



Klub Polskich
Laboratoriów
Badawczych
POLLAB

Członek rzeczywisty
Klubu POLLAB nr 949



TEST REPORT N°

69/2020

TEST METHOD:

PN EN 15457: 2014-10

Paints and varnishes - a laboratory method of testing the effectiveness of a coating protection agent against fungi

INFORMATION DATA OF THE INVESTIGATOR

Address:

phone number

e-mail:

Manufacturer / Supplier:

M&R LAB

Microbiology & Research

Renata Szczygłowska

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NIP: CZ036 49 997

Type of method:

the semi-quantitative evaluation of the fungicidal effectiveness of the protective coatings of the product, placed on an agar medium, inoculated with a suspension of fungal spores, and then incubated at the temperature optimal for the growth of the fungus, was carried out after 7 days, 14 and 21 days of contact with the test samples

Test conditions

the test covered samples of the paint coating chosen randomly from among 40 samples sent by the Customer

Test strains used in the research:

Fungi with greater tendency to fouling under internal conditions (according to the planned application of the paint):

Aspergillus niger ATCC 9642

Rhodotorula mucilaginosa ATCC 66034

Test method:

In order to identify the properties of the samples, the individual strains were cultured on the tested samples separately

DATE OF DELIVERY OF SAMPLES FOR TESTING:

7.07.2020.

SAMPLING BY:

Costumer

SUPPLIER OF SAMPLES:

PRINCIPAL

DATE OF START TEST:

24.07.2020.

DATE OF END TESTS:

21.08.2020.

TYPE OF MATERIAL ACCORDING TO THE ORDERING PARTY'S DECLARATION:

multi-component material intended for thermal insulation, thermo-reflective, wood-dilutable, based on acrylic dispersion and glass microspheres. The declaration of conformity of materials provided by the ordering party applies to the following products: PSC 250T ECI Inside, PSC 250T BUILD, PSC 250T ECF Floor, PSC 250 Eco Outside, PSC 250T ECE Elastic

SAMPLE IDENTIFICATION DATA

Sample number in the laboratory register

251/2020

Name of test samples:

dry coatings of acrylic paint PSC 250T / ECI interior

Description of test samples:

coating with several layers in the form of discs with a diameter of 50mm x 50mm x 3mm with smooth surfaces (40pcs) as per photo 1

Antibacterial additives present in the samples according to the information of the Ordering Party:

5-chloro-2-methyl-2H-isothiazol-3-one [EC No 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC No 220-239-6] (3: 1)

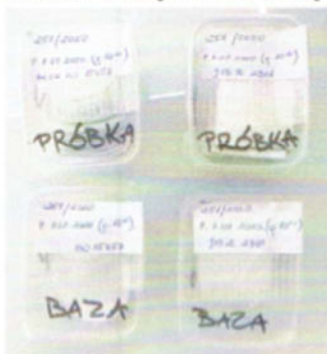


Photo 1. Samples intended for testing (dry coatings of acrylic paint PSC 250T / ECI interior)

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TEST METHOD: Determination of the fungicidal effectiveness of the material according to PN EN 15457: 2014-10

Table I. TEST CONDITIONS	
Sample number from the laboratory register:	251/2020
control	according to table II
The strains used in the study:	<i>Aspergillus niger</i> ATCC 9642
Date of start the test:	24.07.2020.
Date of end the test:	21.08.2020.
Test area:	outer surface
The diameter of the samples:	5 cm
Thickness of the test samples:	to 10 mm
Type of material disinfection prior to testing:	wipe with ethanol (75%) and evaporation in a laminar chamber for 2 h
Conditioning of samples prior to testing:	23±2 °C; 50±5% relative humidity (5 d)
Test strain inoculum:	1.4x10 ⁷ cfu/ml (10 ⁶ -10 ⁷ cfu/ml)
Amount of inoculum normally used in the test:	0.2 ± 0.1 ml
Incubation temperature:	temperature 24 ± 2 °C
Strain control:	positive
Incubation time:	7- 21 day
Type of diluent:	sterile water
Substrate for incubation:	Malt agar
Incubation time after recovery:	24-48h

Table II. Types of samples intended for testing

Table II. Types of samples intended for testing			
Types of tested samples	Symbol	Type of samples - description	
	C1	positive controls (3 samples of nutrient medium inoculated with the tested strain)	Control 251/2020
	C2		
	C3		
	B1	controls without additive (base)	
	B2		
	B3		
	251-1	samples tested after inoculation with the test strain	251/2020
	251-2		
	251-3		

Test strain:

