

Test Report

Chemical spot test of glass fibre panel in accordance with:

SEFA 8 - 1998

Carried out for:

Labflex A/S
Truemøllevej 5
DK-8381 Tilst

Attn.: Helle Tranberg Lund

C032 - 600841 TPN 2014.06.02

Test Report

Client: Labflex A/S – Helle Tranberg Lund

Specimen: One glass fibre panel having a width of 390 mm and a length of 628 mm. The test area measures 350 mm in width and 610 mm in length.

Test date: Week 22, 2014

Tested by: Thomas Poulsen

Equipment: 25 1 oz (29.57 cl) bottles
24 40 mm watch glasses
Cotton balls
Paper towels

Test setup: See page 2

Procedure: See page 2

Results: See page 3

Test Setup

The test specimen was received with markings made by BN Produkter dividing the specimen into 50 rectangles each measuring 61 x 71 mm, see Figure 1. Each rectangle is given a unique number from 1 to 49 referring to the chemical number in SEFA 8 - 1998 that is to be placed within this rectangle.

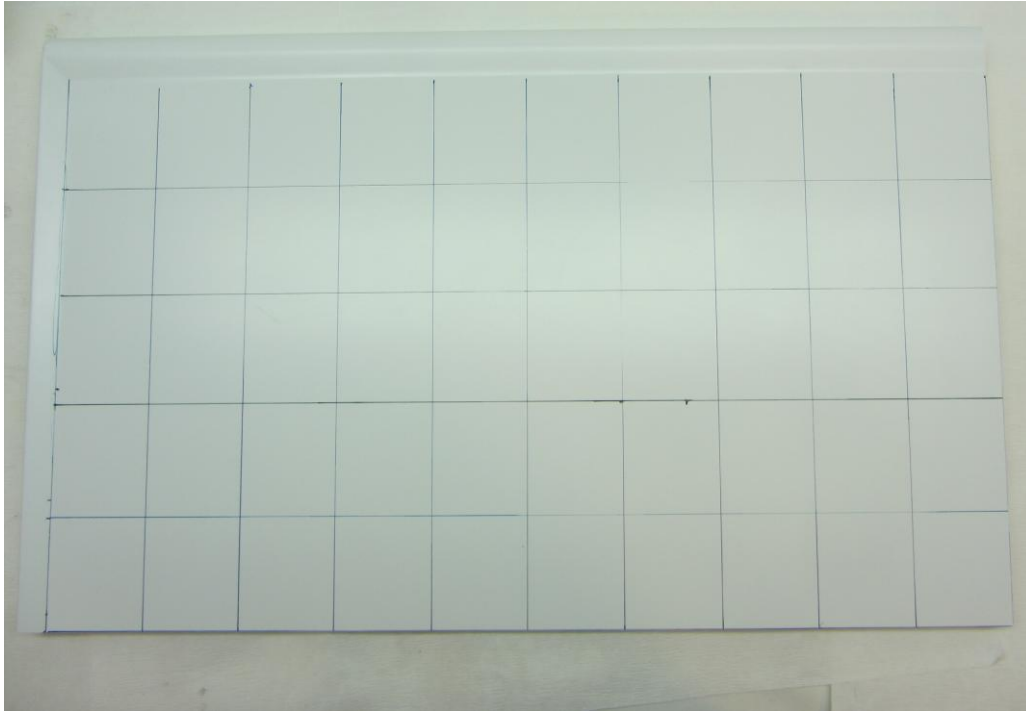


Figure 1: Test specimen as received

Test Procedure

The test is conducted in accordance with SEFA 8 - 1998 8.1.2 with some minor deviations from the standard. These deviations are detailed in Enclosure 1.

Some of the chemicals listed in the standard were open for interpretation due to insufficient details about the chemicals. The interpretation used in the test can be seen in Table 4 in Enclosure 2. It was agreed to use these interpretations.

The two test methods A and B used during testing can be seen in Figure 2 and Figure 3 respectively.



