

Series: TECHNICAL APPROVALS

TECHNICAL APPROVAL ITB AT-15-7961/2013

On the basis of the Regulation of the Minister of Infrastructure of November 8, 2004 on technical approvals and organisational entities authorized to issue them (Journal of Laws No. 249, item 2497), as a result of the approval proceedings taken in the Building Research Institute in Warsaw, at the request of the company:

**Profile VOX sp. z o.o. Sp. k.
143 Gdyńska Str., 62-004 Czerwonak**

we confirm the suitability of the products under the name:

A set of the products for the execution of the external claddings SOLID

in the construction industry to the extent and according to the principles determined in the Annex that is an integral part of this Technical Approval ITB.

Expiration date:
June 26, 2018

DIRECTOR
of the Building Research Institute

Jan Bobrowicz

Annex:
General and technical provisions

Warsaw, June 26, 2013

The Technical Approval ITB AT-15-7961/2013 is an amendment to the Technical Approval ITB AT-15-7961/2009. The document of the Technical Approval ITB AT-15-7961/2013 contains 24 pages. The text of this document may be reproduced only in its entirety. The publication or distribution of the excerpts of the text of the Technical Approval in any other form requires the written consent of the Building Research Institute.

GENERAL AND TECHNICAL PROVISIONS

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1. SUBJECT OF TECHNICAL APPROVAL

The subject of the Technical Approval ITB is a set of products for external claddings SOLID, manufactured by Profile VOX sp. z o.o. Sp. k., 143 Gdyńska Str., 62-004 Czerwonak.

The Approval covers the following products:

- a) elements of external claddings SOLID MUR:
 - facade panel SOLID MUR, acc. to fig. 1,
 - plinth trim SOLID MUR, acc. to fig. 2,
 - outside corner SOLID MUR, acc. to fig. 3,
 - inside corner SOLID MUR, acc. to fig. 4,
 - cover trims, acc. to fig. 5 and 6,
 - starting trims, acc. to fig. 7 and 8,
- b) elements of external claddings SOLID STONE S:
 - facade panel SOLID STONE S, acc. to fig. 9,
 - plinth trim SOLID STONE S, acc. to fig. 10,
 - inside corner SOLID STONE S, acc. to fig. 11,
 - outside corner SOLID STONE S, acc. to fig. 12,
 - cover trims, acc. to fig. 5 and 6,
 - starting trims, acc. to fig. 7 and 8,
- c) elements of external claddings SOLID STONE:
 - facade panel SOLID STONE, acc. to fig. 13,
 - multi-purpose trim SOLID STONE, acc. to fig. 14,
 - outside corner SOLID STONE, acc. to fig. 15,
 - cover trim, acc. to fig. 6,
 - starting trim, acc. to fig. 8,
- d) elements of external claddings SOLID BRICK:
 - facade panel SOLID BRICK, acc. to fig. 16,
 - multi-purpose trim SOLID BRICK, acc. to fig. 17,
 - outside corner SOLID BRICK, acc. to fig. 18,
 - cover trim, acc. to fig. 6,
 - starting trim, acc. to fig. 8.

The facade panels, outside corners, inside corners, multi-purpose trims and plinth trims are made of polypropylene (PP) and chalk mixture, using the plastic injection method. The surface of the elements is coated by a layer of water-based acrylic paint for external application, meeting the requirements of the standard PN-C-81913:1998.

The cover and starting trims are made of unplasticized poly(vinyl chloride) (PVC-U), dyed in the mass.

The elements of the set SOLID MUR, SOLID BLICK and SOLID STONE have elongated holes for mechanical couplings enabling the claddings to be installed in a way ensuring the thermal movements over the life of the facade.

The required technical properties of the set of the products covered by the Technical Approval are specified in item 3.

2. PURPOSE, EXTENT AND APPLICATION CONDITIONS

The set of the products SOLID is intended for the execution of the facade cladding of the external walls of the existed and new-erected buildings.

The external claddings, made of the set of the products SOLID, are not classified with regard to the flame propagation by walls with flame acting from the outside acc. to PN-90/B-02867+Az1:2001.

The elements of the external cladding SOLID should be fixed to the wall through the wooden or wood-based lattice by means of steel mechanical couplings (nails, staples etc.), protected against corrosion, in a way ensuring the thermal movements resulting from the variable ambient temperatures over the life of the facade. The maximum axial spacing of the lattice elements is 400 mm.

The use of the elements of the set for the external claddings should result from the technical properties specified in item 3 and be compliant with the technical documentation, developed for the defined object, with reference to:

- requirements of this Technical Approval ITB,
- installation manual, developed by the manufacturer,
- requirements of valid standards, technical and construction provisions, in particular, the Regulation of the Minister of Infrastructure of April 12, 2002 on technical conditions that should be met by building and their location (Journal of Laws No. 75, item 690, as amended).

3. TECHNICAL PROPERTIES. REQUIREMENTS

3.1. Materials

The facade panels, outside corners, inside corners, multi-purpose trims and plinth trims of the external claddings SOLID should be made of polypropylene (PP) and chalk mixture, however, the cover and starting trims should be made of unplasticized poly(vinyl chloride) (PVC-U). The required properties of plastic - polypropylene (PP) and chalk mixture, and unplasticized poly(vinyl chloride) (PVC-U) are presented in table 1.

Table 1

No.	Properties	Requirements	Testing methods
1	2	3	4
Properties of plastic - polypropylene (PP) and chalk mixture			
1	Tensile strength, MPa	≥ 20	item 5.6.1
2	Tensile modulus, MPa	≥ 1100	
3	Relative elongation at break, %	≥ 12	
4	Heat reversion after heating for 90 min. at temperature 150°C and conditioning for 4 h, %	≤ 3	item 5.6.2
5	Charpy impact strength, kJ/m ²	≥ 1	item 5.6.3
6	Density, g/cm ³	$\geq 1,15$	item 5.6.4
7	Water absorption after 24 h of immersion, %	≤ 1	PN-EN ISO 62:2008
8*)	Resistance to accelerated aging under artificial conditions at energy of irradiation 6200 Mjm ² , determined by colour change	not higher than the 3 rd grade of the grey scale	PN-EN ISO 4892-2:2009+A1:2009, method 1 PN-EN 20105-A02:1996
Properties of unplasticized poly(vinyl chloride) (PVC-U)			
9	Vicat softening temperature, °C	≥ 75	PN-EN ISO 306:2006 method B50
*) property determined in the approval procedure, not covered by Initial type testing and testing of finished products			

3.2. Products

The required properties of the products being part of the set for the execution of the external claddings SOLID are presented in table 2.

