

TEST REPORT N° 2014B VEC 22379-2a

Including 14 pages + 2 annexes
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Mons, September 8th, 2014

REQUESTED BY : **AGC Glass Europe - Technovation Centre**
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REFERENCE OF THE REQUEST : Order n°450560867

CONCERNED MANUFACTURER : **AGC Glass Europe SA**
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BELGIUM


NUMBER OF SAMPLES AND IDENTIFICATION : **Lacobel T – SG500**

PURPOSE OF THE REQUESTED : Tests according to EOTA – ETAG 002
Mechanical Performances *

SAMPLES RECEIVED ON : 27/11/2013 and 14/07/2014

TESTING DATE : From 19/12/2014

REMARKS : * Test under BELAC accreditation

 Notified body (Id.N°1174)
according to Regulation (EU) No 305/2011 - Construction products

TECHNICAL REPORT
ADHESION PERFORMANCES ACCORDING TO ETAG 002
GUIDELINE

SAMPLES

Samples were prepared by Sika on 14/11/2013 (see annex 1) and 30/06/2014 (see annex 2)

Lacobel T Deep Black+ Sikasil SG-500+ Planibel Clear

Batch A/B : MI-10109135/MI-02505132
Number of samples prepared : 90

Batch A/B : MI-09904145/MI-02505132
Number of samples prepared : 20

RESULTS

The tests were conducted in compliance with the methods described in the "Guideline for European Technical Approval for Structural Sealant Glazing System (SSGS)" ETAG n° 002.

Définitions :

K_x = Stiffness of the sample at x% elongation in the initial state

$K_{x,c}$ = Stiffness of the sample at x% elongation after conditioning
 $= 100 \cdot \sigma_x / x$

$R_{u,5}$ = the characteristic breaking stress giving 75% confidence that 95% of the test result will be higher than this value
 $= X_{mean} - \tau_{\alpha\beta} \cdot S$

S = standard deviation of the serie under consideration

$X_{mean,n}$ = the average breaking stress, either under tension or shear in the initial state

$X_{mean,c}$ = the average breaking stress, either under tension or shear after conditioning

$\Delta X_{mean} = X_{mean,c} / X_{mean,n}$

Mechanical performances

5.1.4.1. INITIAL TESTS – INITIAL MECHANICAL STRENGTH

5.1.4.1.1. TENSION – RUPTURE*

a) Results for 10 samples conditioned at +23°C

Sample number	Section (mm ²)	Limited to 5% stretch. (N/mm ²)	Limited to 10 % stretch. (N/mm ²)	Limited to 15% stretch. (N/mm ²)	Limited to 20% stretch. (N/mm ²)	Limited to 25% stretch. (N/mm ²)	Limit of breakage (N/mm ²)	Stretch on breaking (%)	Type of breakage (*)
1	595	0.11	0.23	0.33	0.42	0.50	0.95	63	100C
2	587	0.10	0.22	0.33	0.42	0.50	1.23	86	100C
3	586	0.08	0.20	0.31	0.39	0.47	1.07	75	100C
4	587	0.07	0.20	0.33	0.44	0.52	1.19	88	100C
5	596	0.07	0.17	0.28	0.40	0.49	1.23	92	100C
6	604	0.08	0.19	0.30	0.41	0.50	1.18	87	100C
7	594	0.07	0.17	0.29	0.40	0.49	1.13	81	100C
8	598	0.06	0.16	0.28	0.40	0.49	1.20	88	100C
9	596	0.08	0.18	0.27	0.41	0.50	1.19	84	100C
10	596	0.07	0.18	0.31	0.41	0.49	1.20	92	100C
Average	594	0.08	0.19	0.30	0.41	0.50	1.16	84	
Standard deviation	6	0.02	0.02	0.02	0.01	0.01	0.09	9	
Minimum	586	0.06	0.16	0.27	0.39	0.47	0.95	63	
Maximum	604	0.11	0.23	0.33	0.44	0.52	1.23	92	

