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FUNDERMAX GMBH  
Date: September 23, 2014  
P.O. No.: MP

Report No.: 101666076GRR-001B  
Reference No.: 14-500530170  
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**Test Report For:**

**FunderMax GmbH**

**MAX Resistance<sup>2</sup>**

**SEFA 3-2010, 2.1 Chemical/Stain Resistances**

**Gary Liu**  
**Project Manager**

**Tom Pearson**  
**Reviewer**

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**DATE RECEIVED:** 05/20/14  
**DATES TESTED:** 06/11/14 - 09/18/14

**DESCRIPTION OF SAMPLES:**

Specimen ID: MAX Resistance<sup>2</sup> (hpl acc. to EN 438)  
Part Description: 0082 Deep Black, thickness 25 mm  
Material Submitted: Four (4) of ~ 4" x 12" Laminated Black Sections  
Material Specification: SEFA 3-2010  
Condition of Test Sample: Production

**WORK REQUESTED / APPLICABLE DOCUMENTS:**

2.1 Chemical/Stain Resistances: SEFA 3-2010, Section 2.1

**CONCLUSIONS:**

2.1 Chemical/Stain Resistances: Conforming\*

\* Suitability for a given application is dependent upon the chemicals used in a given laboratory.

**DISPOSITION OF TEST SPECIMENS/ SAMPLES:**

Test samples were properly disposed.

## 2.1 CHEMICAL/STAIN RESISTANCES:

Date Received: 05/20/14  
Dates Tested: 06/11/14 - 09/18/14

### Description of Samples:

Specimen ID: MAX Resistance<sup>2</sup> (hpl acc. to EN 438)  
Part Description: 0082 Deep Black, thickness 25 mm  
Material Submitted: Four (4) of ~ 4" x 12" Laminated Black Sections  
Material Specification: SEFA 3-2010  
Condition of Test Sample: Production

### Test Procedure:

Test Method: SEFA 3-2010, Sec 2.1  
The received sample to be tested for chemical resistance as described herein: Place panel on flat surface, clean with soap (Liqui-Nox at 5% concentration) and water and blot dry. Condition the panel for 48-hours at 73±3°F (23±2°C) and 50 ± 5% relative humidity. Test the panel for chemical resistance using forty-nine (49) different chemical reagents by the following methods.

Method A: For volatile chemicals – A cotton ball, saturated with the test chemical, was placed in a one ounce bottle (10mm x 7mm test tube or similar container). The container was inverted on the test material surface for a period of 24 hours. Temperature of test: 23° +/- 2°C (73° +/- 4°F). This method was used for the organic solvents.

Method B: For non-volatile chemicals – Five drops (1/4cc) of the test chemical were placed on the test material surface. The chemical was covered with a watch glass (25mm), convex side down for a period of 24 hours. Temperature of test: 23° +/- 2°C (73° +/- 4°F). This method was used for all chemicals listed below other than solvents.

After 24-hours exposure, exposed areas were washed with water, then a detergent solution detergent (Liqui-Nox at 5% concentration) and finally with isopropyl alcohol. Materials were then rinsed with distilled water and dried with a cloth.  
Test Side: Both sides are able to be tested per client

Chemical/Stain Resistances Test Procedure:

Samples are numerically rated as follows:

**0 – No Effect** – No detectable change in the material surface.

**1 – Excellent** – Slight detectable change in color or gloss but no change in function or life of the surface.

**2 – Good** – A clearly discernible change in color or gloss but no significant impairment of surface life or function.

**3 – Fair** – Objectionable change in appearance due to discoloration or etch, possibly resulting in deterioration of function over an extended period of time.

Number of Samples Tested: Four (4) panels

Deviation:

Client requested to also test with Hydrogen Peroxide, 3%, using method B.

