

FUNDERMAX GMBH TEST REPORT

SCOPE OF WORK

SEFA 8PH-2014, 8.1 Analysis of Max Compact Interior White and Black Plaques

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TEST REPORT FOR FUNDERMAX GMBH

Report No.: 103600635GRR-001c

Date: 25-September-2018

P.O.: 4500167024

Telephone: +1 616 656 7401

Facsimile: +1 616 656 2022

www.intertek.com

SECTION 1

CLIENT INFORMATION

Attention: Erich Streit

FunderMax GmbH

IZ-NÖ-Süd Straße 3

2355 Wiener Neudorf

Österreich

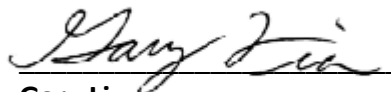
Austria

Phone: +43 (0) 59494 4659

Email: erich.streit@fundermax.biz



Marie Peck
Test Engineer



Gary Liu
Project Reviewer

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SECTION 2

SUMMARY AND CONCLUSION

Date Received: 28-August-2018
Dates Tested: 12-September-2018 to 20-September-2018

DESCRIPTION OF SAMPLES

Part Description: Max Compact Interior Plaques
Material Submitted: Four (4) Black Plaques & Four (4) White Plaques
Material Specification: SEFA 8PH-2014 Section 8.1
Condition of Samples: Production

WORK REQUESTED/APPLICABLE DOCUMENTS

SEFA 8PH-2014 Section 8.1

Intertek quote Qu-00893211

CONCLUSION

TEST	DISPOSITION
2.1 Chemical Resistance:	
Black Sample	*CONFORMING
White Sample	*CONFORMING

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

SAMPLE DISPOSITION

After testing completed, samples were rendered unusable and then disposed of.

SECTION 3

2.1 CHEMICAL/STAIN RESISTANCES:

Date Received: 28-August-2018
Dates Tested: 12-September-2018 to 20-September-2018
Location: Intertek

DESCRIPTION OF SAMPLES:

Part Description: Max Compact Interior Plaques
Material Submitted: Four (4) Black Plaques & Four (4) White Plaques
Material Specification: SEFA 8PH-2014 Section 8.1
Condition of Samples: Production

TEST PROCEDURE:

Test Method: Per SEFA 8PH-2014 Section 8.1
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 $73\pm 3^{\circ}\text{F}$ ($23\pm 2^{\circ}\text{C}$) and $50 \pm 5\%$ relative humidity. Test the panel for chemical resistance using forty-nine (49) different chemical reagents by the following methods.

Method A: For volatile chemicals – Test volatile chemicals by placing a cotton ball saturated with reagent in the mouth of a 1-oz. (29.574cc) bottle and inverting the bottle on the surface of the panel.

Method B: For non-volatile chemicals – Test non-volatile chemicals by placing five drops of the reagent on the surface of the panel and covering with a 24mm watch glass, convex side down.

For both of the above methods, leave the reagents on the panel for a period of one hour. Wash off the panel with water, clean with detergent and naphtha, and rinse with deionized water. Dry with a towel and evaluate after 24-hours at $73^{\circ} \pm 3^{\circ}\text{F}$ ($23^{\circ} \pm 2^{\circ}\text{C}$) and $50 \pm 5\%$ relative humidity, or the currently accepted guideline set by ASTM using the following rating system.

Rating Scale: **Level 0 - No detectable change.**
Level 1 - Slight change in color or gloss.
Level 2 - Slight surface etching or severe staining.
Level 3 - Pitting, cratering, swelling, or erosion of coating. Obvious and significant deterioration.

Number of Samples: Two (2) Panel Types

ACCEPTANCE CRITERIA:

Per SEFA 8PH-2014 Section 8.1

Range of results is provided to establish the acceptable range for a Laboratory Grade Finish. Results will vary from manufacturer to manufacturer due to differences in finish formulations. Laboratory grade finishes shall result in no more than four (4) Level 3 conditions. Individual test results, for the specified 49 reagents, will be verified with the established third party, independent SEFA 8 test submittal form. Suitability for a given application is dependent upon the chemicals used in a given laboratory.

