



INSTYTUT TECHNIKI BUDOWLANEJ
(BUILDING RESEARCH INSTITUTE)

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NATIONAL TECHNICAL ASSESSMENT

ITB-KOT-2017/0131 issue 1

The present National Technical Assessment has been issued in accordance with the Regulation of the Minister of Infrastructure and Construction of 17 November 2016 on national technical assessments (Polish Journal of Laws 2016, item 1968) by the Building Research Institute based in Warsaw, pursuant to the application filed by:

P.P.H.U. TEKOPAK Zbigniew Krzyżaniak
Ćmachowo 101, 64-510 Wronki, Poland

The National Technical Assessment ITB-KOT-2017/0131 issue 1 certifies that the construction products specified below have performance properties which have been assessed as suitable for their intended use:

TEKOPAK
corners and concealed beads

The National Technical Assessment is valid until:

30 June 2022

[A round seal with the national emblem of the Republic of Poland and seal surround reading: POLISH RESEARCH INSTITUTE]

acting DIRECTOR
Building Research Institute
[Signed ilarmibly]
Robert Geryło, PhD, MSc

Warsaw, 30 June 2017

The document of the National Technical Assessment ITB-KOT-2017/0131 issue 1 consists of 20 pages including two appendices. The text of the document may only be copied in its entirety. Publication or dissemination of fragments of National Technical Assessment documents in any other form requires a prior written approval of the Building Research Institute. The National Technical Assessment ITB-KOT-2017/0131 issue 1 applies to products covered by the Technical Approval ITB AT-15-8413/2010.

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1. TECHNICAL DESCRIPTION OF THE PRODUCT

The present National Technical Assessment has been issued for TEKOPAK corners and concealed beads manufactured in Poland by TEKOPAK Zbigniew Krzyżaniak, Ćmachowo 101, 64-510 Wronki.

The National Technical Assessment applies to the following product types:

- TEKOPAK perforated aluminium corner, equal-sided, made of aluminium tape with a thickness of $0.22 \div 0.50$ mm (as shown in Fig. A1),
- TEKOPAK perforated aluminium corner, unequal-sided, made of aluminium tape with a thickness of $0.22 \div 0.60$ mm (as shown in Fig. A2),
- TEKOPAK perforated aluminium corner, equal-sided, made of aluminium tape with a thickness of $0.3 \div 0.4$ mm, for arches (as shown in Fig. A3),
- TEKOPAK perforated aluminium corner, equal-sided, made of aluminium tape with a thickness of $0.22 \div 0.50$ mm, with fibreglass mesh (as shown in Fig. A4),
- TEKOPAK perforated corner, equal-sided, made of non-plasticized polyvinyl chloride (PVC-U) (as shown in Fig. A5),
- TEKOPAK perforated corner, equal-sided, made of non-plasticized polyvinyl chloride (PVC-U), for arches (as shown in Fig. A6),
- TEKOPAK perforated corner, equal-sided, made of non-plasticized polyvinyl chloride (PVC-U), with fibreglass mesh (as shown in Fig. A7),
- TEKOPAK perforated aluminium corner, equal-sided, made of aluminium tape with a thickness of $0.30 \div 0.39$ mm, with cut and drawn metal arms, for wet plaster (as shown in Fig. A8),
- TEKOPAK steel corner, equal-sided, made of steel tape with a thickness of $0.30 \div 0.39$ mm, coated with Z275 zinc or ZM140 zinc/magnesium alloy, with cut and drawn metal arms, for wet plaster (as shown in Fig. A9),
- TEKOPAK W6/W10 concealed steel guide bead, made of steel tape with a thickness of $0.27 \div 0.50$ mm, coated with Z275 zinc or ZM140 zinc/magnesium alloy (as shown in Fig. A10),
- TEKOPAK concealed window bead, made of non-plasticized polyvinyl chloride (PVC-U), with polyurethane (PU) foam tape (as shown in Fig. A11),
- TEKOPAK concealed window bead, made of non-plasticized polyvinyl chloride (PVC-U), with polyurethane (PU) foam tape and fibreglass mesh (as shown in Fig. A12),
- TEKOPAK concealed corner with drip, made of non-plasticized polyvinyl chloride (PVC-U), with fibreglass mesh (as shown in Fig. A13),
- TEKOPAK end bead, made of non-plasticized polyvinyl chloride (PVC-U) (as shown in Fig. A14),
- TEKOPAK universal corner, made of non-plasticized polyvinyl chloride (PVC-U) (as shown in Fig. A15),
- TEKOPAK universal corner, made of non-plasticized polyvinyl chloride (PVC-U), with fibreglass mesh (as shown in Fig. A16),
- TEKOPAK perforated steel corner, equal-sided, made of steel tape with a thickness of $0.22 \div 0.50$ mm, coated with Z275 zinc or ZM140 zinc/magnesium alloy (as shown in Fig. A17).

The arms of the corners are either perforated or made in the form of mesh obtained in the process of cutting and expanding. The mesh in concealed corners is made of fiberglass mesh which is fixed to the corner using a hot melt adhesive.

The shapes and dimensions of TEKOPAK corners and concealed beads are listed in Appendix A. Deviations from non-tolerated dimensions correspond to the coarse tolerance class (c) according to the Polish Standard PN-EN 22768-1:1999.

A technical description of the materials and components used in the production of the products covered by this National Technical Assessment and the quality of their execution is provided in Appendix B.

2. INTENDED USE OF THE PRODUCT

TEKOPAK corners and concealed beads are intended for reinforcing wall corners, finishing drywall edges and joints between plaster and window or door frames. TEKOPAK concealed guide beads are intended for use on flat surfaces to monitor the thickness of plastering.

The products covered by this National Technical Assessment can be used inside and outside buildings, in lagging made of gypsum, lime and cement plasters, and cement-based dry set mortars.

TEKOPAK corners and concealed beads with mesh can be used for jointless thermal insulation of outside building walls. The mesh of concealed corners must not be used as an element of the reinforcing layer in building thermal insulation systems.

The aluminium corners covered by this National Technical Assessment should not be used in wet conditions or in persistently humid environments such as laundering facilities, swimming pools or bathrooms.

TEKOPAK corners and concealed beads should be used in accordance with technical plans and specifications prepared for a given building, and in compliance with the following:

- Polish construction standards and technical/construction regulations, and in particular the provisions set out in the Regulation of the Minister of Infrastructure of 12 April 2002 on the technical conditions of buildings and their location (consolidated text: Polish Journal of Laws 2015, item 1422);
- Provisions laid down in the National Technical Assessment;
- Product manual prepared by the manufacturer.

3. PERFORMANCE PROPERTIES OF THE PRODUCTS AND METHODS USED FOR THEIR ASSESSMENT

3.1. Performance properties

3.1.1. Straightness. With respect to straightness, the deviation of the edges of the corners and concealed beads must not exceed $L/400$, where L is the length of the corner or bead.

3.1.2. Resistance to the corrosive effect of mortars. The surfaces of the aluminium corners and beads exposed to cement, lime, gypsum and dry set mortars in dry air and humid conditions do not show pitting or other types of damage. Changes in colour, tarnishing and surface roughness may occur.

The surfaces of the steel corners and beads exposed to cement, lime, gypsum, and dry set mortars in dry air and humid conditions do not show signs of steel corrosion.

The joint between the mesh and corner or bead is resistant to the effect of the mortars listed above, and a test demonstrates that the mesh is fixed permanently over the entire product surface.

3.1.3. Vicat softening point for PVC-U products

The softening point of PVC-U products determined by the Vicat method is not lower than 74°C.

3.1.4. Charpy impact test for PVC-U products

The impact strength of PVC-U products determined by the Charpy method is not lower than 2 kJ/m².

