

**Classification of the fire resistance of the
Schüco FW50/60+ BF Curtain Wall system
according to EN 13501-2:2007+A1:2009**

Classification n°	2013-Efectis-R0103.164b
Sponsor	Schüco International KG Karolinenstrasse 1 D-33609 Bielefeld GERMANY
Product name	FW50/60+ BF Curtain Wall system
Prepared by	Efectis Nederland BV Brandpuntlaan Zuid 16 NL 2665 NZ BLEISWIJK The Netherlands
Notified body n°	1234
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1. SUBJECT

This classification report defines the resistance to fire classification assigned to the Schüco FW50/60+ BF Curtain Wall system in accordance with the procedures given in EN 13501-2:2007+A1:2009.

2. DETAILS OF CLASSIFIED PRODUCT

2.1 GENERAL

A series of fire test was carried out on various versions of the Schüco FW50/60+ BF Curtain Wall system, see Figure 1 for a general lay-out of the system.



Figure 1

A total of 6 fire tests have been performed on Full Configurations according to EN 1364-3. The results are reported in the following test reports:

- GRYFITlab test report LBO-269/11E, dated 12-02-2012
- GRYFITlab test report LBO-257/11E, dated 06-12-2011
- GRYFITlab test report LBO-235/11E, dated 17-08-2011
- GRYFITlab test report LBO-277/11E, dated 17-08-2011
- GRYFITlab test report LBO-263/11E, dated 10-11-2011
- IFT Rosenheim test report 271 31572, dated 13-07-2006

In addition, 2 fire tests have been performed on Partition Walls according to EN 1364-1. The results are reported in the following test reports:

- IBS Linz test report 03062305-1, dated 28-12-2003
- IBS Linz test report 03111809-1, dated 10-02-2004

For the dimensions and specifications of the materials and significant details of the

construction examined, see the next paragraphs 2.2 - 2.9.

Based on these fire tests, the field of application for the Schüco Curtain Wall system has been defined. The field of application is determined on the basis of the test results obtained and the rules given in:

- the Direct Field of Application in prEN 1364-3:2012 and
- the Extended Application in prEN 15269-6:2012.

This is reported in:

- Efectis NL report 2013-Efectis-R0103.164a dated June 2013.

A summary is given in paragraph 2.10.

2.2 GRYFITLAB TEST REPORT LBO-269/11E, DATED 12-01-2012

The test specimen was a Schüco FW50+ BF curtain wall with external dimensions 4505 x 4855 mm (w x h). The construction was glazed with SchücoFlam 30 ISO-3 C LT. At some locations, panels of type ISO-GKB were installed (based on 3 x 12,5 mm plasterboard).

The fire test was performed on 14th November 2011, according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation “fire from inside to outside”.

2.3 GRYFITLAB TEST REPORT LBO-257/11E, DATED 06-12-2011

The test specimen was a Schüco FW50+ BF curtain wall with external dimensions approx. 3780 x 3905 mm (w x h). The construction was glazed with SchücoFlam 30 ISO-3C. At some locations, panels of type ISO-GKB were installed (based on 32 mm plasterboard).

The fire test was performed on 30th September 2011, according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation “fire from inside to outside”.

2.4 GRYFITLAB TEST REPORT LBO-235/11E, DATED 17-08-2011

The test specimen was a Schüco FW50+ BF curtain wall with external dimensions 4505 x 4855 mm (w x h). The construction was glazed with SchücoFlam 30 ISO-3 C LT. At some locations, panels of type ISO-GKB were installed (based on 32 mm plasterboard).

The fire test was performed on 13th July 2011, according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation “fire from inside to outside”.

2.5 GRYFITLAB TEST REPORT LBO-277/11E, DATED 17-08-2011

The test specimen was a Schüco FW50+ BF curtain wall, including double doors of type Schüco ADS 80 FR 30. The external dimensions of the test specimen were approx. 4000 x 4000 mm (w x h). The construction was fully glazed with SchücoFlam 30 ISO-3 C in the façade and SchücoFlam 30 ISO C in the door leaves.

The fire test was performed on 9th December 2011, according to EN 1634-1:2009 with heat exposure according to the standard fire curve for the situation “fire from inside to outside” for the façade and with the door leaves pivoting away from the fire.

2.6 GRYFITLAB TEST REPORT LBO-263/11E, DATED 10-11-2011

The test specimen was a Schüco FW50+ BF curtain wall with external dimensions approx. 3780 x 4950 mm (w x h). The construction was glazed with SchücoFlam 30 ISO-3 C LT. At some locations, panels of type ISO-GKB were installed (based on 3 x 12,5 mm plasterboard).

The fire test was performed on 14th October 2011, according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation “fire from outside to inside”.

2.7 IFT ROSENHEIM TEST REPORT 271 31572, DATED 13-07-2006

The test specimen was a Schüco FW50+ BF curtain wall, with external dimensions 3680 x 3700 mm (w x h). The construction was glazed with Pilkington Pyrostop 30-25 ISO. At some locations, panels (based on 28 mm Aestuver) were installed.

The fire test was performed on 29th March 2006, according to prEN 1364-3:2005 with heat exposure according to the standard fire curve for the situation “fire from inside to outside”.

2.8 IBS LINZ TEST REPORT 03062305-1, DATED 28-12-2003

The test specimen was a Schüco FW50+ BF partition wall, with external dimensions approx. 4000 x 3040 mm (w x h). The construction was glazed with Pilkington Pyrostop F30-10 (15 mm) as well as SchücoFlam Iso (32 mm).

The fire test was performed on 15th July 2003, according to EN 1364-1:1999 with heat exposure according to the standard fire curve for the situation “fire from inside to outside”.

2.9 IBS LINZ TEST REPORT 03111809-1, DATED 10-02-2004

The test specimen was a Schüco FW50+ BF partition wall, with external dimensions approx. 3650 x 3040 mm (w x h). The construction was glazed with Pilkington Pyrodur G30-26 (DGU based on Pyrodur G30-201, 10 mm, total thickness 32 mm).

The fire test was performed on 26th November 2003, according to EN 1364-1:1999 with heat exposure according to the standard fire curve for the situation “fire from inside to outside”.

2.10 EFECTIS NL REPORT 2013-EFECTIS-R0103.164A DATED JUNE 2013

Based on these fire tests, the field of application for the Schüco Curtain Wall system has been defined. The field of application is determined on the basis of the test results obtained and the rules given in:

- the Direct Field of Application in prEN 1364-3:2012 and
- the Extended Application in prEN 15269-6:2012.

3. TEST REPORTS & DEFINITION OF FIELD OF APPLICATION IN SUPPORT OF CLASSIFICATION

3.1 TEST REPORTS

Name of laboratory	Name of sponsor	Test report no.	Test method
GRYFITlab (Poland)	Schüco International	LBO-269/11E	EN 1364-3:2007
GRYFITlab (Poland)	Schüco International	LBO-257/11E	EN 1364-3:2007
GRYFITlab (Poland)	Schüco International	LBO-235/11E	EN 1364-3:2007
GRYFITlab (Poland)	Schüco International	LBO-277/11E	EN 1634-1:2009
GRYFITlab (Poland)	Schüco International	LBO-263/11E	EN 1364-3:2007
IFT Rosenheim (Germany)	Schüco International	271 31572	prEN 1364-3:2005
IBS Linz (Austria)	Schüco International	03062305-1	EN 1364-1:1999
IBS Linz (Austria)	Schüco International	03111809-1	EN 1364-1:1999

3.2 TEST RESULTS

Table 3.2.1 - Summary of results GRYFITlab test report LBO-269/11E	
Fire test performed according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation "fire from inside to outside"	
Integrity (E)	32 minutes (no failure before end of heating)
Thermal insulation (I)	32 minutes (no failure before end of heating)
Heating was terminated after 32 minutes.	

Table 3.2.2 - Summary of results GRYFITlab test report LBO-257/11E	
Fire test performed according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation "fire from inside to outside"	
Integrity (E)	31 minutes (no failure before end of heating)
Thermal insulation (I)	31 minutes (no failure before end of heating)
Heating was terminated after 31 minutes.	

Table 3.2.3 - Summary of results GRYFITlab test report LBO-235/11E	
Fire test performed according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation “fire from inside to outside”	
Integrity (E)	44 minutes (sustained flaming)
Thermal insulation (I)	44 minutes (as a consequence of failure on E)
Heating was terminated after 44 minutes.	