***Aspergillus niger* ATCC 9642**

Types of tested samples:

1) positive controls:

3 samples of nutrient medium inoculated with the tested strain (Fig. 2 and 3 - top)

2) samples tested with the addition of: **3 material samples (P / 251) containing the preservative along with the tested strain (Fig. 2 and 3 - inside)**

3) control samples without addition:

3 samples of untreated material - base (B1-B3) inoculated with the tested strain (Photos 2 and 3 - bottom)

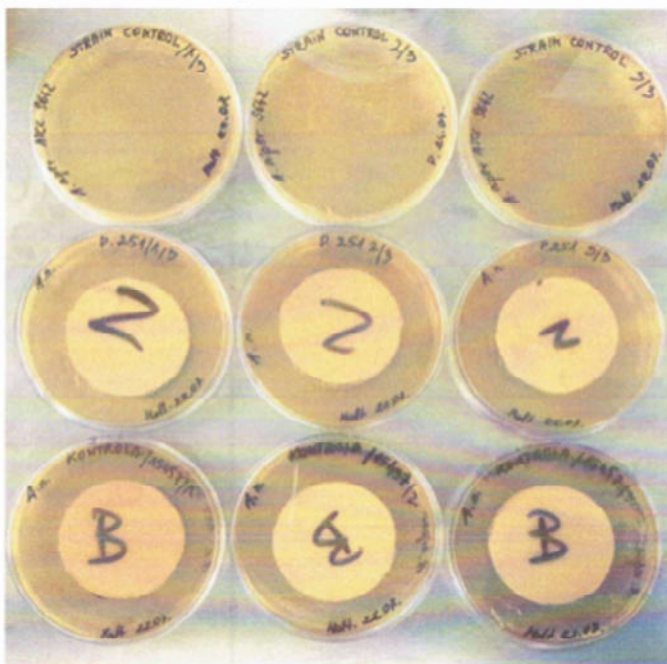


Photo 2. Positive and negative controls used in *Aspergillus niger* ATCC 9642

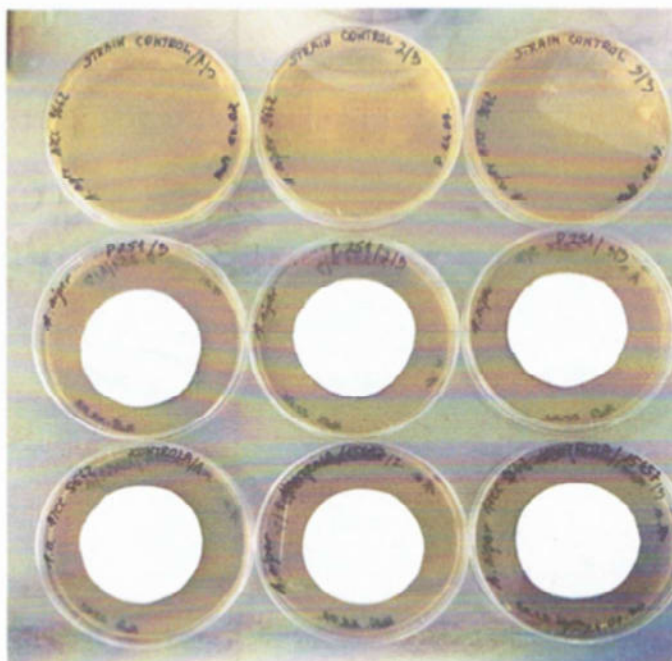


Photo 3. Positive and negative controls used in *Aspergillus niger* ATCC 9642

Test strain:

Test samples:

1) positive controls:

2) control samples without addition:

3) samples tested with the addition of:

Aspergillus niger ATCC 9642

3 samples of nutrient medium inoculated with the tested strain (Fig. 4 and 5 - top)

3 samples of untreated material - base (B1-B3) inoculated with the tested strain (Photo 4 and 5 - center)

3 material samples (P / 251) containing the preservative along with the tested strain (Fig. 4 and 5 - bottom)