Figure 2: Test method A (volatile chemicals)

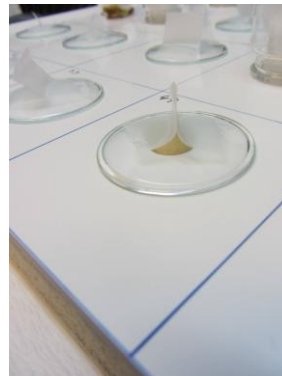


Figure 3: Test method B (non-volatile chemicals)

Test Results

Chemical no.	Rating
1	1
2	1
3	0
4	1
5	1
6	0
7	0
8	1
9	0
10	1
11	0
12	2
13	1
14	1
15	2
16	0
17	2
18	0
19	1
20	1
21	1
22	0
23	1
24	0
25	0

Table 1: Test results from the test with chemical no. 1 to 25.

Chemical no.	Rating
26	2
27	1
28	3
29	0
30	0
31	0
32	0
33	1
34	2
35	0
36	2
37	1
38	0
39	1
40	0
41	1
42	0
43	0
44	3
45	1
46	0
47	1
48	0
49	0

Table 2: Test results from the test with chemical no. 26 to 49.

The results can also be seen in Enclosure 3. Chemicals were left on the test specimen for 1 hour and then removed and cleaned as described in SEFA 8 – 1998. Due to the multiple steps in the cleaning procedure some of the final chemicals were removed following 65-70 minutes. No chemicals were left on the test specimen for more than 70 minutes. This should not have any significant outcome for the results.

Some of the test areas have stains which originate from chemicals next to the test area. The staining happened during the cleaning procedure at which water and/or naphtha cleaning at some areas ran into other rectangles still containing chemicals. This is detailed in Enclosure 3.

Conclusion

The test specimen has been subjected to a chemical spot test according to SEFA 8 – 1999 8.1. The test resulted in a total of 2 level 3 conditions which means that the test specimen can be considered of laboratory grade finish according to SEFA 8 – 1998 8.1.3.

Aarhus, June 2nd, 2014
Department of Metal and Surface Technology

Thomas Poulsen
M.Sc.

Reference to SEFA 8 – 1999	Specified in SEFA 8 - 1999	Used during testing at DTI
8.1.2	Condition the panel for 48 hours at 73+ 3F (23(+ 2(C) and 50+ 5% relative humidity.	The panel was conditioned 67 hours (from Friday afternoon until Monday morning). Following condition there were no visual changes on the panels surface compared to when the panel was received.
8.1.2	Method B – 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.	24 mm watch glasses could not be delivered prior to the test. Instead 40 mm watch glasses where used.

