Si-Tech Sp. z o. o.
05-306 Jakubów, Dobra 9 St.
tel.+ 48 25 749 88 60
e-mail: sitech@sitech.net.pl
www.sitech.net.pl

ROMIX BL ELEKTRON

**ALUMINA-METALLIC HARDENER FOR CONCRETE FLOORS
WITH ANTISTATIC PROPERTIES
CT-C80-F7-A1.5**

ADVANTAGES OF THE PRODUCT

- Antistatic properties
- Special combination of mineral and synthetic ingredients plus chemical modifiers provide excellent workability and ease of application and processing
- High impact and abrasion resistance due to the content of wear-resistant quartz, alumina and metallic aggregates
- After setting and proper curing, it forms a hard structure with excellent adhesion to the substrate
- The high degree of density of silicon fillers makes the floor resistant to heavy mechanical operation and medium and heavy loads to the highest degree
- Creates a very tight and dust resistant floor
- Highly resistant to temperature differences of -65 to + 95°C
- A properly trowelled floor shows much less absorption of media such as oil, water, grease and detergents

APPLICATION

- Romix BL Elektron is an alumina-metallic hardener for application to freshly poured concrete to make abrasion-resistant and durable anti-electrostatic industrial floors, among others, in facilities where electrical and electronic equipment prone to damage from electrostatic discharge is manufactured and operated.
- Suitable for use in explosion hazard rooms: 0, 1, 2, 20, 21, 22.

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PROPERTIES

- Product in accordance with PN-EN 13813
- Abrasion resistance on Boehme disc after 28 days: A1.5 (when all technological requirements and conditions of floor execution are met)
- BCA abrasiveness after 28 days: AR0.5 (when all technological requirements and conditions of floor execution are met)
- Average electrical surface resistance: ρ_s $1x10^7$ Ω < ρ_s ≤ $1x10^{10}$ Ω,
- Average leakage resistance: Ru ≤ $1 \cdot 10^6$ Ω
- Electrical resistance to grounding element: ρ_s $1x10^7$ Ω < ρ_s ≤ $1x10^{10}$ Ω,
- Reaction to fire: class $A1_{fl}$
- Compressive strength after 28 days: 80 MPa
- Flexural strength class: F7

FLOOR CONCRETE - RECOMMENDATIONS

First of all, when preparing for the application of Romix, we must secure the right concrete mix. In the selection of the concrete formulation, the concrete producer is required to take into account the intended use of the concrete in the aspect of surface curing of the concrete slab in Dry Shake Topping technology) and the requirements for concrete mixtures defined in the technical sheet of the used curing sprinkle from Si-Tech Ltd. available at www.sitech.net.pl, ensuring the compatibility of the used curing sprinkle with the concrete mixture.

The basic technological requirements for concrete mixtures for flooring are as follows:

- The strength class of the concrete should be a minimum of C20/25
- Class of chloride content in concrete - Cl 0.20
- Air content in the concrete mix - up to 2.5%
- Consistency class S3 (cone drop tested on site according to EN 12350-2 - from 100 to 150 mm)
- Recommended grain size - crumb stack using fractionated aggregate (three fractions: 0-2 (fine, washed aggregate), 2-8, 8-16 mm (coarse aggregate) according to PN-EN 12620+A1:2010
- Ensuring the durability of the curing (operational floor) layer requires the use of the right quality aggregate in concrete. The use of aggregate containing alkali reactive grains, weak grains, weathered grains, clayey grains, marly grains that could adversely affect the physical, mechanical and durability properties of the concrete base slab is excluded. It is recommended to completely eliminate materials containing impurities and components that could cause point destruction of the floor's wearing surface
- Concrete for flooring should take into account exposure classes selected in terms of environmental impacts on concrete in accordance with current morms

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- The concrete formulation should meet the generally accepted rules for designing concrete mixtures for floors such as:
  - the mass of cement should not exceed 350 kg/m^3, but also should not be less than 300 kg/m^3
  - It is recommended that the sand point be between 35-37%
  - w/c ratio was ≤0.50
  - the content of aggregate of 0.25 mm fraction should not be less than 4%, at the same time the dust content (cement + aggregate of 0.125 mm) should be limited to 400 kg/m^3, , and cement + aggregate of 0.25 mm fraction should be limited to 500 kg/m^3
  - For the sake of electrical charge dissipation, the concrete must be reinforced with steel fibers in the amount according to the floor design, but not less than 20 kg/m^3 of concrete (minimum) for 1/50 fiber, ensuring the required conductivity.
  - In a situation where the concrete composition does not meet the above recommendations, it is possible to approve the concrete mixture once after reviewing the recipe.
- Depending on the conditions during the execution of the floor and the subsequent maturation of the concrete, the selection of the appropriate cement should be taken into account. The recommended cements are Portland-slag cements (CII/B-S, CII/A-S of class 32.5 or 42.5) and metallurgical cements (CIII of class 32.5 or 42.5) or CEM I (during the period of reduced temperatures due to the relatively rapid increase in early strength)
- The designed concrete mixture should not contain fly ash additives and should not include the use of cements with fly ash additives.
- The type and dosage level of liquefying and plasticizing admixtures used should ensure the consistency of the concrete mixture and the normal mode of concrete work. The correlation of admixtures used, their selection and quantity should ensure compatibility with the other raw materials of the concrete mixture (especially cement), and should not cause the process of excessive drainage of water from the concrete mixture (so-called bleeding).

