Application manual

MFC Cobet 100

INTRODUCTION

This application manual (hereinafter referred to as "AM") states the manner of application of MFC Cobet 110 – 180 spreading mixtures, which are used for surface treatment of fresh concrete floors.

- this AM is recommended for processors of MFC Cobet spreading mixtures, delivered by the company MFC – MORFICO s.r.o.
- all work executed according to this AM must correspond to the principles of work safety, must be in accordance with valid safety regulations and regulations for the protection of the environment
- the achievement of the expected technical parameters of the spreading mixtures depends on the keeping of this AM .

REQUIREMENTS FOR THE BASE AND WORKING ENVIRONMENT

The spreading mixture is to be applied exclusively on the "live" surface of concrete floors placed by various methods, such as continuous casting, placement by means of guide bars and finishing beams, machine placement (LASER SCREAT, FINIŠER) or the traditional manner using batten.

The load-bearing concrete slab must be produced in accordance with the respective ČSN EN, from high-quality concrete mixture of the class C20/25 – C30/37. It is not recommended to use a mixture containing ash and weathered concrete for XF3 and 4 environments. In the case of the use of plasticizers, it is necessary to verify if the type used will not cause foaming of the mixture or separation of water. We recommend consulting the suitability of added substances with the producer of the concrete mixture. At the same time, it is necessary to monitor the so-called thixotropy of the concrete (false hardening), which is caused by the improper content of washed-off substances in the fraction 0/4 mm, in particular clay particles. This phenomenon is more significant for plasticizers on the basis of polycarbonates.

Requirements for consistency of fresh concrete mixture:

- test by spreading 380-450 mm
- test for setting cone S3

In particular, during the application of the "dry into wet" system it is necessary that the concrete mixture has sufficient moisture for the newly applied spreading mixture. This time is mainly influenced by the type of cement (Portland or mixed, temperature of the placed concrete, temperature of the environment or the flow or air above the floor. It is necessary to adapt the application of spreading to the above-mentioned influences. The placement, compaction and levelling of the concrete mixture must always be performed in coordination with the consequent application of spreading and smoothing the surface. The surface of such prepared bases for application of the spreading must fulfil the tolerances for the plainness according to the manner of use.

- during the application of spreading, smoothing of areas and their maturing, the temperature of the surroundings must be outside the range + 5 to + 25 °C
- in particular, during the application on outdoor areas when working it is necessary to prevent direct affection of rain (rain, storms, etc.) and direct solar radiation on the area
- during the application and maturing (protection of ready floor), it is necessary to prevent affection of strong wind which significantly increases the possibility of non-homogenous hardening and consequently the origination of cracks
- immediately after drying of the concreted area (no later than within 24 hours) it is necessary to divide the areas by cutting expansion joints into suitable units which are usually stated by the designer. The joints can be filled by flexible material (a suitable plastic profile or permanently flexible seal). This will prevent damage (breaking) to the edges of the expansion cuts
- After spreading, the surface of the concrete must by watered.

SPREADING APPLICATIONS

In terms of the application of spreading, two methods are mainly used: the so called "dry into wet" (MFC Cobet 110 – 140) or "wet into wet" " (MFC Cobet 150 – 180).

1. Application by "dry into wet"

- after the concrete mixture starts to harden, with the possibility of a passage (about 3-5 hours after placement) there is the wiping of all excess water and cement milk from the surface of the area by rubber wiper
- surface treatment of the area by rotary wiper with blades of the "slippers" or "disk" type
- application of the first layer of the spreading by truck or manually proportionally in the volume of 2 - 3 kg/m^2 and then leaving for 10 – 20 minutes for the penetration of moisture from the surface
- levelling of spreading into the surface by the rotary hose identical with the hose for performing the revival of the surface
- application of the second layer of the spreading by truck or manually proportionally in the volume of 1 - 2 kg and leaving for 10 – 20 minutes for the penetration of moisture from the surface
- levelling of the second layer of the spreading and consequent smoothing of the surface of the area by rotary hoses up to the achievement of the required level of the final surface treatment (according to hardening conditions, for about 5 - 20 hours) with the use of blades of the "combi" or "final" type.

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For walls with difficult to access places, it is necessary to level the surface manually by means of a steel smoother

- immediate treatment of a ready surface by suitable protective means which prevents fast evaporation of water, e.g. MFC – Stoplak 610 or MFC – Master 820 or treatment by covering the surface by geotextiles and regular watering
- after drying of the concrete area (no later than within 24 hours) it is necessary to make expansion cuts in a suitable manner.

2. Application by "wet into dry"

- after the concrete mixture starts to harden with the possibility of a passage (about 3-5 hours after its placement) there is wiping of all excessive water and cement milk from the surface of the area by a rubber wiper
- surface treatment of the area by a rotary wiper with blades of the "slippers" or "disk type
- the dry mixture is mixed with water according to the instructions (the best is in a vertical mixer) to a liquid mixture which is transported on the treated surface by means of construction wheels, proportionally applied in the volume of 10 – 20 kg/m^2 and levelled into the required line by means of bars with various lengths (for large areas it is possible to use a pump and levelling bars)
- after hardening of the applied mixture (2 – 5 hours, depending on the climatic conditions), the surface is levelled and smoothed by means of rotary smoothers up the achievement of the required level of the final treatment of the surface (according to hardening conditions about 5 – 20 hours) with the use of blades of the "combi" or "final" type. For walls with difficult to access places, it is necessary to level the surface manually by means of a steel smoother
- immediate treatment of the ready surface by suitable protecting means which prevent fast evaporation of water, e.g. MFC – Stoplak 610 or MFC – Master 820 or treatment by covering the surface by geotextiles and regular watering
- after drying of the concrete area (no later than within 24 hours) it is necessary to make expansion cuts in suitable manner.

