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EXTENDED APPLICATION REPORT

No. P 0413/12-530-13

ANALYSIS OF RESULTS FROM FIRE RESISTANCE PERFORMANCES IN ACCORDANCE WITH SIST EN 15254-5:2010 – Evaluation of extension of span length

Non-loadbearing wall sandwich panels

QBISS ONE B or TRIMOTERM FTV R (120 kg/m^3)

Sponsor:	TRIMO d.d., Prijateljeva cesta 12, 8210 Trebnje, Slovenia
Order No:	4500101131 dated 08th of May 2012

Responsible investigator:
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1. Introduction:

This extended application report concerns test results obtained in accordance with test method SIST EN 1364-1:1999 (identical to EN 1364-1:1999).

This extended application report defines the resistance to fire classification after extension of span length assigned to non-loadbearing wall made of sandwich panels **QBISS ONE B or TRIMOTERM FTV R (120 kg/m^3)** and is carried out in conformity with the extended application standard SIST EN 15254-5:2010 (identical to EN 15254-5:2009). Structural performances in normal conditions must also be taken in to consideration.

2. Details of classified product:

2.1 General:

The non-loadbearing walls made of sandwich panels **QBISS ONE B or TRIMOTERM FTV R (120 kg/m^3)** prevent spread of fire from room of origin considering resistance to fire performance characteristics stated in Clause 5 and 7.5.2 of SIST EN 13501-2:2008 (identical to EN 13501-2:2007).

2.2 Product description:

The composition of the sandwich panels **QBISS ONE B or TRIMOTERM FTV R (120 kg/m^3)** is fully described below and is the following:

- coloured lightly profiled sheet-steel facing, thickness 0.6 mm (unexposed side)
- polyurethane glue KLEIBERIT A2 (220 g/m^2),
- rock wool lamellas core KNAUF INSULATION PBE Board High or DP 12 (nominal density 120 kg/m^3),
- polyurethane glue KLEIBERIT A2 (220 g/m^2),
- coloured lightly profiled sheet-steel facing, thickness 0.7 mm (exposed side).

The thickness of the panels can be from 100 mm to 240 mm.

The non-loadbearing walls made of sandwich panels **QBISS ONE B or TRIMOTERM FTV R (120 kg/m^3)** are fully described in the test reports provided in support of extended application and classification detailed in clause 3.1.

3. Test reports and calculations of extension of span length:

Test	Orientation	Tested dimensions [mm]	Classification	Calculation of span length variations								Calculated span length [m]
				Time [min]	f1	f2	fj	Δf	c1	c2	Δ+c1+c2	
Qbiss One 100 Rep. No.: P 0241/11-530-6 ZAG Ljubljana Date: 15.06.2011	Horizontal	3000 × 3000	EI 45 (56 min)	0	0	0	0	[illegible]	0	0	[illegible]	
				15	-2	-8	3	[illegible]	0	0	[illegible]	12,00
				20	-3	-7	3	[illegible]	0	0	[illegible]	12,00
				30	-2,5	1	14	[illegible]	0	0	[illegible]	12,03
				45	-18,5	46	35	[illegible]	0	2	[illegible]	11,33

Test	Orientation	Tested dimensions [mm]	Classification	Calculation of span length variations								Calculated span length [m]
				Time [min]	f1	f2	fj	Δf	c1	c2	Δ+c1+c2	
Qbiss One 120 Rep. No.: P 0139/09-530-1 ZAG Ljubljana Date: 13.03.2009	Horizontal	3000 × 3000	EI 60 (63 min)	0	0	0	0	[illegible]	0	0	[illegible]	
				15	1	5	0	[illegible]	0	-1	[illegible]	12,00
				20	4	10	6	[illegible]	0	0	[illegible]	12,00
				30	4	10	6	[illegible]	0	0	[illegible]	12,00
				45	0	27	27,5	[illegible]	0	0	[illegible]	12,00
				60	-2	41	51	[illegible]	0	2	[illegible]	10,24

Test	Orientation	Tested dimensions [mm]	Classification	Calculation of span length variations							Calculated span length [m]
				Time [min]	f1	f2	fj	Δf	c1	c2	Δc<0,5
Qbiss One 150 Rep. No.: P 0108/13-530-1 ZAG Ljubljana Date: 03.04.2013	Horizontal	3000 × 3000	EI 120 (173 min)	0	0	0	0	0,000	0	0	0,000	
				20	6	2	8	0,003	0	1	0,001	12,00
				30	6	2	7	0,002	0	0	0,000	12,00
				45	6	6	12	0,004	0	1	0,001	12,00
				60	8	15	22	0,007	0	1	0,001	12,00
				90	24	36	31	0,001	0	1	0,001	12,00
				120	26	41	42	0,000	0	1	0,000	12,00

Test	Orientation	Tested dimensions [mm]	Classification	Calculation of span length variations							Calculated span length [m]
				Time [min]	f1	f2	fj	Δf	c1	c2	Δc<0,5
Qbiss One 172 Rep. No.:3490/243/09 IBMB Braunschweig Date: 15.03.2010	Horizontal	5500 × 3000	EI 120 (127 min)	0	0	0	0	0,000	21,71	21,71	0,000	
				20	2	1	2	0,000	21,71	21,87	0,000	12,00
				30	1	1	2	0,001	21,71	21,7	0,001	12,00
				45	1	1	1	0,000	21,71	21,3	-0,013	12,00
				60	1	1	1	0,000	21,71	21,2	-0,018	12,00
				90	2	4	4	0,001	21,71	21,08	-0,013	12,00
				120	4	7	7	0,001	21,71	22,32	0,031	12,00

4. The conclusion of the analysis of extension of span length:

4.1 Reference:

This extended application evaluation has been carried out in accordance with next Clauses of the standard SIST EN 15254-5:2010:

- 5.2.2.2 Variation in the metal material,
- 5.2.2.3 Changes in profile geometry of facing,
- 5.2.4.2 Variations in the core material for mineral wool,
- 5.3.1 Variations in span length,
- 5.3.2 Variations in the panel thickness,
- Annex B Evaluation of extension of span length.