Table 2

No.	Properties	Requirements	Testing methods
1	2	3	4
1	Permissible deviations of dimensions: – thickness, – length, – width, – rectangularity of facade panels, – shape	± 10% ± 3 mm ± 3 mm ≤ 3 mm acc. to figures 1 to 18	item 5.6.5
2	External appearance	external surfaces of cladding elements should not have bubbles, cracks, visual contamination and damages of surfaces, edges and corners	item 5.6.6
3	Resistance to hard body impact	cladding elements should not show cracks; small dents on visible surface may appear	item 5.6.7

4. PACKING, STORAGE AND TRANSPORT

4.1. Packing

The products being part of the set for the execution of the external claddings SOLID should be delivered in the manufacturer's original packages. A label should be attached to every package including at least the following information:

- name and address of the manufacturer,
- name of product,
- number of pieces in package,
- number of Technical Approval ITB AT-15-7961/2013,
- number and date of issuance of the national certificate of conformity,
- building mark.

The product should be marked with the building mark in accordance with the Regulation of the Minister of Infrastructure of August 11, 2004 on ways of declaring building product conformity as well as ways of marking them with building marks (Journal of Laws No. 198, item 2041, as amended).

4.2. Storage and transport

The products being part of the set for the execution of the external claddings SOLID should be stored and transported in a way protecting them against destruction, contamination and mechanical damage.

5. ASSESSMENT OF CONFORMITY

5.1. General principles

In accordance with article 4, article 5 paragraph 1 point 3 and article 8 paragraph 1 of the act of April 16, 2004, on building materials (Journal of Law No. 92/2004, item 881, as amended) the set of the products, to which this Technical Approvals refers, may be placed on the marked and used in the building works to the extent meeting its properties and purpose, if the manufacturer has assessed the conformity, issued the national declaration of conformity with the Technical Approval ITB AT-15-7961/2013 and labelled the products with the building mark according to the valid provisions.

In accordance with the Regulation of the Minister of Infrastructure of August 11, 2004 on ways of declaring building product conformity as well as ways of marking them with building marks (Journal of Laws No. 198, item 2041, as amended) the conformity of the set of the products covered by the Technical Approval ITB AT-15-7961/2013 is assessed by the manufacturer, using the system 4.

In case of the system 4 of the assessment of conformity, the manufacturer can issue the national declaration of conformity with the Technical Approval ITB AT-15-7961/2013 on the basis of:

- a) initial type testing carried out by the manufacturer or on its behalf,
- b) factory quality control.

5.2. Initial type testing

The initial type testing is a test confirming the required technical and performance properties, carried out before placing the products on the market.

The initial type testing covers:

- a) properties of plastic - polypropylene (PP) and chalk mixture:
 - tensile strength,
 - tensile modulus,
 - relative elongation at break,
 - Charpy impact strength,
 - water absorption after 24 h of immersion,
 - heat reversion after heating for 90 min. at temperature 150°C and conditioning for 4 h,
 - density,
- b) Properties of poly(vinyl chloride) (PVC-U):
 - Vicat softening temperature of PVC-U,
- c) properties of products being part of the set:
 - resistance to hard body impact.

The tests, that were the basis for establishing the technical and performance properties in the approval procedure, form the initial type testing for the assessment of conformity.

5.3. Factory quality control

The factory quality control covers:

1. specification and verification of raw materials and materials,
2. controls and testing during the manufacturing process as well as testing of finished products (item 5.4) conducted by the manufacturer in accordance with the established testing plan and according to the principles and procedures laid out in the factory quality control documentation, adapted to the production technology and intended to produce goods with required properties.

The production control should ensure that the product is compliant with the Technical Approval ITB AT-15-7961/2013. The results of production control should be systematically recorded. The entries in the record should confirm that the product meets the criteria of the assessment of conformity. Individual products or batches of products and related manufacturing details must be fully identifiable and reproducible.

5.4. Testing of finished products

5.4.1. Testing Program. The testing program covers:

- a) continuous testing,
- b) periodic testing.

5.4.2. Continuous testing. The continuous testing covers the verification of:

- a) shape and dimensions,
- b) external appearance.

5.4.3. Periodic testing. The periodic testing covers the verification of:

- a) tensile strength of plastic - polypropylene (PP) and chalk mixture,
- b) tensile modulus of plastic - polypropylene (PP) and chalk mixture,
- c) Charpy impact strength of plastic - polypropylene (PP) and chalk mixture,
- d) Vicat softening temperature of poly(vinyl chloride) (PVC-U)
- e) resistance of products being part of the set to hard body impact.

5.5. Frequency of testing

The continuous testing should be conducted in accordance with the testing plan, but not less frequently than once per batch of products. The batch size should be defined in the factory quality control documentation.

The periodic testing should be carried out not less frequently than once every three years.

5.6. Testing methods

5.6.1. Verification of tensile strength and tensile modulus. The determination of tensile strength and tensile modulus should be carried out on the basis of the samples of polypropylene (PP) and chalk mixture or the samples cut out from the external cladding in accordance with the requirements of the standard PN-EN ISO 527-1:2012, using the 1A-type samples according to the standard PN-EN ISO 527-2:2012. The speed of 50 mm/min. should be used during the test, and the measuring base of elongation should be 25 mm.

5.6.2. Verification of heat reversion. The verification of heat reversion of the samples of polypropylene (PP) and chalk mixture or the samples cut out from the external cladding should be carried out in accordance with the requirements of the standard PN-EN 479:1997, using the samples with the dimensions 100 x 100 mm.

The testing temperature should be +150°C, and the elements should be measured after 90 min of increased temperature operation and 4 h of conditioning under laboratory conditions. The percentage change of width and length dimensions of the tested samples should be determined.

5.6.3. Verification of impact strength. The determination of Charpy impact strength of plastic cut from the facade panel in the direction parallel to the panel length and in the direction perpendicular to the panel length should be carried out in accordance with the standard PN-EN ISO 179-1:2010, using the 1eC method and the samples with the dimensions 80 mm x 10 mm x wall thickness, with one C-type notch, rounded to a radius $r = 0,10$ mm, and with the width $b_N = 8$ mm. The spacing of supports should be 60 mm.