(*) xC: x% cohesive

K_{12,5} = 1.97

Ru,5 = 0.97

b) Results for 5 samples conditioned at -20°C

Sample number	Section (mm ²)	Limited to 5% stretch. (N/mm ²)	Limited to 10 % stretch. (N/mm ²)	Limited to 15% stretch. (N/mm ²)	Limited to 20% stretch. (N/mm ²)	Limited to 25% stretch. (N/mm ²)	Limit of breakage (N/mm ²)	Stretch on breaking (%)	Type of breakage (*)
1	582	0.07	0.17	0.27	0.36	0.44	1.20	88	100C
2	581	0.10	0.21	0.31	0.40	0.48	1.39	101	100C
3	574	0.08	0.21	0.31	0.40	0.48	1.60	127	100C
4	584	0.09	0.19	0.29	0.38	0.46	1.40	108	100C
5	591	0.11	0.23	0.33	0.42	0.50	1.23	86	100C
Average	582	0.09	0.20	0.30	0.39	0.47	1.36	102	
Standard deviation	6	0.02	0.02	0.02	0.02	0.02	0.16	17	
Minimum	574	0.07	0.17	0.27	0.36	0.44	1.20	86	
Maximum	591	0.11	0.23	0.33	0.42	0.50	1.60	127	

(*) xC: x% cohesive

$$R_{u,5} = 0.97$$

$$\Delta X_{\text{mean}} = 1.17$$

c) Results for 5 samples conditioned at +80°C

Sample number	Section (mm ²)	Limited to 5% stretch. (N/mm ²)	Limited to 10 % stretch. (N/mm ²)	Limited to 15% stretch. (N/mm ²)	Limited to 20% stretch. (N/mm ²)	Limited to 25% stretch. (N/mm ²)	Limit of breakage (N/mm ²)	Stretch on breaking (%)	Type of breakage (*)
1	581	0.09	0.20	0.30	0.40	0.49	0.91	52	100C
2	578	0.08	0.20	0.30	0.39	0.48	1.00	64	100C
3	586	0.08	0.18	0.28	0.38	0.47	0.81	48	100C
4	601	0.10	0.21	0.31	0.41	0.50	1.09	65	100C
5	573	0.10	0.21	0.30	0.39	0.47	0.81	50	100C
Average	584	0.09	0.20	0.30	0.39	0.48	0.92	56	
Standard deviation	11	0.01	0.01	0.01	0.01	0.01	0.12	8	
Minimum	573	0.08	0.18	0.28	0.38	0.47	0.81	48	
Maximum	601	0.10	0.21	0.31	0.41	0.50	1.09	65	

(*) xC: x% cohesive

$$R_{u,5} = 0.62$$

$$\Delta X_{\text{mean}} = 0.79$$

5.1.4.1.2. SHEAR – RUPTURE*

a) Results for 10 samples conditioned at +23°C

Sample number	Section (mm ²)	Limited to 5% stretch. (N/mm ²)	Limited to 10 % stretch. (N/mm ²)	Limited to 15% stretch. (N/mm ²)	Limited to 20% stretch. (N/mm ²)	Limited to 25% stretch. (N/mm ²)	Limit of breakage (N/mm ²)	Stretch on breaking (%)	Type of breakage (*)
1	601	0.03	0.06	0.09	0.12	0.15	0.75	137	100C
2	604	0.03	0.06	0.09	0.12	0.14	0.75	141	100C
3	596	0.04	0.07	0.10	0.12	0.15	0.80	149	100C
4	608	0.03	0.06	0.09	0.11	0.14	0.86	138	100C
5	622	0.03	0.07	0.10	0.12	0.15	0.71	124	100C
6	603	0.03	0.07	0.10	0.10	0.14	0.83	152	100C
7	606	0.04	0.07	0.10	0.13	0.16	0.79	151	100C
8	582	0.03	0.06	0.09	0.12	0.15	0.80	145	100C
9	591	0.04	0.08	0.11	0.14	0.17	1.10	163	100C
10	616	0.03	0.07	0.10	0.13	0.16	0.83	142	100C
Average	603	0.03	0.07	0.10	0.12	0.15	0.82	144	
Standard deviation	11	0.00	0.01	0.01	0.01	0.01	0.11	11	
Minimum	582	0.03	0.06	0.09	0.10	0.14	0.71	124	
Maximum	622	0.04	0.08	0.11	0.14	0.17	1.10	163	

