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QEZAC QUANTUM DOT MODIFIED EMBEDDING ZINC ACTIVATING CEMENT

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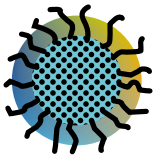

QEZAC QUANTUM DOT MODIFIED EMBEDDING ZINC ACTIVATING CEMENT

3-part geopolymeric binder for embedding & activating galvanic zinc anodes

PRODUCT DESCRIPTION

The QEZAC binder is a shrinkage controlled geopolymeric binder, containing admixed Carbon Quantum Dots (CQD's), formulated to be used as Embedding Zinc Anode Cement. The admixed Carbon Quantum Dots (CQD's) specifically increase galvanic activity of the EZ-anode, increase adhesion strength and ionic conductivity due to their versatile surface and superior electron transfer capability. The CQD's are part of a composite hygroscopic admixture formulation providing sufficient ionic conductivity for maintaining galvanic protection under dry conditions. The QEZAC binder is a non-cementitious 3-component binder containing glass-fibers in compliance with ASTM C1666/0 1666/M-07 and EN 15455 for the use as an embedding and activating matrix for zinc anodes. The QEZAC binder is preferentially applied like a fine putty to uncoated concrete surfaces. It forms a matrix with excellent adhesion to concrete surfaces characterized by a volumetric porosity of > 35 %, high ionic conductivity and high durability.

FIELDS OF APPLICATIONS

The QEZAC binder is especially suited for the use as embedding binder for metallic zinc mesh, forming a durably active **E**mbedded **Z**inc **A**node (EZ-Anode) on concrete surfaces for the galvanic corrosion protection of steel reinforcement in concrete according to EN 12696.

- Preparation of EZA – galvanic zinc mesh anodes, usually applied in a thickness of 6 – 8 mm to the concrete surface, containing usually 2,7 – 7 kg zinc mesh/m², assuring reliable galvanic corrosion protection of steel in concrete for 20 – 40 years.
- EZA Galvanic Surface Anodes for corrosion protecting of steel reinforcements in concrete members of parking decks, bridges, tunnels, marine port structures such as decks, columns, soffits, beams, abutments, walls etc.
- EZA Galvanic Surface Anodes are especially suited for the electrochemical corrosion protection (CP) of pre-stressed concrete members, assuring the prevention of hydrogen embrittlement of the steel reinforcement and steel strands.

ADVANTAGES

_Simple and easy application
_Maintenance free corrosion protection of steel in concrete
_Suited for pre-stressed concrete members
_Prevention of passivation of the zinc anode surface
_Providing enough space for the anodic products formed
_Prevention of auto-corrosion of the zinc anode
_High adhesion to concrete surfaces > 1,5 Mpa
_Low E-Modulus < 7 GPa
_High electrolytic conductivity, specific resistance at 75% rh < 90 Ohm.m
_Compatible with acrylic, epoxy and PU based cover/seal coats
_High sustainability (no or minimum concrete refuse, no fresh concrete required, minimum energy required for the preparation of the concrete surface, maintenance free)

MATERIAL DATA

Color and Consistency

Component A	Component BQ64	Component C (Filler)
Greyish thixotropic liquid dispersion	Transparent brownish liquid	0,2 – 0,5 mm fine whitish marble sand

Packaging

Component A	Component BQ64	Component C (Filler)
18 Liter PP pails à 12 kg	5 liter PP containers à 6 kg	Paper bags à 25 kg

Storage and Shelf Life

Stored in the original packaging in dry conditions, protected from freezing, this product will keep for at least

Component A	Component BQ64	Component C (Filler)
one (1) year	two (2) years	unlimited

Storage Temperature:	
Minimum	0° C
Maximum	35° C

PHYSICAL DATA OF COMPONENTS

	Component A	Component BQ64	Component C (Filler)
Density [g/cm³] [20 °C]	1,53	1,49	2,6 – 2,8 bulk density: 1,46
Viscosity	14 000 cP [26°C]		
pH [20 °C]	12,7	14	8,5 – 9,5 100 g/l
Mixing Ratio/weight	100	50	103

Pot life	approximately one (1) hour (20 °C)
Start Hardening	70 – 90 min
Hardened after	4 hours

PHYSICAL DATA OF QEZAC BINDER

Specific weight [20 °C]	1,76 g/cm³
Maximum grain size	0,5 mm
Layer Thickness	minimum 2 mm, maximum 10 mm

PHYSICAL DATA OF SOLIDIFIED QEZAC MATRIX

Compressive Strength, EN 12190 [20 °C]	28d 3 month	> 15 Mpa > 20 Mpa
Flexural Strength, EN 12190 [20 °C]	28d 3 month	> 5 MPa > 7 MPa
Pull Off Strength on concrete [20 °C]	28d 3 month	> 1,5 MPa > 2 Mpa
Elastic Modulus, EN 13412		< 7 MPa
Density at 20°C, 75% rel. humidity	water saturated dried at 40°C	1,76 g/cm³ 1,67 g/cm³
Water fillable porosity		> 30 Vol. %
Specific electrolyte resistance	75% rel. humidity 45% rel. humidity	< 90 Ohm.m < 900 Ohm.m

SYSTEM INFORMATION

The system configuration, as described in the installation guideline, QEZAC 2016 must be fully complied with and may not be changed.