5.6.4. Verification of density. The determination of density of plastic cut from the facade panels should be carried out in accordance with the standard PN-EN ISO 1183-1:2006, using the method A.

5.6.5. Verification of dimensions and shape. The verification of dimensions and shape of the elements of external claddings should be conducted by means of multi-purpose measuring instruments ensuring the required accuracy of measurement. The verification of rectangularity of facade panels should be performed in accordance with the standard PN-EN 15013:2009.

5.6.6. Verification of external appearance. The external appearance of the products is assessed visually by the inspection with an unaided eye in the natural light (daylight) or in the diffused artificial light from a distance of 0,5 m.

5.6.7. Verification of resistance to hard body impact. The test of resistance of the elements of external claddings made of polypropylene (PP) and chalk mixture to hard body impact should be carried out in accordance with the standard PN-EN 13245-1:2010.

5.7. Collection of samples for testing

The samples for testing should be collected according to the standard PN-N-03010:1983.

5.8. Evaluation of test results

The manufactured products should be considered as complying with the requirements of this Technical Approval ITB if all of the test results are positive.

6. FORMAL AND LEGAL PROVISIONS

6.1. The Technical Approval ITB AT-15-7961/2013 supersedes the Technical Approval ITB AT-15-7961/2009.

6.2. The Technical Approval ITB AT-15-7961/2013 is a document confirming the suitability of the set of the products for the execution of the external claddings SOLID in the construction industry to the extent resulting from the provisions of the Approval.

In accordance with article 4, article 5 paragraph 1 point 3 and article 8 paragraph 1 of the act of April 16, 2004, on building materials (Journal of Law No. 92/2004, item 881, as amended) the set of the products, to which this Technical Approvals refers, may be placed on the marked and used in the building works to the extent meeting its properties and purpose, if the manufacturer has assessed the conformity, issued the national declaration of conformity with the Technical Approval ITB AT-15-7961/2013 and labelled the products with the building mark according to the valid provisions

6.3. The Technical Approval ITB does not affect the rights resulting from the regulations on industrial property protection, especially the notice of the Speaker of the Lower House of the Parliament of the Republic of Poland of June 13, 2003 on announcement of consolidated text of the act of June 30, 2000 - the Industrial Property Law (Journal of Law No. 119, item 1117 as amended). Those who use this Technical Approval ITB are responsible for assuring these rights.

6.4. Having issued this Technical Approval, the Building Research Institute assumes no responsibility for any possible infringement of exclusive and acquired rights.

6.5. The Technical Approval ITB does not release the manufacturer of the set of the products for the execution of the external claddings SOLID from the responsibility for the proper quality of the products nor the contractors of construction works from the responsibility for their proper application.

6.6. The contents of the issued brochures, announcements, and other documents related to placing the set of the products for the execution of the external claddings SOLID on the market and using it in the construction industry should include information on the Technical Approval ITB AT-15-7961/2013 granted to these products.

7. EXPIRATION DATE

The Technical Approval ITB AT-15-7961/2013 is valid until June 26, 2018.

The validity of the Technical Approval ITB may be extended for further periods, if the applicant or the formal successor submits an appropriate application to the Building Research Institute not later than three months before the expiration date of this document.

THE END

ADDITIONAL INFORMATION

Standards and related documents

PN-EN 479:1997

Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors. Determination of heat reversion.

PN-EN 13245-1:2010	<i>Plastics. Unplasticized poly(vinyl chloride) (PVC-U) profiles for building applications. Part 1: Determination of PVC-U profiles.</i>
PN-EN ISO179-1:2010	<i>Plastics. Determination of Charpy impact properties. Part 1: Non-instrumented impact test.</i>
PN-EN ISO 306:2006	<i>Plastics. Thermoplastic materials. Determination Of Vicat softening temperature (VST).</i>
PN-EN ISO 527-1:2012	<i>Plastics. Determination of tensile properties. Part 1: General principles.</i>
PN-EN ISO 527-2:2012	<i>Plastics. Determination of tensile properties. Test conditions for moulding and extrusion plastics.</i>
PN-EN ISO 1183-1:2006	<i>Plastics. Methods for determining the density of non-cellular plastics. Part 1: Immersion method, liquid pyknometer method and titration method.</i>
PN-EN ISO 15013:2009	<i>Plastics. Sheets of polypropylene (PP). Requirements and test methods.</i>
PN-EN ISO 62:2008	<i>Plastics. Determination of water absorption.</i>
PN-B-02867:1990 +Az1:2001	<i>Fire protection of buildings. Test method of flame propagation by walls.</i>
PN-C-81913:1998	<i>Dispersion paints for painting of building facades.</i>
PN-N-03010:1983	<i>Statistical quality control. Random sampling. Testing plans.</i>

Test reports and assessments

- Study work on facade elements SOLID MUR made of propylene by VOX CHEMIA from Czerwonak, No. NL-2557/A/03, Light Partitions and Gazing Laboratory NL, ITB Warsaw.
- Specialist opinion on amendment to the Technical Approval AT-06-0795/2005, Light Partitions and Gazing Laboratory NL, ITB Warsaw.

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- Test report No. LOW-037.1/2008 “Elements of claddings SOLID MUR and SOLID STONE”, Building Hardware and Ironmongery Laboratory, Wielkopolska Branch of ITB, Poznań.

 - Test report No. LOW01-1901/13/R11OWN “External claddings SOLID MUR and SOLID STONE”, Building Hardware and Ironmongery Laboratory, Wielkopolska Branch of ITB, Poznań.