Table 3.2.4 - Summary of results GRYFITlab test report LBO-277/11E	
Fire test performed according to EN 1634-1:2009 with heat exposure according to the standard fire curve for the situation “fire from inside to outside” for the façade and with the door leaves pivoting away from the fire	
Integrity (E)	37 minutes (no failure before end of heating)
Thermal insulation I ₁ I ₂	28 minutes (measured on a door leaf) 37 minutes (measured on a door leaf)
Heating was terminated after 37 minutes.	

Table 3.2.5 - Summary of results GRYFITlab test report LBO-263/11E	
Fire test performed according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation “fire from outside to inside”	
Integrity (E)	36 minutes (no failure before end of heating)
Thermal insulation (I)	25 minutes (maximum temperature rise on S1)
Heating was terminated after 36 minutes.	

Table 3.2.6 - Summary of results IFT Rosenheim test report 271 31572	
Fire test performed according to prEN 1364-3:2005 with heat exposure according to the standard fire curve for the situation “fire from outside to inside”	
Integrity (E)	41 minutes (sustained flaming)
Thermal insulation (I)	41 minutes (as a consequence of failure on E)
Heating was terminated after 43 minutes.	

Table 3.2.7 - Summary of results IBS Linz test report 03062305-1	
Fire test performed according to EN 1364-1:1999 with heat exposure according to the standard fire curve for the situation “fire from inside to outside”	
Integrity (E)	45 minutes (sustained flaming)
Thermal insulation (I)	41 minutes (maximum temperature rise)
Heating was terminated after 45 minutes.	

Table 3.2.8 - Summary of results IBS Linz test report 03111809-1	
Fire test performed according to EN 1364-1:1999 with heat exposure according to the standard fire curve for the situation “fire from inside to outside”	
Integrity (E)	31 minutes (sustained flaming)
Thermal insulation (I)	28 minutes (mean temperature rise)
Heat radiation (W)	32 minutes (no failure)
Heating was terminated after 32 minutes.	

3.3 DEFINITION OF FIELD OF APPLICATION

Based on the fire tests referred to above, the field of application for the Schüco Curtain Wall FW50+ BF system has been defined. The field of application is determined on the basis of the test results obtained and the rules given in:

- the Direct Field of Application in prEN 1364-3:2012 and
- the Extended Application in prEN 15269-6:2012.

4. CLASSIFICATION AND FIELD OF APPLICATION

4.1 REFERENCE OF CLASSIFICATION

This classification has been carried out in accordance with clause 7.5.3 of EN 13501-2:2007+A1:2009.

4.2 CLASSIFICATION

The fire resistance of curtain wall constructions in the Schüco FW50/60+ BF Curtain Wall system.

Fire resistance classification of:

E 15 (i ↔ o), E 30 (i ↔ o)
EW 20 (i ↔ o), EW 30 (i ↔ o)
EI 15 (i ↔ o), EI 30 (i ↔ o)

5. FIELD OF APPLICATION

5.1 GENERAL

This classification is valid for the end use applications which are covered in the next sections. The approved constructions and variations thereof are based on the results obtained in the fire tests and the associated Field of Direct Application as given in prEN 1364-3:2012. In addition, the rules as specified in the Extended Field of Application standard prEN 15269-6:2012 have been used.

5.2 APPROVED CONFIGURATIONS

The approved configurations are shown in Figure A.1 in Annex A. The information includes:

- storey height
- faceted facade
- tested door and window size
- angle for transoms/ mullions
- sloped angle

5.3 BASIC AND SUPPLEMENTARY PROFILES

The approved basic and supplementary profiles are shown in the Figures A.2 - A.4 in Annex A. The information includes:

- mullions
- transoms
- cover caps FW 50+ BF
- cover caps FW60+ BF

5.4 INFILL PANELS

The approved infill panels are shown in the Figures A.5 and A.6 in Annex A. The information includes:

- glazing options
- panel options

5.5 ACCESSORIES

The approved accessories are shown in the Figures A.7 and A.8 in Annex A. The information includes:

- insulation types and intumescent strips
- Gaskets, glazing supports, T-connections

5.6 INSERT UNITS

The approved door and window constructions which are to be integrated in the curtain wall system are shown in the Figures A.9 and A.10 in Annex A. The information includes:

- Integration of fire resistant door ADS 80 FR 30
- Integration of fire resistant window AWS 60 FR 30 / AWS 70 FR 30

Only the door and window configurations as tested are included. A further assessment of alternative door and window configurations is to be based on the rules in EN 1634-1 and the applicable part in the EN 15269-series. This is not part of the present classification.

5.7 SUPPORTING STRUCTURE / ANCHORING

The supporting constructions into which the curtain wall system is to be installed are shown in the Figures A.11 - A.14 in Annex A. The information includes:

- sill attachment
- head attachment
- side attachments

6. LIMITATIONS

This classification document does not represent type approval or certification of the product.