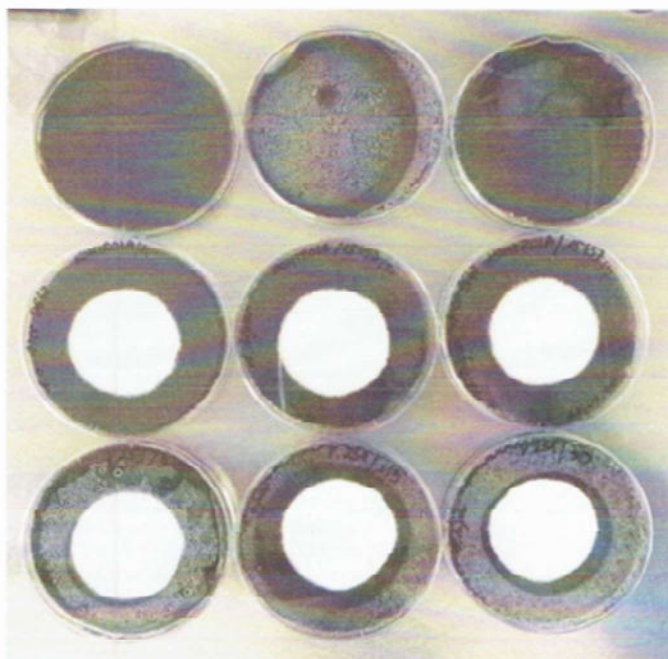


Photo 4. Samples tested against *Aspergillus niger* ATCC 9642 after 7 days

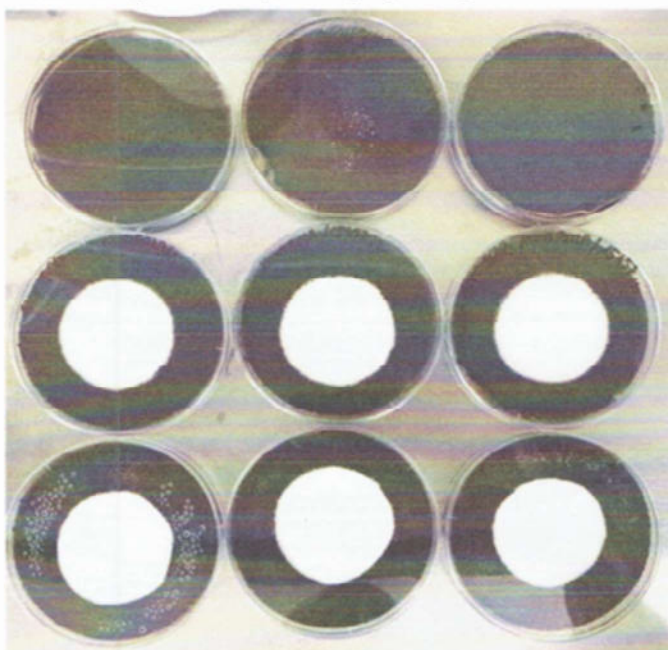


Photo 5. Samples tested against *Aspergillus niger* ATCC 9642 after 21 days

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TEST METHOD: Determination of the antibacterial effectiveness of the material according to PN EN 15457: 2014-10

Table III. TEST CONDITIONS	
Sample number from the laboratory register:	251/2020
control	according to table IV
The strains used in the test	<i>Rhodotorula mucilaginosa</i> ATCC 66034
Date of start the test:	24.07.2020.
Date of end the test:	21.08.2020.
Test area	outer surface
The diameter of the samples	5 cm
Thickness of the test samples	to 10 mm
Type of material disinfection prior to testing	wipe with ethanol (75%) and evaporation in a laminar chamber for 2 h
Conditioning of samples prior to testing	23 ± 2 °C; 50 ± 5% relative humidity (5 d)
Test strain inoculum:	9.3 × 10 ⁷ cfu/ml (10 ⁸ -10 ⁷ cfu/ml)
Amount of inoculum normally used in the test	0.2 ± 0.1 ml
Incubation temperature	temperature 24 ± 2 °C
Strain control	positive
Incubation time	7- 21 day
Type of diluent	sterile water
Substrate for breeding	Sabouroda agar

Table IV. Types of samples intended for testing

Table 1.1. Types of samples submitted for testing			
Types of tested samples	Symbol	Type of samples - description	
	C1	positive controls (3 samples of nutrient medium inoculated with the tested strain)	Control 251/2020
	C2		
	C3		
	B1	controls without additive (base)	
	B2		
	B3		
	251-1	samples tested after inoculation with the test strain	251/2020
	251-2		
	251-3		

Test strain:

Types of tested samples:

1) positive controls:

2) samples tested with the addition of:

3) control samples without addition:

Rhodotorula mucilaginosa ATCC 66034

3 samples of nutrient medium inoculated with the tested strain (Fig. 6 and 7 - top row)

3 material samples (P / 251) containing the preservative along with the tested strain (Fig. 6 and 7 - in the center)

3 samples of untreated material - base (B1-B3) inoculated with the test strain (Fig. 6 and 7 - bottom row)

