



TEST REPORT

Test report No.: 2-453.1/11
Customer: Clerprem Spa
Via Bianche 10
36010 Carré (VI) - Italy
Contract/Date: C3 / 11002226 / 29/06/2011
Quotation No.: 110306 / 23/06/2011
Archival storage: 7 month
Test specimen: Powder coated plates and original parts
Test objective: Testing of resistance in accordance to DB TL 918 340
(interior parts)
Origin of sample: Samples sent by customer
Date of receipt: 11/07/2011
Test start date: 12/07/2011
Test end date: 30/08/2011
Laboratory: Application Technology
Scope of testing: Test procedure and characteristic values in accordance
with table 1 of the DB TL 918 340 (March 2005)
Number of pages: 6

The signed ^{*)} testing methods are not accredited.



1. Test specimen

The customer delivered powder coated aluminium plates and original parts. These specimens were coated (according to the manufacturer information) with the following coating systems:

Pretreatment: Phosphating

Powder coating: Interpon 610 AS RAL 9006 MR BOND (Fa. Akzo)

Table 1: Designation

Designation of parts (iLF)	
Aluminium plates	P 1
Original parts	P 2

2. Test procedure in accordance to DB BN 918 340

2.1 Determination of dry film thickness

Test procedure: Measurement of dry film thickness according to DIN EN ISO 2360

Table 2: Dry film thickness

Specimen	Mean value [μm]	Standard deviation	Maximum [μm]	Minimum [μm]
P 1	81	17	119	49
P 2	95	18	130	65



2.2 Determination of mechanical properties

Table 3: Properties of powdered specimen

Characteristics	Test procedure	Requirement	Result	
Adhesion	Cross-cut DIN EN ISO 2409	Gt 0	Plate: Part:	Gt 0 Gt 0
Ductility	Cupping test DIN EN ISO 1520	≥ 4 mm	Plate:	11,5 mm
Hardness	Pendulum damping test DIN EN ISO 1522	72 (Minimum oscillation)	Plate:	112
Elasticity and Adhesion	Bend test (cylindrical) DIN EN ISO 1519	∅ 6 mm Mandrel	Plate:	OK
Resistance to falling weights	Falling-weight test ¹ DIN EN ISO 6272-1	No scratches, no flaking	Plate:	OK
Gloss	DIN 67530	60° geometry	Plate: Part:	19 18
Colour RAL 840 HR	DIN EN ISO 11664-4	RAL 9006	Plate: Part:	not possible ²

¹ Height of fall: 20 centimeter; Drop weight: 1 kg

² The company RAL-Farben recommend the use of RAL 9006 for corrosion protection only and not for decorative purposes.

2.3 Resistance to corrosion and humidity

2.3.1 Test Procedures and test conditions

Salt spray test

Test procedure: Salt spray test (NSS) in accordance to DIN EN ISO 9227

Test conditions: 240 hours

Evaluation: Assessment of degree of
- blistering (DIN EN ISO 4628-2)
- rusting (DIN EN ISO 4628-3)
- delamination and corrosion around a scribe (DIN EN ISO 4628-8)



Condensation-water atmosphere (constant humidity)

Test procedure: Determination of resistance to humidity in accordance to DIN EN ISO 6270-2 (CH)

Test conditions: 300 hours

Evaluation: Assessment of degree of
- blistering (DIN EN ISO 4628-2)
- rusting (DIN EN ISO 4628-3)

2.3.2 Test results

Table 4: Results of resistance to corrosion and humidity

Test procedure	Requirement		Test results	
			Plate	Part
Salt spray (NSS) DIN EN ISO 9227	Blister:	0 (S0)	0 (S0)	0 (S0)
	Rust:	Ri 0	Ri 0	Ri 0
	Delamination:	d = 0 mm	d = 0 mm	d = 0 mm
	Corrosion:	c = 0 mm	c = 0 mm	c = 0 mm
Condensation-water atmosphere (CH) DIN EN ISO 6270-2	Blister:	0 (S0)	0 (S0)	0 (S0)
	Rust:	Ri 0	Ri 0	Ri 0



2.4 Determination of resistance to detergents and graffiti removing agents

2.4.1 Determination of resistance to detergents^{*)}

Test procedure: Application of a detergent upon the coating, covered with a watch glass for 4 hours at 23°C.
- wash up afterwards with clear water

Test medium: Bendurol forte, 1: 10 (company: Ecolab)

Evaluation: visual

Table 5: Result of resistance to detergents

Requirement	Result
No swelling, no dissolution, or dulling	No swelling, no dissolution, or dulling

2.4.2 Determination of resistance to graffiti removing agents^{*)}

Test procedure: Application of a graffiti removing agent upon the coating, covered with a watch glass for 10 minutes.

Test medium: SC 10 (company: Dr. Schnell)

Evaluation: visual

Table 6: Result of resistance to graffiti removing agents

Test medium	Requirement	Result
SC 10	Low dissolution and swelling acceptable, no visual changes	No dissolution, no swelling, no visual changes



3. Summary

The in accordance with DB TL 918 340 tested powder coated specimen passed the requirements of the specification for interior parts.

30th August 2011

A handwritten signature in blue ink, appearing to read 'Dreyer', with a large, sweeping initial 'D'.

Dipl.-Chem. Cornelia Dreyer
Lab supervisor Application Technology

A handwritten signature in blue ink, appearing to read 'Carsten Passiel', with a large, sweeping initial 'C'.

Dipl.-Ing. (FH) Carsten Passiel
Laboratory person in charge

Note:

The test results refer only to the subjects of testing.
This test report is a shortened test report that does not cover all test conditions required by the applicable standards.