TRANSMISSION TOWERS AND UTILITY POLES

Vulmkoriz-R PL

ENVIRONMENTALLY FRIENDLY PRODUCT

WATER-BASED COATING

HEALTHY – ELIMINATION OF HARMFUL EFFECTS ON HUMAN HEALTH

Product description:

Vulmkoriz-R PL is a unary, water soluble anti-corrosion material developed on the basis of a copolymer aqueous dispersion. The product forms a permanently flexible, compact film insoluble in petroleum products and water. It has excellent adhesion and colour stability. It resists well to normal weathering, UV radiation and heavy mechanical stress. It contains corrosion inhibitor and zinc phosphate ingredients with dispersed fillers and admixture of special additives.

Use:

Vulmkoriz-R PL is a multi-use (base and top) coating for steel structures, masts and electric poles etc. In particular, we recommend its use in cases where the substrate is in direct contact with petroleum products (gasoline, diesel, kerosene, jet fuel, oils, etc.).

Benefits / Resistance:

- good chemical and mechanical resistance
- resistance to raw water and all petroleum products
- resistant to chemicals, solvents, detergents and cleaners
- resists water penetration
- frost resistant
- resistance to weathering and UV radiation
- high inhibition of corrosion processes (category C2 (long durability))

Test data:

Conformity Certificate	1301-CPD-0199
TSÚS 239/2000	STN ISO 1515 (67 3031)
	STN 73 2577
	STN 73 2578
	STN 73 2580
	STN 73 2581
	STN 73 2582
	STN 73 3092
	STN 73 0242

Product data:

colour:	RAL – according to customer's choice
appearance:	matte, semi-gloss
shelf life:	24 months in original packaging in dry conditions at the temperature 5 – 35 °C

Physical data:

solids content:	66 %
viscosity:	7,5 dPa.s
abrasion resistance:	over 20 min.
density:	1,35 g/ml
adhesion to the substrate:	over 1,92 MPa
water resistance:	0 $1.m^{-2}$ per 30 min.
frost resistance:	1,74 MPa after 20 cycles

VULM BIOTECHNOLOGY s.r.o., Tuhovská 18, 831 06 Bratislava
info@vulmbiotech.com, www.vulmbiotech.com

Theoretical capacity:

5 – 8 m^2/kg at a thickness of 50 – 60 µm

Processing temperature:

minimum temperature of primer and air:	5 °C above the dew point
maximum temperature of the substrate:	30 °C
ideal paint temperature:	15 – 22 °C

Substrate:

Suitable substrates are metal structures (even light metals and alloys), roof cladding groups etc. The substrate must be coherent and sufficiently bearing, without dirt, grease and loose particles.

Instructions for use:

Apply the anchor coat of **Vulmkoriz-R PL** diluted with water on a dry or slightly damp substrate in a ratio of 1 kg : 0.1 l. After drying (approx. 4 hours) apply another coat, i.e. mix of the paint material and water in the same ratio of 1 kg : 0.1 l. We recommend 2 – 3 layers in the thickness of 100 – 120 µm.

Time data for application:

dry to touch:	approx. 4 hours
re-coating interval:	approx. 4 hours
cured:	approx. 24 hours completely

at a relative air humidity of 65 % and temperature of 23 °C

Cleaning of tools:

Immediately after use, with water.

Safety:

Vulmkoriz-R PL when handling, proceed in accordance with the general safety measures, follow the safety instructions on the packaging labels and on safety data sheets. Data, specifications, directions and recommendations given in this technical data sheet are based on experience gained in modeling of supposed ways of applications, or under specially defined conditions. Their accuracy, completeness or appropriateness under the actual conditions of any intended use is not guaranteed and must be determined by the user. The manufacturer and distributor are not responsible for the results achieved, loss, direct or consequential damages arising from failure to comply with the recommended use of the product, which go beyond the conditions herein.

Category and sub-category of a regulated product:

A/d/VR: Interior and exterior paints for wood, metal and plastics finishing. The limit value for the highest content of volatile organic compounds: 130 g/l.

The highest content of volatile organic compounds in the state in which the regulated product is ready for use: 117.3 g/l.