(*) xC: x% cohesive

Ru,5 = 0.59

b) Results for 5 samples conditioned at -20°C

Sample number	Section (mm ²)	Limited to 5% stretch. (N/mm ²)	Limited to 10 % stretch. (N/mm ²)	Limited to 15% stretch. (N/mm ²)	Limited to 20% stretch. (N/mm ²)	Limited to 25% stretch. (N/mm ²)	Limit of breakage (N/mm ²)	Stretch on breaking (%)	Type of breakage (*)
1	617	0.05	0.08	0.11	0.14	0.17	0.92	141	100C
2	603	0.04	0.08	0.11	0.14	0.17	1.00	148	100C
3	607	0.04	0.07	0.10	0.13	0.15	0.90	163	100C
4	594	0.05	0.09	0.12	0.15	0.18	1.51	197	100C
5	592	0.05	0.08	0.12	0.14	0.17	0.93	143	100C
Average	603	0.05	0.08	0.11	0.14	0.17	1.05	158	
Standard deviation	10	0.01	0.01	0.01	0.01	0.01	0.26	24	
Minimum	592	0.04	0.07	0.10	0.13	0.15	0.90	141	
Maximum	617	0.05	0.09	0.12	0.15	0.18	1.51	197	

(*) xC: x% cohesive

$$R_{u,5} = 0.41$$

$$\Delta X_{\text{mean}} = 1.28$$

c) Results for 5 samples conditioned at +80°C

Sample number	Section (mm ²)	Limited to 5% stretch. (N/mm ²)	Limited to 10 % stretch. (N/mm ²)	Limited to 15% stretch. (N/mm ²)	Limited to 20% stretch. (N/mm ²)	Limited to 25% stretch. (N/mm ²)	Limit of breakage (N/mm ²)	Stretch on breaking (%)	Type of breakage (*)
1	604	0.03	0.07	0.10	0.12	0.15	0.56	104	100C
2	581	0.03	0.06	0.09	0.12	0.15	0.52	92	100C
3	597	0.04	0.07	0.10	0.13	0.16	0.57	109	100C
4	590	0.03	0.07	0.10	0.12	0.15	0.97	144	100C
5	574	0.03	0.06	0.09	0.12	0.15	0.59	111	100C
Average	589	0.03	0.07	0.10	0.12	0.15	0.64	112	
Standard deviation	12	0.00	0.01	0.01	0.00	0.00	0.19	20	
Minimum	574	0.03	0.06	0.09	0.12	0.15	0.52	92	
Maximum	604	0.04	0.07	0.10	0.13	0.16	0.97	144	

(*) xC: x% cohesive

$$R_{u,5} = 0.17$$

$$\Delta X_{\text{mean}} = 0.78$$

5.1.4.2. RESIDUAL MECHANICAL STRENGTH AFTER ARTIFICIAL AGEING

5.1.4.2.1 IMMERSION IN WATER AT HIGH TEMPERATURE WITH SOLAR RADIATION*

a) *Conditioning :*

- Duration : 2 x 21 days
- Water temperature : 45°C ± 0.1°C
- Conductivity of the water : 8 µs

b) *Results of the traction test after the artificial ageing :*

Lacobel T Deep Black

After 21 days :

Sample number	Section (mm ²)	Limited to 5% stretch. (N/mm ²)	Limited to 10 % stretch. (N/mm ²)	Limited to 15% stretch. (N/mm ²)	Limited to 20% stretch. (N/mm ²)	Limited to 25% stretch. (N/mm ²)	Limit of breakage (N/mm ²)	Stretch on breaking (%)	Type of breakage (*)
1	569	0.06	0.15	0.22	0.27	0.32	1.00	144	100C
2	574	0.07	0.14	0.20	0.26	0.30	0.95	123	100C
3	580	0.08	0.16	0.22	0.28	0.33	0.96	123	100C
4	565	0.08	0.16	0.22	0.28	0.33	0.89	119	100C
5	561	0.07	0.15	0.22	0.27	0.33	0.95	112	100C
Average	570	0.07	0.15	0.22	0.27	0.32	0.95	124	
Standard deviation	8	0.01	0.01	0.01	0.01	0.01	0.04	12	
Minimum	561	0.06	0.14	0.20	0.26	0.30	0.89	112	
Maximum	580	0.08	0.16	0.22	0.28	0.33	1.00	144	

(*) xC: x% cohesive

$$\Delta X_{\text{mean}} = 0.82$$

After 42 days :

