



avenue Pierre Holoffe 21
BE-1342 Limelette (Belgium)

Phone +32/2.652.22.49
Fax +32/2.653.95.03
E-mail technology@cori-coatings.be
Website www.cori-coatings.be

T.V.A./B.T.W. BE 407.593.208
ING 310-1781351-32

MARTIN MATHYS n.v
att. Mr. Michel Diels
Kolenberg 23

3545 ZELEM-HALEN

TEST REPORT

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IDENTIFICATION NUMBER: ES-040504.d

DATE: 22.06.2006

LABORATORY: Coatings Research Institute
Avenue P. Holoffe
1342 LIMELETTE

CUSTOMER: MARTIN MATHYS n.v
Kolenberg 23
3545 ZELEM-HALEN
BELGIUM

REFERENCE ORDER: Your visit dated 20.02.2004

DATE OF RECEPTION OF THE SAMPLES: 20.02.2004 and 26.04.2004

NUMBER OF THE DOCUMENT OF RECEPTION: ES/4186

SAMPLES: Pegarust

PERFORMED TESTS AND TESTING METHODS:

Realized following ISO 12944-6 "Corrosion protection of steel structures by protective paint systems - Part 6: Laboratory performance test methods"

Tropical test

Realized following ISO 6270-1 "Determination of resistance to humidity - Part 1: Continuous condensation"

The coated panels are exposed to a temperature of 38 ± 2 °C and 95 to 100 % relative humidity in a climatic chamber during 480 hours.

After 48 h, 120 h, 240 h and 480 h, the panels are visually observed. At the end of the test period they are evaluated following the standard ISO 4628 part 2 to 5 and the adhesion is tested (see further on)

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Resistance to neutral salt spray

Realized following ISO 7253 "Determination of resistance to neutral salt spray"

A half St-Andreascross is made down to the metallic substrate.

The panels are exposed to the following conditions:

- mean temperature in the test chamber: 34,8 °C
- NaCl-concentration: 5±0,5 %
- collected volume of salt solution per hour: between 1,01 and 1,67 ml/80 cm²
- pH of the solution: between 6,52 and 7,04
- air pressure: 1,06 bar

After 120 h, 240 h, 480 h and 720 h, the panels are visually observed. At the end of the test period they are evaluated following the standard ISO 4628 part 2 to 5 and the adhesion is tested (see further on)

Adhesion by pull-off strength method

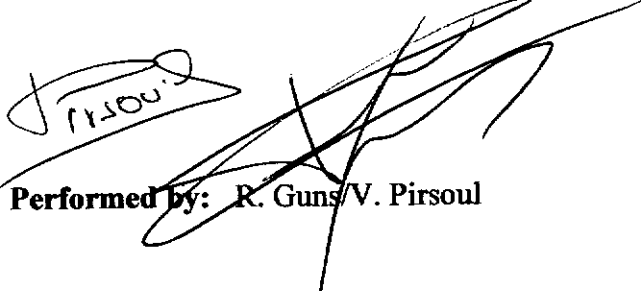
Due to the film thickness (> 250 µm) , this test is realized following ISO 4624 "Adhesion by pull off test"

Apparatus: Seaberg Adhesion Tester

Method: loading fixtures (surface area 3.1 cm²) are glued on the paint film by means of a 2 component solventless epoxy adhesive, slow drying type. After the adhesive is cured, a testing apparatus is attached to the loading fixture and aligned to apply tension (perpendicular) to the test surface. The force applied to the loading fixture is then gradually increased. The nature of the failure is qualified in accordance with the percent of adhesive and cohesive failures. The pull-off strength is computed based on the maximum indicated load.

DATE OF EXECUTION OF THE TESTS: February - March 2004

RESULTS: See pages 3 to 6


Performed by: R. Guns/V. Pirsoul


Approved by: R. Treckels/S. Vonckx

!!!!!!! Samples will be stored at CoRI during 6 months and then removed in accordance with the waste legislation, unless you make an appeal to prolongate this period or you recall the samples yourself (on charge of the customer).

- * This test report concerns only the samples subjected to these tests
- * This test report can not be copied partially without the written permission of the CoRI

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RÉSULTATS:

Initial adhesion

	Panel 53	Panel 69	Panel 70	Panel 89
Pull off strength (MPa)	2,78 - 2,48 - 2,48	1,62 - 2,01 - 1,55	2,48 - 2,16 - 2,09	2,01 - 2,01 - 2,63
Nature of the rupture	cohesive rupture in the coating	cohesive rupture in the coating	cohesive rupture in the coating	cohesive rupture in the coating

Resistance to continuous condensation

	Panel 47	Panel 56	Panel 62	Panel 63	Panel 64	Panel 67
After 48 hours	zone with haze of ± 5 x 10 cm	1 small zone with haze	a few small zones with haze	haze on ± 75 % of the panel	haze on ± 75 % of the panel	a few small zones with haze
After 120 hours	haze on more than 50 % of the panel	zone with haze of ± 3 x 1 cm	a few small zones with haze	haze on ± 80 % of the panel	haze on ± 75 % of the panel	a few small zones with haze
After 240 hours	a zone (lower part of the panel) shows a haze; softening of the paint and partially denuding of the substrate in the zone where the panel is clamped in the holder (a few rust pits in this zone)	haze on about 50 % of the panel; softening of the paint and partially denuding of the substrate in the zone where the panel is clamped in the holder (a few rust pits in this zone)	haze on about 30 % of the panel; softening of the paint and partially denuding of the substrate in the zone where the panel is clamped in the holder (a few rust pits in this zone)	haze almost completely disappeared; softening of the paint and partially denuding of the substrate in the zone where the panel is clamped in the holder (a few rust pits in this zone)	haze partially disappeared; softening of the paint and partially denuding of the substrate in the zone where the panel is clamped in the holder (a few rust pits in this zone)	a few small zones with haze; softening of the paint and partially denuding of the substrate in the zone where the panel is clamped in the holder (a few rust pits in this zone)