DRAWINGS

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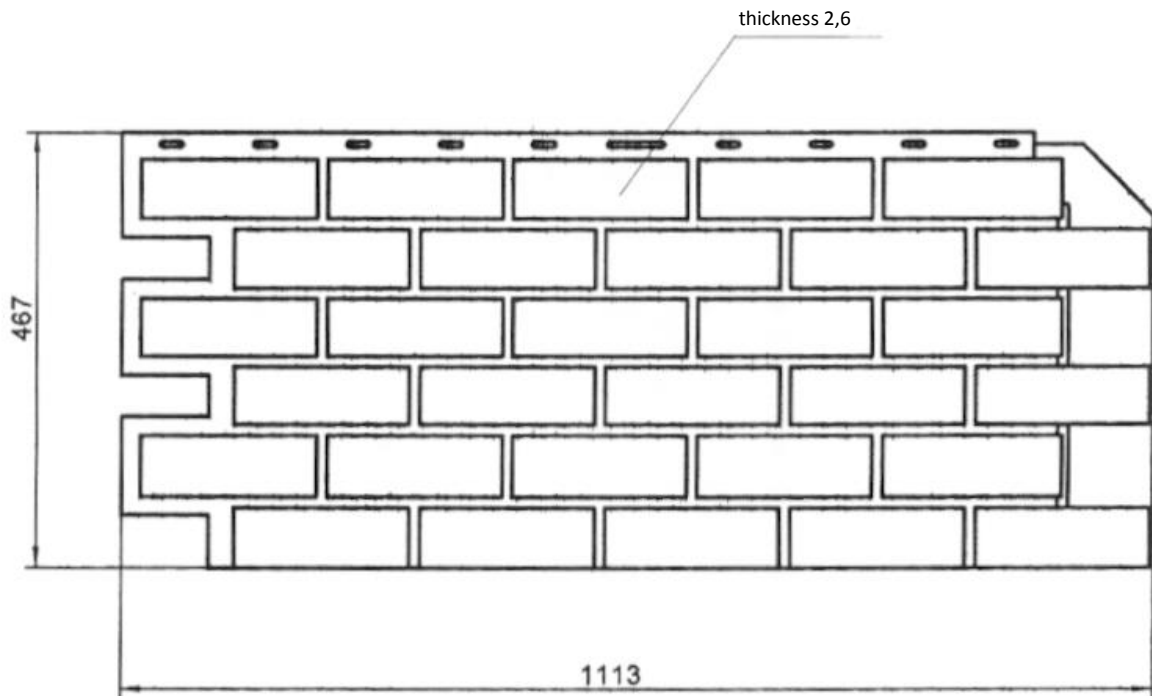


