ZFES®

anticorrosive zinc-rich composition

TS 20.30.12-004-12288779-2017

VMP® 1991

Quality management system is certified according to ISO 9001

Description

Double-packed composition based on zinc paste and ethyl silicate binder.

According to the metal zinc mass content (more than 85 %), the coating meets the operational requirements SSPC Paint 20 (level 1, type II), can be considered as "cold" galvanizing.

Recommended use

Anticorrosive protection of steel articles and structures operated in the atmospheric conditions of all macroclimate areas, types of atmosphere and placement categories according to GOST 15150. The coating is resistant to sea and fresh water, to aqueous solutions of salts (pH = 6.0-9.0), to oil and oil products and can be used in cold and hot utility and drinking water supply system.

Heat resistance of the coating: in a dry, non-aggressive atmosphere, long–term - plus 150 ° C (short-term -plus 200 °C), in liquids - plus 105 ° C.

The ZFES composition is used as:

- primer in complex systems of anticorrosive protection with POLYTON-UR, ISOLEP-mio, ALUMOTAN, FERROTAN, as well as with other top coats on polyurethane, epoxy, vinyl-epoxy, vinyl chloride and copolymer-vinyl chloride bases;
- primer in complex fire-proof systems with the PLAMCOR series;
- an independent anticorrosive coating, including as a friction primer for contact surfaces of steel structures of bridges, buildings and structures.

Welding works are allowed on the ZFES single-layer coating (without deterioration of the quality of a weld).

Certificates, approvals

Certificate of state registration No. RU.66.01.31.013.E.000134.07.18 dated 11.07.2018

Industrial and civil construction: recommended for use according to GOST 9.401, Guidance document Trust Gidromontazh (РД ГМ-02-18);

Transport construction: STO-01393674-007-2022 Central Research Institute of Transport Construction JSC, STO 483-2010 (frictional coatings).

Oil and Gas Industry: Interdepartmental Commission decision No. 347 P dated 23.10.2000.

Power engineering: RD 153-34.1-40.504-00, ORGRES, UES of Russia RJSC.

Shipbuilding: YAKUT 25-069-2001

Approved by testing centers: Central Research Institute of Transport Construction; Lacquer Coating Research Institute, Khotkovo town; Melnikov Central Research and Design Institute of Steel Structures, Institute of Energy Resources Transportation Problems, Research Institute of Applied Chemistry, Lakokraska Research Centre, Central Research Institute of Constructional Material "Prometey", Institute of Ecology and Evolution Problems RAS named after A.N. Severtsov (Russian-Vietnamese Research and Technology Center, Nyachang).

Technical data

Coating	
Color of coating	Gray (the shade is not standardized) matte
Zinc mass content in dry coating, %	90
Thickness of one dry-layer, μm	40-50
Adhesion (GOST 31149)	2 grades, not more than
Composition	
Density, g/cm^3	1.85-2.05
Viscosity	thixotropic
Non-volatile matters, %	65.0-72.0
Pot life at temperature (20±2) °C	8 hours, not less than
Drying time to 3 degree (GOST 19007-73) at temperature (20±2)°C and relative air humidity (65±5)%, min	20, not more than
Theoretical spreading rate of one-layer coating, g/m^2	228-285

Surface preparation

- to degrease metal surface to 1 grade according to GOST 9.402;
- to do abrasive blasting cleaning to 2 grade according to GOST 9.402 (Sa 2 $^1/_2$ ISO 8501-1) with roughening recommended surface profile is acute-angled (grit), surface roughening Rz=30-50 μm.

Use of a hand-worked and power surface cleaning tool is not allowed;

- to remove dust.

Preparing of the ZFES coating before overcoating:

- degrease (if necessary) with aqueous solutions of detergents (pH of solutions should be in the range of 6 to 8), slight degreasing (without grinding) using white spirit is allowed;
- remove moisture and dust.

Application

- mix zinc paste thoroughly to homogenous condition;
- completely (mixing ratio 100:15 by mass, respectively) add the binding agent to the paste with constant stirring;
- mix to homogenous condition before application.

If necessary, the ZFES composition should be diluted to the working viscosity:

- for airless spray from 20 to 50 seconds;
- for conventional spray from 20 to 30 seconds.

ZFES is recommended to be applied at a temperature from minus 15 °C to plus 40 °C and relative air humidity from 30 to 80 % (aimed from 50 % to 80 %). The temperature of the surface to be painted must be above the dew point by at least 3 °C, but not above plus 40 °C. When painting, the temperature of the material should not be below plus 15 °C.

When carrying out painting work below 0 °C, the surface to be painted must be free from snow, ice or frost.

Apply 2-5 layers by airless, conventional (air) spray, brush/roller (striped painting).

Exceeding the total thickness of the coating by more than 200 μm can lead to cracking and deterioration of the adhesion of the coating to the metal.

Recommended application parameters:

Airless spray	
Recommended thinner	SOLV-ES (TS 2319-080-12288779-2009)
Quantity	up to 5 % by mass
Nozzle diameter	0.015”-0.021” (0.38-0.53 mm)
Pressure	10-20 MPa (100-200 bar)
Conventional (air) spray	
Recommended thinner	SOLV-ES
Quantity	up to 10 % by mass
Nozzle diameter	1.8-2.2 mm
Pressure	0.3-0.4 MPa (3-4 bar)
Brush/roller	
Recommended thinner	SOLV-ES
Quantity	up to 5 % by mass
Equipment cleaning	SOLV-ES, thinners R-4, 646.

Each subsequent layer of the ZFES composition should be applied after drying the previous "to tack free" (lightly pressing the finger on the coating does not leave a trace and does not give a feeling of stickiness).

The time before the packaging and shipment of structures at a temperature of 20 °C is not less than 12 hours, the holding time of the coating to operation in corrosive environments is 7 days.

The minimum overcoating interval by POLYTON-UR, ALUMOTAN and FERROTAN at a temperature of (20±2) °C and relative air humidity (60±5) % is not less than 6 hours; before applying other coating materials – not less than 24 hours.

The specified hardening time is recommended to be taken as indicative of practical coloring. The hardening time depends on the surface temperature and ambient air, the degree of dilution of the material, the thickness of the coating, the efficiency of ventilation and the relative humidity of the air.

It is recommended to apply coating painting systems on the ZFES coating in two steps to prevent the appearance of the "gassy surface" effect of the finish coating:

- apply a thin layer of painting systems with a "light spray" to moisten;
- apply a layer of coating painting systems for covering to the required thickness (not earlier than in 2 hours).

Storage and handling

The composition is delivered in packages: base and binding agent packed in metal buckets, metal cans and plastic fuel cans respectively depending on the weight.

Storage and transportation conditions of composition components (base and binding agent) – according to GOST 9980.5-2009 (at air temperature from minus 40 to plus 40 °C). The container with composition components shall be protected from direct sunlight and atmospheric condensation.

The shelf life of the zinc paste – 12 months, binding agent – 6 months starting with the manufacture date.

Precautions

When working with the composition, one shall observe the existing sectoral standard norms and requirements and safety measures as specified on the package label.

Personal protective equipment (goggles, face masks and respirators) shall be used, inhalation of thinners and contact of the composition or its components with skin, ocular mucosa, respiratory channels shall be avoided; use inside the premises is allowed only in case sufficient ventilation is provided.

The composition is classified as a fire-hazardous material. The ZFES coating is fire-proof, non-toxic, refers to materials that do not spread the flame over the surface.

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