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	Panel 47	Panel 56	Panel 62	Panel 63	Panel 64	Panel 67
After 480 hours	size and location of haze changed again; softening of the paint and partially denuding of the substrate in the zone where the panel is clamped in the holder (a few rust pits in this zone)	size and location of haze changed again; softening of the paint and partially denuding of the substrate in the zone where the panel is clamped in the holder (a few rust pits in this zone)	size and location of haze changed again; softening of the paint and partially denuding of the substrate in the zone where the panel is clamped in the holder (a few rust pits in this zone)	size and location of haze changed again; softening of the paint and partially denuding of the substrate in the zone where the panel is clamped in the holder (a few rust pits in this zone)	size and location of haze changed again; softening of the paint and partially denuding of the substrate in the zone where the panel is clamped in the holder (a few rust pits in this zone)	size and location of haze changed again; softening of the paint and partially denuding of the substrate in the zone where the panel is clamped in the holder (a few rust pits in this zone)
Evaluation following ISO 4628	blistering: 0(S0) rust: Ri 0 cracking: 0(S0) flaking: 0(S0)	blistering: 0(S0) rust: Ri 0 cracking: 0(S0) flaking: 0(S0)	blistering: 0(S0) rust: Ri 0 cracking: 0(S0) flaking: 0(S0)	blistering: 0(S0) rust: Ri 0 cracking: 0(S0) flaking: 0(S0)	blistering: 0(S0) rust: Ri 0 cracking: 0(S0) flaking: 0(S0)	blistering: 0(S0) rust: Ri 0 cracking: 0(S0) flaking: 0(S0)
Adhesion 24 hours after exposition	/	/	4,49 - 4,33 cohesive rupture in the coating	4,43 - 2,94 cohesive rupture in the coating	4,02 - 2,94 - 3,17 cohesive rupture in the coating	2,48 - 2,78 - 3,40 cohesive rupture in the coating

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Resistance to neutral salt spray

(*) Remark: without scratch

	Panel 49*	Panel 45*	Panel 46*	Panel 42	Panel 43	Panel 44
After 120 hours	unchanged	unchanged	unchanged	surface: unchanged <i>scratch</i> : rust in the scratch with slight runs down	surface: unchanged <i>scratch</i> : rust in the scratch with slight runs down	surface: unchanged <i>scratch</i> : rust in the scratch with runs down
After 240 hours	unchanged	unchanged	unchanged	surface: unchanged <i>scratch</i> : rust in the scratch with runs down + 4 blisters with \varnothing 1 mm	surface: unchanged <i>scratch</i> : rust in the scratch with slight runs down	surface: unchanged <i>scratch</i> : rust in the scratch with runs down
After 480 hours	unchanged	unchanged	unchanged	surface: unchanged <i>scratch</i> : rust in the scratch with runs down + 4 blisters with \varnothing 2 mm	surface: unchanged <i>scratch</i> : rust in the scratch with slight runs down + 4 blisters with \varnothing 1 mm	surface: unchanged <i>scratch</i> : rust in the scratch with runs down + a few blisters with \varnothing 1 mm
After 720 hours	unchanged	unchanged	unchanged	surface: unchanged <i>scratch</i> : rust at the scratch (total width 1 mm) with runs down + a few blisters (some bursted open) with \varnothing 2 mm	surface: unchanged <i>scratch</i> : rust in the scratch with runs down + a few blisters with \varnothing max. 4 mm	surface: unchanged <i>scratch</i> : rust in the scratch with runs down + a few blisters with \varnothing max. 4 mm

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	Panel 49*	Panel 45*	Panel 46*	Panel 42	Panel 43	Panel 44
Evaluation of the surface following ISO 4628	blistering: 0(S0) rust: Ri 0 cracking: 0(S0) flaking: 0(S0)	blistering: 0(S0) rust: Ri 0 cracking: 0(S0) flaking: 0(S0)	blistering: 0(S0) rust: Ri 0 cracking: 0(S0) flaking: 0(S0)	blistering: 0(S0) rust: Ri 0 cracking: 0(S0) flaking: 0(S0)	blistering: 0(S0) rust: Ri 0 cracking: 0(S0) flaking: 0(S0)	blistering: 0(S0) rust: Ri 0 cracking: 0(S0) flaking: 0(S0)
Evaluation of the rust at the scratch (M-value; see annex A of ISO 12944-6)	/	/	/	0,25 mm	0 mm	0 mm
Adhesion 24 hours after exposition	3,24 - 3,71 cohesive rupture in the coating	2,94 - 3,40 - 3,24 cohesive rupture in the coating	4,02 - 2,78 cohesive rupture in the coating	/	/	/



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Martijn Fossen
Rustoleum Mathys

ATTACHMENT TO THE TEST REPORT ES040504.d

We may conclude that the paint Pagarust, applied on steel panels, following the results obtained in the test report ES040504.d namely

- . Resists at 720 h neutral salt spray following ISO 7253
- . Resists at 480 h continuous condensation following ISO 6270

fulfils the requirements of the following corrosivity categories:

- . C4 - high
- . C5-M - mean

as defined in the specification ISO 12944.

A handwritten signature in black ink, appearing to read 'Sophie Vonckx', is written over a horizontal line. The signature is stylized and includes a vertical stroke that crosses the horizontal line.

Sophie Vonckx
Head of Testing Dept.