3.2. Methods applied for the assessment of performance properties

3.2.1. Straightness. Straightness is tested in accordance with the PN-EN 13658-1:2009 standard.

3.2.2. Resistance to the corrosive effect of mortars. Resistance to the corrosive effect of mortars is performed on samples of corners and concealed beads with a minimum length of 150 mm which are coated with cement, lime, gypsum and cement-based dry set mortars used for thermal insulation systems. Two series of samples for each mortar type should be prepared. One series of samples should be stored in an enclosed facility at an air temperature of 15 ÷ 25°C and relative air humidity of ≤ 70% for 7 days. The other series, after the curing of the mortars for 24 hours, should be immersed in water to a depth of 5 ÷ 50 mm for another 24 hours. The corner and bead samples should be immersed in water vertically, so that there is no capillary rising damp affecting the mortars.

Following exposure to dry air and humid conditions, and after mortar removal, changes in the appearance of product surface and the quality of the joint between the mesh and the corner or bead is assessed.

3.2.3. Vicat softening point for PVC-U products. The softening point is determined by the Vicat method in accordance with the PN-EN ISO 306:2014 standard (method B50).

3.1.4. Charpy impact test for PVC-U products. The impact strength is determined by the Charpy method in accordance with the PN-EN ISO 179-1:2010 standard (method 1eA) on samples with a single notch, cut out from product elements made of non-plasticized polyvinyl chloride (PVC-U) along the direction of extrusion.

4. PRODUCT PACKING, TRANSPORT, STORAGE AND LABELLING

The products covered by this National Technical Assessment should be supplied in the manufacturer's original packaging, and should be stored and transported in a manner ensuring that their technical properties are maintained.

The manner of marking the product with the construction mark should conform to the Regulation of the Minister of Infrastructure and Construction of 17 November 2016 on the manner of declaring the performance properties of construction products and the manner of marking them with construction marking (Polish Journal of Laws 2016, item 1966).

The marking of the product with the construction mark should be accompanied by the following information:

- last two digits of the year in which the construction mark was placed for the first time on the construction product;
- name and address of the registered office of the manufacturer or an identification mark permitting the unequivocal indication of the manufacturer's name and address;
- name and marking of the construction product;
- number and year of issue of the national technical assessment in keeping with which the performance properties were declared (ITB-KOT-2017/0131 issue 1);
- number of the national declaration of performance properties;
- level or class of declared performance properties;
- manufacturer's website address, if the national declaration is available there.

In addition to the national declaration of performance properties, it is requisite to provide or make available, as appropriate, a safety data sheet and/or information on any hazardous substances contained in the construction product, as set out in Article 31 or 33 of the Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) and establishing a European Chemicals Agency.

Furthermore, the marking of the construction product which represents a hazardous mixture in accordance with REACH should comply with the provisions laid down in the Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

5. ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE PROPERTIES

5.1. National system for the assessment and verification of constancy of performance properties

In accordance with the Regulation of the Minister of Infrastructure and Construction of 17 November 2016 on the manner of declaring the performance properties of construction products and the manner of marking them with construction marking (Polish Journal of Laws 2016, item 1966), system 4 for the assessment and verification of constancy of performance properties applies.

5.2. Type testing

The performance properties assessed in item 3 constitute the product type test until the modification of raw materials, components, production line or production plant.

5.3. Factory production control

The manufacturer should have a factory production control system in operation in the production plant. All elements of the system, requirements and provisions adopted by the manufacturer should be documented in a systematic manner in the form of rules and procedures including records of any tests performed. The factory production control system should be properly adjusted to the manufacturing technology, and should ensure that the declared performance properties of the product are maintained throughout continuous production.

The factory production control system consists of specifications and checks of raw materials and components, monitoring and tests performed during the process of manufacture as well as inspection tests (according to item 5.4.) conducted by the manufacturer in line with the test plan and in compliance with rules and procedures laid down in the documentation applicable to factory production control.

Production control results should be consistently recorded, and records should certify that the products concerned satisfy all criteria employed for the assessment and verification of constancy of their performance properties. Individual products or product batches as well as production details related to them should be fully identifiable and traceable.

5.4. Inspection tests

5.4.1. Test schedule. The test schedule comprises:

- a) ongoing tests
- b) periodic tests

5.4.2. Ongoing tests. Ongoing tests are performed in order to check:

- a) shapes and dimensions,
- b) quality of execution,
- c) straightness.

5.4.3. Periodic tests. Periodic tests comprise Vicat softening point tests for PVC-U products.

5.5. Frequency of testing

Ongoing tests should be conducted in accordance with the adopted test plan, with a minimum frequency of once per every product batch. The size of product batch should be specified in the factory production control documentation.

Periodic tests should be performed with a minimum frequency of once every 3 years.

6. INSTRUCTION

6.1. The National Technical Assessment ITB-KOT-2017/0131 issue 1 certifies that the TEKOPAK corners and concealed beads have essential performance properties which, in line with the intended use of the products resulting from the provisions of the Assessment, affect the compliance of buildings in which the products are to be mounted with applicable basic requirements.

6.2. The National Technical Assessment ITB-KOT-2017/0131 issue 1 is not a document authorizing its holder to mark the construction product with the construction mark.

Pursuant to the Act of 16 April 2004 on Construction Products, as amended (consolidated text: Polish Journal of Laws 2016, item 1570), the products covered by this National Technical Assessment may be marketed or released to the domestic market subject to the manufacturer performing an assessment and verification of constancy of performance properties, preparing a national declaration of performance properties in accordance with the National Technical Assessment ITB-KOT-2017/0131 issue 1, and marking the products with the construction mark, in line with applicable regulations.

6.3. The National Technical Assessment ITB-KOT-2017/0131 issue 1 does not infringe on any rights stemming from regulations pertaining to industrial property, and in particular the provisions of the Act of 30 June 2000 on Industrial Property Law (consolidated text: Polish Journal of Laws 2013, item 1410, as amended). Compliance with these provisions is the responsibility of users of this National Technical Assessment issued by the Building Research Institute.

6.4. While issuing this National Technical Assessment, the Building Research Institute does not assume any responsibility for any instances of violation of exclusive and acquired rights.

6.5. The National Technical Assessment does not relieve the manufacturer of the products of responsibility for their appropriate quality, and does not exempt building contractors from responsibility for the appropriate use of the products.

6.6. The validity of the National Technical Assessment may be extended for consecutive periods of not more than 5 years.

7. LIST OF DOCUMENTS REFERRED TO IN THE PROCEEDINGS

7.1. Statements, test reports, assessments, classifications

- 1) Test report no. LOW-1231.1/A/2010. TEKOPAK corners and concealed beads. Building Hardware and Ironmongery Laboratory, Building Research Institute (ITB), Wielkopolska Branch Office, Poznań
- 2) Test report no. LZM00-00785/17/Z00NZE. TEKOPAK corners and concealed beads. Building Elements Engineering Department, Building Research Institute (ITB), Warsaw
- 3) Test report no. LZM01-00785/17/Z00NZE. PVC finishing profiles. Building Elements Engineering Department, Building Research Institute (ITB), Warsaw
- 4) Test report no. LZE01-00785/17/Z00NZE. Building Elements Engineering Department, Building Research Institute (ITB), Poznań Branch Office

7.2. Associated standards and documents

PN-EN 573-3:2014	<i>Aluminium and aluminium alloys. Chemical composition and form of wrought products – Part 3: Chemical composition and form of products.</i>
PN-EN 515:2017	<i>Aluminium and aluminium alloys. Wrought products. Temper designations.</i>