Name of the test, or the name of the tested characteristics and a number of a standard, or other identifier of the test method, procedure:

determination of non-volatile substances	STN ISO 1515 (67 3031)
coating adhesion to the substrate	STN 73 2577
water resistance of the surface finish	STN 73 2578
transfer of water vapour through the surface finish	STN 73 2580
resistance of the surface coating against sudden temperature changes	STN 73 2581
abrasion resistance of the surface coating	STN 73 2582
absorption	STN 67 3092
resistance to oil products	STN 64 0242

Samples conditioning:

Laboratory temperature 23 °C ± 2 °C.

Used test device, its metrological traceability:

air conditioner cabinet ILKA	Z 90 0003
laboratory oven	Z 90 0004
Erichsen type 417	M 90 0015
glass bell with burette	M 90 0017
technical stopwatch	M 90 0018
analytical scales Sartorius BP 300 S	M 90 0088

Deviations from the standardized test procedure and all circumstances that might affect the test result:

none

FOR CONCRETE STRUCTURES

The initial tests verified:

Property	Declared value or class	Number of test report and laboratory reference
Capillary absorption and water permeability	< 0,1 kg/m^2. h^{0,5}	Test Report no.151/2006 dated 13.04.2006 TSÚS, n.o., branch Tatranská Štrba
CO_2 permeability	> 50	Test Report no.151/2006 dated 13.04.2006 TSÚS, n.o., branch Tatranská Štrba
Water vapour permeability – equivalent diffusion thickness	class II from 5 m to 50 m	Test Report no.151/2006 dated 13.04.2006 TSÚS, n.o., branch Tatranská Štrba
Adhesion in pull-off tests	0,8 N/mm^2	Test Report no.151/2006 dated 13.04.2006 TSÚS, n.o., branch Tatranská Štrba
Resistance to temperature changes – cyclic exposure to storm rain	After the test without blistering, cracking, or peeling, adhesion strength 0,8 N/mm^2	Test Report no.151/2006 dated 13.04.2006 TSÚS, n.o., branch Tatranská Štrba
Resistance to temperature changes – ageing 7 days at 70 °C	After the test without blistering, cracking, or peeling, adhesion strength 0,8 N/mm^2	Test Report no.151/2006 dated 13.04.2006 TSÚS, n.o., branch Tatranská Štrba

Information on measurement uncertainty:

They are specified in tables of measured values in the form of the combined measurement uncertainty.

Results of measurement:

1. Water resistance ($l.m^{-2}$ per 30 min)

Sample no.	Water	Petrol	Diesel	Heating oil	Transformer oil
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
Arith. mean	0	0	0	0	0
C.m.u.	0,042	0,042	0,042	0,042	0,042

2. Absorptivity of the paint film after 72 hours (%)

Sample no.	Water	Petrol	Diesel	Heating oil	Transformer oil
1	0,216	0,188	0,106	0,097	0,097
2	0,209	0,201	0,101	0,096	0,096
3	0,208	0,204	0,108	0,104	0,104
Arith. mean	0,211	0,198	0,105	0,099	0,099
C.m.u.	0,0036	0,0069	0,0030	0,0036	0,0036

3. Equivalent diffusion thickness r_D (m)

Sample no. 1	1,858
Sample no. 2	1,796
Sample no. 3	1,791
Arithmetic mean	1,815
Combined measurement uncertainty	0,0308

4. Adhesion to the substrate (concrete) (MPa)

Sample no. 1	1,92
Sample no. 2	1,88
Sample no. 3	1,93
Arithmetic mean	1,91
Combined measurement uncertainty	0,0216

5. Resistance to sudden temperature changes – adhesion to the substrate after 25 cycles (MPa)

Sample no. 1	1,74
Sample no. 2	1,71
Sample no. 3	1,75
Arithmetic mean	1,73
Combined measurement uncertainty	0,017

6. Resistance to oil – adhesion after 28-day storage

Sample no.	Petrol	Diesel	Heating oil	Transformer oil
1	1,73	1,72	1,57	1,59
2	1,77	1,69	1,61	1,64
3	1,71	1,66	1,50	1,57
Arithm. mean	1,74	1,69	1,56	1,56
Combined measurement uncertainty:	0,0249	0,0245	0,0455	0,0425

7. Abrasion resistance (min)

Sample no. 1	> 20
Sample no. 2	> 20
Sample no. 3	> 20
Arithmetic mean	> 20
Combined measurement uncertainty	–

8. Content of non-volatile substances (%)

Sample no. 1	61,66
Sample no. 2	61,65
Sample no. 3	61,61
Arithmetic mean	61,64
Combined measurement uncertainty	0,0216

Identified weaknesses:

none