Figure 1. Façade panel SOLID STONE

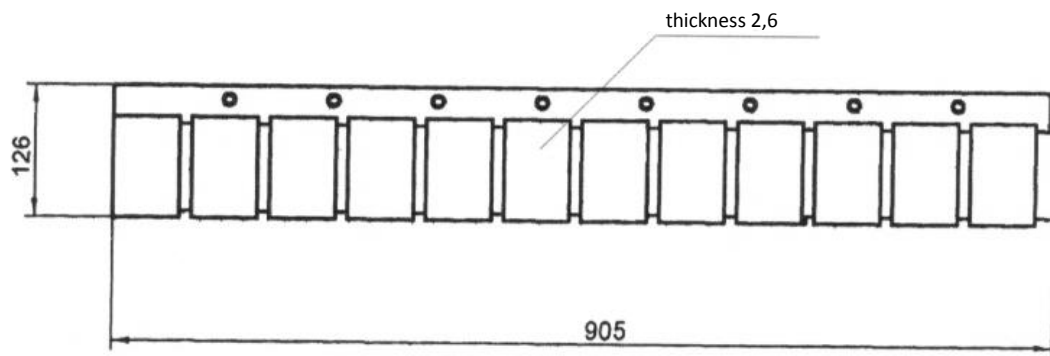


Figure 2. Plinth trim SOLID MUR

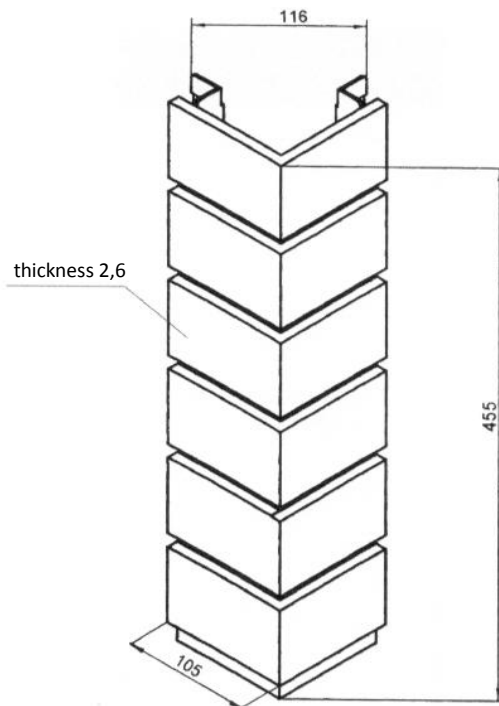


Figure 3. Outside corner SOLID MUR

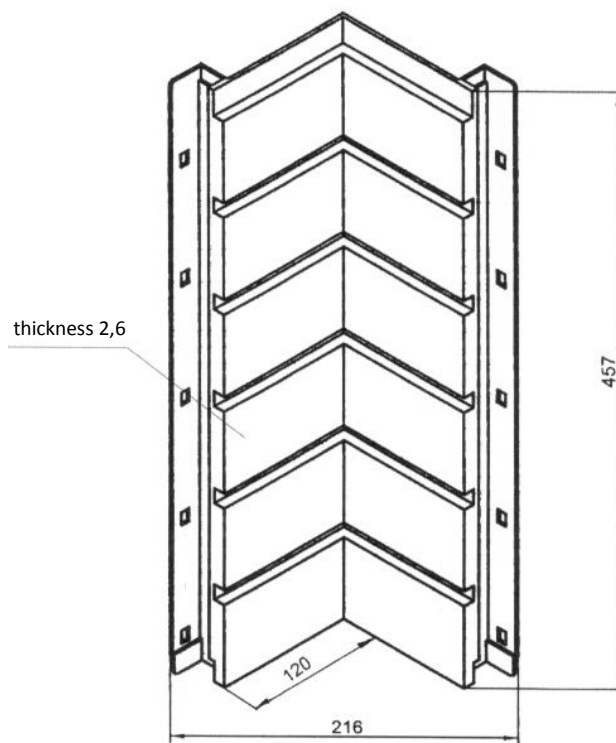


Figure 4. Inside corner SOLID MUR

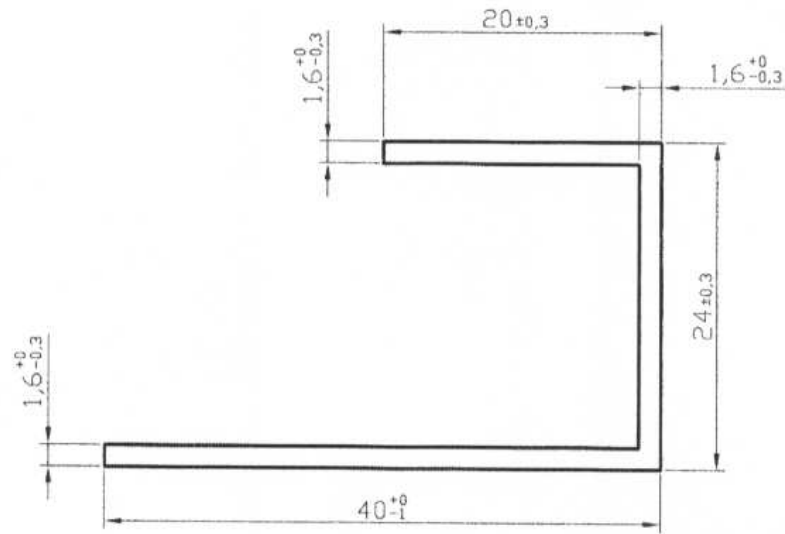


Figure 5. Cover trim