PN-EN 10346:2015	<i>Continuously hot-dip coated steel flat products for cold forming. Technical delivery conditions.</i>
PN-EN 13658-1:2009	<i>Metal mesh and beads. Definitions, requirements and test methods. Part 1: Internal plastering.</i>
PN-EN ISO 306:2014	<i>Plastics. Thermoplastic materials. Determination of Vicat softening temperature (VST).</i>
PN-EN 22768-1:1999	<i>General tolerances. Tolerances for linear and angular dimensions without individual tolerance indications.</i>
PN-EN ISO 179-1:2010	<i>Plastics. Determination of Charpy impact properties. Part 1: Non-instrumented impact test.</i>
PN-EN ISO 1183-3:2003	<i>Plastics. Methods for determining the density of non-cellular plastics. Part 3: Gas pycnometer method.</i>
PN-C-89265-4:1998	<i>Plastics. Plasticized poly(vinyl chloride) compounds for electric cables. Sampling and preparation of test samples.</i>
AT-15-8413/2010	<i>TEKOPAK corners and concealed beads.</i>

APPENDICES

Appendix A.	Shapes and dimensions of TEKOPAK corners and concealed beads	10
Appendix B.	Technical description of materials and components, and quality of execution of TEKOPAK corners and concealed beads	20

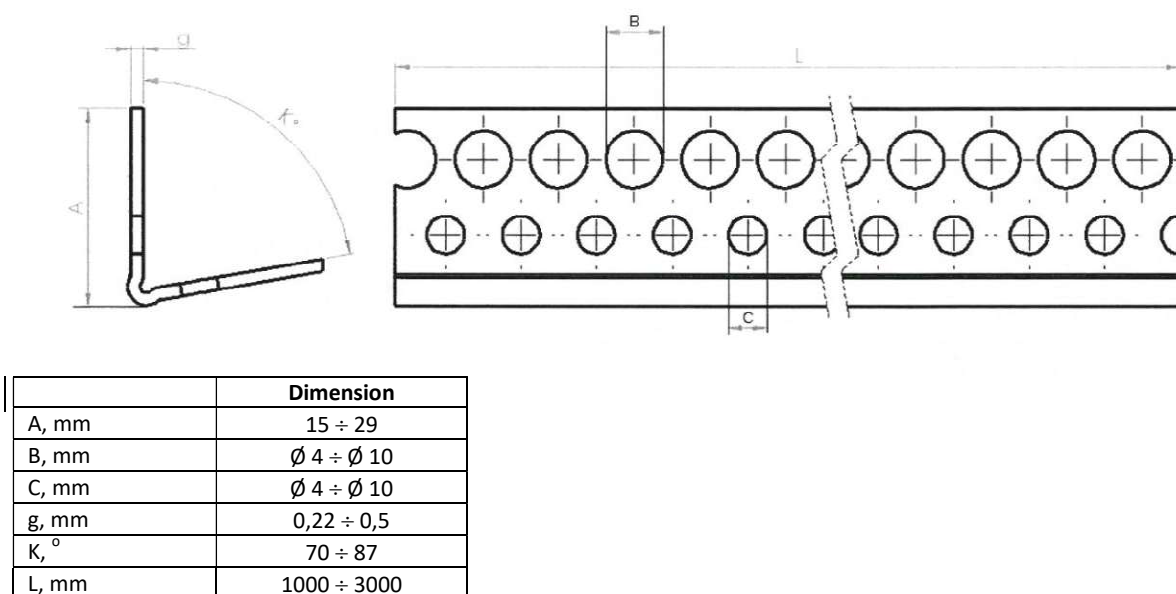


Figure A1. TEKOPAK perforated aluminium corner, equal-sided.

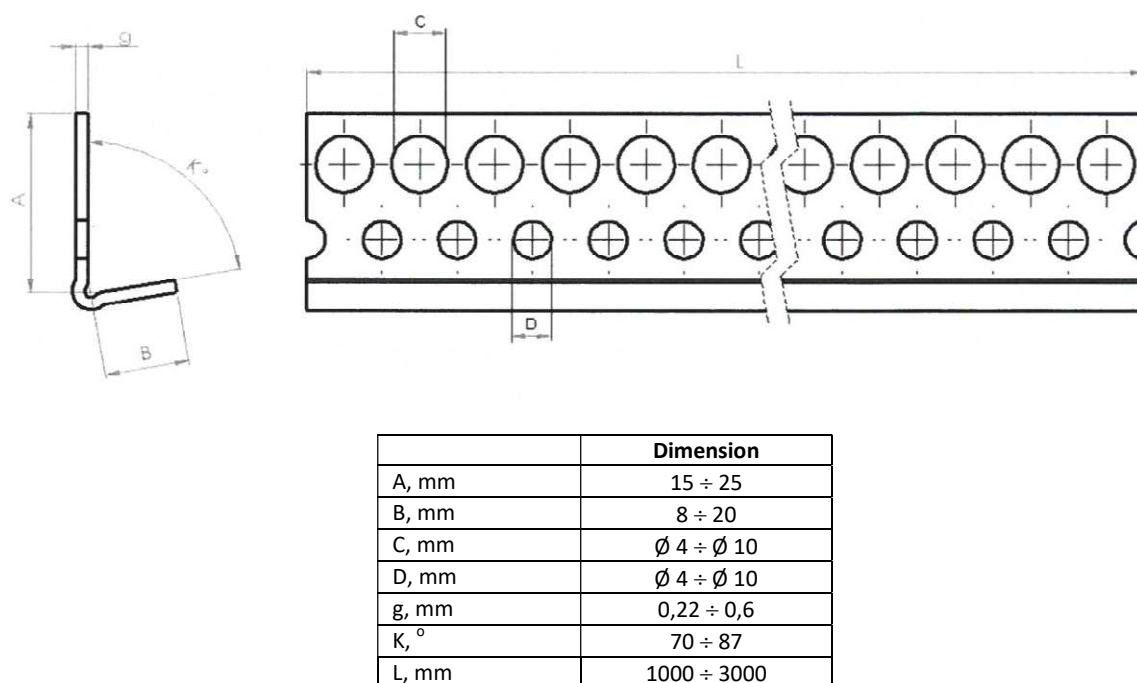


Figure A2. TEKOPAK perforated aluminium corner, unequal-sided.

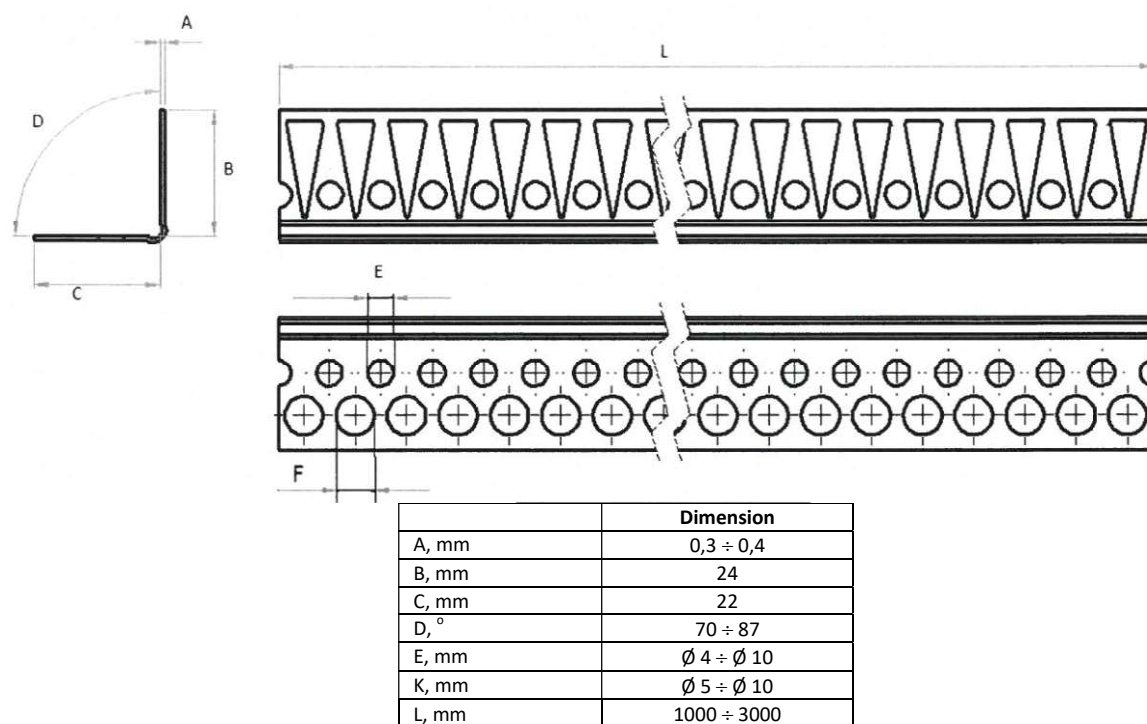


Figure A3. TEKOPAK perforated aluminium corner, equal-sided, for arches.

