

Technical data sheet

i.active BIODYNAMIC

Fields of application

i.active BIODYNAMIC is a highly flowable mortar grout to be used for manufacturing non-structural architectural elements of complex geometry and thin section.

Composition

i.active BIODYNAMIC is a dry premix, i.e. it contains white photocatalytic cement containing the TX Active® principle, selected aggregates and admixtures in the proper proportions, to which water is added to obtain a highly flowable white mortar.

Application Data (*)

Mixing water	~10.4 %
Workability time	approx. 30 minutes at 20° C
Bulk density of the fresh mix	approx.. 2300 kg/m ³
Application temperature	from +5 to +30° C
Final hardening	28 days

Product Data

Appearance	Dry premix in powder form
Colour	White

()These values are derived from laboratory tests in controlled environment and could be considerably modified by application*

Physical properties

Density of the fresh mortar	UNI EN 1015-6	2300Kg/m ³
Particle size distribution	-	0-1,8mm
Initial flow	UNI 7044(no shock applied)	>300mm
Workability	UNI 7044(no shock applied)	>35min

Mechanical properties

Compressive strength	UNI EN 196-1	>60MPa at 28 days
Flexural strength	UNI EN 196-1	>10MPa at 28 days
Elastic modulus	UNI 9771	>30GPa at 28 days
Roughness (for pouring into moulds made of materials with < 50 nm roughness)	Taylor-Hobson TALYSURF CCI optical profiler	~200nm
Drying shrinkage	UNI 6687	<500 µm/m
Photocatalytic activity	UNI 11247-2010	>25%



Preparation and pouring

i.active BIODYNAMIC mortar is prepared according to the specified formulation by using a planetary mortar mixer equipped with a steel bowl as follows¹:

1. Place the dry premix into the mixer;
2. Add the exact amount of water;
3. Mix for 2 minutes;
4. Stop the mixer, check the homogeneity of the mix (absence of apparent solid parts) and scrap the bowl walls;
5. Mix again for 2 minutes.

Pour the mix into the mould immediately or keep it in a container ensuring continuous mixing for maximum 30 minutes. For the purpose of obtaining elements with high-quality surface finish, we recommend pouring the mix into vertical moulds made of a rigid material - to avoid deformation in the final elements - with a controlled surface roughness below 50 nm. The vertical moulds with demountable walls that are used at CTG / Italcementi Group labs are fitted with a side sealing system which ensures the compression of the material in the mould during the casting and curing steps. Moreover, moulds must be fitted with an integrated vibration system to remove any air bubbles possibly entrained during the pouring process and especially in case of thick sections.

The i.active BIODYNAMIC mortar is intended for manufacturing non-structural elements, decorative items, and indoor & outdoor furniture pieces.

Its formulation based on fine materials allows achieving perfectly smooth and uniform surfaces as well as an excellent reproduction of mould textures.

Precautions

Work at an ambient temperature between 5° and 30°C. According to the ambient temperature, application time may vary as follows:

- In hot weather, store all ingredients at a temperature below ambient and mix with cold water to extend workability time;
- Ensure that all mould/formwork joints are properly sealed to prevent leakage; in case they are not, use silicone joints;
- All surfaces in contact with i.active BIODYNAMIC mortar should be clean and made of materials with a controlled surface roughness below 50 nm (e.g. polycarbonate or PVC);
- Provide effective protection against desiccation (drying-out), especially when manufacturing thin elements - i.e. those featuring a significant exposed surface/volume ratio;
- Protect from freezing, wind and direct sun during setting and hardening;
- After mould /formwork removal, elements must be maintained in moist conditions at 20°C and $\geq 50\%$ R.H. for at least 7 days. During early curing, avoid storage in hot, dry and windy weather.

Benefits

i.active BIODYNAMIC white mortar offers great versatility of use on account of its excellent physical and mechanical properties. Remarkable strength performance combined to enhanced flowability allow for the creation of elements of extremely complex geometry as well as cladding panels for discontinuous façades with hollow sections. The simple addition of water makes it possible to create works of high aesthetic value to meet different architectural challenges through an efficient and reliable process. Selecting the right formworks permits users to manufacture precast elements showing high quality textures in one single production step with no after-treatment needed. The addition of suitable inorganic pigments and/or coloured fine aggregates makes it possible to create prestigious custom-coloured elements. A compact matrix combined to nanometer-sized porosity provides the precast elements built with i.active BIODYNAMIC mortar with very low water absorption, greater durability and improved resistance to weathering.

¹ Depending on the type of mixer used, the optimum volume of i.active BIODYNAMIC mortar is equal to half the maximum capacity of the mixer. Duration of the production process depends on the type of mixer used.



i.active BIODYNAMIC mortar is of a brilliant white colour and, thanks to the presence of photocatalytic cement, gives photocatalytic properties to the final elements. For this reason, in the presence of natural light (and in particular of the ultraviolet component of the light spectrum) or of a suitable artificial light, a strong oxidation process takes place at the surface of the final element, leading to the decomposition of certain organic and inorganic substances, when in contact with the surface itself of the cement based element. Accordingly, i.active BIODYNAMIC confers the final elements, properties of:

- purifying the air and achieving an effective reduction of organic and inorganic polluting substances generated mainly by human activities – i.e. power plants, cars, house heating systems, etc. – responsible for the atmospheric pollution;
- enhancing and preserving over time the aesthetic appeal of the final elements, as well as reducing the frequency of cleaning and aesthetic maintenance services

For professional use only. The use of this product should be based on investigations and evaluations made by the user.

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