

## TEST REPORT No. 342564

**Place and date of issue:** Bellaria-Igea Marina - Italy, 31/05/2017

**Customer:** NORD RESINE S.p.A. - Via Fornace Vecchia, 79 – 31058 SUSEGANA (TV) - Italy

**Date test requested:** 15/03/2017

**Order number and date:** 72578, 15/03/2017

**Date sample received:** 26/04/2017

**Test date:** from 03/05/2017 to 26/05/2017

**Purpose of test:** performance analysis on products and systems for environments with food

**Test site:** Istituto Giordano S.p.A. - Blocco 4 - Via San Mauro, 8 - 47814 Bellaria-Igea Marina (RN) - Italy

**Sample origin:** sampled and supplied by the Customer

**Identification of sample received:** No. 2017/0914

### Specimen name\*

The test sample is called "NORPHEN 200".

### Description of specimen\*

The test sample consists of a bicomponent epoxy coating intended for environments with the presence of foods.

(\*) according to that stated by the Customer.

Comp. FM  
Revis. OF

This test report consists of 4 sheets.  
This document is the English translation of the test report No. 342564 dated 31/05/2017 issued in Italian; in case of dispute the only valid version is the Italian one. Date of translation: 23/06/2017.

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### **Normative references**

The test was performed according to the requirements of the following standards:

- standard UNI 11021:2002 dated 01/12/2002 “Paints and varnishes - Coating material and coatings systems for rooms with the presence of foodstuff - Requirements and test methods”;
- HACCP - Decreto Legislativo n. 193 dated 06/11/2007 “Attuazione della direttiva 2004/41/CE relativa ai controlli in materia di sicurezza alimentare e applicazione dei regolamenti comunitari nel medesimo settore” (*“Implementation of Directive 2004/41/EC on controls on food safety and application of Community rules in the same sector”*);
- standard UNI 10792:1999 dated 31/12/1999 “Paints and varnishes - Wall paints for interiors, white or light coloured - Determination of dirt pick-up”;
- standard UNI 10560:1996 dated 31/07/1996 “Paints and varnishes. Emulsion paints for interior masonry. Wet scrub resistance. Brush method”;
- standard UNI EN ISO 4628-2:2016 dated 07/04/2016 “Paints and varnishes - Evaluation of degradation of coatings - Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 2: Assessment of degree of blistering”;
- standard UNI EN 4628-4:2016 dated 07/04/2016 “Paints and varnishes - Evaluation of degradation of coatings. Designation of quantity and size of defects, and of intensity of uniform changes in appearance - Part 4: Assessment of degree of cracking”;
- standard UNI EN 4628-5:2016 dated 07/04/2016 “Paints and varnishes - Evaluation of degradation of coatings. Designation of quantity and size of defect, and of intensity if uniform changes in appearance - Part 5: Assessment of degree of flaking”.

### **Test method**

The test sample was submitted to:

- determination of dirt pick-up according to the requirements of the standard UNI 10792:1999;
- cession odor according to the requirements of appendix “A” “Metodo per la determinazione della cessione di odore di pitture e vernici” (*“Method for the determination of the sale the smell of paints and varnishes”*) of the standard UNI 11021:2002;
- determination of the resistance to washing in accordance with the requirements of the standard UNI 10560:1996;
- determination of cleanability according to the requirements of the standard UNI 11021:2002;
- resistance to specific washing agents with detergent type “A”, “B”, “C” in accordance with the requirements of the standard UNI 11021:2002;
- resistance to particular agents of disinfection with “D-type disinfectant” in accordance with the requirements of the standard UNI 11021:2002;
- resistance to thermal shock, 2 h at a temperature of -20 °C and 2 h at a temperature of 20 °C, in water for n. 10 cycles, in accordance with the provisions of the standard UNI 11021:2002.

### **Test result**

Test	Result	Limits
determination of dirt pick-up	$\Delta L < 0,5$	$\Delta L \leq 3,0$
cession odor	$< 0,5$	$\leq 1$
determination of the resistance to washing	$> 5000$	$\geq 5000$
cleanability	$\Delta E < 0,5$	$\Delta E \leq 3,0$
resistance to detergent “A” active chlorine (UNI 11021:2002 paragraph 8.4)	no alteration after immersion for 24 h	no alteration
	blistering = 0	blistering = 0
	cracking = 0	cracking = 0
	flacking = 0	flacking = 0