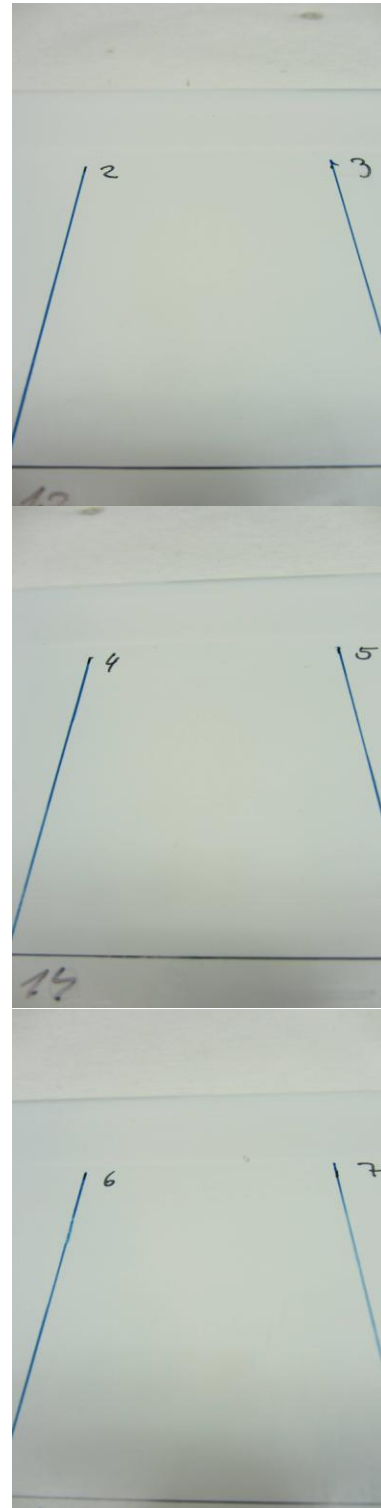
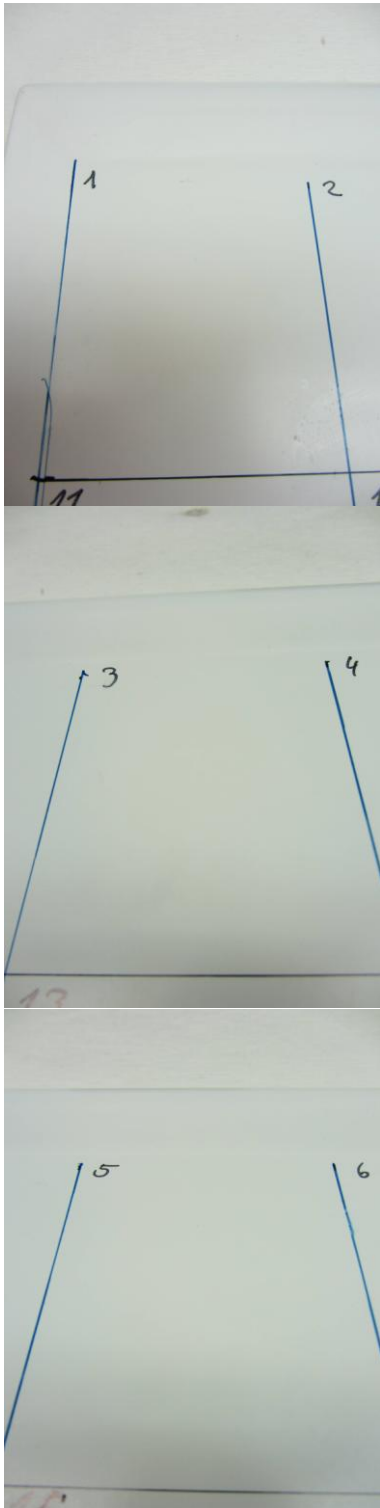
Table 3: Deviations of the performed test in relation to SEFA 8 – 1999.

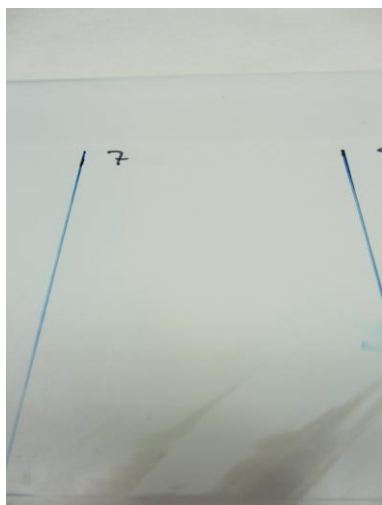
All the solutions have been mixed on the day of the test and used within 6 hours.

Chemical no.	Specified in SEFA 8 - 1999	DTI interpretation
5	Acid Dichromate, 5%	5 % sodium dichromate to 45 % sulphuric acid (96 %) and 50 % water. 2.0 g sulphuric acid (96 %) is added with great care in three portions to 2.1 g deionized water. The solution is stirred after each addition. When all acid has been added the solution is stirred for 10 min and then 0.2 g of sodium dichromate is added. The solution is stirred for 20 min.
13	Chromic acid, 60 %	60 % Chromium(VI)oxide in water. 3.1 g Chromium(VI)oxide is added to 2.1 g deionized water. Stirred for 20 min.
26	Iodine, Tincture of	0.2 g iodine and 2.3 g sodium iodide is dissolved in 5 ml absolute denatured ethanol in a 10 ml measuring glass. Deionized water is used for filling up to 10 ml.
40	Sodium hydroxide, flake	NaOH pellets which have been finely crushed.