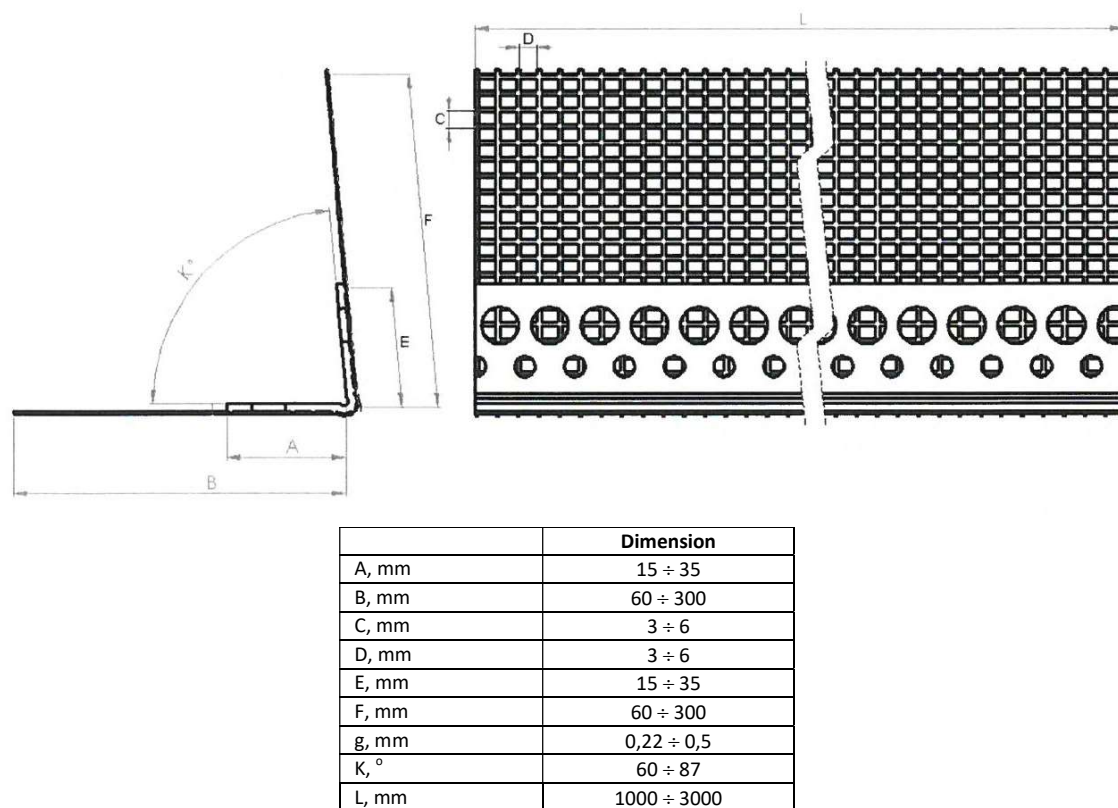


Figure A4. TEKOPAK perforated aluminium corner, equal-sided, with fibreglass mesh.

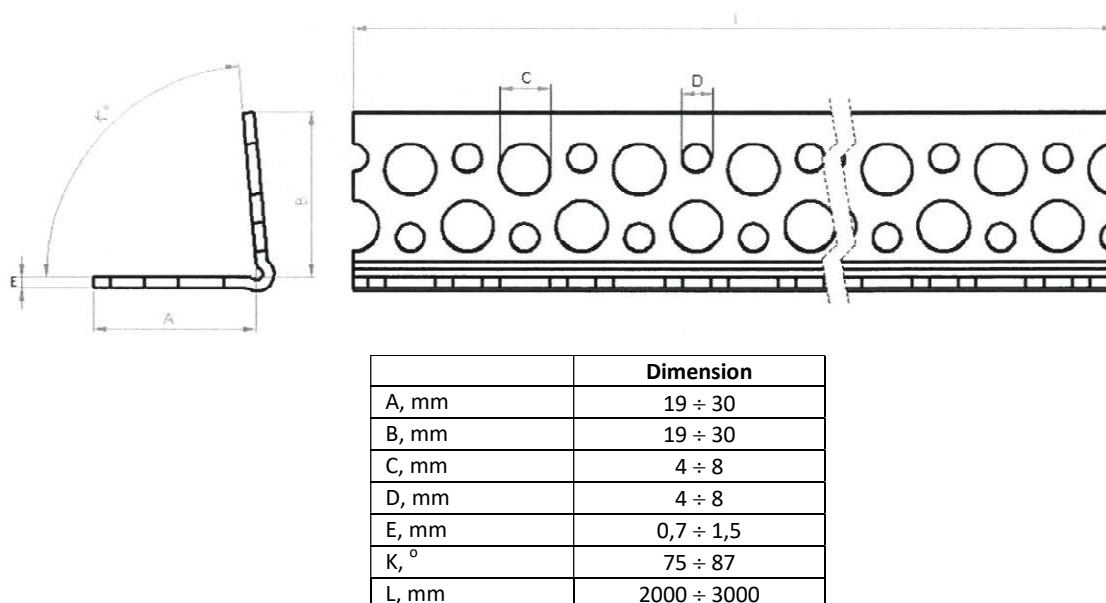


Figure A5. TEKOPAK perforated PVC-U corner, equal-sided.