Test	Result	Limits
resistance to detergent "B" alkaline degreasing (UNI 11021:2002 paragraph 8.4)	no alteration after immersion for 24 h	no alteration
	blistering = 0	blistering = 0
	cracking = 0	cracking = 0
	flaking = 0	flaking = 0
resistance to "C" detergent descaling acid (UNI 11021:2002 paragraph 8.4)	no alteration after immersion for 24 h	no alteration
	blistering = 0	blistering = 0
	cracking = 0	cracking = 0
	flaking = 0	flaking = 0
resistance to disinfectant "D" (UNI 11021:2002 paragraph 8.5)	no alteration after immersion for 24 h	no alteration
	blistering = 0	blistering = 0
	cracking = 0	cracking = 0
	flaking = 0	flaking = 0
resistance to thermal shock	no alterations after 10 cycles	no alteration
	blistering = 0	blistering = 0
	cracking = 0	cracking = 0
	flaking = 0	flaking = 0

Test Technician:  
Dott. Oscar Filippini

Head of Chemical Laboratory:  
Dott. Oscar Filippini

Chief Executive Officer

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**REPORT 122/L DATE 28.04.2014**

Laboratory	GFC Chimica S.r.l. Viale Marconi, 73 44122 Ferrara
Customer	NORD RESINE S.p.A. Via Fornace Vecchia, 79 31058 Susegana (TV)
Samples identification <sup>1</sup>	26031405 – NORPHEN 200 NF Comp. A 26031406 – NORPHEN 200 NF Comp. B
Samples description	Epoxy floor coating
Date of receiving	26.03.2014
Analysis beginning (date)	27.03.2014
Analysis end (date)	28.04.2014
Ref.	Sig. Stefano Martin

## **1 Introduction**

GFC Chimica has examined a sample of 2K epoxy floor coating by order of NORD RESINE S.p.A. of Susegana (TV). The sample is identified and described as reported in the table above.

The sample is constituted by the following components:

- NORPHEN 200 NF Comp. A
- NORPHEN 200 NF Comp. B

(ratio of mixing: 3,33 parts in weight of NORPHEN 200 NF Comp. A and 1 part in weight of NORPHEN 200 NF Comp. B).

Both the components were consigned to the laboratory by NORD RESINE.

As stated between the parties, GFC Chimica's laboratory has assessed the coating in order to determinate the resistance against fungal growth (method UNI EN 15457:2008). Test in subcontracting.

## **2 Results**

### **2.1 Determination of the resistance against fungal growth**

The sample was applied by brush in one layer, on special supports of fiber glass paper, then dried in a climatic chamber at  $T = 23 \pm 2^\circ \text{C}$  and  $RH 50 \pm 5\%$  for 7 days. The specimens were sterilized with UV irradiation for 24 hours and stored, separately, with the painted surface facing upwards, in Petri dishes containing Malt Agar as a culture medium. After preparation, the specimens were inoculated with a suspension of *Aspergillus niger*, *Cladosporium cladosporoides*, *Alternaria alternata*, *Penicillium purpurogenum* ( $10^6$  cells/mL). Three replicates were performed.

<sup>1</sup>The codes 26031405 and 26031406 are internal ones of GFC Chimica used to mark the samples.



Petri dishes were placed to incubate at  $24 \pm 2^\circ \text{C}$  for a period of 21 days after inoculation. After this period fungal development was observed.

The results obtained are shown in the following table:

Suspension of fungi	Intensity of fungal growth
<i>Aspergillus niger</i> <i>Cladosporium cladosporoides</i> <i>Alternaria alternata</i> , <i>Penicillium purpurogenum</i>	0

Rating scale (REF. UNI EN 15457:2008):

0 = no growth on the surface of the specimen

1 =  $\leq 10\%$  of coated surface is covered by fungi

2 = greater than 10% and less than 30% of coated surface is covered by fungi

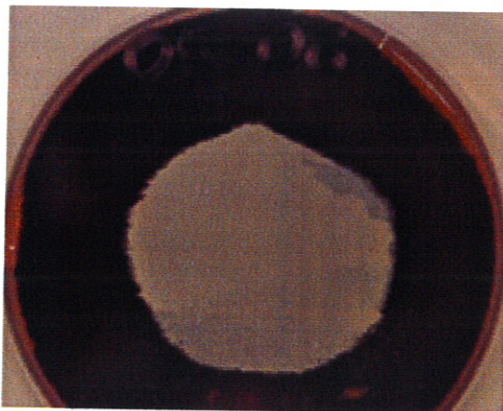
3 = greater than 30% but less than 50% of coated surface is covered by fungi

4 =  $> 50\%$  up to 100 of coated surface is covered by fungi

Specified value  $< 4$  = suitable

The test is positive. No fungal growth is present on the surface of the specimen

In the picture below it is possible to see the resistance of the sample against fungal growth.



No fungal growth on "NORPHEN 200 NF"

GFC Chimica Srl  
L'Analista  
Ing. Cristina Pocaterra  
*Cristina Pocaterra*

GFC Chimica Srl  
Il Responsabile di laboratorio  
Dr. Arlen Ferrari  
*Arlen Ferrari*

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