PROTECTIVE MEANS AND WORKING AIDS, MACHINES AND TOOLS

1. Protective means

a) application by "dry into wet"

- working clothes (all employees)
- working shoes with smooth non-slip sole (all employees)
- protective gloves
- respirator (application of spreading)
- protective glasses (application of protective means)

b) application by "wet into wet"

- working cloth (all employees)
- rubber shoes (employees for the placement and levelling of the mixture)
- working shoes (other working brigades)
- protective glasses or shield (operating of mixer)
- protective gloves (all employees)

application by "wet into wet" - polishing

- working cloth (all employees)
- working shoes with smooth non-slip sole (all employees)
- protective gloves (all employees)
- protective glasses (application of protective means)

2. Working aids, machines and tools

a) application by "dry into wet"

- machine polishers or double-smoothing machines with replaceable blades (Ø 90, Ø 120) – volume according to the complicacy and the site of the area
- machine polishers Ø 60 – so-called binding – for polishing at the walls (1 pc)
- recommended for spreading truck (e.g. TREMIX) or shovel and construction wheels for the application of the spreading mixture
- steel smoothers (the best are stainless)
- knives for cutting of the peripheral expansion
- levelling bar, minimum length of 2 m
- rubber wiper (1 pc)
- sprayer or paint roller for application of penetration

b) wet method – application of spreading

- vertical mixer of a suitable size (optimal 100 150 l)
- construction wheels + shovel (min. 2 pcs)
- levelling bar, length 4 – 6 m 1 pc, 2 – 3 m 1 pc
- set of smoothers for levelling of wet spreading (if performed in this manner)
- rubber wiper (1 pc)
- machine polisher for surface treatment (Ø 90 or 120)

wet method - polishing

- the equipment is the same as for the dry method with the exception of aids for the placement of dry spreading (spreading truck and others)

DEFECTS AND CORRECTIVE MEASURES

1. MICTO CRACKS

As a rule this concerns cracks with a very small width (often indicated as "capillary cracks", mutually linked into a characteristic square grid. These cracks can originate shortly after finishing the work, but also after 1-3 weeks, in some cases they do not appear for several months or years.

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Technical explanation

The tension originated by the shrinking of the concrete mixture and the final layer of the spreading material may be quite different. This is mainly stated by the relatively small thickness of the layer of the final treatment, the quality of the base concrete mixture (mainly the volume of fine particles and water coefficient), climatic conditions in the construction site and by the correctly estimated time for dosing of the spreading mixture. Non-proportional spreading of the mixture can also result in the origination of different tensile forces in places with either a very small or too thick layer of the spreading mixture. The capillary cracks can also originate due to over-polishing of the surface and in places where the surface was watered during polishing.

Corrective measures

It is not possible to 100% prevent origination of cracks (due to many direct and indirect factors). If these cracks are firmly linked with the base, they do not have any influence on the utility properties of the floor. However, their origination can be eliminated by keeping to the under mentioned principles.

- correct composition of the concrete mixture for the preparation of the load-bearing slab. It is recommended to consult the composition with the respective expert so that the mixture suits the preparation of concrete floors for spreading (in particular the type and class of cement, ratio of fine fraction, plasticizers, consistency, etc.)
- correct estimated time of the application of spreading (in particular in the case of over-drying of the surface there can be the origination of defects and the consequent separation of the final treatment from the base!)
- it is necessary to prevent additional watering of the surface during the polishing
- the correct manner of treatment of the surface during the maturing of the concrete area
- for further details, see the requirements for foundations and the working environment.

2. COLOUR DIFFERENCES

As a rule, this mostly reflects as the difference in the colour shade if the final treatment is in the whole area or locally. The greatest colour differences can be observed shortly after finishing the floor during 1-4 weeks, in some cases longer.

Technical explanation

During the application of spreading there is the mixing of the spreading mixture with cement milk of the foundation concrete which may influence the shade of the colour. At the same time, there is relocation of spreading during the polishing from the upper into the lower places which results in the decrease of the thickness of the layer of the spreading mixture in higher places and colouring of the foundation concrete on the surface. In particular in the case of coloured spreading, this is often the reason for problems with the colour difference in local "polished" places.

This type of defect is significantly eliminated by the application of the “wet to wet” method!

Corrective measures

In the case of keeping to the technological procedure for the application of spreading, the application of spreading in 2 layers (“dry to wet” method), the resulting surface is uniform in terms of colour. The differences in the area (darker – lighter) are often caused by non-proportional maturing of the concrete which may cause greater concentration of treatment penetration in lower places. Gradually, with the drying there is a unification of the colour – the darker shade changes into a lighter shade.

- for the correct composition of the concrete mixture for the preparation of the load-bearing slab, it is recommended to consult the composition with the respective expert so that the mixture suits the preparation of concrete floors with spreading (in particular the type and class of cement, ratio of fine fraction, plasticizers, consistency, etc.)
- the high-quality of the foundation load-bearing layer, in particular in terms of the plainness character of the base
- keeping of the technological procedure for the application of spreading
- it is necessary to prevent additional watering of the surface during polishing.

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NOTIFICATION!

All information contained in this application manual is based on long-term experience acquired during the production and application of these materials. It is always necessary to consider the suitability of the product for planned use. Due to the different conditions during the implementation, it is necessary to select a suitable composition and technological procedure.

MFC - MORFICO s.r.o. is not liable for defects or any damages originated due to incorrect use or processing of the product.

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