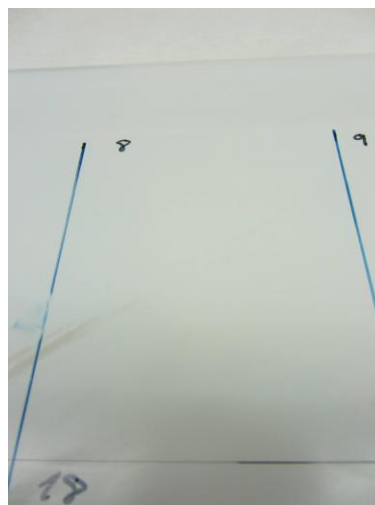
Table 4: Interpretation of the chemicals listed.

Pictures of the surfaces after the chemical spot test and 24 hours exposure at 23 ± 2 °C and 50 ± 5 % relative humidity.

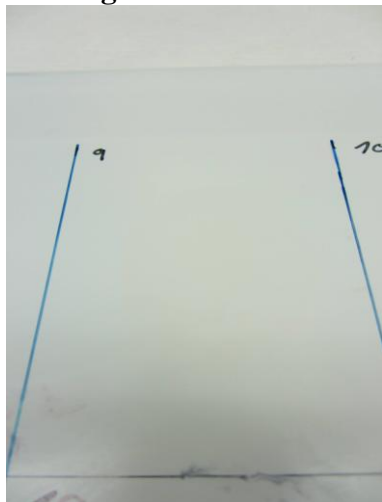




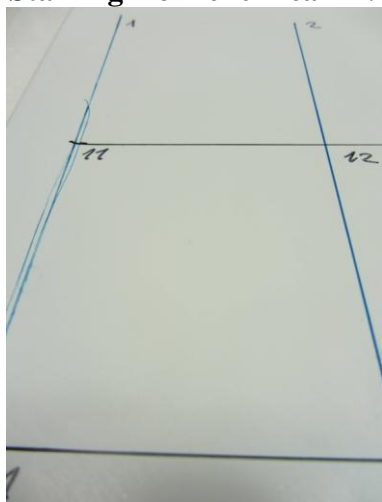
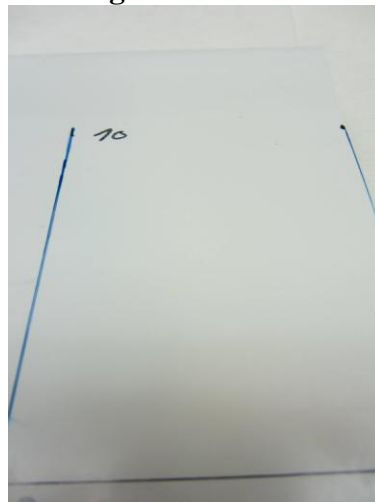
7: staining from chemical nr. 17.

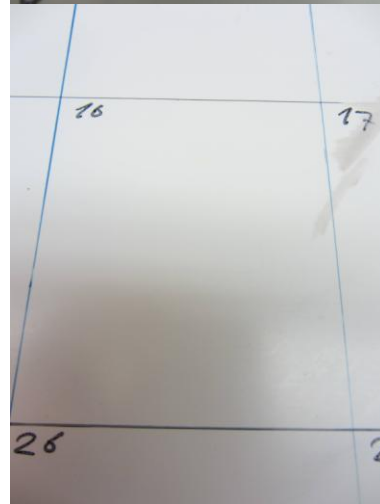
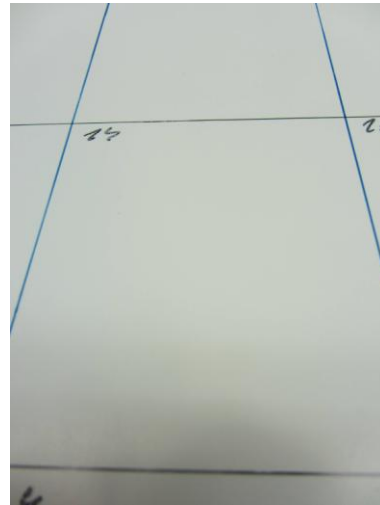
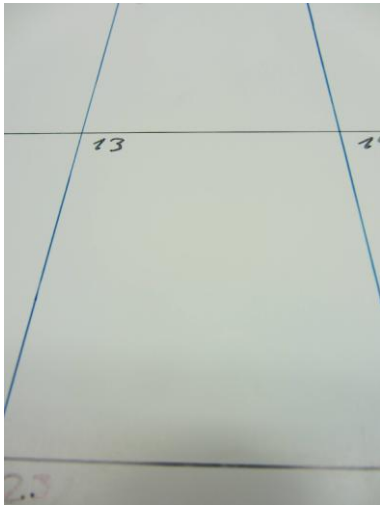