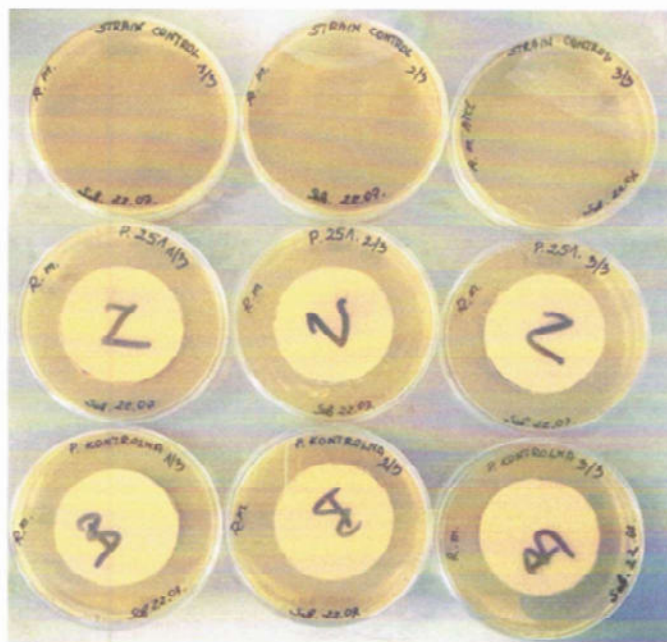


Photo 6. Positive and negative control samples used in tests against *Rhodotorula mucilaginosa* ATCC 66034



Photo 7. Positive and negative control samples used in the studies of *Rhodotorula mucilaginosa* ATCC 66034

Test strain:

Types of tested samples:

1) positive controls:

2) samples tested with the addition of:

3) control samples without addition:

Rhodotorula mucilaginosa ATCC 66034

3 samples of nutrient medium inoculated with the tested strain (Fig. 8 and 9 - top row)

3 material samples (P/251) containing the preservative along with the tested strain (Fig. 8 and 9 - in the center)

3 samples of untreated material - base (B1-B3) inoculated with the test strain (Fig. 8 and 9 - bottom row)

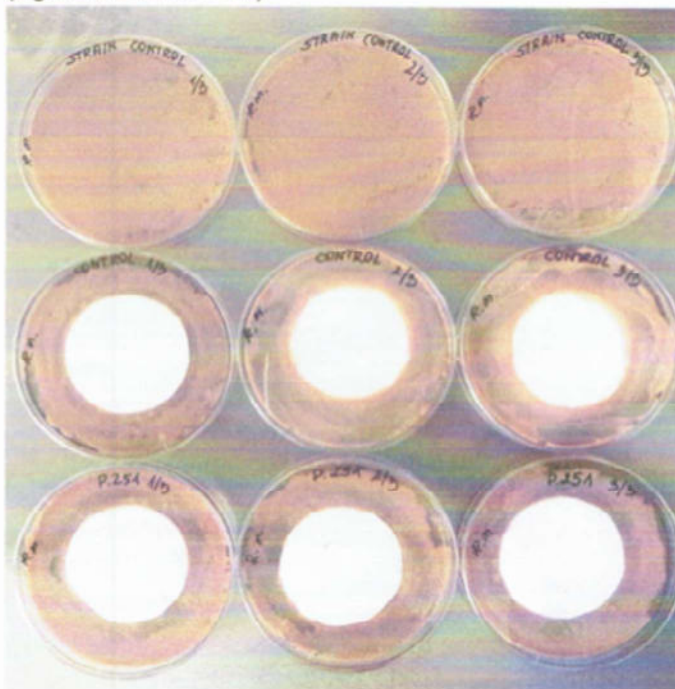


Photo 4. Samples tested against *Rhodotorula mucilaginosa* ATCC 66034 after 7 days.