4.2 Extended application results:

The non-loadbearing wall made of sandwich panels **QBISS ONE B or TRIMOTERM FTV R (120 kg/m^3)** of which the span length between the supports of the panels and/or the intermediate supports to which these panels are fixed are classified to the following classes.

Variations in span length for walls with panels Qbiss One B or TRIMOTERM FTV R (horizontal orientation) according to EN 15254-5:2009

Density of MW 120 kg/m^3 (producer: Knauf Insulation)

Thickness [mm]	EI 15	EI 20	EI 30	EI 45	EI 60	EI 90	EI 120	EI 180	EI 240	Reference to Note Nr.
50	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-
80	-	-	-	-	-	-	-	-	-	-
100	6,50	6,50	6,50	6,50	-	-	-	-	-	1
120	6,50	6,50	6,50	6,50	4,00	-	-	-	-	2, 5
133	6,50	6,50	6,50	6,50	4,00	-	-	-	-	2, 5, 6
150	6,50	6,50	6,50	6,50	6,50	6,50	6,50	-	-	3
172	6,50	6,50	6,50	6,50	6,50	6,50	6,50	-	-	4, 6
200	6,50	6,50	6,50	6,50	6,50	6,50	6,50	-	-	4, 6
240	6,50	6,50	6,50	6,50	6,50	6,50	6,50	-	-	4, 6

Note 1: Test results from test report P 0241/11-530-6.
Note 2: Test results from test report P 0139/09-530-1.
Note 3: Test results from test report P 0108/13-530-1.
Note 4: Test results from test report 3490/243/09.
Note 5: According to prEN 1364-1:2011, clause 13.3, a) the height of the construction may be increased by 1 m.
Note 6: According to SIST EN 15254-5:2010, clause 5.3.2, valid for thicker panels.

Variations in span length for walls with panels Qbiss One B or TRIMOTERM FTV R (vertical orientation) according to EN 15254-5:2009

Density of MW 120 kg/m^3 (producer: Knauf Insulation)

Thickness [mm]	EI 15	EI 20	EI 30	EI 45	EI 60	EI 90	EI 120	EI 180	EI 240	Reference to Note Nr.
50	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-
80	-	-	-	-	-	-	-	-	-	-
100	4,00	4,00	4,00	4,00	4,00	-	-	-	-	1, 5, 7
120	4,00	4,00	4,00	4,00	4,00	-	-	-	-	2, 5, 7
133	4,00	4,00	4,00	4,00	4,00	-	-	-	-	2, 5, 6, 7
150	4,00	4,00	4,00	4,00	4,00	4,00	4,00	-	-	3, 7
172	6,50	6,50	6,50	6,50	6,50	6,50	6,50	-	-	4, 7
200	6,50	6,50	6,50	6,50	6,50	6,50	6,50	-	-	4, 6, 7
240	6,50	6,50	6,50	6,50	6,50	6,50	6,50	-	-	4, 6, 7

Note 1: Test results from test report P 0241/11-530-6.
Note 2: Test results from test report P 0139/09-530-1.
Note 3: Test results from test report P 0108/13-530-1.
Note 4: Test results from test report 3490/243/09.
Note 5: According to prEN 1364-1:2011, clause 13.3, a) the height of the construction may be increased by 1 m.
Note 6: According to SIST EN 15254-5:2010, clause 5.3.2, valid for thicker panels.
Note 7: According to SIST EN 15254-5:2010, clause 5.3.1, valid for both horizontal and vertical joints between panels.

4.3 Other product variations valid for all non-loadbearing wall sandwich panels QBISS ONE B or TRIMOTERM FTV R (120 kg/m^3):

4.3.1 Variations in the metal facing (clause 5.2.2.2):
- the results are valid for all grades of tested normal steel and stainless steel,
- the result is valid also for a product with perforated facing on the fire-exposed side, where the perforation area is not greater than 40 % and the core material is classified A2-s1, d0 or better.

4.3.2 Changes in profile geometry of facing (clause 5.2.2.3):
- the results are valid for any change of profiling.

4.3.3 Panel width (Table 2):
- increase of the width up to 200 mm is allowed.

4.3.4 Steel-sheet facing (Table 1):
- the thickness of the steel-sheet on the unexposed side can vary from 0.3 mm to 0.9 mm,
- the thickness of the steel-sheet on the exposed side can vary from 0.35 mm to 1.05 mm.

4.4 Additional statement

The extended application results relate to the behaviour of non-loadbearing wall sandwich panels **QBISS ONE B or TRIMOTERM FTV R (120 kg/m^3)** under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the non-loadbearing wall sandwich panels **QBISS ONE B or TRIMOTERM FTV R (120 kg/m^3)** in use.

The extended application was prepared by: Aleksander Bergant B.Sc.