8: Staining from chemical nr. 17



9: Staining from chemical nr. 20





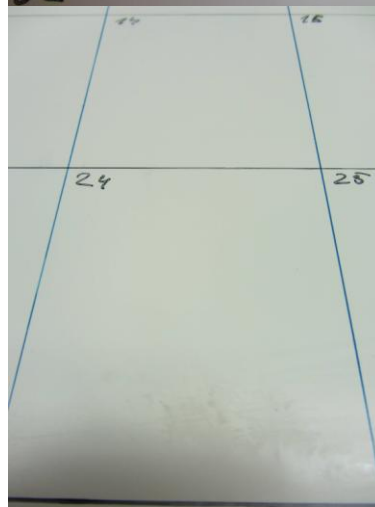
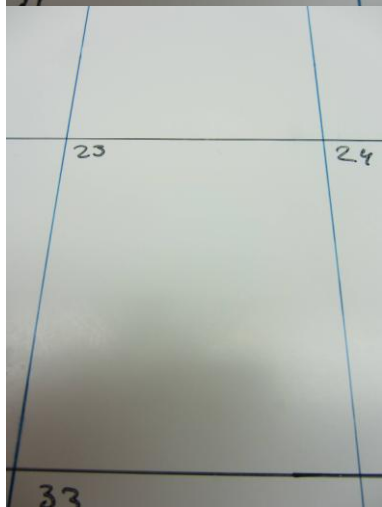
16: Staining from chemical nr. 17