RESULTS:

Table 3: Max Compact Interior Black Sample Chemical Spot Test Results

TEST NO.	CHEMICAL (% BY VOL.)	METHOD	RATING	COMMENTS
1	Acetate, Amyl	A	0	
2	Acetate, Ethyl	A	0	
3	Acetic Acid, 98%	B	0	
4	Acetone	A	0	
5	Acid Dichromate, 5%	B	1	Slight gloss change
6	Alcohol, Butyl	A	0	
7	Alcohol, Ethyl	A	0	
8	Alcohol, Methyl	A	1	Slight gloss change
9	Ammonium Hydroxide, 28%	B	0	
10	Benzene	A	0	
11	Carbon Tetrachloride	A	0	
12	Chloroform	A	0	
13	Chromic Acid, 60%	B	0	
14	Cresol	A	0	
15	Dichloroacetic Acid	A	0	
16	Dimethylformamide	A	0	
17	Dioxane	A	0	
18	Ethyl Ether	A	0	
19	Formaldehyde, 37%	A	0	
20	Formic Acid, 90%	B	1	Slight gloss change
21	Furfural	A	1	Slight gloss change

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TEST NO.	CHEMICAL (% BY VOL.)	METHOD	RATING	COMMENTS
22	Gasoline	A	0	
23	Hydrochloric Acid, 37%	B	0	
24	Hydrofluoric Acid, 48%	B	2	Gloss change
25	Hydrogen Peroxide, 30%	B	0	
26	Iodine, Tincture of	B	1	Slight gloss change
27	Methyl Ethyl Ketone	A	0	
28	Methylene Chloride	A	0	
29	Monochlorobenzene	A	0	
30	Naphthalene	A	0	
31	Nitric Acid, 20%	B	0	
32	Nitric Acid, 30%	B	0	
33	Nitric Acid, 70%	B	2	Gloss change
34	Phenol, 90%	A	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	1	Slight gloss change
41	Sodium Sulfide, Saturated	B	0	
42	Sulfuric Acid, 33%	B	0	
43	Sulfuric Acid 77%	B	0	
44	Sulfuric Acid, 96%	B	2	Gloss change, Color change
45	Sulfuric Acid, (77%) and Nitric Acid (70%), equal parts	B	2	Gloss change
46	Toluene	A	0	
47	Trichloroethylene	A	0	
48	Xylene	A	0	
49	Zinc Chloride, Saturated	B	0	

Table 4: Max Compact Interior Black Sample Summary Results Table:

TOTALS			
ITEMS	REQUIREMENT	NO. REAGENT WITH 3 RATINGS	DISPOSITION
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.

Table 5: Max Compact Interior White Sample Chemical Spot Test Results

TEST NO.	CHEMICAL (% BY VOL.)	METHOD	RATING	COMMENTS
1	Acetate, Amyl	A	0	
2	Acetate, Ethyl	A	0	
3	Acetic Acid, 98%	B	0	
4	Acetone	A	0	
5	Acid Dichromate, 5%	B	0	
6	Alcohol, Butyl	A	0	
7	Alcohol, Ethyl	A	0	
8	Alcohol, Methyl	A	0	
9	Ammonium Hydroxide, 28%	B	0	
10	Benzene	A	0	
11	Carbon Tetrachloride	A	0	
12	Chloroform	A	1	Slight gloss change
13	Chromic Acid, 60%	B	0	
14	Cresol	A	0	
15	Dichloroacetic Acid	A	0	
16	Dimethylformamide	A	0	
17	Dioxane	A	0	
18	Ethyl Ether	A	0	
19	Formaldehyde, 37%	A	0	
20	Formic Acid, 90%	B	0	
21	Furfural	A	2	Staining
22	Gasoline	A	0	
23	Hydrochloric Acid, 37%	B	0	
24	Hydrofluoric Acid, 48%	B	1	Slight gloss change
25	Hydrogen Peroxide, 30%	B	0	
26	Iodine, Tincture of	B	1	Slight staining
27	Methyl Ethyl Ketone	A	0	
28	Methylene Chloride	A	0	
29	Monochlorobenzene	A	0	
30	Naphthalene	A	0	
31	Nitric Acid, 20%	B	0	
32	Nitric Acid, 30%	B	0	
33	Nitric Acid, 70%	B	1	Slight gloss change
34	Phenol, 90%	A	0	
35	Phosphoric Acid, 85%	B	0	
36	Silver Nitrate, Saturated	B	2	Staining, color change
37	Sodium Hydroxide, 10%	B	2	Color change

