will be used in the project should be installed with a spacer. When the reinforcement is installed on the floor without using a spacer, as the reinforcement will not have any adherence to the screed concrete, and the fact that it cannot prevent tension and yield, as a result it will cause the concrete forms to crack under heavy load. If a single layer reinforcement is used, it should be ensured that the reinforcement is installed in the middle depth of the concrete.

Reinforcement

The iron reinforcement should not protrude from the concrete forms. If steel meshwork is used, it should be installed overlapping each other. Crack control joints and cold joints should be formed to control any change in form or movement in the concrete without causing cracks. In order to control the movements in these joints to be only in horizontal and directive mode, joint reinforcement should protrude from the reinforced forms as well as being tied to the reinforced forms themselves . Joint reinforcement protruding from the forms should be fitted on with a plastic pipe or hose to form the formwork and then the concrete of this other formwork should be poured. This will prevent the vertical and longitudinal movements of the cold joints during the movement of the concrete forms.

Priming

In monolithic screed applications, in order to provide adherence between the old and the new concrete, before starting pouring the concrete, epoxy adhesive **(MasterStrength® ER 1420)** or **PCC (Polymer Cement Concrete)** adherence enhancing **MasterCast® 125** should be applied. In floating screed applications, polyethylene covers should be laid on the old concrete to prevent the new screed concrete from adhering to the old concrete.

Pouring of the Concrete

The concrete forms should be placed according to the project. Before starting pouring the concrete, **MasterCoat® 430** bags should be placed next to the concrete forms in accordance with the anticipated consumption. The thickness of the screed on which **MasterCoat® 430** will be applied should be more than 7 cm, the water/cement ratio should be over 0.45 and the concrete class should be at least C25. While pouring the concrete between concrete forms, a concrete vibrator should be used to consolidate the concrete. Before the bleed water rises to the surface, the surface should be smoothed as necessary with a bull float and a wooden

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trowel. The Bleeding water should be removed by sweeping off with a long handled wooden bull float.

Application of the Surface Hardener

An adequate amount of surface hardener to be used in the slab which will receive the application should be put aside. The applications should be carried out as stated below. Before sprinkling the material, approximately 5 x 5 cm triangular shaped concrete along the joint should be removed with a trowel from the slab sides. To replace the removed concrete, **MasterCoat® 430** mortar with very little water should be applied with a trowel. This will prevent the joint edges from breaking under heavy load. The surface hardener should not be sprinkled to distant places; this may cause the aggregates to segregate. To start sprinkling, depending on the ambient and weather conditions, the concrete should be hardened such that when stepped on 0.5-1.5 cm depth foot print is left on the concrete. The surface hardener should not be applied as a lump but should be sprinkled as homogenous as possible and smoothed with a water blade. If the product is applied in groups on the slab and spread with a water blade, any excess productwhere the product applied first should be removed by scraping. With the first shake, 2/3 of the total amount should be sprinkled on the concrete surface and spread with a water blade or a machine. The shake should absorb moisture from the concrete beneath it (and change color) and the surface hardener should be floated as necessary to work into the concrete. Then apply the last 1/3 of the product by repeating the same stages as in the first application. When floating, the over flown surface hardener on the previously poured slab should be cleaned continuously with a spatula. Otherwise, there may be level differences and foul joint appearances between two slabs. After the floating, finishing should begin. The finishing should be done by using the finishing blades. Finishing should continue until the required sheen is achieved. After the surface hardener application has been completed, curing compound (**MasterKure®**) should be applied to the surface to prevent shrinkage cracks and dusting. Thus maximum performance expected from **MasterCoat® 430** can be achieved. Curing should always be carried out both in summer and in winter.For correct curing product, please consult **MBT Tech** technical services. After the concrete is hardened so as not to be marred by application, the attachment points of the concrete forms are cut with a width of at least 4 mm and joints are formed. To prevent dusting and breakage caused by joints, the joints should be filled with suitable sealants.The application of surface hardener is done in different periods depending on the quality and the type of the concrete, temperature and ambient conditions. In hot temperatures the application time increases, in cold temperatures the application time decreases. During the application, set phases of the concrete should be observed.

Consumption

Based on the purpose of use and traffic load 4-8 kg/m^2. For light colored applications, the application should not be less than 7 kg/m^2.

Point to Consider

- During application the ambient and the floor temperature should not be less than +5°C and more than +35°C.
- The surface hardener applications should be carried out by suitably qualified applicators.
- The surface hardeners are only aimed to increase the abrasion and impact resistance of the surface; they have no effect on mechanical strengths (flexural, tensile and compression) of the concrete on which they are applied. Therefore, the concrete should be designed in accordance with the mechanical loads that affect the surface thereof.
- The thickness of the screed on which **MasterCoat® 430** will be applied should be more than 7 cm, the water/cement ratio should be over 0.45 and the concrete class should be at least C25 at least.

Cleaning of Tools

All the tools and equipments must be cleaned by water after the application. After **MasterCoat® 430** is hardened, it can only be removed from the surface mechanically.

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Packaging

MasterCoat® 430 is available in 25 kg polyethylene reinforced kraft bag.

Shelf Life

12 months after the production date under appropriate storing conditions.Opened packages should be stored under suitable storage conditions and used within 1 week.

Storage

Must be stored in unopened original packing, and in cool and dry environment protected from freezing. In short-term storing, maximum 3 palettes can be stowed on top of each other and delivery has to be according to first in first out system. In long-term storing, the palettes must not be stowed on top of each other.

Health and Safety

It is dangerous to approach the application sites. During the application, a protective apparel, protective gloves, goggles and masks which comply with the Occupational Health and Safety Rules should be used. Due to the irritation effect of the uncured materials, the mixture should not come into contact with skin and eyes; in case of a contact, the affected area should be washed with plenty of water and soap; in case of swallowing, a physician should be consulted immediately. No food or beverages should be brought to the application area. The product should be stored and kept out of reach of children. For detailed information please consult the Material Safety Data Sheet.

Disclaimer

The technical information given in this publication is based on the present state of our best scientific and practical knowledge. **MBT Teknik Yapı Kimyasalları Sanayi ve Ticaret A.Ş.** is only responsible for the quality of the product **MBT Teknik Yapı Kimyasalları Sanayi ve Ticaret A.Ş.** is not responsible for results that may occur because the product is used other than advised and/or out of instructions regarding the place and the method of use. This technical form is valid only till a new version is implemented and nullifies the old ones.

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MasterCoat® 430	
TS EN 13813 Mineral ve Korund Agregalı Yüzey Sertleştirici Mineral and Corundum Aggregate Surface Hardener	
Basınç Dayanımı Compressive Strength	C70
Eğilme Dayanımı Flextural Strength	F7
Aşınma DirenciBÖHME Abrasion Resistance "Boehme"	A6
Aşındırıcı maddelerin salınımı Release of corrosive substances	CT
Yangına Karşı Tepki Reaction To Fire	$A1_E$
Tehlikeli maddeler Dangerous substances	Güvenlik bilgi formu Safety data sheet