Sample number	Section (mm ²)	Limited to 5% stretch. (N/mm ²)	Limited to 10 % stretch. (N/mm ²)	Limited to 15% stretch. (N/mm ²)	Limited to 20% stretch. (N/mm ²)	Limited to 25% stretch. (N/mm ²)	Limit of breakage (N/mm ²)	Stretch on breaking (%)	Type of breakage (*)
1	581	0.09	0.16	0.22	0.27	0.31	0.90	167	100C
2	571	0.08	0.15	0.20	0.24	0.28	0.85	151	100C
3	570	0.09	0.16	0.21	0.26	0.30	0.97	162	100C
4	575	0.08	0.15	0.21	0.25	0.29	0.83	131	100C
5	588	0.07	0.14	0.19	0.24	0.28	0.81	137	100C
Average	577	0.08	0.15	0.21	0.25	0.29	0.87	150	
Standard deviation	8	0.01	0.01	0.01	0.01	0.01	0.06	16	
Minimum	570	0.07	0.14	0.19	0.24	0.28	0.81	131	
Maximum	588	0.09	0.16	0.22	0.27	0.31	0.97	167	

(*) xC: x% cohesive

$$\Delta X_{\text{mean}} = 0.75$$

Planibel Clear

After 21 days :

Sample number	Section (mm ²)	Limited to 5% stretch. (N/mm ²)	Limited to 10 % stretch. (N/mm ²)	Limited to 15% stretch. (N/mm ²)	Limited to 20% stretch. (N/mm ²)	Limited to 25% stretch. (N/mm ²)	Limit of breakage (N/mm ²)	Stretch on breaking (%)	Type of breakage (*)
1	567	0.10	0.17	0.23	0.28	0.33	0.98	130	100C
2	599	0.07	0.14	0.21	0.26	0.31	0.87	127	100C
3	583	0.09	0.17	0.23	0.28	0.32	1.04	146	100C
4	561	0.08	0.16	0.22	0.28	0.33	0.92	109	100C
5	584	0.07	0.15	0.21	0.27	0.32	0.93	120	100C
Average	579	0.08	0.16	0.22	0.27	0.32	0.95	127	
Standard deviation	15	0.01	0.01	0.01	0.01	0.01	0.06	14	
Minimum	561	0.07	0.14	0.21	0.26	0.31	0.87	109	
Maximum	599	0.10	0.17	0.23	0.28	0.33	1.04	146	

(*) xC: x% cohesive

$$\Delta X_{\text{mean}} = 0.82$$

After 42 days :

Sample number	Section (mm ²)	Limited to 5% stretch. (N/mm ²)	Limited to 10 % stretch. (N/mm ²)	Limited to 15% stretch. (N/mm ²)	Limited to 20% stretch. (N/mm ²)	Limited to 25% stretch. (N/mm ²)	Limit of breakage (N/mm ²)	Stretch on breaking (%)	Type of breakage (*)
1	572	0.08	0.15	0.20	0.25	0.28	0.90	176	100C
2	575	0.08	0.14	0.20	0.24	0.28	0.91	164	100C
3	569	0.10	0.17	0.22	0.27	0.31	0.92	169	100C
4	574	0.08	0.13	0.18	0.23	0.27	0.90	180	100C
5	576	0.08	0.15	0.20	0.25	0.29	0.90	168	100C
Average	573	0.08	0.15	0.20	0.25	0.29	0.91	171	
Standard deviation	3	0.01	0.01	0.01	0.01	0.02	0.01	7	
Minimum	569	0.08	0.13	0.18	0.23	0.27	0.90	164	
Maximum	576	0.10	0.17	0.22	0.27	0.31	0.92	180	

(*) xC: x% cohesive

$$\Delta X_{\text{mean}} = 0.78$$

5.1.4.2.2 HUMIDITY AND NaCl ATMOSPHERE*

a) Conditioning :

- Duration : 480 hours
- NaCl concentration : 48.4 g/l
- pH : 6.6

b) Results of the traction test after the artificial ageing :