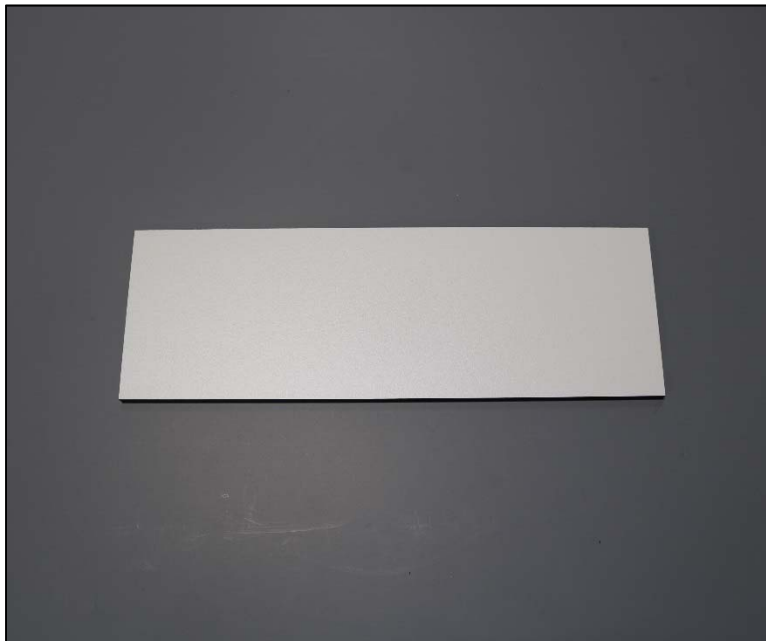
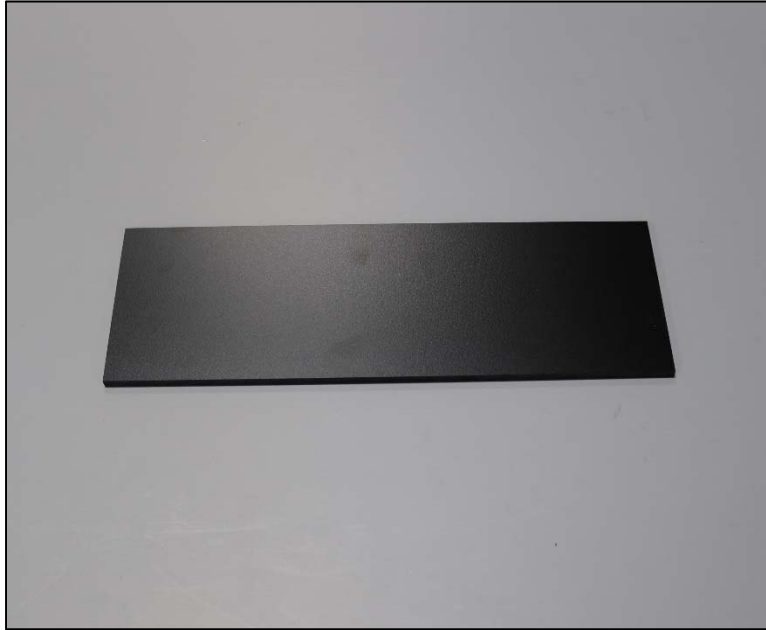
TEST NO.	CHEMICAL (% BY VOL.)	METHOD	RATING	COMMENTS
38	Sodium Hydroxide, 20%	B	2	Color change
39	Sodium Hydroxide, 40%	B	1	Slight color change
40	Sodium Hydroxide, Flake	B	0	
41	Sodium Sulfide, Saturated	B	0	
42	Sulfuric Acid, 33%	B	0	
43	Sulfuric Acid 77%	B	0	
44	Sulfuric Acid, 96%	B	1	Slight gloss change
45	Sulfuric Acid, (77%) and Nitric Acid (70%), equal parts	B	2	Color change
46	Toluene	A	0	
47	Trichloroethylene	A	0	
48	Xylene	A	0	
49	Zinc Chloride, Saturated	B	0	