SIGNED



Dr. Ir. G. van den Berg
Senior project leader fire resistance

APPROVED



P.A. Ram
Project leader fire resistance

ANNEX A - DRAWINGS FOR THE CURTAIN WALL SYSTEM FW 50+ BF AND FW 60+ BF

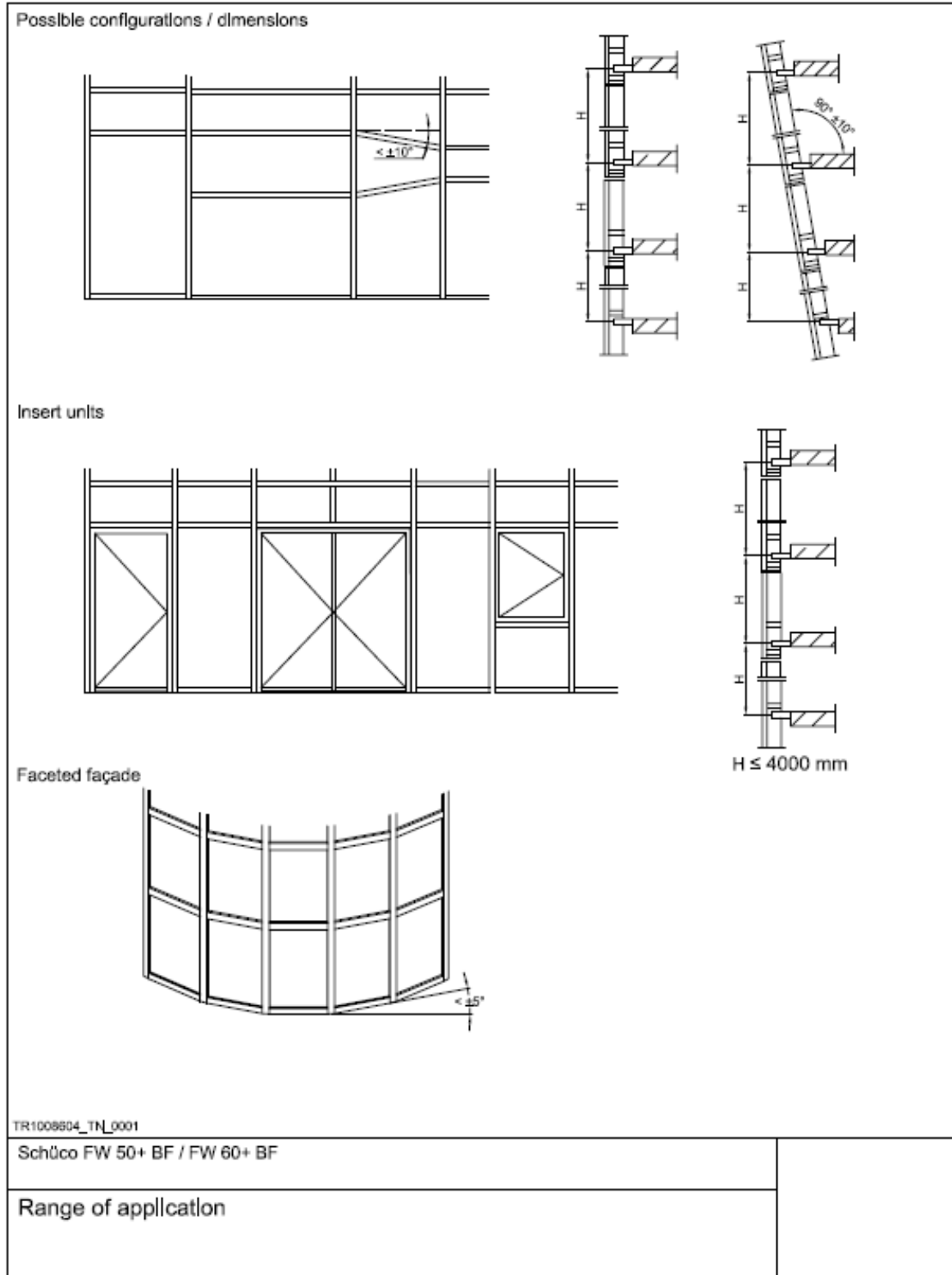


Figure A.1

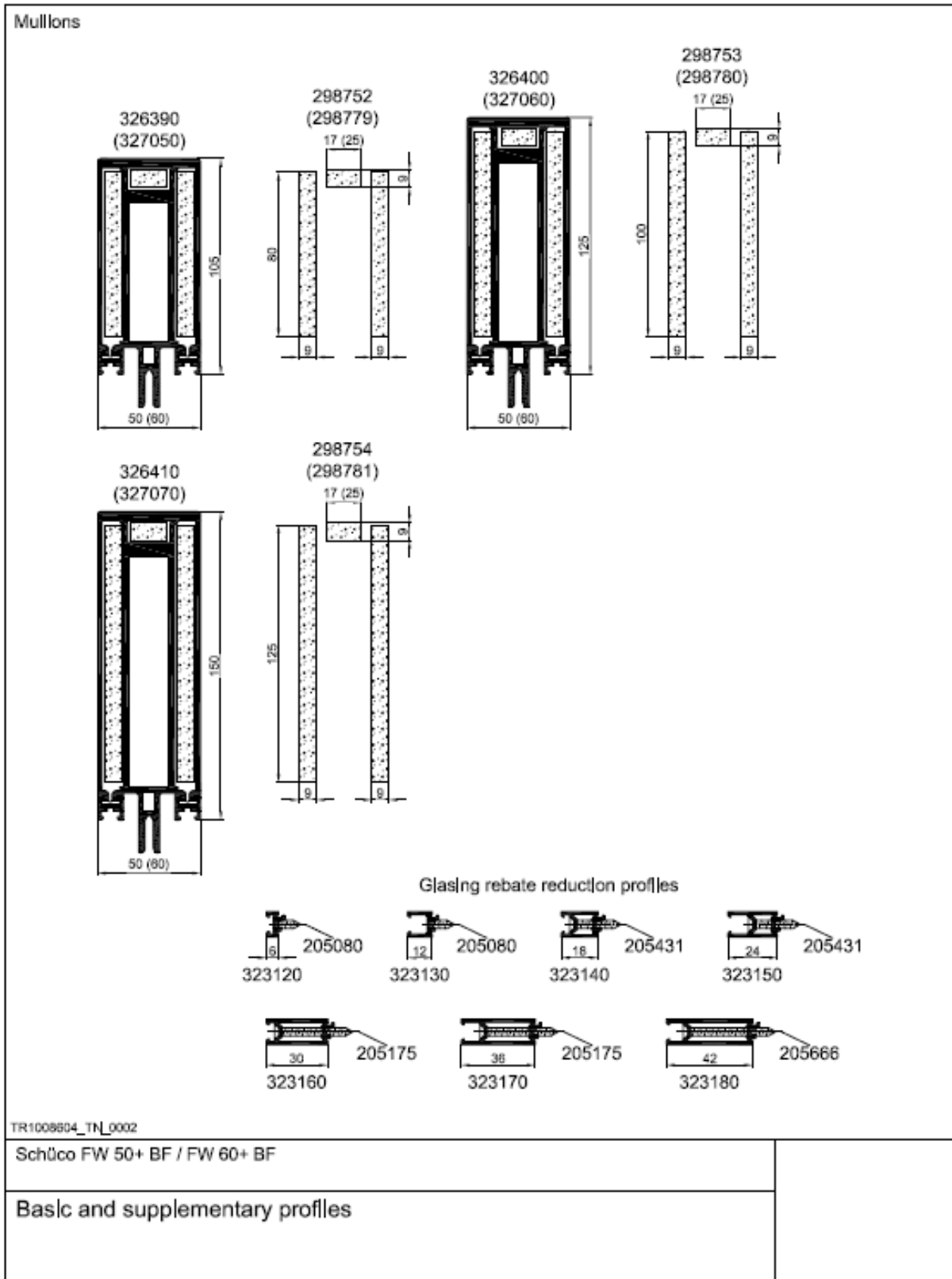


Figure A.2

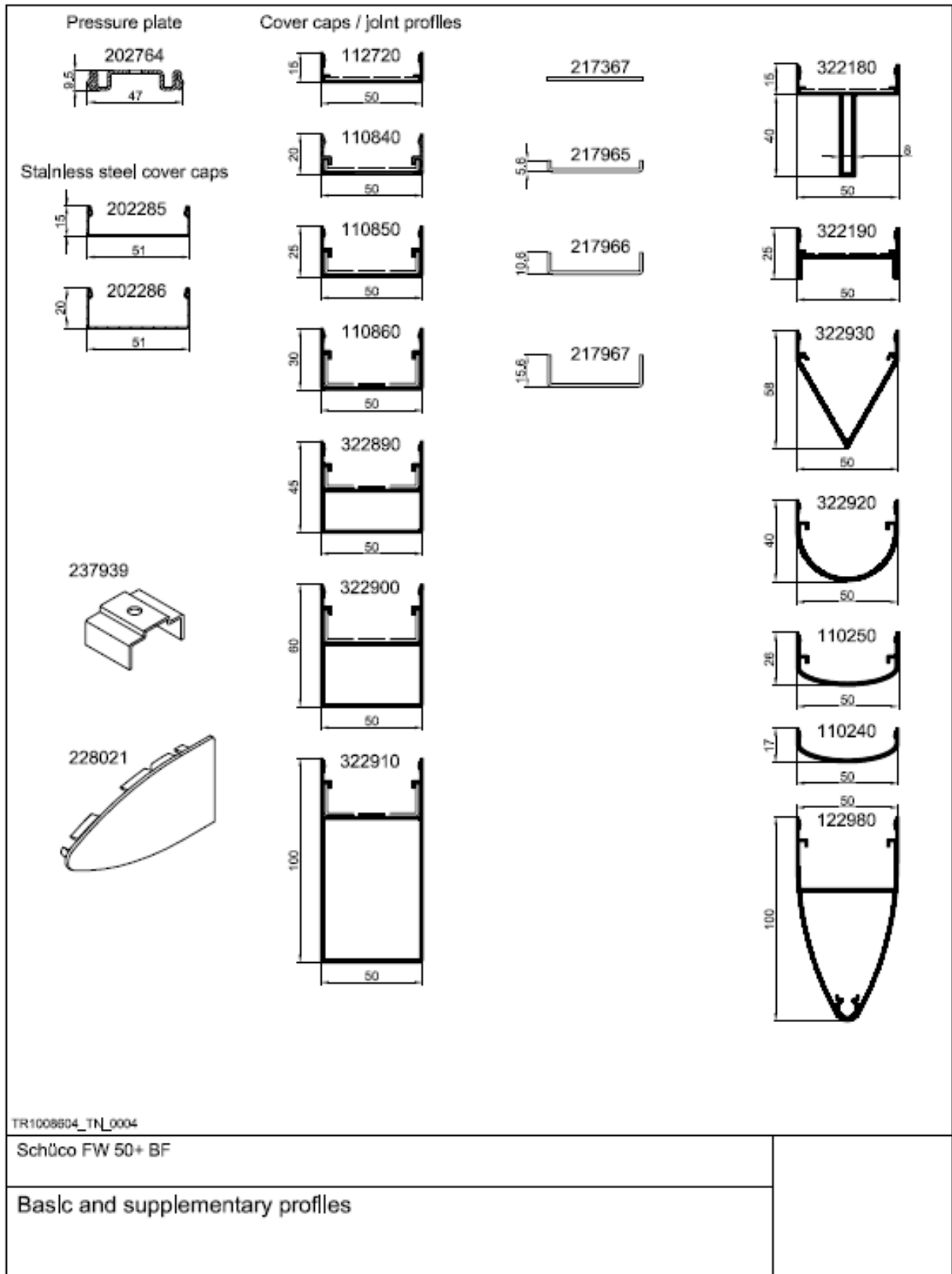


Figure A.3

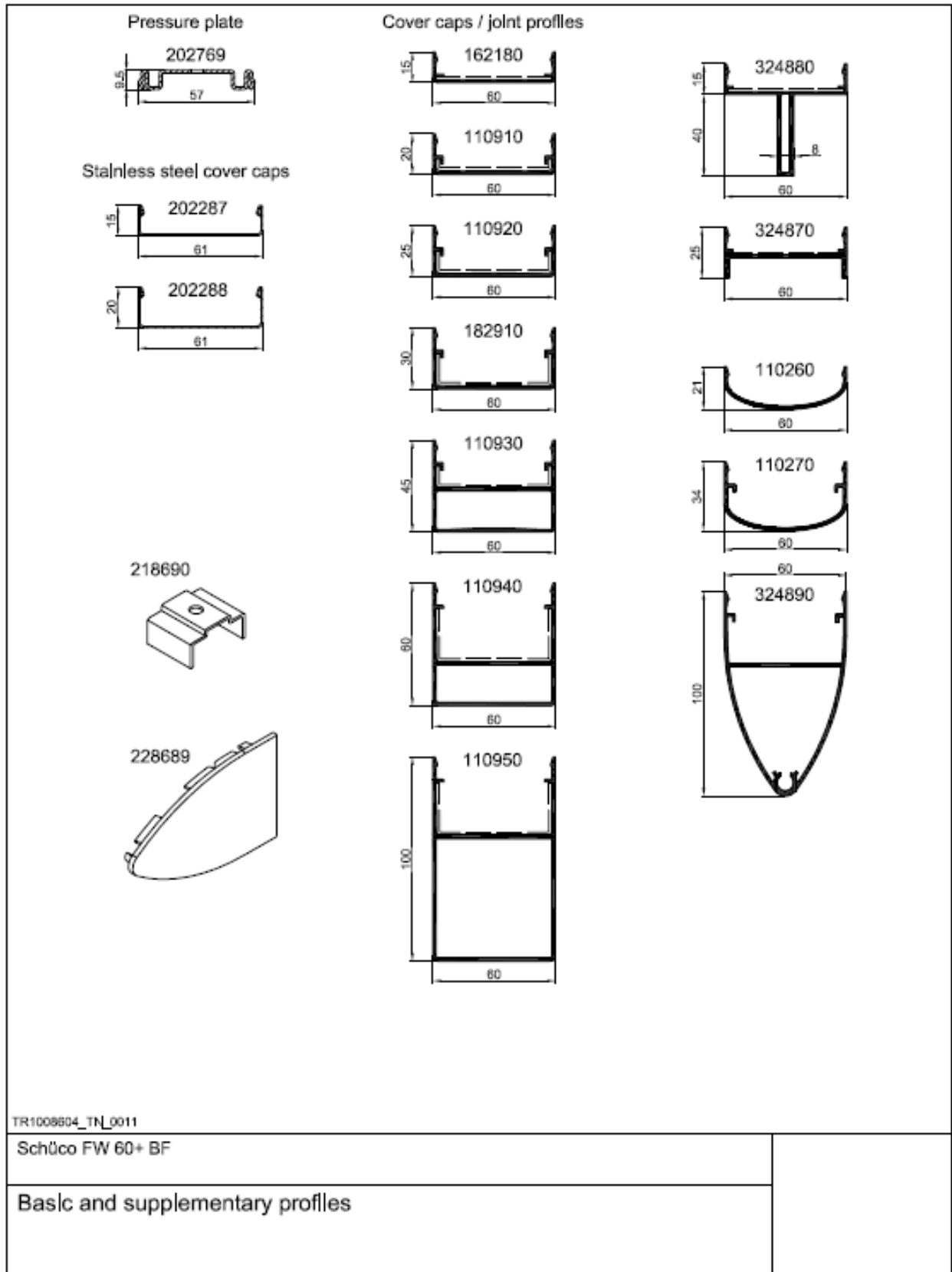


Figure A.4

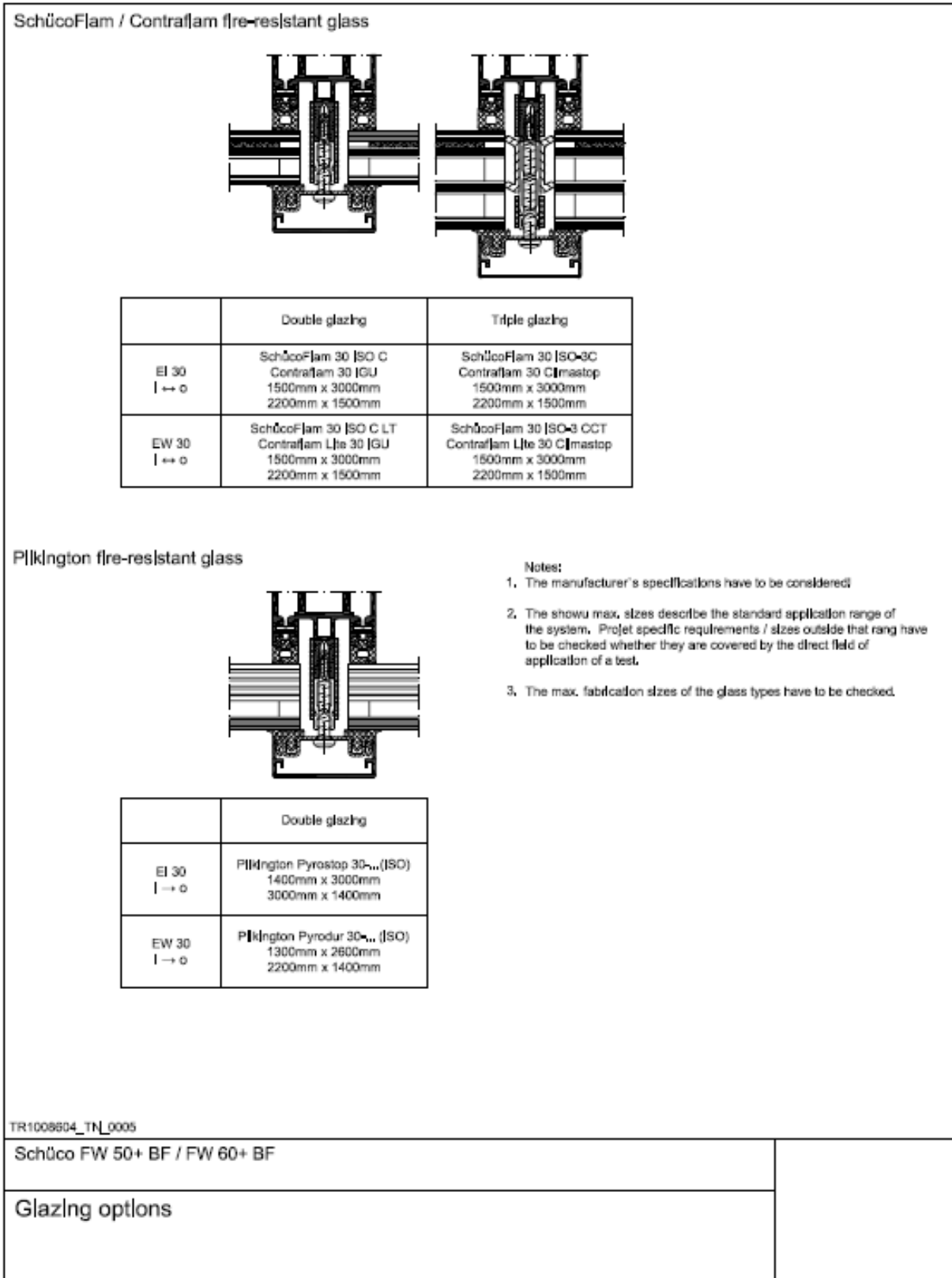