Sample number	Section (mm ²)	Limited to 5% stretch. (N/mm ²)	Limited to 10 % stretch. (N/mm ²)	Limited to 15% stretch. (N/mm ²)	Limited to 20% stretch. (N/mm ²)	Limited to 25% stretch. (N/mm ²)	Limit of breakage (N/mm ²)	Stretch on breaking (%)	Type of breakage (*)
1	571	0.12	0.21	0.29	0.36	0.43	1.03	88	100C
2	579	0.10	0.20	0.28	0.35	0.41	0.96	82	100C
3	572	0.10	0.19	0.27	0.34	0.41	1.06	91	100C
4	585	0.10	0.19	0.27	0.34	0.41	1.13	103	100C
5	580	0.11	0.20	0.28	0.36	0.42	1.03	87	100C
6	589	0.10	0.19	0.27	0.34	0.40	1.16	110	100C
7	577	0.10	0.20	0.28	0.35	0.41	1.09	98	100C
8	590	0.08	0.18	0.25	0.32	0.38	1.10	105	100C
9	588	0.09	0.18	0.25	0.32	0.38	0.86	80	100C
10	593	0.10	0.19	0.26	0.33	0.39	0.85	68	100C
Average	582	0.10	0.19	0.27	0.34	0.40	1.03	91	
Standard deviation	8	0.01	0.01	0.01	0.01	0.02	0.11	13	
Minimum	571	0.08	0.18	0.25	0.32	0.38	0.85	68	
Maximum	593	0.12	0.21	0.29	0.36	0.43	1.16	110	

(*) xC: x% cohesive

$$\Delta X_{\text{mean}} = 0.89$$

5.1.4.2.3 HUMIDITY AND SO₂ ATMOSPHERE*

a) Conditioning :

- Duration : 20 cycles
- 0.2l SO₂

b) Results of the traction test after the artificial ageing :

Sample number	Section (mm ²)	Limited to 5% stretch. (N/mm ²)	Limited to 10 % stretch. (N/mm ²)	Limited to 15% stretch. (N/mm ²)	Limited to 20% stretch. (N/mm ²)	Limited to 25% stretch. (N/mm ²)	Limit of breakage (N/mm ²)	Stretch on breaking (%)	Type of breakage (*)
1	570	0.10	0.19	0.27	0.35	0.41	1.07	100	100C
2	582	0.12	0.22	0.30	0.37	0.43	1.30	146	100C
3	591	0.09	0.18	0.26	0.33	0.39	0.95	86	100C
4	568	0.11	0.20	0.28	0.35	0.41	1.00	95	100C
5	583	0.09	0.18	0.26	0.33	0.39	0.96	88	100C
6	586	0.09	0.18	0.26	0.33	0.39	1.17	124	100C
7	565	0.11	0.20	0.27	0.34	0.39	1.15	135	100C
8	586	0.12	0.22	0.29	0.36	0.42	1.05	101	100C
9	576	0.09	0.19	0.27	0.34	0.40	1.02	94	100C
10	591	0.11	0.21	0.29	0.35	0.41	0.94	87	100C
Average	580	0.10	0.20	0.28	0.35	0.40	1.06	106	
Standard deviation	9	0.01	0.02	0.01	0.01	0.01	0.12	22	
Minimum	565	0.09	0.18	0.26	0.33	0.39	0.94	86	
Maximum	591	0.12	0.22	0.30	0.37	0.43	1.30	146	

(*) xC: x% cohesive

$$\Delta X_{\text{mean}} = 0.91$$

5.1.4.2.4 Facade cleaning product*

a) Results for 10 samples conditioned at +23°C

Sample number	Section (mm ²)	Limited to 5% stretch. (N/mm ²)	Limited to 10 % stretch. (N/mm ²)	Limited to 15% stretch. (N/mm ²)	Limited to 20% stretch. (N/mm ²)	Limited to 25% stretch. (N/mm ²)	Limit of breakage (N/mm ²)	Stretch on breaking (%)	Type of breakage (*)
1	598	0.09	0.20	0.31	0.40	0.48	1.24	105	100C
2	642	0.10	0.20	0.30	0.39	0.46	1.08	84	100C
3	636	0.08	0.18	0.29	0.38	0.46	1.14	92	100C
4	629	0.09	0.19	0.30	0.39	0.47	1.15	91	100C
5	661	0.08	0.20	0.32	0.41	0.48	1.21	105	100C
6	631	0.09	0.20	0.31	0.40	0.48	1.14	87	100C
7	619	0.10	0.21	0.32	0.41	0.49	1.26	106	100C
8	589	0.10	0.22	0.33	0.42	0.50	1.18	91	100C
9	591	0.09	0.21	0.31	0.40	0.48	1.21	101	100C
10	613	0.11	0.22	0.33	0.42	0.51	1.26	97	100C
Average	621	0.09	0.20	0.31	0.40	0.48	1.19	96	
Standard deviation	24	0.01	0.01	0.01	0.01	0.02	0.06	8	
Minimum	589	0.08	0.18	0.29	0.38	0.46	1.08	84	
Maximum	661	0.11	0.22	0.33	0.42	0.51	1.26	106	