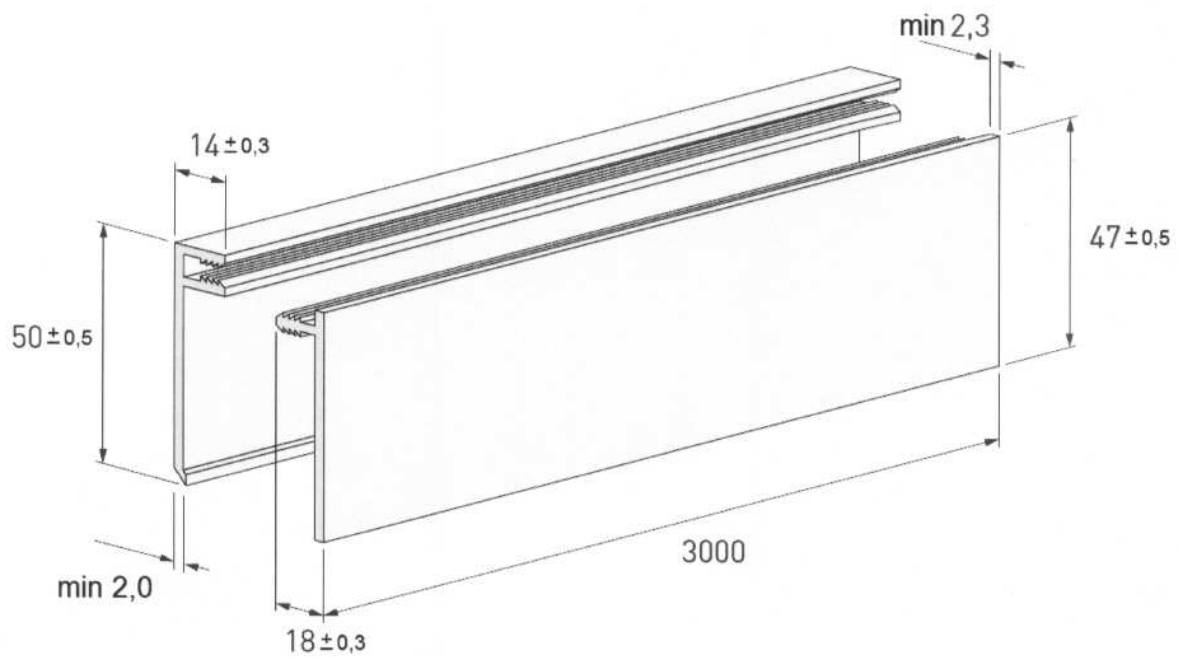


Figure 6. Cover trim

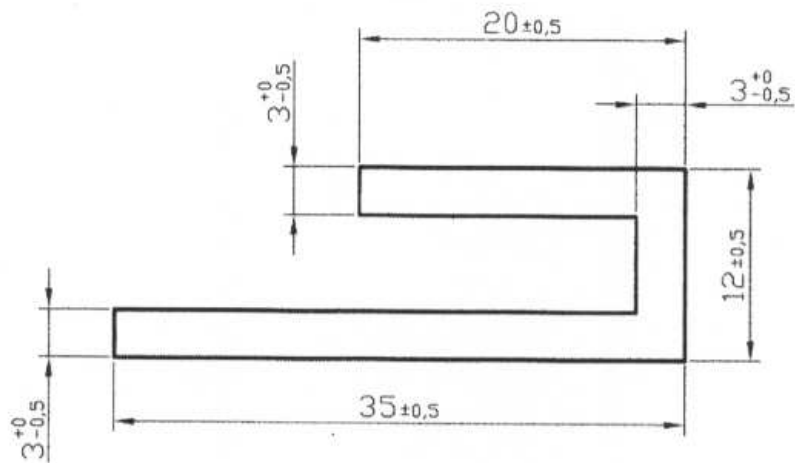


Figure 7. Starting trim

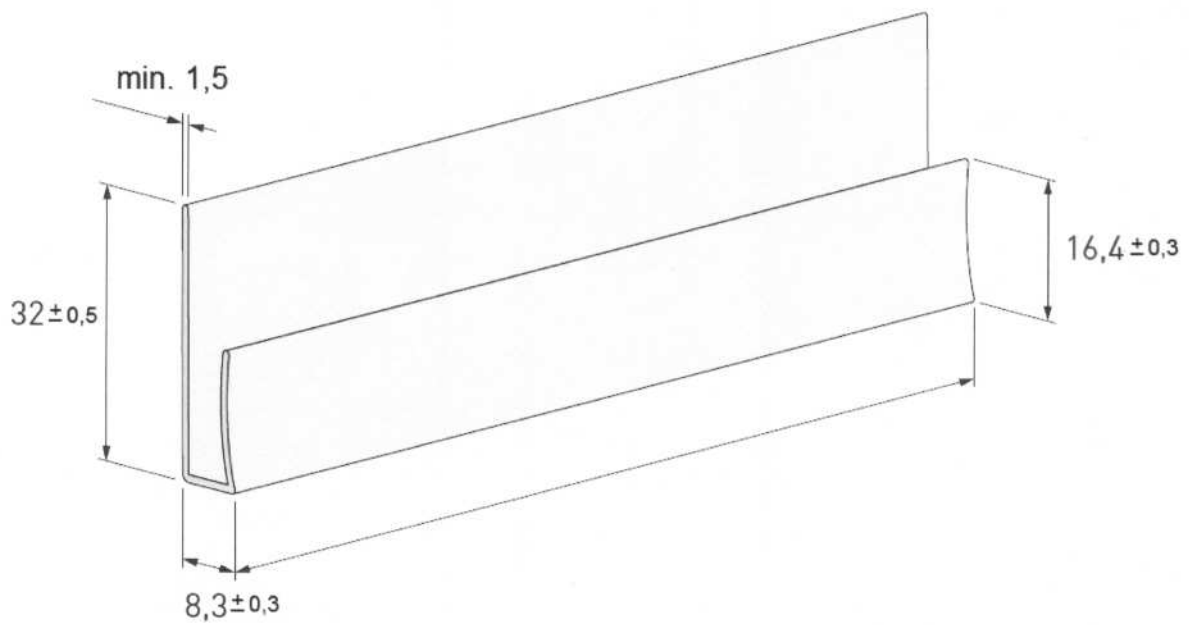


Figure 8. Starting trim

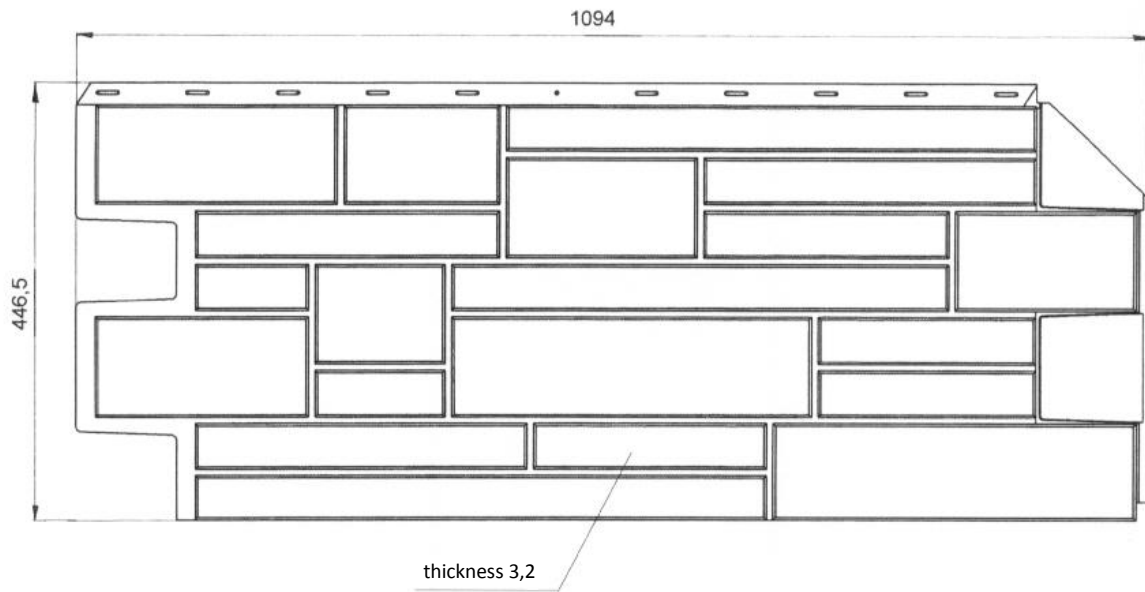


Figure 9. Façade panel SOLID STONE S

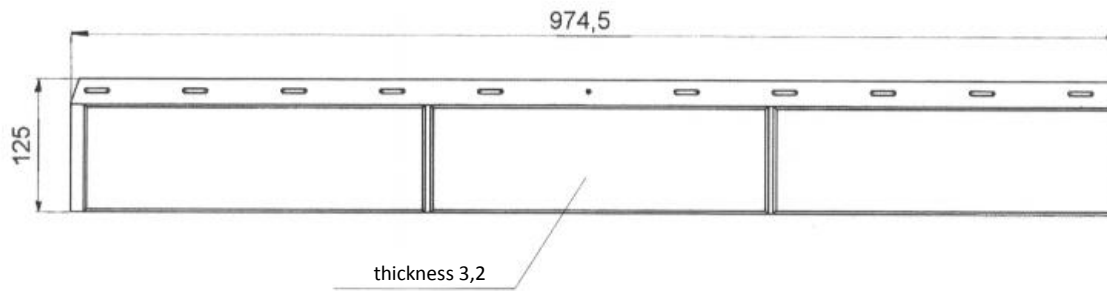


Figure 10. Plinth trim SOLID STONE S