ANTI-ELECTROSTATIC CONCRETE FLOORING IN ROMIX BL ELECTRON SYSTEM

Conditions for the implementation of floating floor on the substructure:

1. Floor finishing layer: Romix BL Elektron in the amount of min. 5.5 - 6 kg/m^2, use coating conditioners such as P100, P200, P300, PH100 or PHW100 to cut off the evaporation of water from the concrete and the proper maturation process of the floor. Measurements of load-dissipation capacity should be carried out after removing the formulations from the concrete surface.
2. It is recommended to use concrete of min. class C20/25 (B25) classified as design concrete and should fully comply with the criteria of PN-EN 206:2013+A2:2021.
3. Concrete reinforced with steel fibers in the amount according to the design of the floor, but not less than 20 kg/m3 of concrete (minimum), providing the required conductivity.
4. In order to dissipate static electricity charges, the floor slab is connected to the grounding system. In the lower 1/3 of the height of the cross-sectional area of the poured slab, strips of cooper measuring 50 x 4 mm are placed, running as close as possible to the axis of the elementary fields. The circuit made in this way is grounded in at least two places, the lagging ground, should be buried at a depth of at least 0.5 m at a distance of about 1 m from the outer walls of the object. The connection of the cooper to ground should be carried out by a person with the appropriate qualifications and authorizations in accordance with applicable regulations (before pouring concrete). Before final concrete pouring, it is recommended to take voltage (U) measurements.

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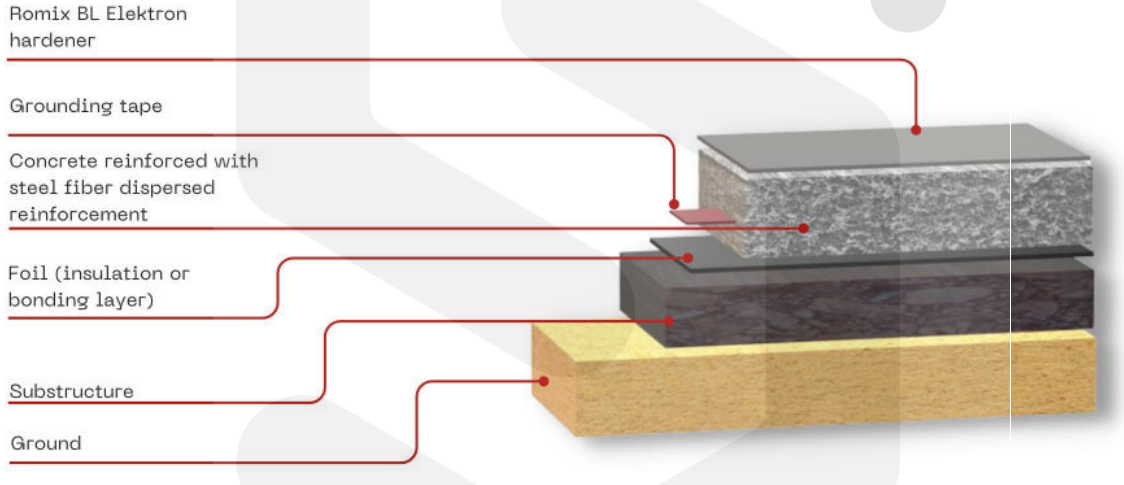
5. Slip layer made of polyethylene film of at least 0.2 mm in thickness separates the top substructure or subsoil from the concrete floor slab (when making the floor slab on the bonding layer connecting the reinforced concrete floor or reinforced concrete foundation slab with the decomposed concrete of the floor slab, use S100 or Meteor Primer W, bridging the stress between the new floor and the subsoil. Prepare the substrate for the bonding layer in accordance with the Technical Data Sheet of the product).
6. Top substructure - of differentiated sand or cement-stabilized sand or gravel, grit, clay or lean concrete (minimum thickness of lean concrete 10 cm).
7. Bottom substructure - from compacted layers of differentiated sand, gravel or ballast - minimum secondary modulus of strain of the substructure Ev2 ≥ 70 MPa.
   (The subgrade and substructure (bottom and top) combined, should have a minimum secondary modulus of strain at the level of the top substructure Ev2 ≥ 90 MPa, unless otherwise specified in the design, while meeting the condition Ev2/Ev1 ≤ 2.5).
8. Soil base - of suitably compacted native sand or native gravel - minimum secondary modulus of elasticity of the soil base Ev2 ≥ 40 MPa.