Table 6: Max Compact Interior White Sample Summary Results Table:

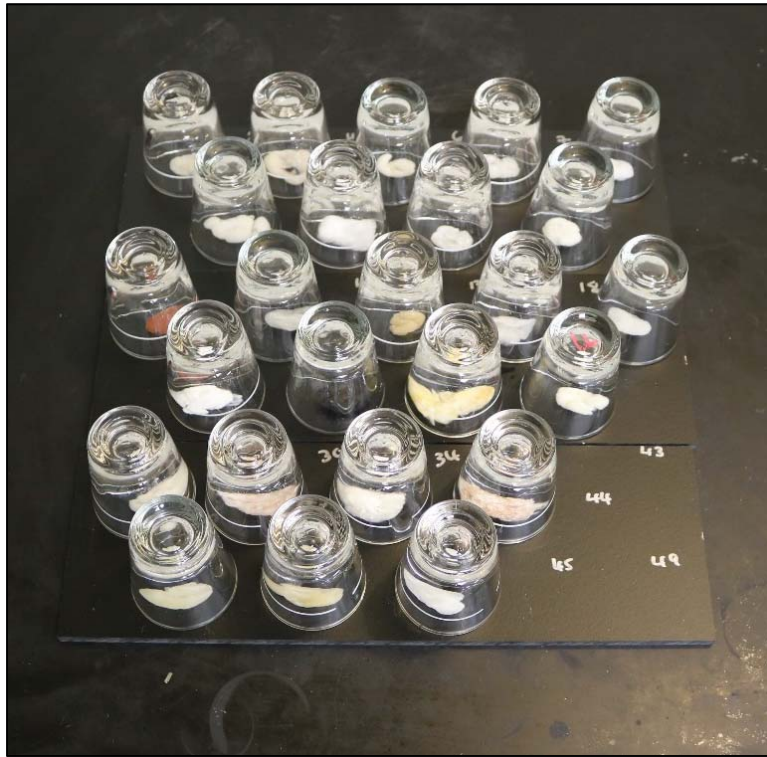
TOTALS			
ITEMS	REQUIREMENT	NO. REAGENT WITH 3 RATINGS	DISPOSITION
Volatile Subtotal:	-	0	---
Non-volatile Subtotal:	-	0	---
Grand Totals:	No More than Four Level 3 Conditions	0	*Conforming

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

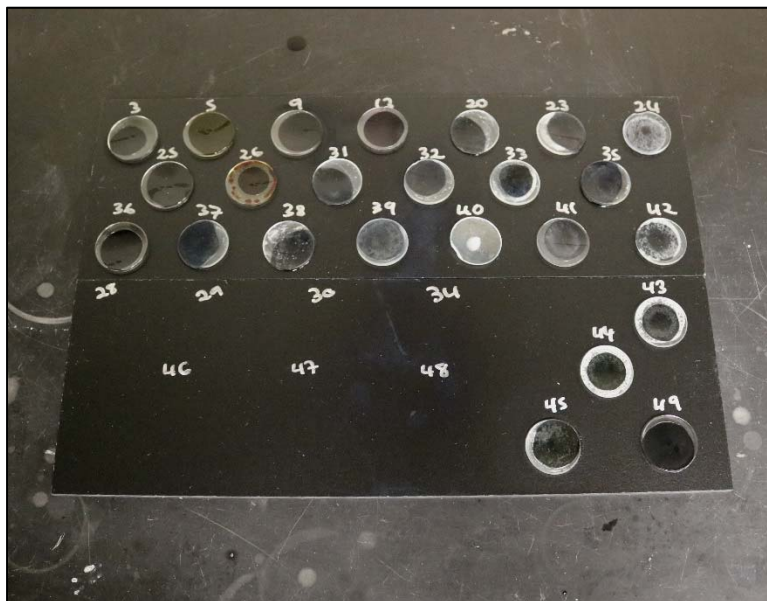
PHOTOGRAPHS:



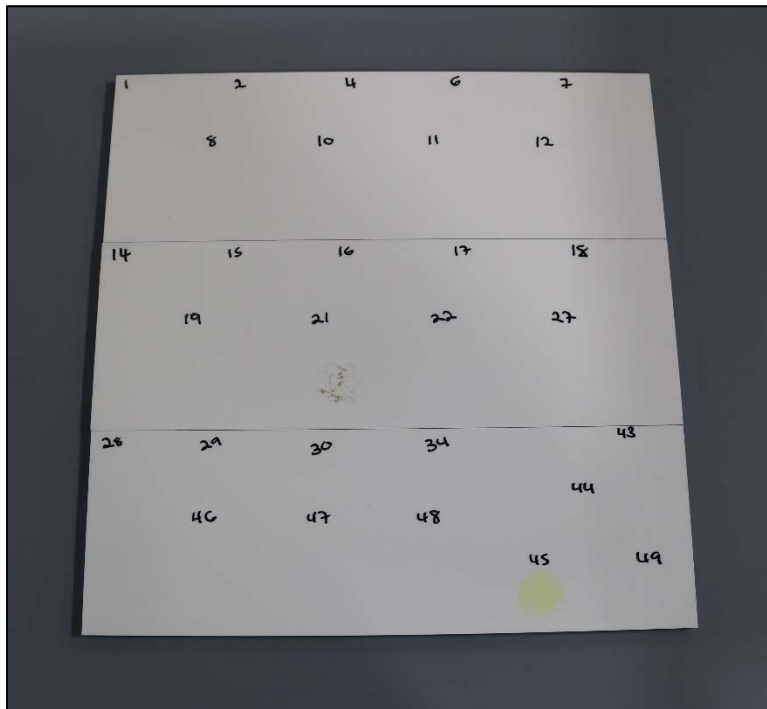
Chemical Spot Test "As Received" Test Panels



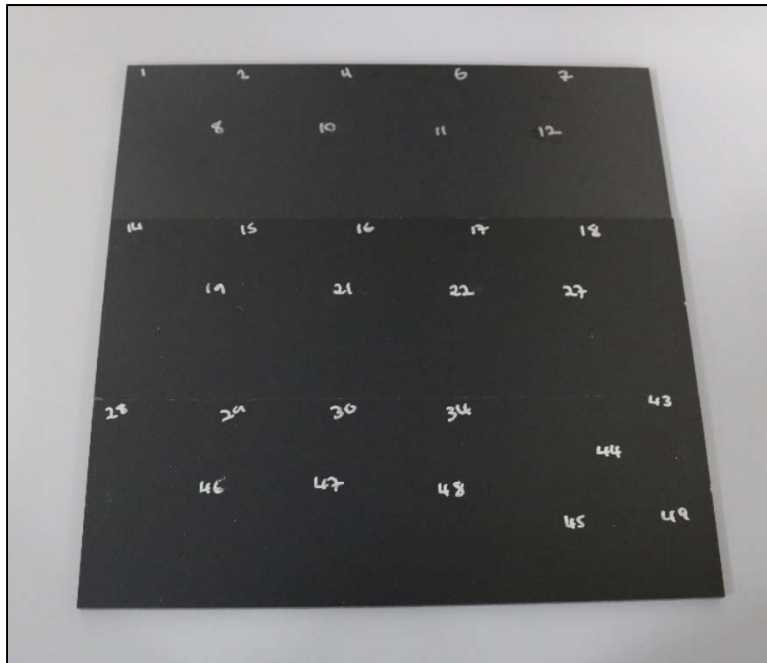
Representative Chemical Spot Test Volatile Chemical Set-up