Figure A.5

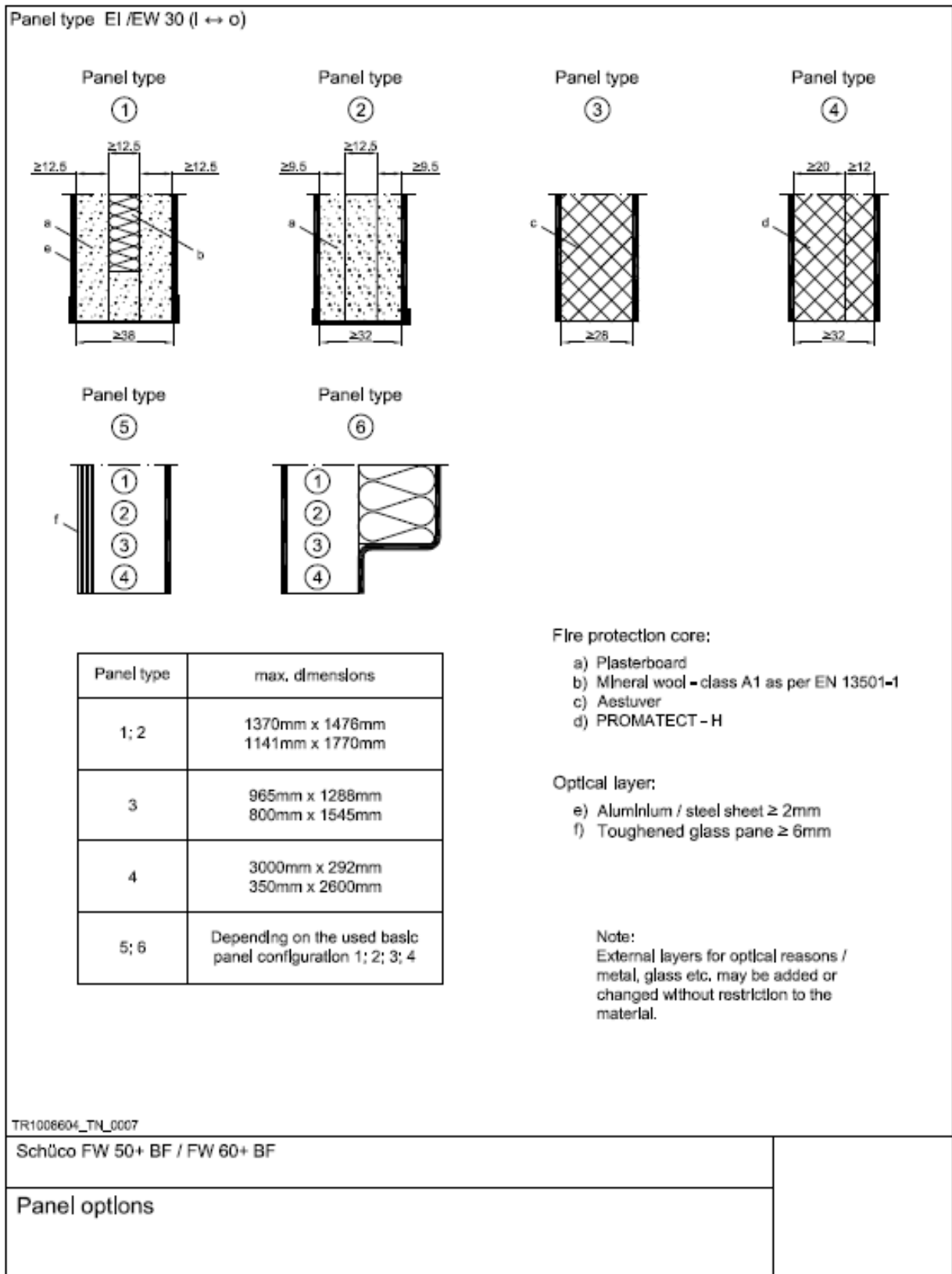


Figure A.6

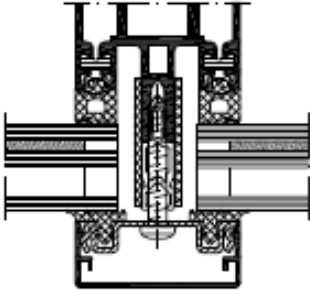
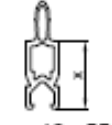
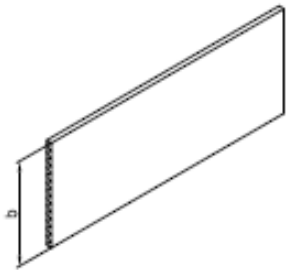
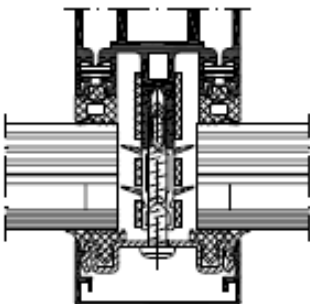

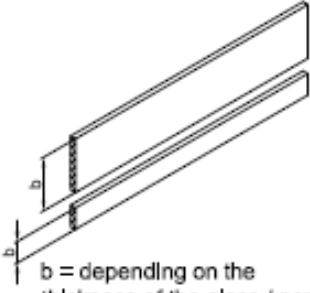
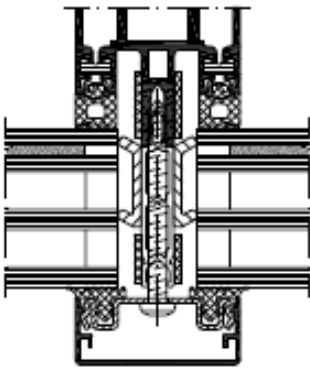
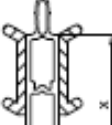
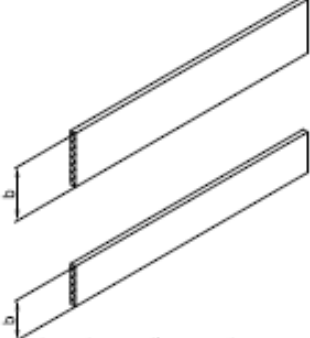
Insulation types and Intumescent strips	
<p>FW 50+ /60+ BF</p>   <p>$x = 13 - 55$</p>  <p>$b =$ depending on the thickness of the glass / panel</p>	
<p>FW 50+ /60+ BF,1</p>   <p>$x = 21 - 43$</p>  <p>$b =$ depending on the thickness of the glass / panel</p>	
<p>FW 50+ /60+ BF,HI</p>   <p>$x = 21 - 49$</p>  <p>$b =$ depending on the thickness of the glass / panel</p>	
<p>TR1008604_TN_0006</p>	
<p>Schüco FW 50+ BF / FW 60+ BF</p>	
<p>Accessories - Insulation types</p>	