18: Staining from chemical nr. 17

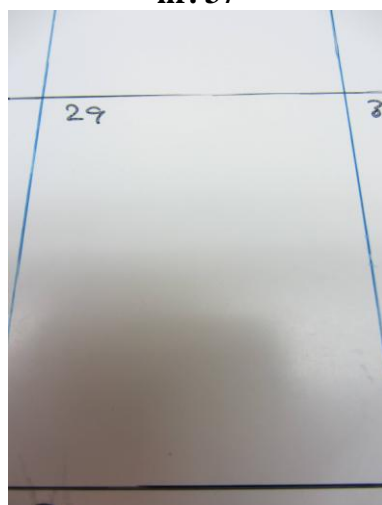


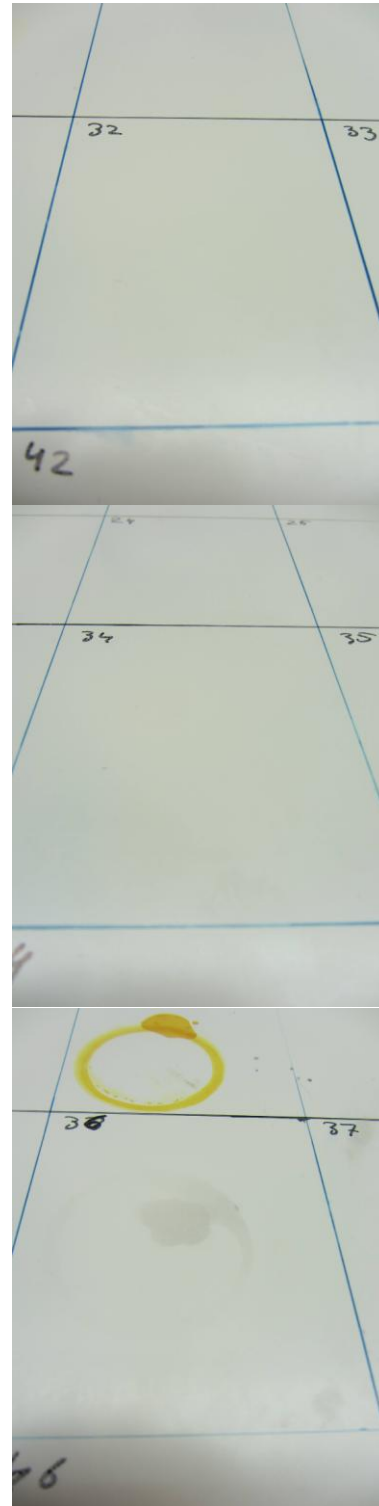
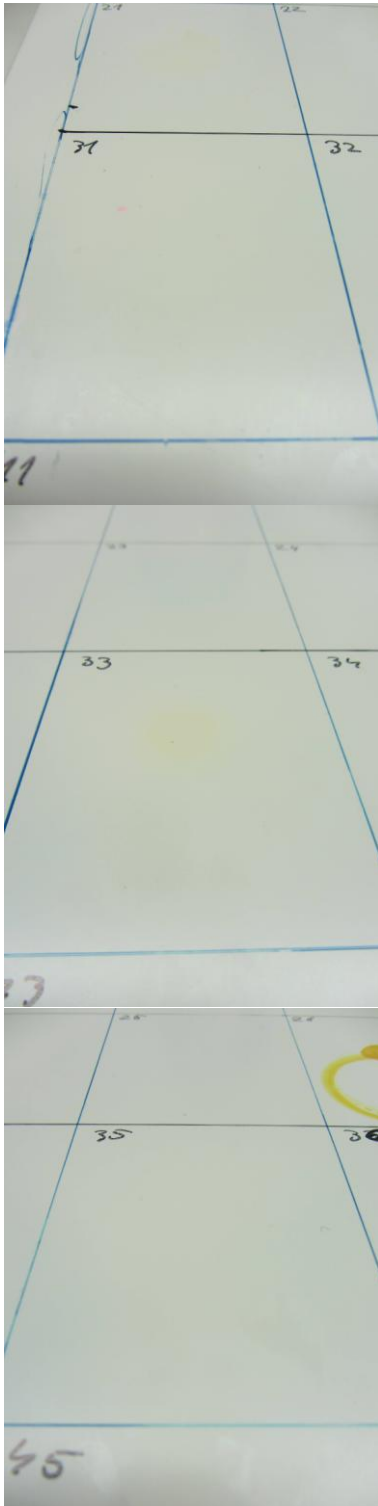
19: Staining from chemical nr. 20