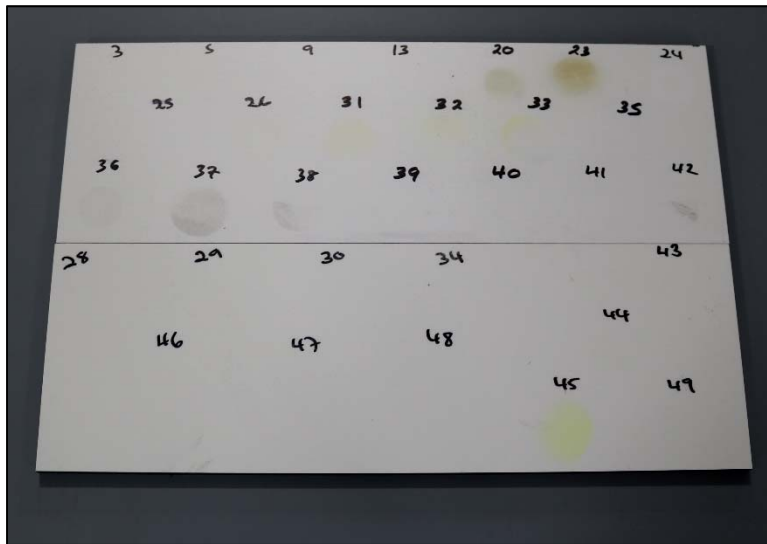
Representative Chemical Spot Test Non-volatile Chemical Set-up



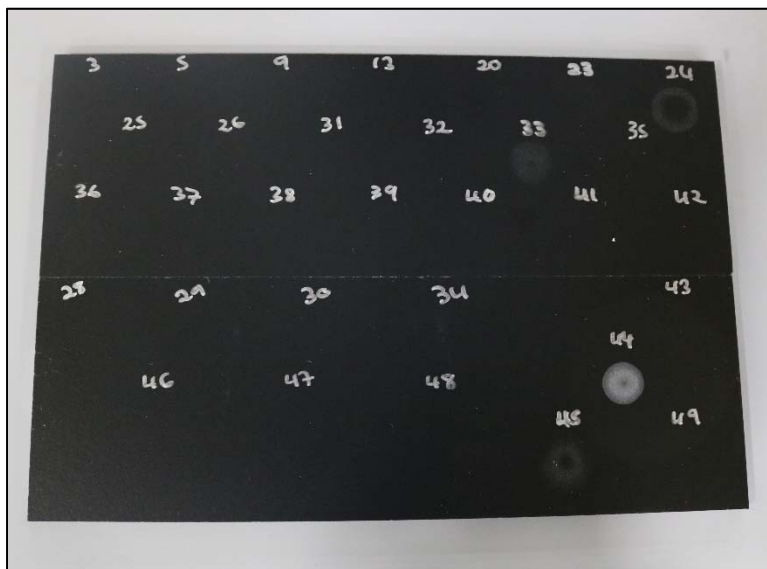
Chemical Spot Test Volatile after Exposure, White Sample