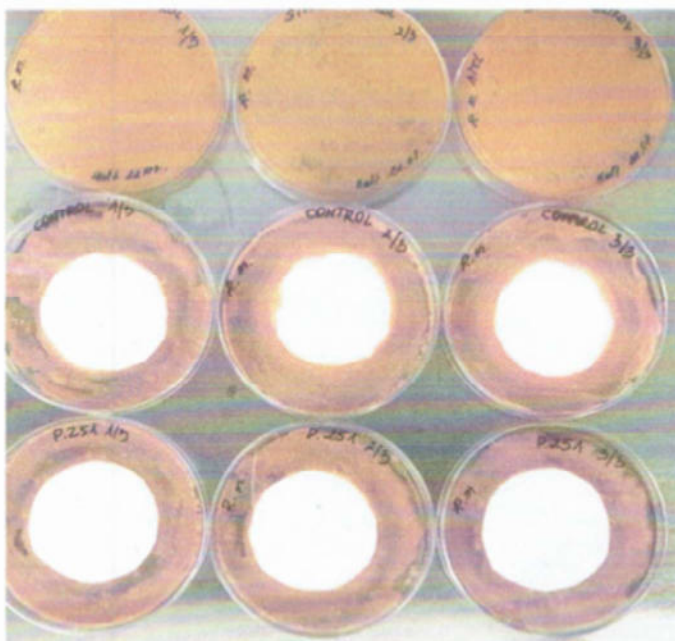


Photo 9. Samples tested against *Rhodotorula mucilaginosa* ATCC 66034 after 21 days.

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CRITERIA OF THE METHOD

Table V. Determination of the percent strain growth area on the area tested

RATING	
0	No visible growth on the surface of the specimen
1	up to 10% growth on the surface of the specimen
2	more then 10% up to 30% growth on the surface of the specimen
3	more then 30% up to 50% growth on the surface of the specimen
4	more then 50% up to 100% growth on the surface of the specimen

Table VI Test results:

Interpretation of the results, according to the test method, was performed in accordance with Table V.

Interpretation of the results, according to the test method, was performed in accordance with Table 4.				
Sample symbol	Assessment of growths against strain <i>Aspergillus niger</i> ATCC 9642			INTERPRETATION OF RESULTS
	po 7d	po 14d	po 21d	
C1	4	4	4	positive growth (correct for control)
C2	4	4	4	
C3	4	4	4	
B1	1	1	1	positive growth
B2	1	1	1	
B3	1	1	1	
251-1	1	1	1	positive growth
251-2	1	1	1	
251-3	1	1	1	
Results submit	samples with the additive show no difference in fungal growth compared to the samples without the additive (the base of the coating may be inert to the tested strain)			

Sample symbol	Assessment of growths against strain <i>Rhodotorula mucilaginosa</i> ATCC 66034			INTERPRETATION OF RESULTS
	po 7d	po 14d	po 21d	
C1	4	4	4	positive growth (correct for control)
C2	4	4	4	
C3	4	4	4	
B1	1	2	2	positive growth
B2	1	2	2	
B3	1	2	2	
251-1	0	0	0	the samples show the activity of the coating against the strain <i>Rhodotorula mucilaginosa</i> ATCC 66034
251-2	1	1	1	
251-3	0	0	0	

Table VII. Assessment of test results in accordance with PN EN 154570-2014-10:

Criterion (fulfillment of all conditions together 1-4)	rating	comments
1. For the purpose of this test, the effectiveness of the preservatives in the coating is considered to be demonstrated if the samples containing the preservatives have a rating of less than 4 in accordance with Table III.	satisfied	-
2. Nutrient medium samples show an increase of 4.	satisfied	-
3. No contamination with other organisms	satisfied	-
4. Samples without biocide show an increase of 4	unfulfilled	probably due to the type of innovative technology)

RESEARCH SUMMARY

Based on the obtained test results (Table VI) and the analysis of the criterion contained in the standard (Table VII), it was established that the tested samples:

dry coatings of acrylic paint PSC 250T / ECI interior with the following active substance added:
(5-chloro-2-methyl-2H-isothiazol-3-one [EC No 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC No 220-239-6] (3 : 1):

1) they are indifferent towards the tested representatives of mold fungi (*Aspergillus niger* ATCC 9642) characteristic of internal conditions, i.e. they do not show growth of the tested strain on the test samples. At the same time, the tested samples without the biocide (substrate) did not show the increase required in the level 4 method (probably due to the type of innovative technology)

2) they show growth-limiting activity of the strain *Rhodotorula mucilaginosa* ATCC 66034 as representative of the indoor yeast fungi.

Samples without biocide (base) also in this case do not show the 4 growth required by the method (probably due to the type of innovative technology)

Comments:

1. In order to demonstrate the innovativeness of the coating, samples of the "base" of classic technology with the same composition should be prepared and the tests performed again.

2. After obtaining the appropriate test results, the product can be registered as a biocidal product (bactericidal and / or fungicidal).

Dyrektor ds. badań M&R LAB

dr Renata Szczygłowska

Place, date: Lipnik, 30.09.2020.
Name, Surname and function: Scientific Director: Ph.D. Renata Szczygłowska

The results relate to test samples only. In the case of samples provided by the Ordering Party, the Laboratory is not responsible for the description of the samples, origin, representativeness and the method of collection and delivery.

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END OF REPORT