For optimum performance as EZA Galvanic Surface Anode, the hardened binder is recommended to be coated with a suitable polymeric coating, e.g. epoxy resin, poly urethane, etc. with a low water vapor permeability to prevent drying out of the concrete substrate.

APPLICATION DETAILS

MATERIAL CONSUMPTION

Applied on clean smooth concrete surfaces, 9 – 11 kg/m² QEZAC binder has to be applied to embed a 1 – 2 mm thick zinc mesh

SUBSTRATE QUALITY

The concrete substrate must be sound and of sufficient compressive strength (minimum 25 N/mm²) with a minimum pull off strength of 1.5 N/mm². The substrate can be damp but must be free of standing water and free of all contaminants such as oil, grease, coatings and surface treatments etc. If in doubt, apply a test area first.

SUBSTRATE PREPARATION

The concrete substrate surface has to be free of loose or sandy parts. Surface contamination's have to be thoroughly removed, especially oil, fats, wax. The pull-off strength of the concrete should be > 1 Mpa, preferentially > 1,5 MPa. Optimum adhesion of the QEZAC binder will be obtained by cleaning and preparing the concrete surface with sandblasting, steel-ball blasting. The temperature of the concrete surface has to be above 10°C

APPLICATION CONDITIONS/LIMITATIONS

Substrate Temperature	+10°C min./+30°C max.
Ambient Temperature	+10°C min/+35°C max.
Substrate Moisture Content	Can be applied on damp concrete, dry concrete has to be prewetted before application
Relative Air Humidity	30% min, preferentially > 75% the QEZAC binder, after application, should be kept humid for at least 24 hours, preferentially to obtain design strength values keep humid for 7 days, e.g., by covering it with plastic foil.

APPLICATION INSTRUCTIONS

PROCESSING

Mixing of components

Mix Component A (12,0 kg, liquid dispersion) with Component BQ64 (6,0 kg, brownish clear transparent solution) in the Component A 18 liter pail thoroughly. Always add Component BQ64 to Component A while mixing – never add Component BQ64 batch wise. Subsequently mix in Component C (Carolith 12 kg, marble sand 0,2 – 0,5 mm). Do not add water to adjust consistency/ fluidity. The QEZAC binder is highly thixotropic and will become fluid upon application with appropriate tools.

MIXING RATIOS in kg

Component A	Component BQ64	Carolith 0,2 - 0,5 mm	Sum in kg
12,0	6,0	12,0 – 12,3	30
100,0	50	103	253

Mixing Time

Prior to mixing, homogenize component A by mixing it in the pail for about 2 minutes. Then add slowly Component BQ64 while mixing, continue mixing for 1 minute and add gradually the filler while mixing.

Mixing Tools

Mix using electric mixers (about 500 rpm or more) with helical paddles or other suitable equipment

Application Method/Tools

- Do not add water to adjust consistency/fluidity. The QEZAC binder is highly thixotropic and will become fluid upon application with appropriate tools.
- Place mixed QEZAC binder onto the substrate and spread evenly to the required thickness uniformly with a rubber or metal trowel or spatula. A seamless finish can be achieved if a wet edge is maintained during application.
- Follow the instructions of the installation guideline QEZAC 2016.

Cleaning advices

Not hardened material may be washed off with water, shortly after hardening with hot water. Dried and hardened material may only be removed mechanically.

Pot Life

Approximately one (1) hour (20 °C)

NOTES ON APPLICATION/LIMITATIONS

- If QEZAC binder is applied as a base layer for embedding zinc-mesh anodes, a layer of minimum of 2 mm thick must be applied (3 kg/m2).
- Prevent premature drying by protecting from strong wind and do not expose to direct sun light.
- Freshly applied QEZAC binder must be protected from water.
- Under no circumstances add water to the mix.
- It is recommended to apply a suitable seal coat on top of the hardened QEZAC binder.

VALUE BASE

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

HEALTH and SAFETY INFORMATION

Safety and disposal instructions in the MSDS (material safety data sheets) and on the container labels have to be observed and followed.

LEGAL NOTES

The purpose of this product data sheet is the description of the properties and applications of the QEZAC binder. The described properties and reported values may vary depending on the solicitude and processing on which we do not have any direct influence. Our warranty is therefore limited to the quality of the delivered product. CAS reserves the right to change the properties of its products. Users must always refer to the most recent issue of the local Product Data Sheet. The product data sheet does not contain a complete manual of use and application. Our advice and consultancy is required for the use of the QEZAC binder and the EZA system. The information above is believed to be accurate and represents the best information currently available to us. The QEZAC binder and the EZA system are protected by patents.

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