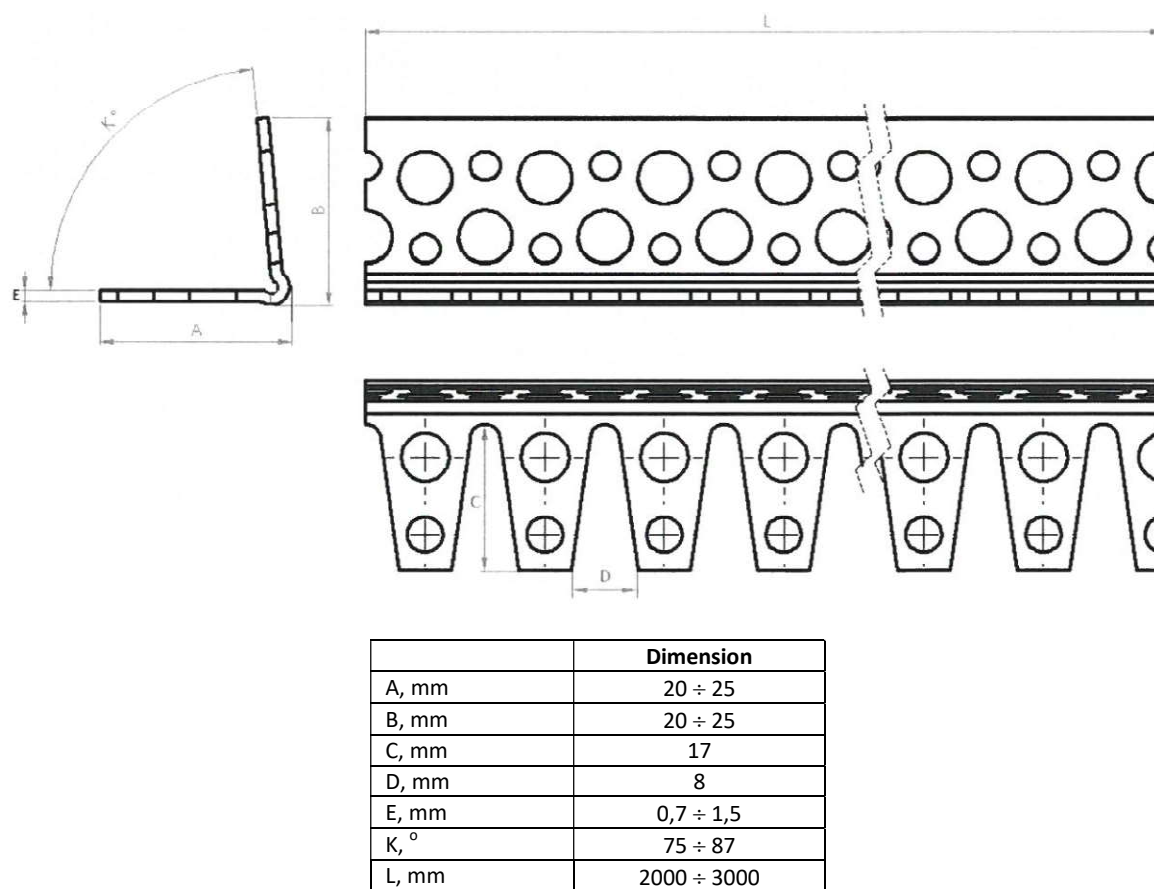


Figure A6. TEKOPAK perforated PVC-U corner, equal-sided, for arches.

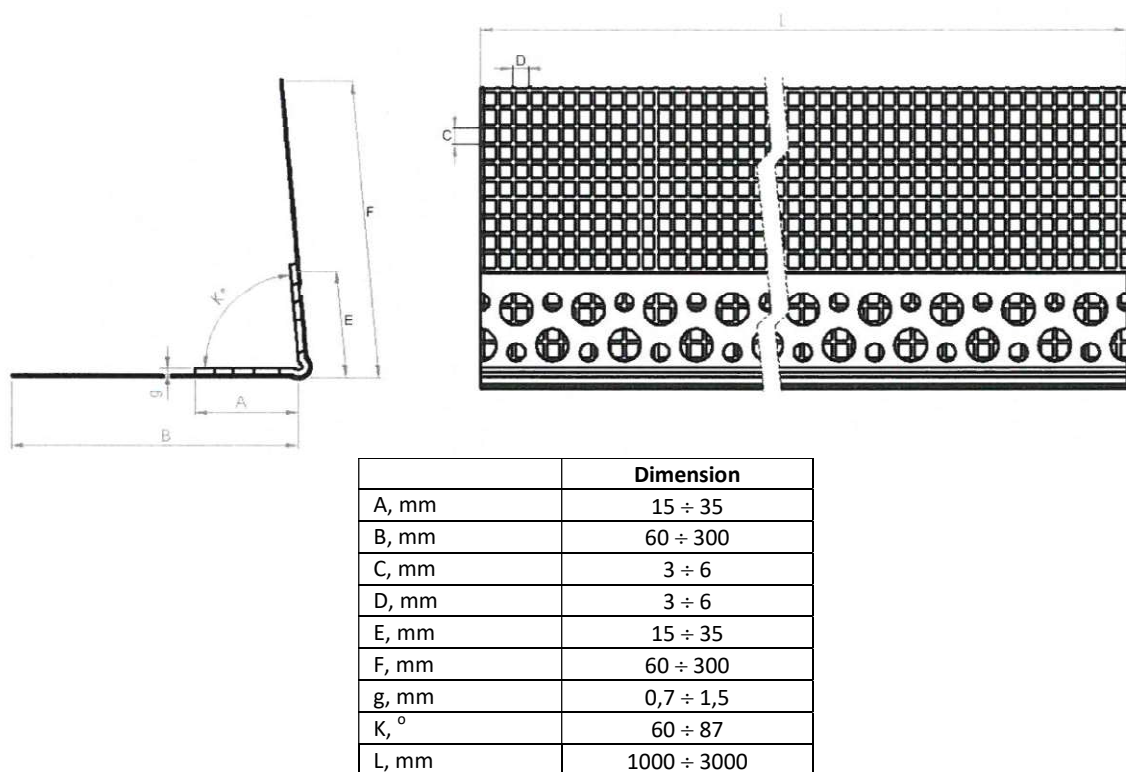


Figure A7. TEKOPAK perforated PVC-U corner, equal-sided, with fibreglass mesh.

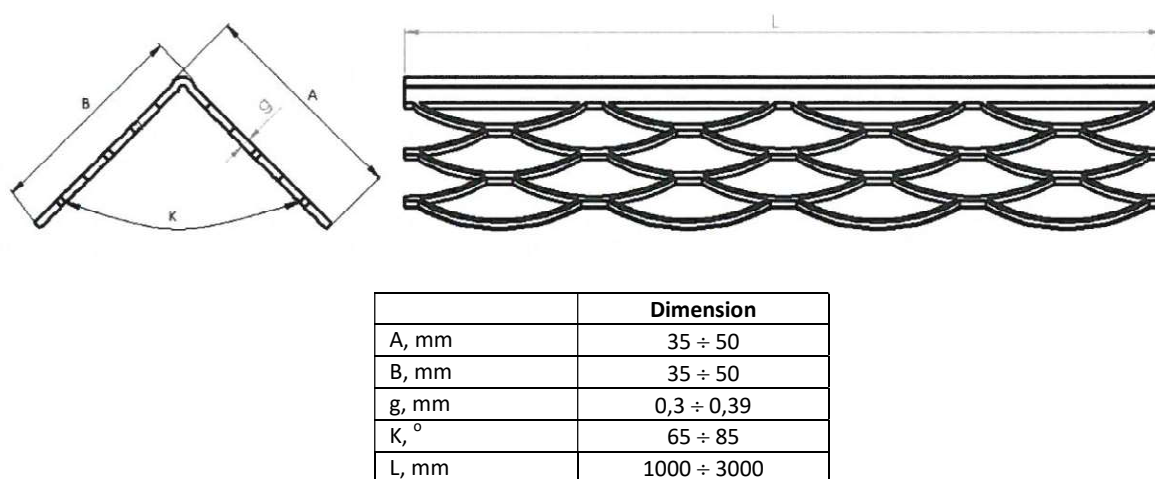
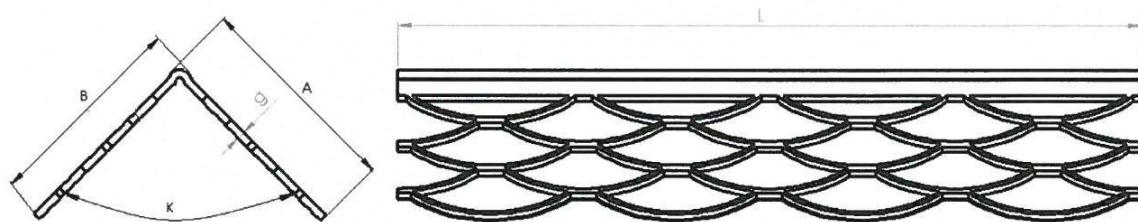
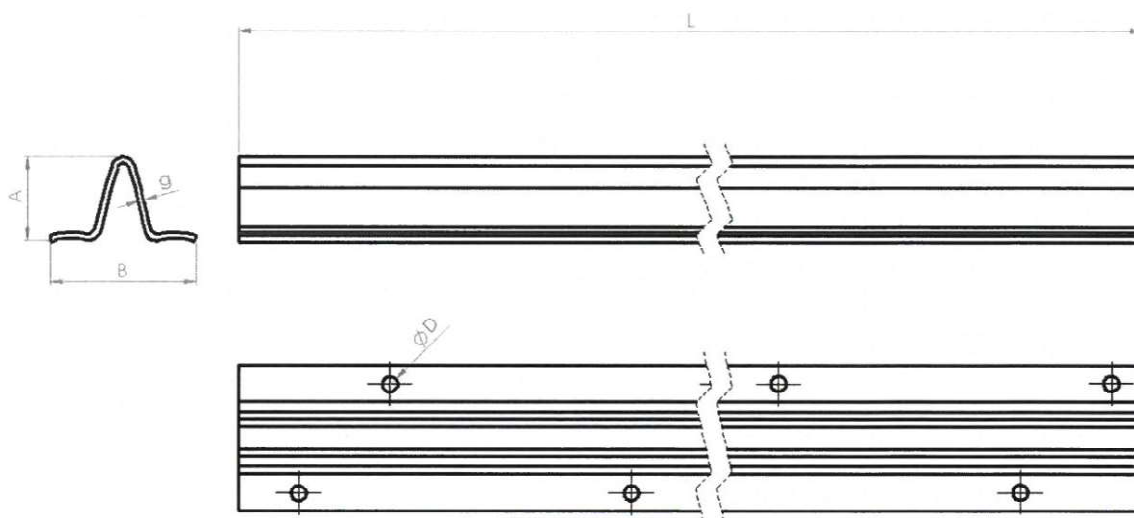