Figure A.7

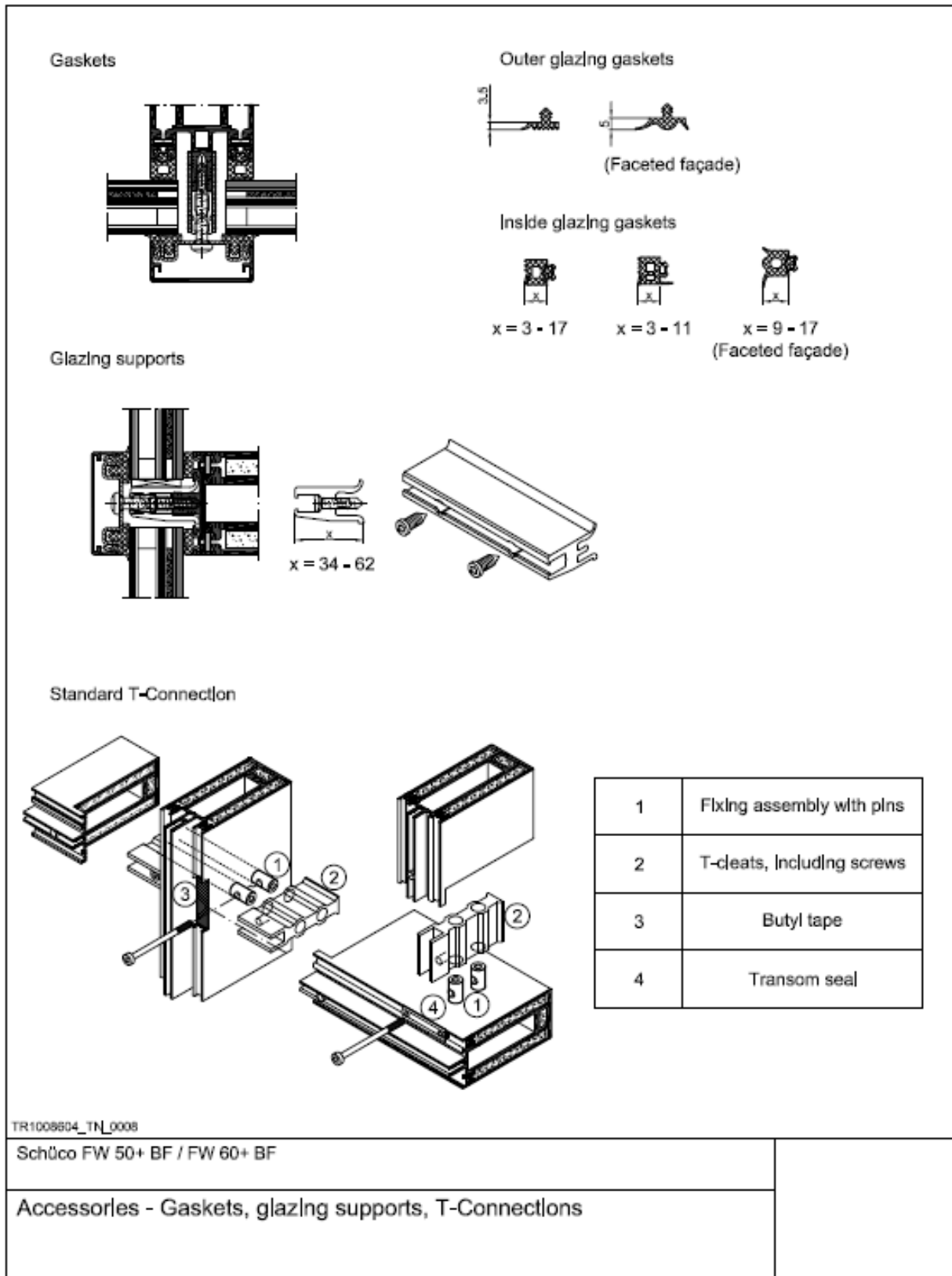


Figure A.8

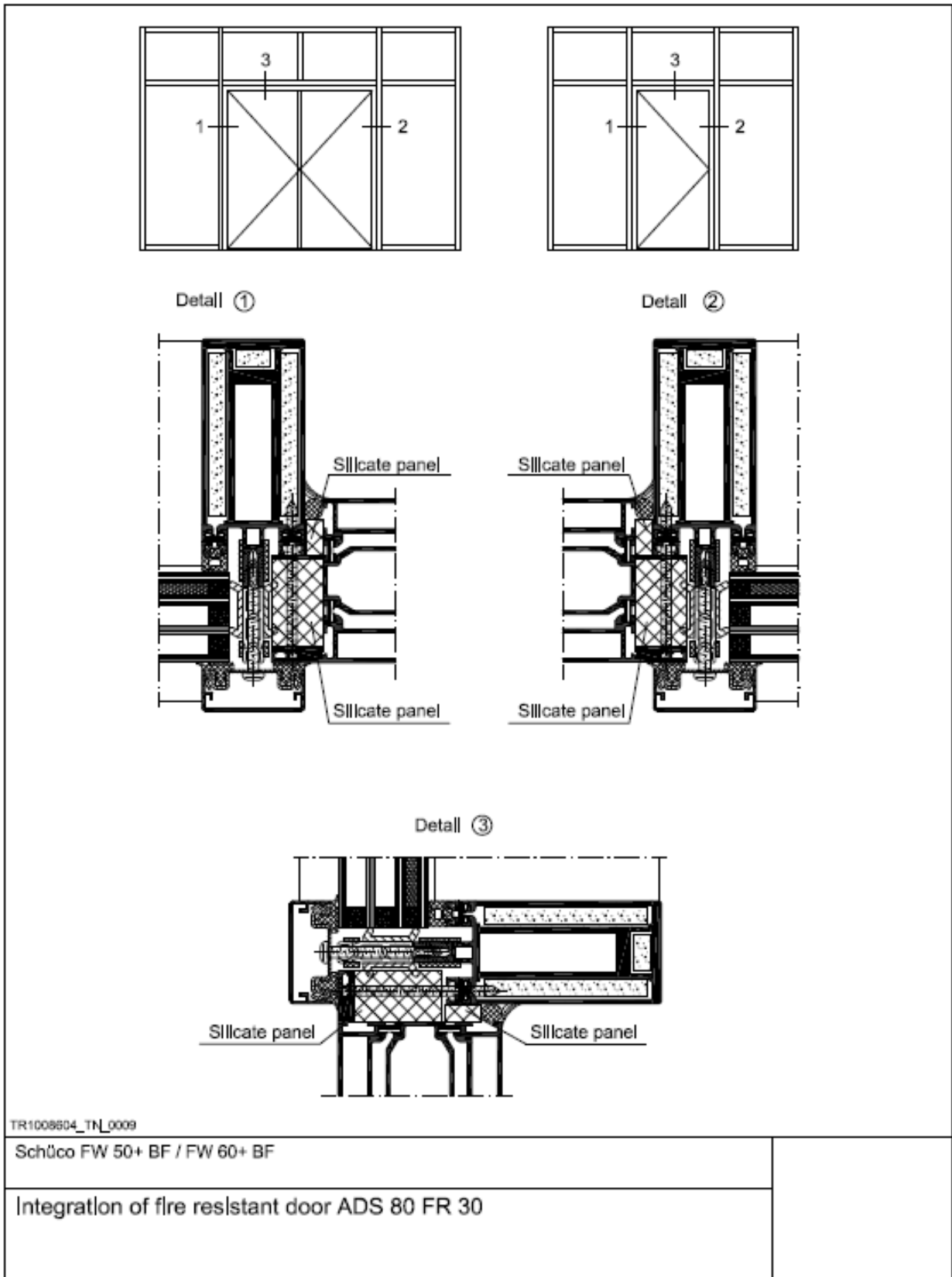


Figure A.9