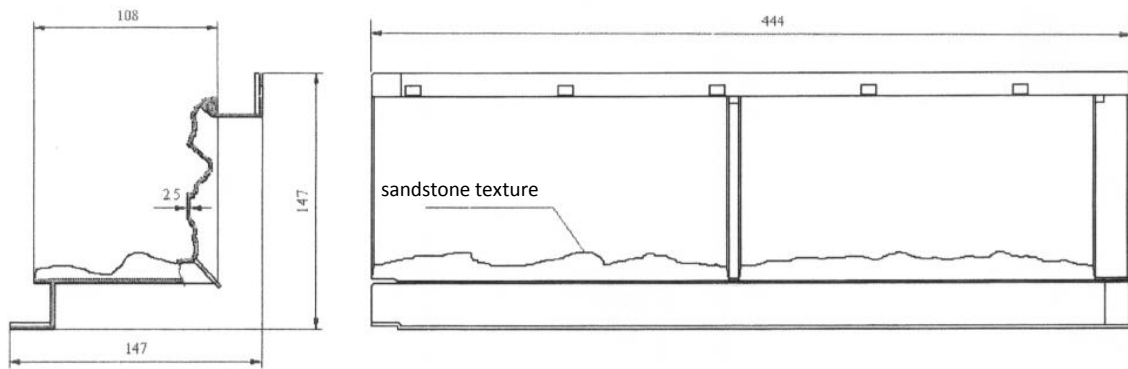


Figure 11. Inside corner SOLID STONE S

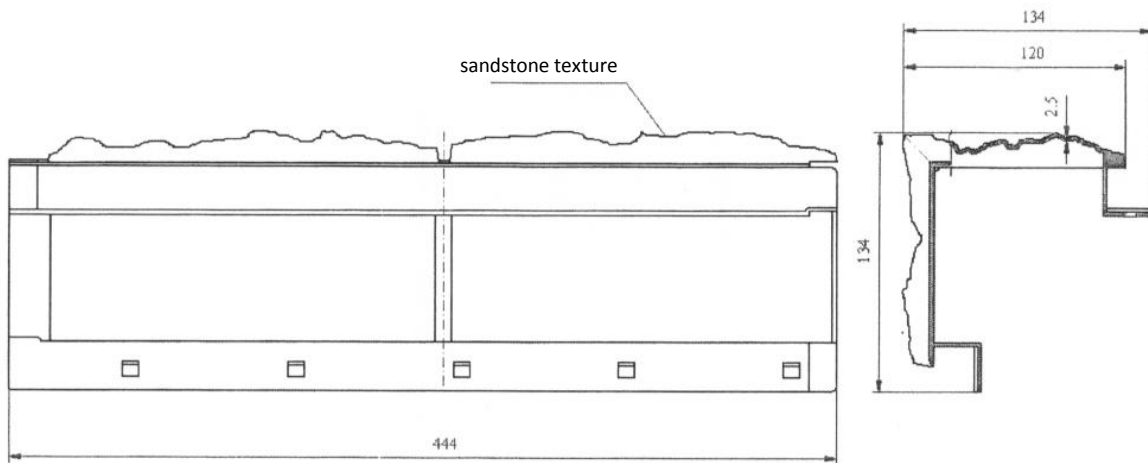


Figure 12. Outside corner SOLID STONE S

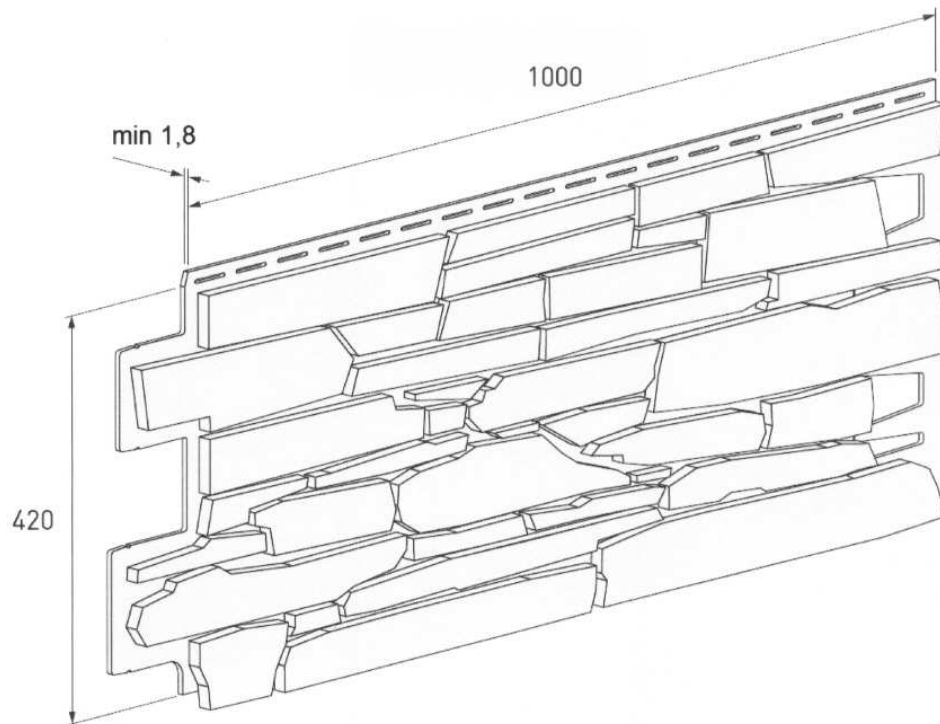


Figure 13. Façade panel SOLID STONE

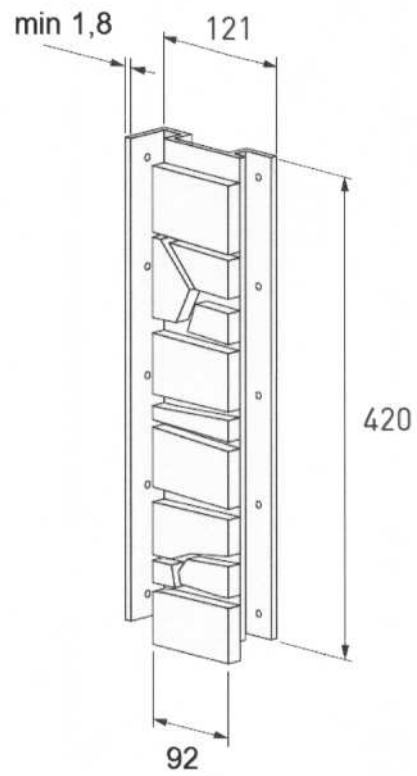


Figure 14. Multi-purpose trim SOLID STONE