Figure A8. TEKOPAK aluminium corner, equal-sided with cut and drawn metal arms, for wet plaster.



	Dimension
A, mm	35 ÷ 50
B, mm	35 ÷ 50
g, mm	0,3 ÷ 0,39
K, °	65 ÷ 85
L, mm	1000 ÷ 3000

Figure A9. TEKOPAK steel corner, equal-sided with cut and drawn metal arms, for wet plaster.



	Dimension
A, mm	6 ÷ 10
B, mm	15 ÷ 19
D, mm	Ø3 ÷ Ø4
g, mm	0,27 ÷ 0,50
L, mm	1000 ÷ 3000

Figure A10. TEKOPAK concealed steel guide bead, W6/W10.

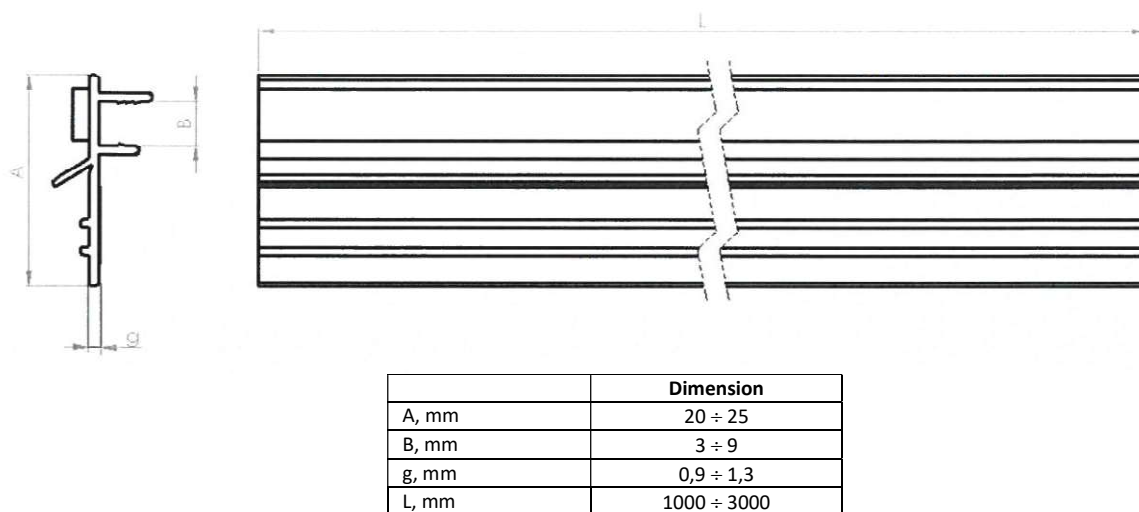


Figure A11. TEKOPAK concealed PVC-U window bead with PU foam tape.

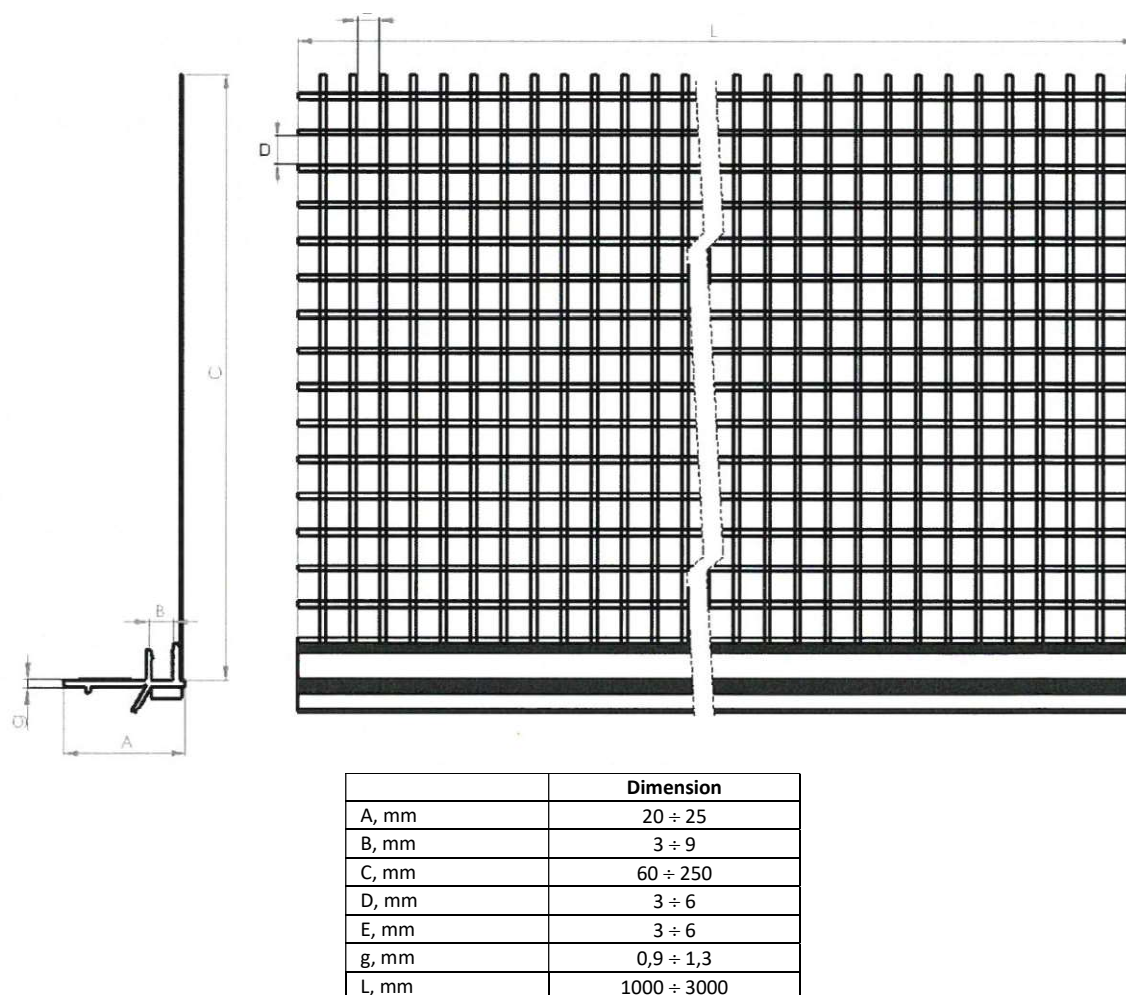


Figure A12. TEKOPAK concealed PVC-U window bead with PU foam tape and fibreglass mesh.