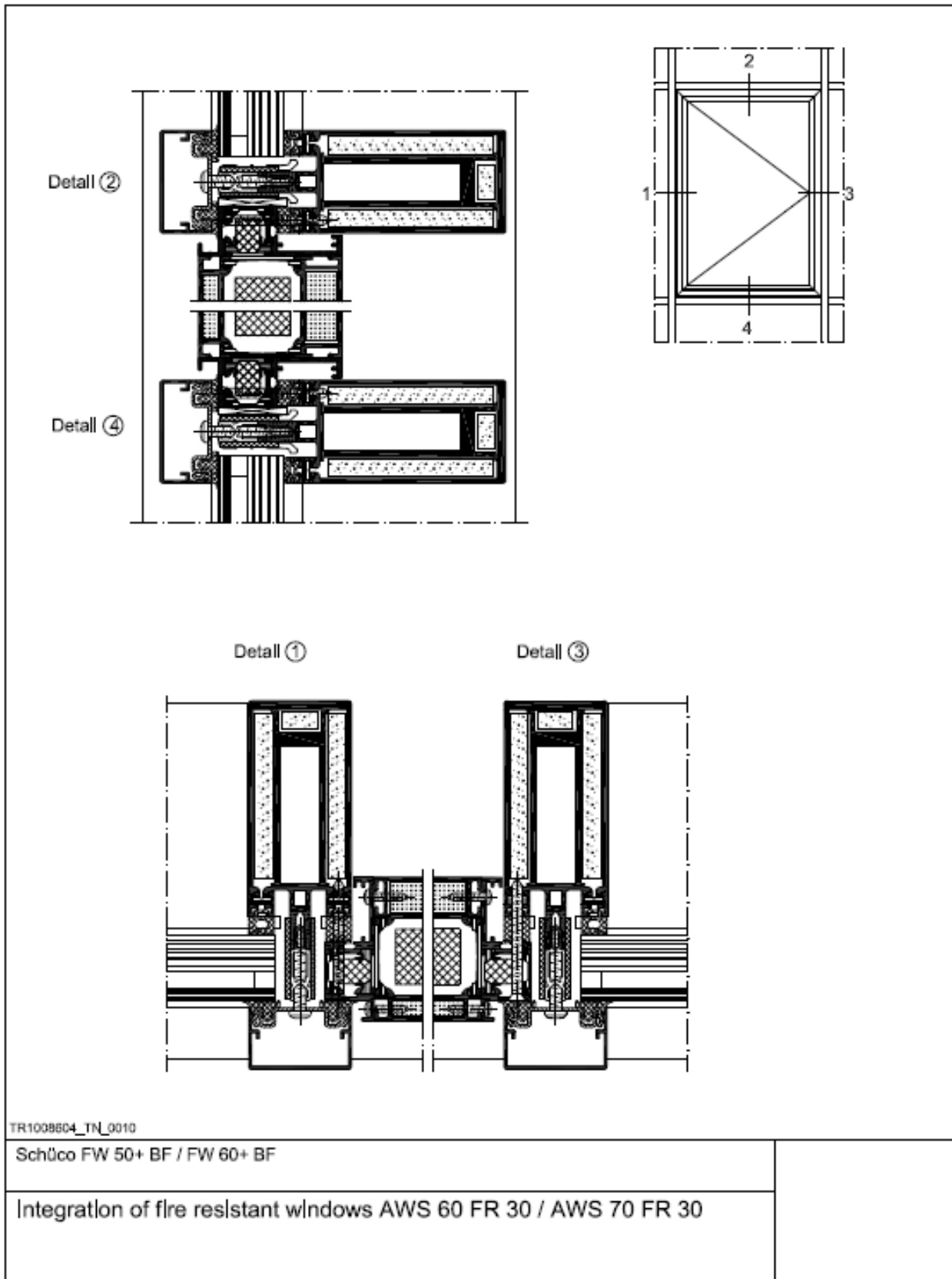


Figure A.10

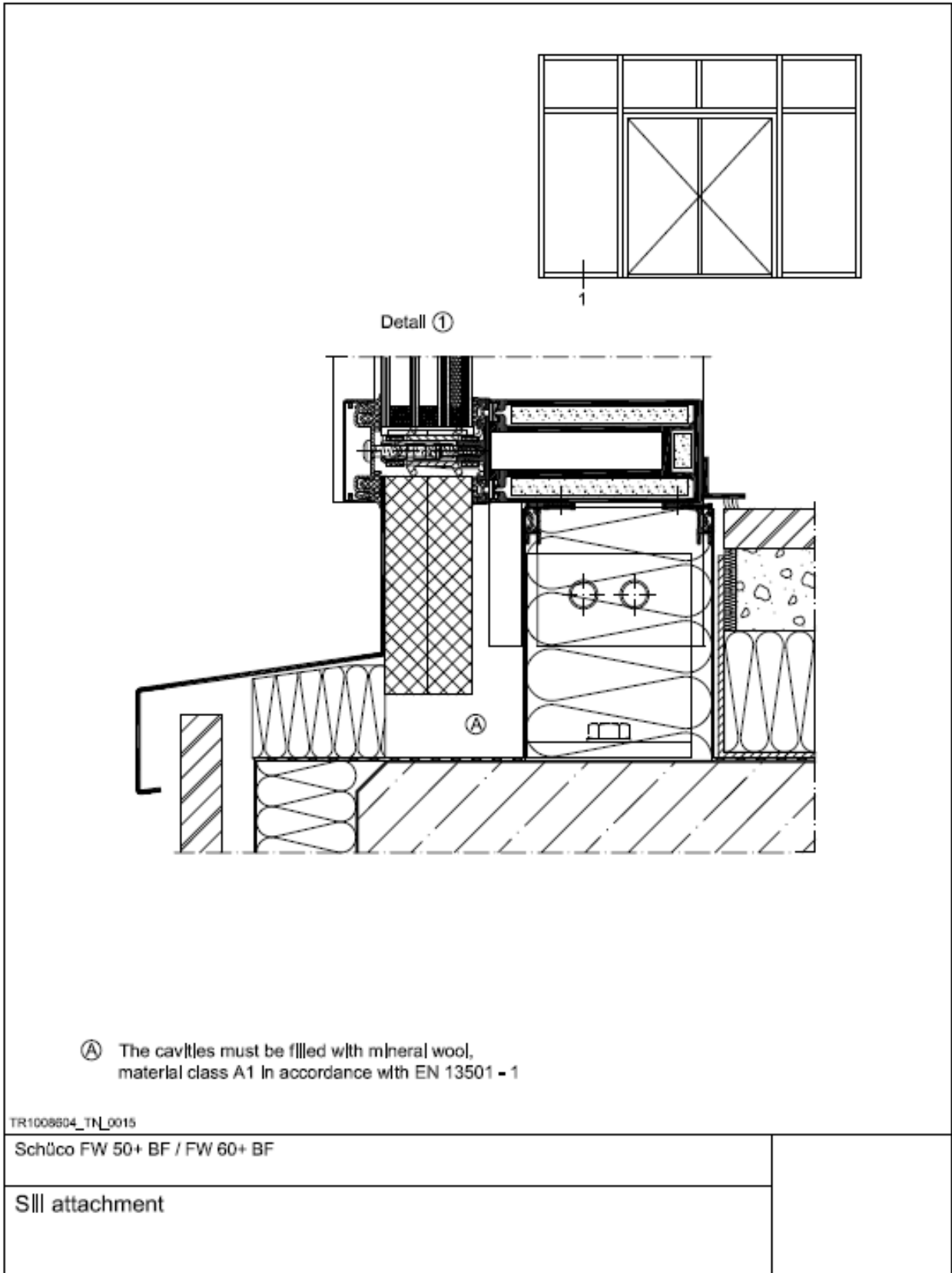


Figure A.11

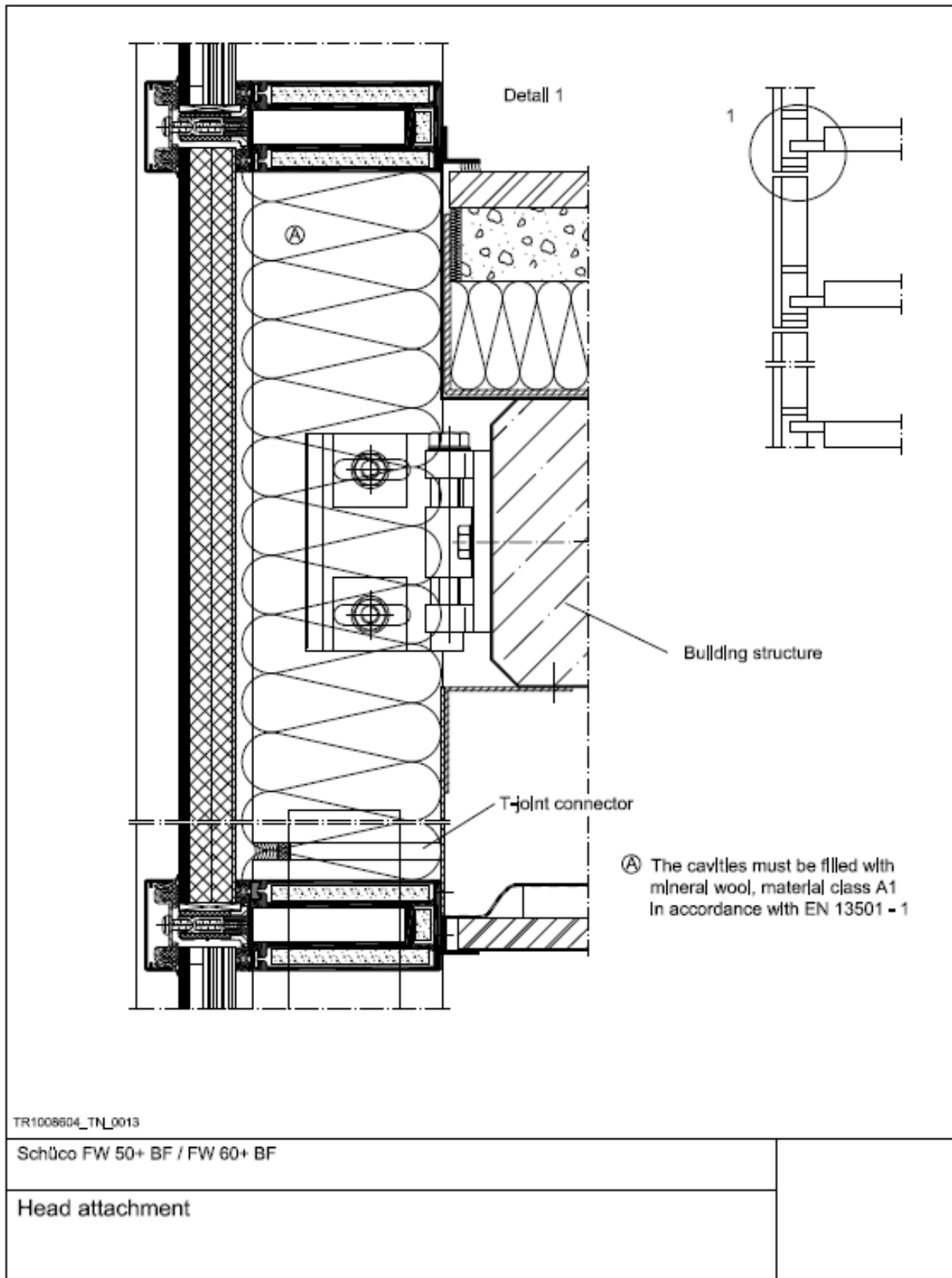


