



## REPORT

Bend test (cylindrical mandrel) according to ISO 1519 of ZINGA

Haarlem, 3 August 2010

**Civil projects**  
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**Project number** : 20100176

**Report number** : LAB10-0698-RAP

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## **1 INTRODUCTION**

### **1.1 Order**

By order of Zingametall bvba in Eke, Belgium, the Centrum voor Onderzoek en Technisch Advies (COT bv) in Haarlem, The Netherlands, has performed the bend test (cylindrical mandrel) according to ISO 1519 of ZINGA on 3 delivered panels.

The order for the determination has been given in the letter of 10 March 2010.

### **1.2 Samples**

Samples : 3 test panels with ZINGA, coded 1, 2 and 3

COT sample number : 12-03-10/0206

Received : 11-03-2010

### **1.3 Substrate**

ZINGA has been applied by Zingametall on Sa 2½ blasted steel panels, dimensions 100 x 200 x 1 mm. The roughness after blasting is Rz 50 – 70 µm. The specified dry coating thickness is 60 µm.

### **1.4 Dry film thickness**

The dry film thickness of ZINGA has been measured by a magnetic dry film thickness gauge (COT apparatus number E009) according to ISO 2808 method 6.

## **2 PROCEDURE**

The panels have been cut in 4 parts, dimension 50 x 100 mm.

The bend test (cylindrical mandrel) according to ISO 1519 has been performed with a type 2 mandrel tester at  $23 \pm 2$  °C and  $50 \pm 5$  % RV. The diameter of the mandrels are 2 mm, 3 mm, 4 mm, 5 mm, 6 mm, 8 mm, 10 mm, 12 mm, 13 mm, 16 mm, 20 mm, 25 mm and 32 mm.

Immediately after bending the coating has been examined under good illumination with normal corrected vision.

Date of test: 26 July 2010.



### 3 RESULTS

Table 1: Dry film thickness

Dry Film Thickness (micrometers)			
	Panel 1	Panel 2	Panel 3
Minimum	66	66	70
Maximum	90	86	84
Average	78	77	77
Standard deviation	8	6	4
Number of measurements	10	10	10

Table 2: Bend test

	Ø Mandrel (mm)	Defects
Panel 1	32	No cracks visible
	25	No cracks visible
	20	No cracks visible
	16	No cracks visible
Panel 2	12	No cracks visible
	10	No cracks visible
	8	Cracks visible in coating
	6	Cracks visible in coating
Panel 3	12	No cracks visible
	10	Cracks visible in coating
	10	Cracks visible in coating
	8	Cracks visible in coating

### 4 CONCLUSION

ZINGA (COT sample number 12-03-10/0206), dry film thickness about 60 µm, shows no cracks when bending on a cylindrical mandrel with a diameter of 12 mm.

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