Chemical Spot Test Volatile after Exposure, Black Sample



Chemical Spot Test Non-volatile after Exposure, White Sample



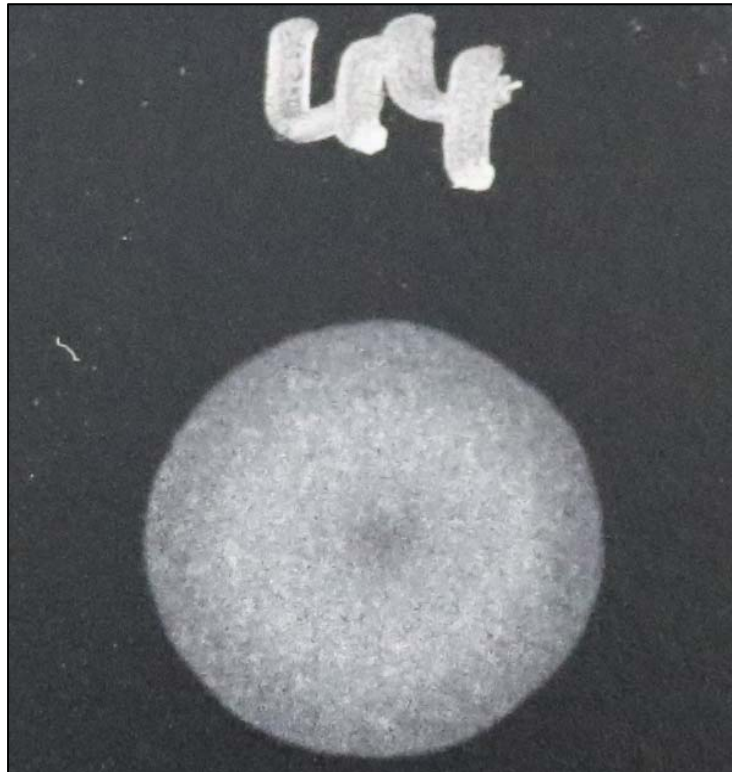
Chemical Spot Test Non-volatile after Exposure, Black Sample



Chemical spot test #24, Hydrofluoric Acid (48%), Rating 2, Gloss change



Chemical spot test #33, Nitric Acid (70%), Rating 2, Gloss change



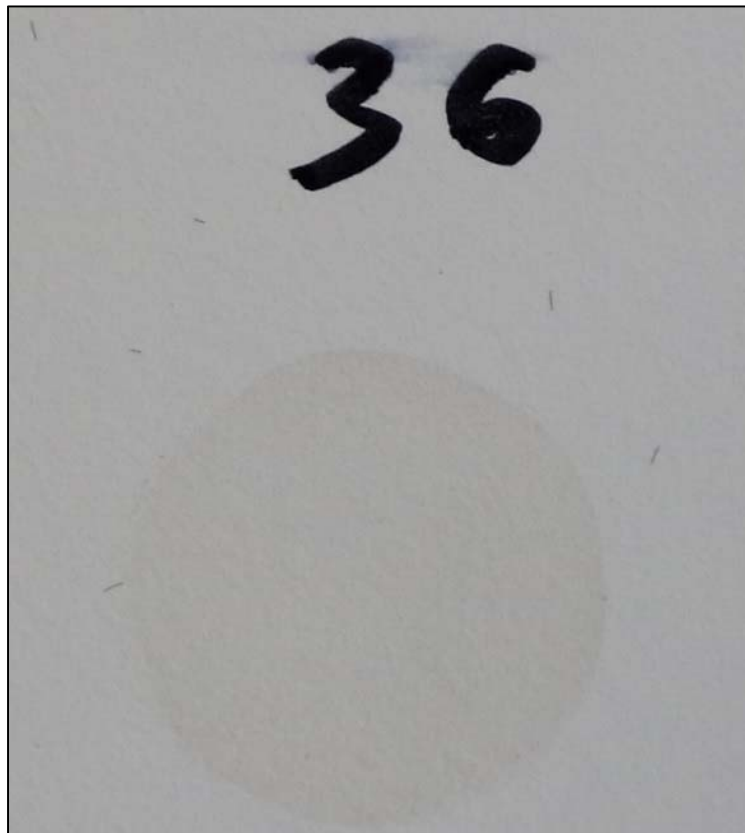
Chemical spot test #44, Sulfuric Acid (96%), Rating 2, Gloss change, Color change