Acceptance Criteria:

Results will vary from manufacturer to manufacturer due to differences in composition and finish formulations and applications processes. Laboratory Grade work surface finishes shall result in no more than 4 Level 3 conditions. Individual test results for the specified 49 reagents will be verified with an established third party independent SEFA 3 test submittal form. Suitability for a given application is dependent upon the chemicals used in a given laboratory.

Results:

<b>2.1 CHEMICAL/STAIN RESISTANCES</b>				
<b>Volatile Chemicals</b>				
<b>Test No.</b>	<b>Chemical</b>	<b>Method</b>	<b>Rating</b>	<b>Comments</b>
1	Acetate, Amyl	A	0	
2	Acetate, Ethyl	A	0	
4	Acetone	A	0	
6	Alcohol, Butyl	A	0	
7	Alcohol, Ethyl	A	0	
8	Alcohol, Methyl	A	0	
10	Benzene	A	0	
11	Carbon Tetrachloride	A	0	
12	Chloroform	A	1	Slight color and gloss change
14	Cresol	A	1	Gloss decrease
15	Dichloroacetic Acid	A	2	Gloss decrease
16	Dimethylformamide	A	0	
17	Dioxane	A	0	
18	Ethyl Ether	A	0	
19	Formaldehyde, 37%	A	0	
21	Furfural	A	1	Color change
22	Gasoline	A	0	
27	Methyl Ethyl Ketone	A	0	
28	Methylene Chloride	A	0	
29	Monochlorobenzene	A	0	
30	Naphthalene	A	0	
34	Phenol, 90%	A	1	Gloss decrease
46	Toluene	A	0	
47	Trichloroethylene	A	0	
48	Xylene	A	0	

## 2.1 CHEMICAL/STAIN RESISTANCES

### Non-volatile Chemicals

Test No.	Chemical	Method	Rating	Comments
3	Acetic Acid, 98%	B	0	
5	Acid Dichromate, 5%	B	1	Slight color change
9	Ammonium Hydroxide, 28%	B	0	
13	Chromic Acid, 60%	B	0	
20	Formic Acid, 90%	B	1	Gloss decrease
23	Hydrochloric Acid, 37%	B	0	
24	Hydrofluoric Acid, 48%	B	1	Color change
25	Hydrogen Peroxide, 30%	B	2	Color Change
26	Iodine, Tincture of	B	1	Gloss Decrease
31	Nitric Acid, 20%	B	0	
32	Nitric Acid, 30%	B	0	
33	Nitric Acid, 70%	B	0	
35	Phosphoric Acid, 85%	B	0	
36	Silver Nitrate, Saturated	B	0	
37	Sodium Hydroxide, 10%	B	0	
38	Sodium Hydroxide, 20%	B	0	
39	Sodium Hydroxide, 40%	B	0	
40	Sodium Hydroxide, Flake	B	0	
41	Sodium Sulfide, Saturated	B	0	
42	Sulfuric Acid, 33%	B	0	
43	Sulfuric Acid 77%	B	0	
44	Sulfuric Acid, 96%	B	1	Gloss decrease
45	Sulfuric Acid, (77%) and Nitric Acid (70%), equal parts	B	2	Color and gloss change
49	Zinc Chloride, Saturated	B	0	
*	Hydrogen Peroxide, 3%	B	0	

\*Client requested

<b>2.1 CHEMICAL/STAIN RESISTANCES</b>			
<b>Totals</b>			
<b>Items</b>	<b>Requirement</b>	<b>No. Reagent with 3 Ratings</b>	<b>Disposition</b>
Volatile Subtotal:	-	0	
Non-volatile Subtotal:	-	0	
Grand Totals:	No More than Four Level 3 Conditions	0	Conforming**

\*\* Suitability for a given application is dependent upon the chemicals used in a given laboratory.

## 2.1 Chemical/Stain Resistances Photographs



Setup non-volatile chemicals



Setup volatile chemicals



## 2.1 Chemical/Stain Resistances Photographs



Post-exposure non-volatile chemicals



Post-exposure volatile chemicals