(*) xC: x% cohesive

b) Conditioning :

- Duration : 21 days
- Temperature : 46.2 °C ± 0.5 °C
- Cleaning product : Palmolive (1% on water)

c) Results of the traction test after the artificial ageing :

Sample number	Section (mm ²)	Limited to 5% stretch. (N/mm ²)	Limited to 10 % stretch. (N/mm ²)	Limited to 15% stretch. (N/mm ²)	Limited to 20% stretch. (N/mm ²)	Limited to 25% stretch. (N/mm ²)	Limit of breakage (N/mm ²)	Stretch on breaking (%)	Type of breakage (*)
1	615	0.08	0.18	0.25	0.31	0.36	1.05	182	100C
2	685	0.07	0.16	0.25	0.31	0.37	1.00	138	100C
3	613	0.07	0.15	0.22	0.28	0.32	0.92	154	100C
4	609	0.09	0.19	0.26	0.32	0.38	0.93	121	100C
5	576	0.08	0.17	0.24	0.30	0.36	1.02	135	100C
6	596	0.06	0.15	0.22	0.29	0.34	0.94	128	100C
7	591	0.07	0.17	0.25	0.32	0.37	1.08	181	100C
8	563	0.08	0.18	0.26	0.32	0.38	1.05	140	100C
9	594	0.07	0.17	0.24	0.31	0.37	1.04	140	100C
10	591	0.07	0.16	0.24	0.31	0.36	0.92	117	100C
Average	603	0.07	0.17	0.24	0.31	0.36	1.00	144	
Standard deviation	33	0.01	0.01	0.01	0.01	0.02	0.06	22	
Minimum	563	0.06	0.15	0.22	0.28	0.32	0.92	117	
Maximum	685	0.09	0.19	0.26	0.32	0.38	1.08	182	

(*) xC: x% cohesive

$$\Delta X_{\text{mean}} = 0.84$$

SUMMARY

ETAG GUIDELINE TEST NUMBER	TEST	TEST CONDI- TIONS	CRITERIA				
			X _{mean} Mpa	ΔX_{mean} ≥ 0.75	K _{12.5} For $0 \leq x\% \leq 12.5$ $0.5 \leq K_{x,c}/K_x \leq 1.10$	R _{u,5}	TYPE OF BREAKAGE ($\geq 90\% C$)
5.1.4.1.1	Tension	+23°C	1.16	-	$\sigma_{12.5} = 0.25$ K _{12.5} = 1.97	1.15	100C
		-20°C	1.36	1.17		1.19	100C
		+80°C	0.92	0.79		1.00	100C
5.1.4.1.2	Shear	+23°C	0.82	-		0.78	100C
		-20°C	1.05	1.28		0.99	100C
		+80°C	0.64	0.78		0.63	100C
5.1.4.2.1	H ₂ O at 45°C + UV Lacobel T Deep Black	500 h	0.95	0.82			100C
		1000 h	0.87	0.75	$\sigma_{12.5,c} = 0.18$ K _{12.5,c} = 1.43 K _{12.5,c}/K_{12.5} = 0.73}		100C
5.1.4.2.1	H ₂ O at 45°C + UV Planibel Clear	500 h	0.95	0.82			100C
		1000 h	0.91	0.78	$\sigma_{12.5,c} = 0.17$ K _{12.5,c} = 1.39 K _{12.5,c}/K_{12.5} = 0.71}		100C
5.1.4.2.2	H ₂ O + NaCl	480h	1.03	0.89			100C
5.1.4.2.3	H ₂ O + SO ₂	20 cycles	1.06	0.91			100C
5.1.4.2.4	Cleaning product	Tension at 23°C	1.19	-			100C
		Cleaning product 21 days	1.00	0.84			100C

x_C = x% cohesive

D. LIBERT
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Glazing and Components – INISMa

Annex 1

Preparation of samples 14/11/2013

Annex 2

Preparation of samples 30/06/2014