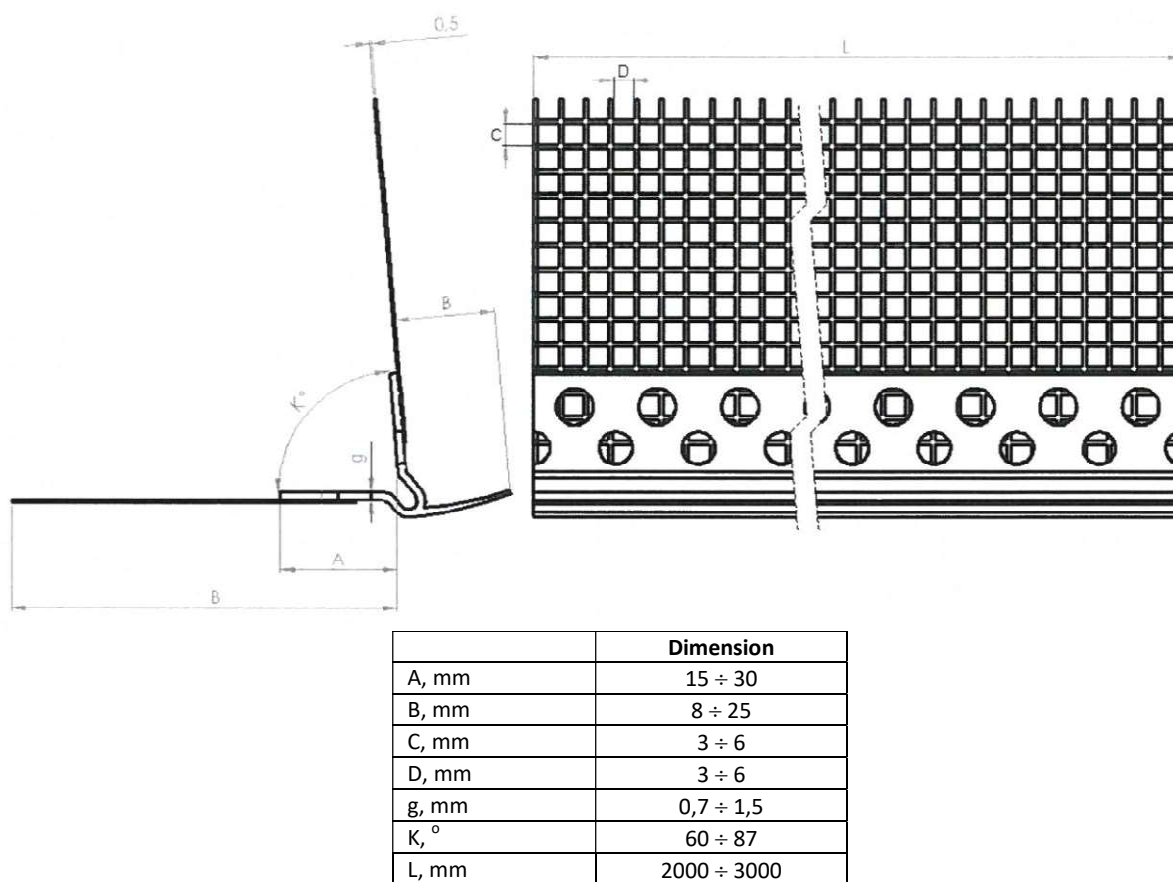


Figure A13. TEKOPAK concealed PVC-U corner with drip, with fibreglass mesh.

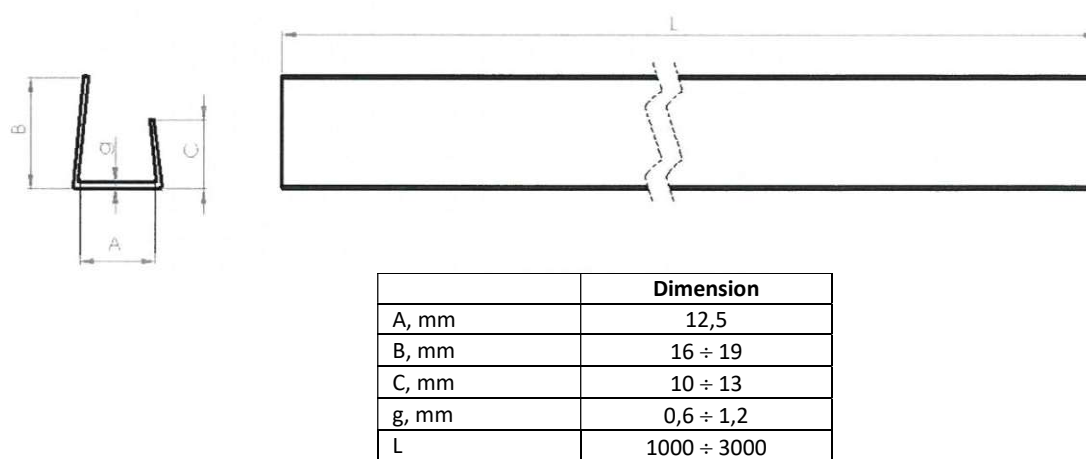
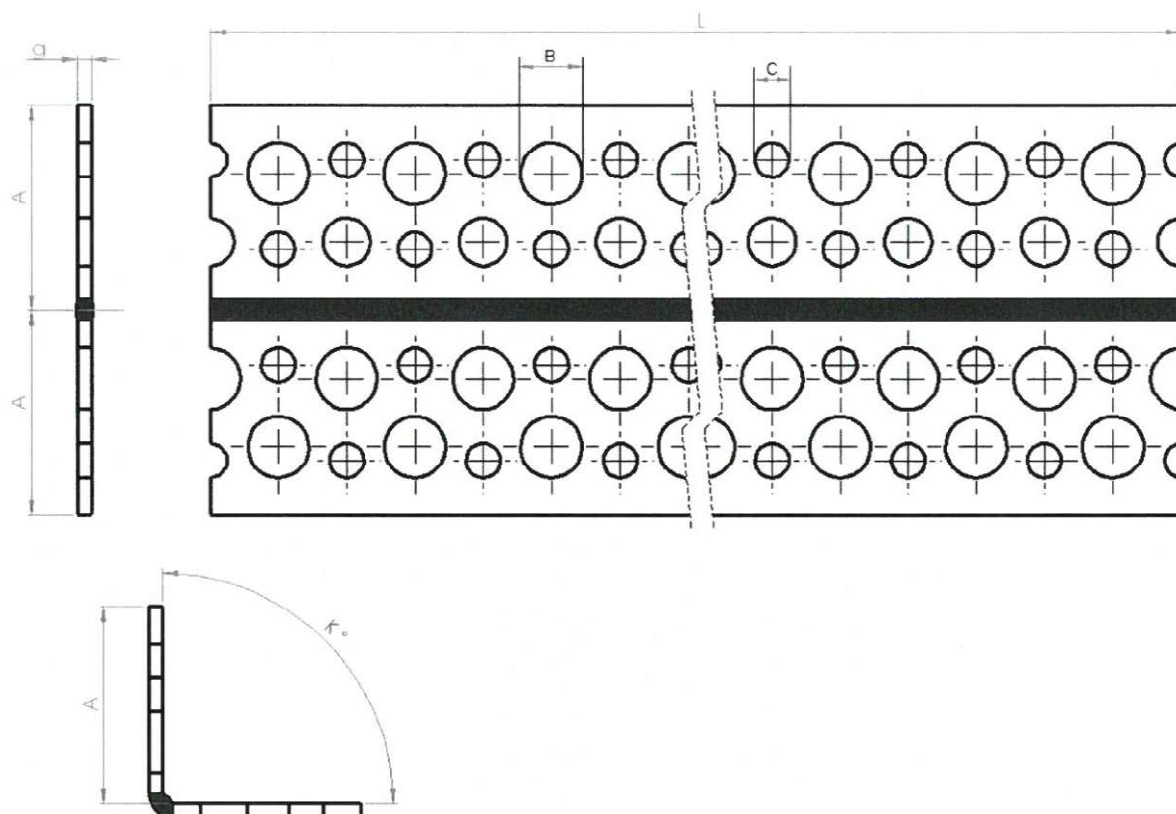
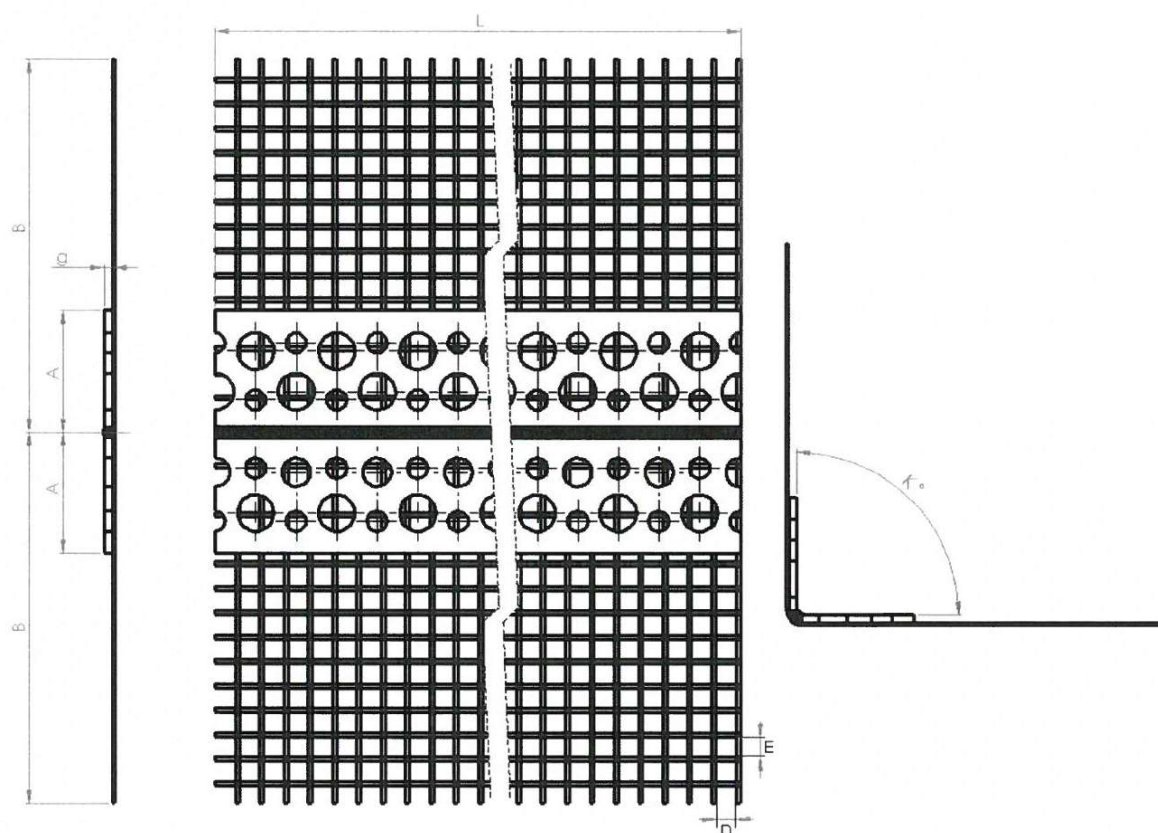


