

**Institute for material testing s.c. Belgrade**  
**Central Laboratory for Material Testing**  
**Laboratory for Waterproofing and Anticorrosion Protection**  
Belgrade, Vojvoda Music Boulevard No 43  
tel: (011) 2650 322 fax: (011) 3692 772, 3692 782  
website: www.institutims.rs

## TEST REPORT

Number UIV 079/15

Subject to testing: Subject of investigation: Colors and protective system of colors (for protection of metals from corrosion):  
"Quick drying base paint for metal "  
"Quick drying enamel"

Ordering: NEVENA COLOR Ltd  
Djordja Stamenkovca Street nn  
16000 Leskovac

Request / Offer / Contract: Purchaser: - from 20.04.2015:  
IMS No .: 41-4332 from 20.04.2015.

Content: Total 4 pages

Sampling performed by -

Report approved by: Laboratory for waterproofing and anti-corrosion protection  
Head:  
(Seal and handwritten signature )  
Verica Laninovic, engineer

Belgrade, 08.06.2015.

## 1. GENERAL INFORMATION

### 1.1. Subject to testing

Colors and protective paint system (for protection of metals from corrosion): "Quick drying base paint for metal " "Quick drying enamel "

### 1.2. Test methods

SRPS EN ISO 1522: 2008 - Paints and varnishes - Examination of throttling pendulum oscillations

SRPS EN ISO 2431: 2007 - Paints and varnishes - Determination of the leakage time using the leakage container

SRPS EN ISO 2409: 2010 - Paints and varnishes - Cross-sectional testing

SRPS EN ISO 2811-1: 2014 - Paints and varnishes - Determination of density - Part 1: Piknometer

SRPS EN ISO 3251: 2012 - Paints, varnishes and plastics - Determination of the content of non-volatile matter

SRPS ISO 6270-1: 2000 - Paints and varnishes - Determination of resistance to humidity. Continuous condensation

SRPS EN ISO 9117-1: 2010. Colors and varnishes - Testing of drying- Part 1: Determination of total dry state and total drying time

SRPS EN ISO 9227: 2014 - 'Corrosion tests in artificial atmospheres. Salt spray dilution tests (point 5.2 - NSS testing)

### 1.3. Measuring and control equipment

Digital thermometer (KIA), ser. no. 0161646; knives for sealing dry film, evid. no. IMS 10046

Pichnometer "Erichsen", 50 ml, Mod. 290/II, without evidence. no.

Digital analytical balance "Kern", evid. no. IMS 10478;

Viscosity meter with "Erichsen" leakage container, Mod. 243/VII, without evidence. no.

Digital seconds-counter RUCANOR, without evidence. No .; Dryer, Evidence no. IMS 3383

Device for determining the color and lacquer drying time, without evidence. no.

Thickness counter of dry coating film "Elcometer 456", Evidence No. IMS 10399

Salt chamber "Industrial Filter ", record number IMS 2077; humid chamber, record number IMS 3398

Pendulum for determination of hard coating by Koning method, Elcometer 3034, resolution 0.1 s; evid. no. 10413

### 1.4. Test sample

Designation on the sample:	Quick drying anti-corrosion base color Quick drying enamel varnish
Manufacturer:	NEVENA COLOR, Leskovac
Date and place of sampling:	Producer submitted to samples in Laboratory on April 21 2015, (record of admission of sample LZ 259 No. 047/15-UIV)
Quantity of samples sent for examination:	basic color: 0,9 kg x 2 finish color: 0,75 l x 2 diluted approx 1 l

Note: the preparation of the samples has been carried out according to the technology by the manufacturer

### Definition of protective system of colours

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Type of coating		NDFT, $\mu\text{m}$ (nominal thickness of dry film)
base color	"Fast drying base color for metal "	2 x 40
finish color	"Fast drying enamel"	2 x 40
Total thickness of dry film:		160

## 2. TEST RESULTS

Characteristics	Results	
	base color	finish color
Density, g / ml	1.410	1.020
Expiration time, s (ISO Ø6 with 5% dilution)	100.9	76,4
Content of non-volatile matter *, mass %	70.81 ± 1.25	49.46 ± 0.11
Condition "Completely dry" achieved after (substrate cell sheet)	30 min	60 min
Hard film hardness, pendulum by Koning	33,2	32,0

\* An expanded measurement uncertainty is expressed with  $k = 4,3$  kOa providing level of confidence of 95%

Characteristics (untreated patterns)	Plate 1	Plate 2	Plate 3
The thickness of the dry film system, $\mu\text{m}$	171	168	162
SRPS EN ISO 2409 (adhesion)	0	0	0

### Test results for C3 average lifespan

Assessment after testing in salt chamber; duration of testing: 240h			
SRPS EN ISO 4628-2 (Creation of blisters)	0 (no)		
SRPS EN ISO 4628-3 (corrosion)	Ri 0 (corrosive surface 0%)		
SRPS ISO 4628 - 4 (occurrence of cracks)	0 (invisible at magnification 10x)		
SRPS ISO 4628 - 5 (spalling)	0 (invisible at magnification 10x)		
Dry film thickness, $\mu\text{m}$	156	164	169
SRPS EN ISO 2409 (adhesion)	0	0	0

\* Spreading of corrosion did not occur 1mm around the notch

Evaluation after testing in the humidified chamber; duration of testing: 120 h			
SRPS ISO 4628 - 2 (Creation of blisters)	0 (no)		
SRPS ISO 4628-3 (corrosion)	Ri 0 (rust the surface 0%)		
SRPS ISO 4628-4 (occurrence of cracks)	0 (invisible at magnification 10x)		
SRPS ISO 4628-5 peeling)	0 (invisible at magnification 10x)		
Thick film thickness, $\mu\text{m}$	168	158	172
SRPS EN ISO 2409 (adhesion)	0	0	0

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### 3. INTERPRETATION OF TEST RESULTS

Based on the results of the examination of the submitted color samples and the protective colour system (160  $\mu\text{m}$ ):

"Quick drying paint for metal" 2x40  $\mu\text{m}$

" Quick drying enamel " 2x40  $\mu\text{m}$

of the producers "NEVENA COLOR", Leskovac can be concluded that the mentioned system FULILLS the requirements of SRPS ISO 12944 for the C3 category of atmospheric corrosivity - AVERAGE (M) lifespan, The tested color characteristics are in accordance with the technical characteristics supplied by the manufacturer.

Note: Interpretation of test results is not within the scope of Laboratory accreditation (according to SRPS ISO/IEC 17025: 2006 only the standards of the prescribed method of testing and sampling are accredited; for this reason, in Report of examination that contains the opinion, the finding, the interpretation or the evaluation of the test results must be mentioned above)

Presented results relate exclusively to the sample tested. No liability shall be taken regarding the authenticity of the sampling, unless it was carried out in the presence of a representative of the Laboratory. Report must not be duplicated, except as the whole, without the approval of the Central Laboratory for Material Testing.

Belgrade, date 08.06.2015

Head of Testing  
Signature  
Milorad Djusic, engineer