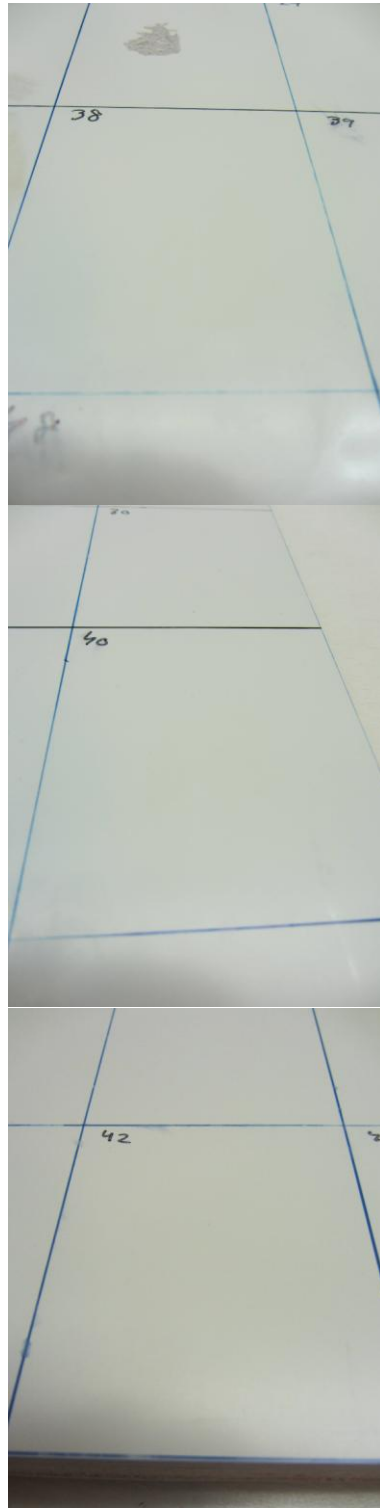
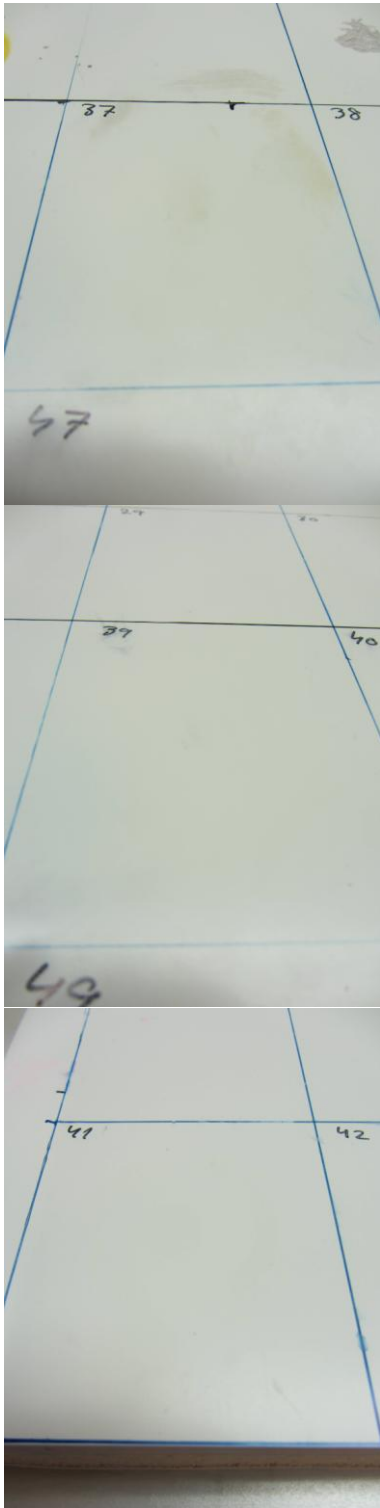


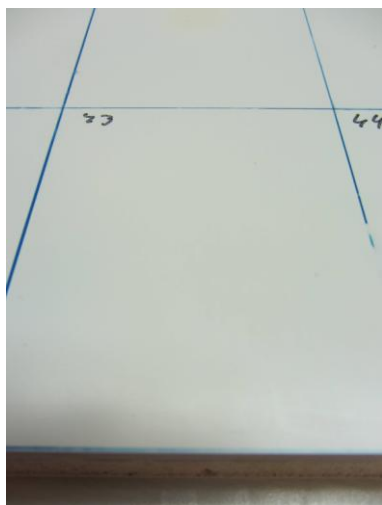


27: Staining from chemical nr. 26 and nr. 37

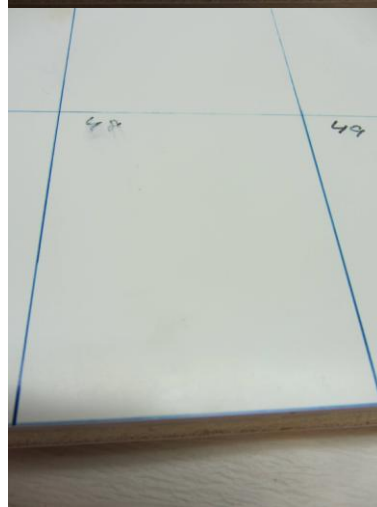
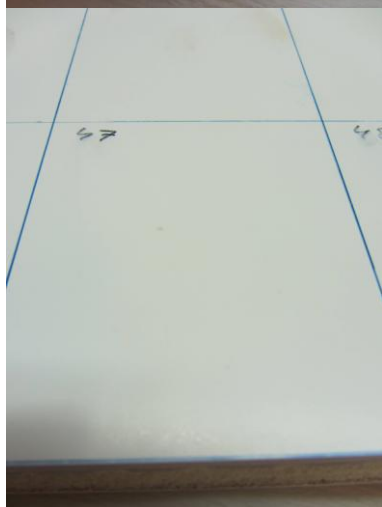








43: Staining from chemical nr. 44



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TPN
C032 - 600841
Enclosure 3

