

Dynasytan® AR

Binder for ceramic casting molds. Binder for 2-pack zinc rich paints

Technical data

Properties and test methods	Value	Unit	Method
Density (20 °C)	approx. 0,93	g/cm ³	DIN 51757
Viscosity (20 °C)	4	mPa·s	DIN 53015
SiO ₂ -Content	19,0-21,0	% (Mass)	AN-SAA 0851
flash point	< 21	°C	DIN 51755
Appearance	milky liquid	-	-
Acidity (H ₂ SO ₄)	0,07-0,14	% (Mass)	AN-SAA 0768
Gel-time	3-10	min	AN-SAA 0987

Registrations

Dynasytan® AR

EINECS/ELINCS (EU):	Yes
AICS (Australia):	Yes
DSL/NDL (Canada):	Yes
PICCS (Philippines):	Yes
TSCA (USA):	Yes
IECS (P.R. China):	Yes
ENCS (Japan):	Yes
ECL (South Korea):	Yes

Dynasytan® AR is a pre-hydrolyzed, ready-for-use silicic acid ester – hybrid binder with additional colloidal SiO₂ particles.

Dynasytan® AR contains Ethanol as solvent and sulfuric acid as catalyst.

Dynasytan® AR is especially suited for use in:

- ceramic casting molds, methods: precision casting (lost wax or casting shell methods) and ceramic molding (ceramic form or SHAW molding processes)
- Refractory materials
- 2-pack zinc dust anti-corrosion paints, (e.g. shop-primers).

Dynasytan® AR in conjunction with especially refractory forming materials results in ceramic casting molds that have highly precise surfaces and dimensions. In zinc rich paints with a zinc content above 95% Dynasytan® AR binds the zinc and allows for the formation of hard coatings with an effective galvanic protection.

Safety and handling

Before considering the use of Dynasytan® products please read its Safety Data Sheet (SDS) thoroughly for safety and toxicological data as well as for information on proper transportation, storage and use. The Safety Data Sheet is available after registration on our website www.dynasytan.com or upon request from your local representative, customer service or from Evonik Operations GmbH, Product Safety Department, E-MAIL sds-hu@evonik.com.

Packaging, storage and shelf life

Dynasytan® AR is supplied in drums of 185 kg bulk containers of 850 kg.

Dynasytan® AR is a pre-hydrolyzed binder and thus will age, especially close to heat sources.

Thus the containers should not be stored in direct sunlight.

In the unopened container Dynasytan® AR has a shelf life of min. 6 months from delivery.

Properties and applications

Dynasylan® AR can be used as delivered to make ceramic slips, immersion/ramming mixes, and 2-pack zinc dust anti-corrosion paints.

The degree of hydrolysis and acidity have been optimized for the required reactivity and sufficient storage stability. Through the addition of alcohol and/or water it is possible to vary the SiO₂-content and the curing properties.

The hydrolysis and condensation has been started during the production of the binder. Through a shift in the pH-value this process is accelerated. This shift is achieved by addition of fillers, pigments, additives, or through the evaporation of solvent or exposure to atmospheric moisture. The resulting silicic acid gel cures rapidly at ambient temperatures in air. The process of curing can be accelerated through the addition of alkali catalysts.

For the use of Dynasylan® AR as a binder in zinc dust paints, the curing process is much faster than when Dynasylan® XAR is used (see product information sheet). This can lead to the formation of cracks (mudcracking) in thicker coating. Thus Dynasylan® AR is recommended for thinner coatings such as shop-primers. By proper application and formulation zinc dust paints on the basis of Dynasylan® AR can yield excellent corrosion protection.

The storage stability of Dynasylan® AR is 6 months. It is determined by the degree of partial hydrolysis and the pH value. Nonetheless, the condensation and hydrolyzation proceeds during storage, as these reactions have not been suppressed, only reduced.

The further the hydrolysis has proceeded the faster the condensation (and thus gelation) occurs when the product is used. This means, that the reactivity depends on the age of the binder which needs to be considered during use. The reactivity of the slurries and 2-pack zinc dust paints depend on the age of the binder.

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