Figure A.12

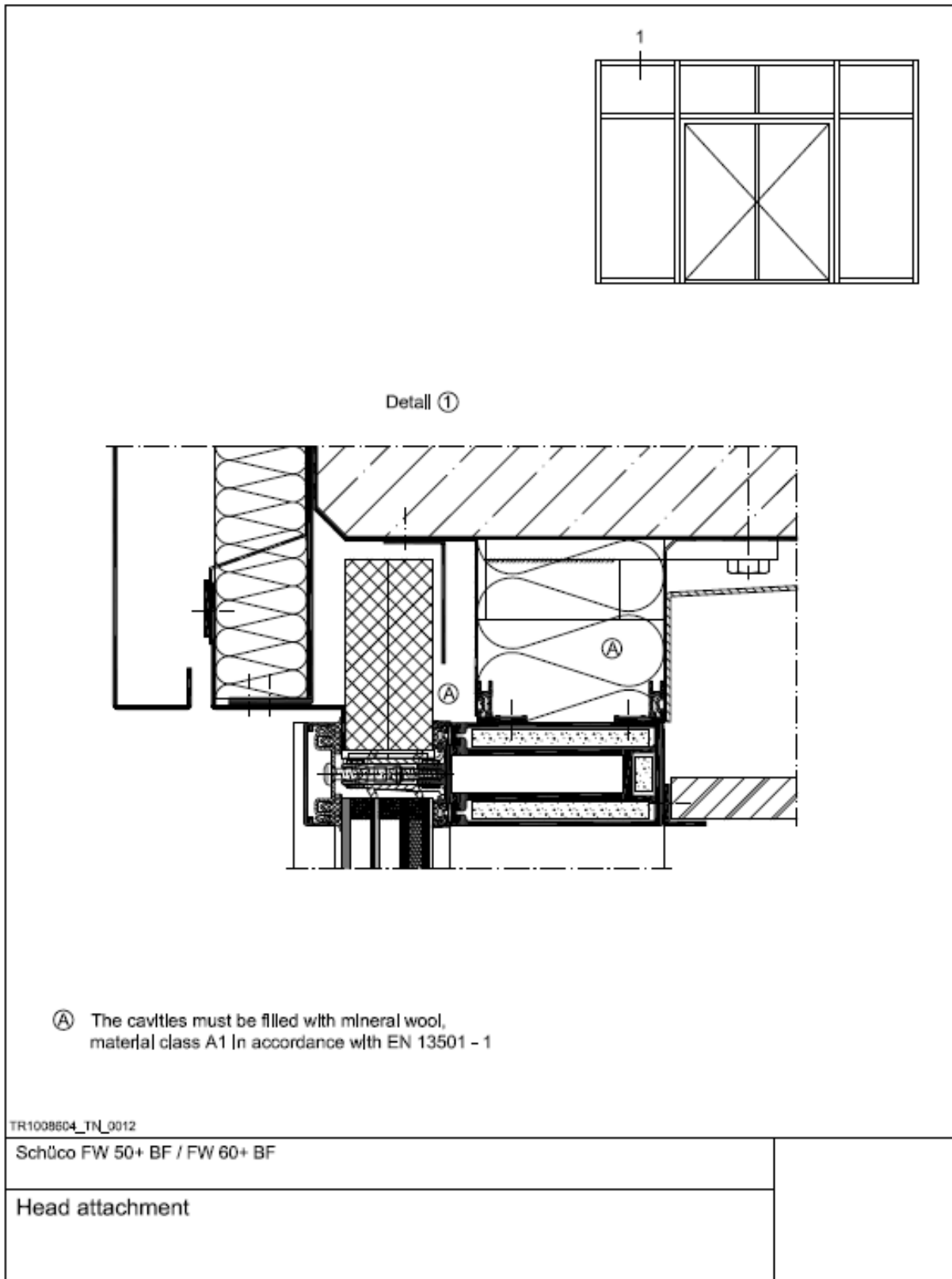


Figure A.13

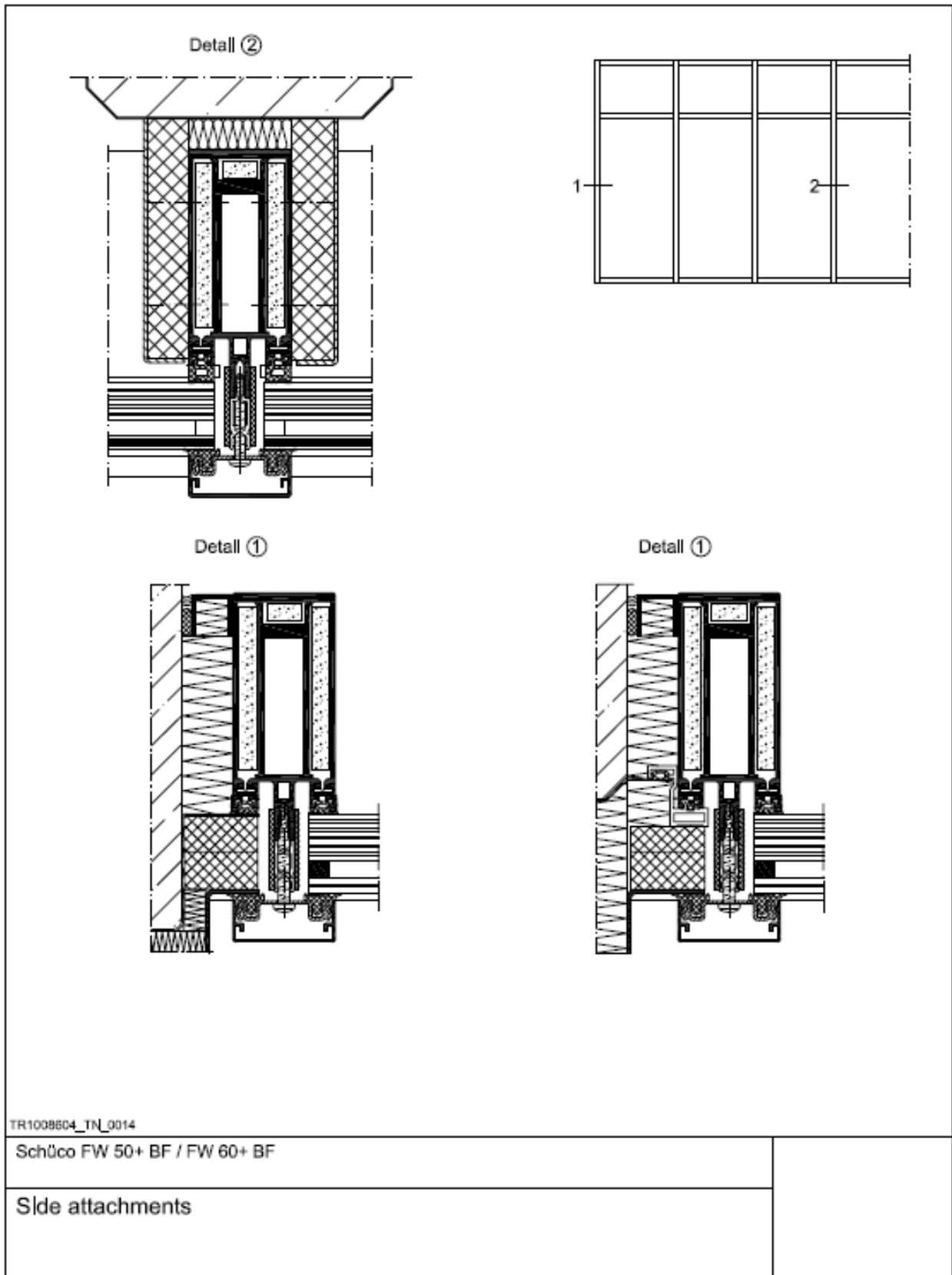


Figure A.14