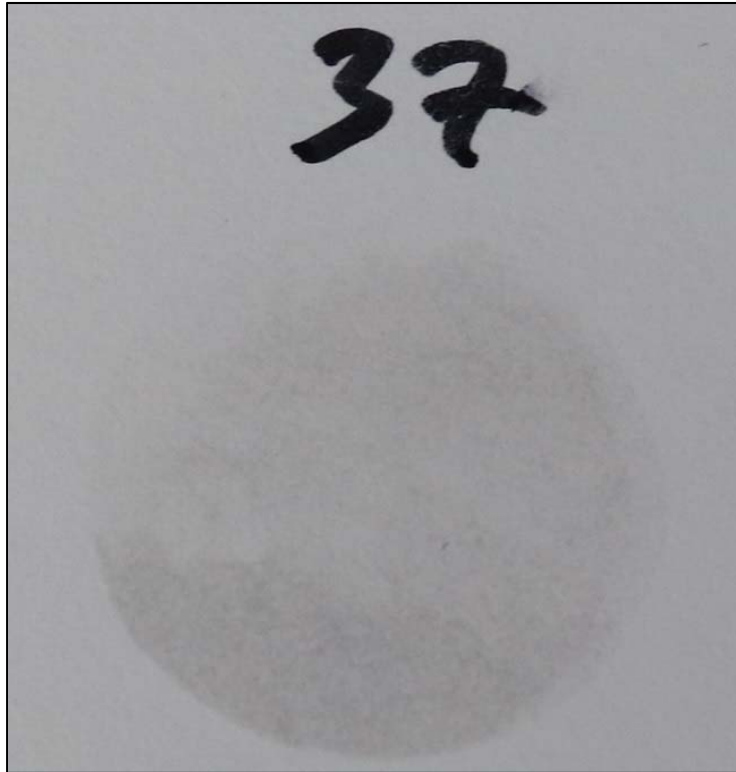
Chemical spot test #45, Sulfuric Acid (77%) and Nitric Acid (70%), equal parts, Rating 2, Gloss change



Chemical Spot Test #21, Furfural, Rating 2, Staining



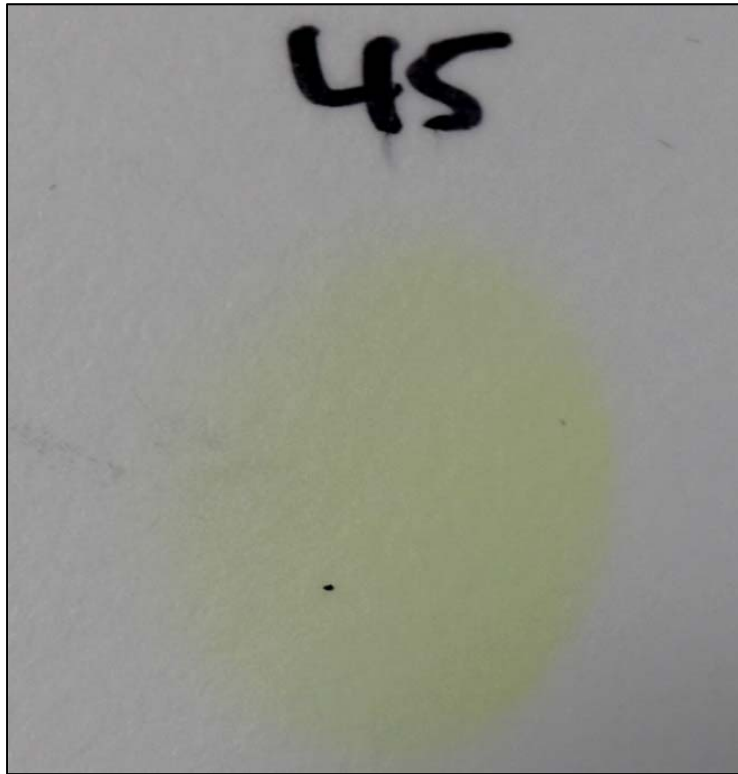
Chemical spot test #36, Silver Nitrate, Saturated, Rating 2, Staining



Chemical spot test #37, Sodium Hydroxide (10%), Rating 2, Color change



Chemical spot test #38, Sodium Hydroxide (20%), Rating 2, Color change



Chemical spot test #45, Sulfuric Acid (77%) and Nitric Acid (70%), equal parts, Rating 2, color change