CROSS–SECTION OF ANTISTATIC CONCRETE FLOOR



INSTRUCTIONS FOR USE OF ROMIX BL ELECTRON HARDENER

The concrete base, once evenly distributed, must be vibrated and allowed to dry. The first work begins when a slight shoe mark (about 5 mm) is observed after entering the concrete. The rule does not apply to machine spreading right after concreting.

The first step is to rub the raw concrete with a trowel to break up the cement milk, and then we apply Romix BL Elektron in an amount of 3 kg/m^2 and then rub the hardener with the pad, making sure that each successive pass of the machine is perpendicular to the previous one. After completing the above steps, sprinkle the concrete again with Romix BL Elektron in an amount of 3 kg/m^2 and trowel until a uniform smooth surface is obtained. The amount of hardener applied to the floor in total must be 5.5 to 6 kg/m^2.

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The manufacturer recommends using the material in the amount of 5.5 - 6 kg/m², if there is a need to apply a larger amount, contact the manufacturer to determine the execution conditions and the concrete formulation. It is also possible to apply Romix BL Elektron hardener with high performance self-propelled seeders. It is then necessary to apply to freshly vibrated concrete. This type of method is fully in accordance with the application technology and the art of construction. It guarantees the most even and proper application. The temperature for making floors based on Romix technology should be between +5 and 25°C. It is necessary, if possible, to protect the performed surface from rain, drafts and sunlight. Pay attention to the optimal level of relative humidity in the air. At humidity levels below 40% there is a risk of efflorescence on the surface of the floor, while at humidity levels of 80% the concrete setting process may be prolonged. In addition, it should be borne in mind that the application of hardener to stagnant water and the use of water during troweling may result in a decrease in the technical parameters of the floor or its delamination.

OPERATION

The maximum load on the cured floor should begin after 28 days. The cured floor should also be protected from excessive drying, for this purpose it is necessary to care for the floor by traditional or chemical methods, adapted to its type and characteristics. Proper use of the floor should be based on regular cleaning of the floor, for example, using pads, using chemical preparations with a pH close to the pH of the substrate that do not leave a coating. You should also remember to vacuum and sweep the floor on an ongoing basis, removing any hard dirt that could cause scratches. It is advisable to use cleaning strings and, in areas particularly exposed to dirt, work platforms for employees.

STORAGE, PACKAGING SIZE AND TRANSPORTATION

- The storage period of Romix, in a dry place, is 6 months from the date of production
- Romix is packed in 25 kg bags, 1200 kg/pallet each
- During transport, transport in original packaging and protect from moisture

PRECAUTIONS

- Romix contains cement, which in its dry form is not dangerous to the skin, but when mixed with water, the cement has an alkaline reaction and is irritating to the skin
- When handling this material in any way, avoid inhaling dust
- It is recommended to wear safety glasses and gloves

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CLOSING REMARKS

Floors made using the DST technique will never achieve a uniform color, the surface will always have darker and lighter discolorations and shades. This phenomenon is commonly called marbling. Also characteristic of DST technology is the appearance of a network of micro-cracks of local extent on the floor surface. They are the result of stresses arising as a result of physical and chemical processes occurring in the maturing concrete floor. The concrete manufacturer and the flooring contractor can try to reduce this phenomenon but cannot completely eliminate it. With floors reinforced with steel fibers, some of it may be visible on the floor surface. When using an abrasive layer, the permissible amount of visible fibers known in the literature is 3 fibers per 1 m^2 of surface. During machine troweling, granules may escape from the floor, resulting in additional cracks and holes on the surface. If the number of cavities does not exceed 6 in 1 m^2 of surface, and at the same time does not exceed 20 pieces in 10 m^2 of surface, this type of phenomenon should not be considered a defect.

AS DETERMINED

- *VOB/B (German business law)*
- B.E.B.
- ACI 302.1R.-06 Guide for Concrete Floor Construction *(Report of the American Concrete Institute. Guidelines for the Construction of Industrial Concrete Floors)*
- DIM
- WTCB *(Edition of the Scientific and Technical Center for Construction)*
- DIN 15185

***Note**: The above information has been prepared on the basis of our best technical knowledge, but does not constitute the subject of legal obligations.*

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