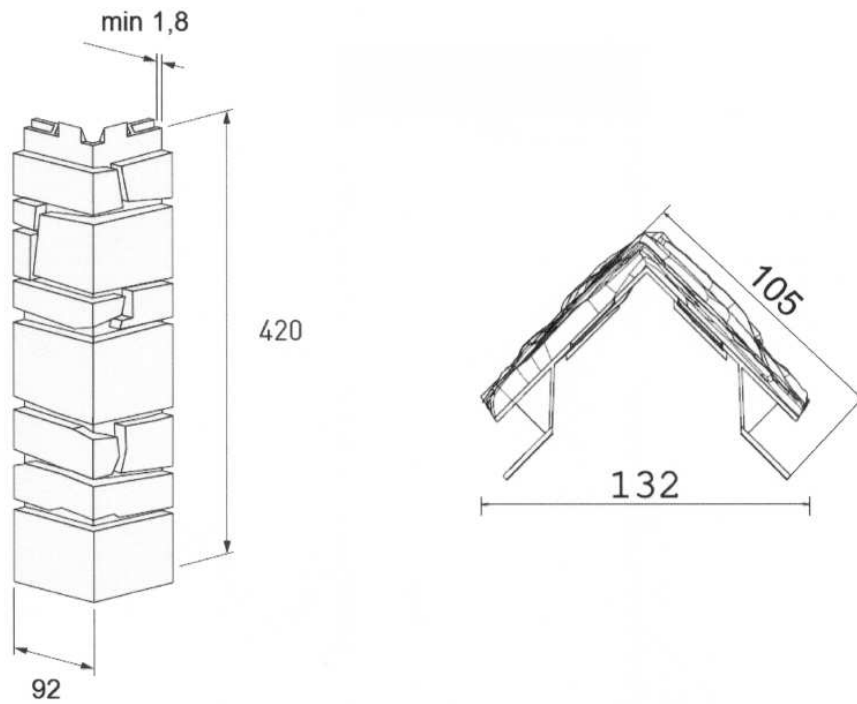


Figure 15. Outside corner SOLID STONE

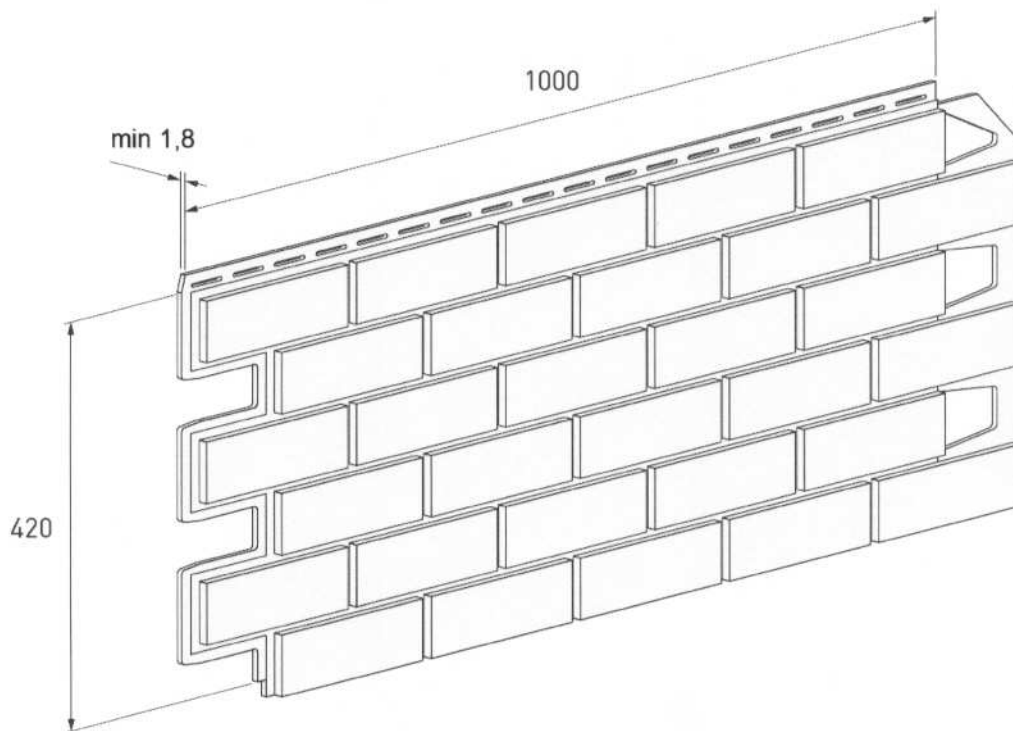


Figure 16. Façade panel SOLID BRICK

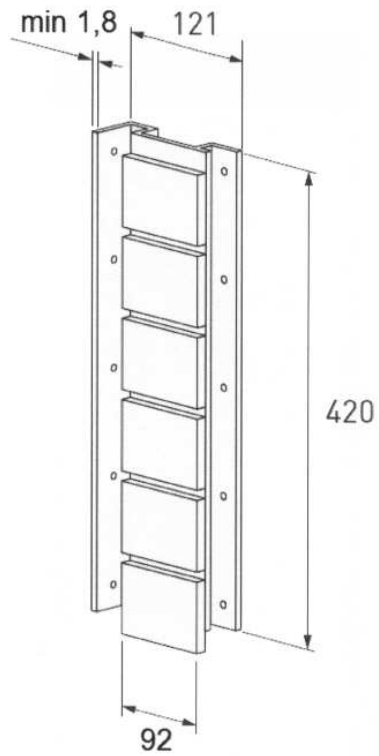


Figure 17. Multi-purpose trim SOLID BRICK

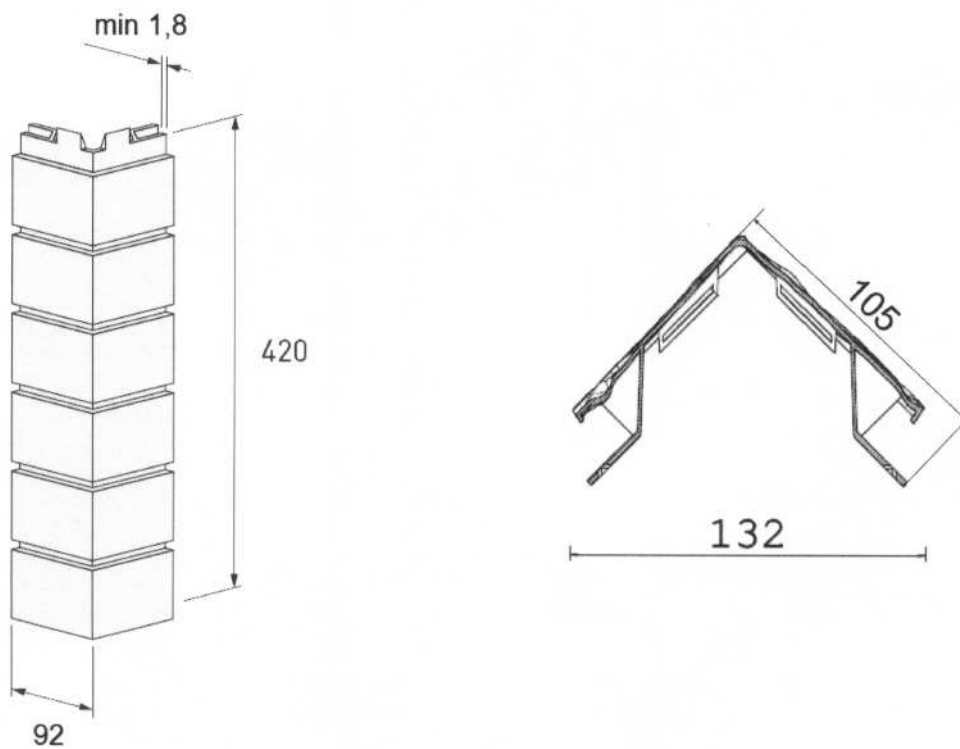


Figure 18. Outside corner SOLID BRICK