Figure A14. TEKOPAK PVC-U end bead.



	Dimension
A, mm	22 ÷ 26
B, mm	Ø4 ÷ Ø8
C, mm	Ø4 ÷ Ø8
g, mm	0,7 ÷ 1,2
K, °	0 ÷ 180
L	1000 ÷ 3000

Figure A15. TEKOPAK universal PVC-U corner.



	Dimension
A, mm	22 ÷ 26
B, mm	60 ÷ 300
D, mm	3 ÷ 6
E, mm	3 ÷ 6
g, mm	0,7 ÷ 1,2
K, °	60 ÷ 87
L	1000 ÷ 3000

Figure A16. TEKOPAK universal PVC-U corner with fibreglass mesh.

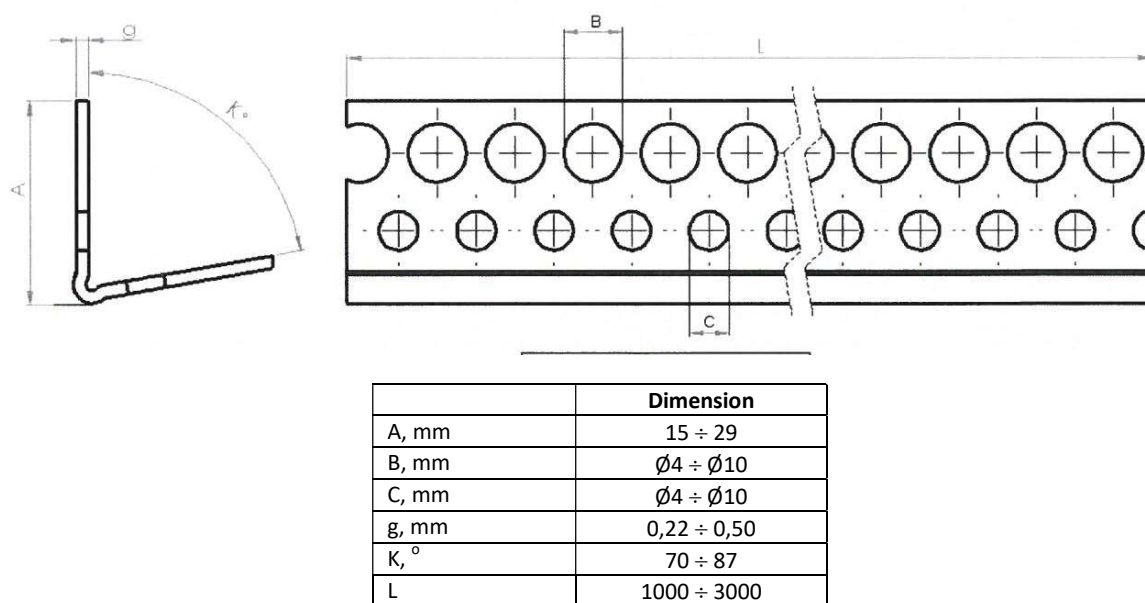


Figure A17. TEKOPAK perforated steel corner, equal-sided.

B1. Materials and components

TEKOPAK corners and concealed beads should be made from the materials listed below:

- aluminium tape; EN AW-1050 grade according to PN-EN 573-3:2014; H18 temper according to PN-EN 515:1996; thickness range: $0.22 \div 0.6$ mm;
- steel tape; DX51D grade according to PN-EN 10346:2015; coated with Z275 zinc or ZM140 zinc/magnesium alloy; thickness range: $0.22 \div 0.5$ mm;
- fibreglass mesh; mesh size: $(3 \div 6) \times (3 \div 6)$; resistant to alkali; mass per unit area: not less than 90 g/m^2 ;
- granulated non-plasticized polyvinyl chloride (PVC-U) with stabilizers, fillers, impact modifiers and lubricants; with properties listed in Table B1.1 below.

Table B.1

Item	Properties	Requirements	Test methods
1	Density g/cm^3	$\geq 1,5$	PN-EN ISO 1183-3:2003
2	Thermal stability at 200°C , min	≥ 15	PN-C-89265-4:1998

Corners and concealed beads which are made of non-plasticized polyvinyl chloride (PVC-U) may only be produced from primary raw materials originating from the manufacturer's original packaging. An addition of recycled material of the same type, ground by the manufacturer, is acceptable on the condition that its properties are not deteriorated in relation to the primary raw material.

B2. Quality of execution

The surfaces of corners and concealed beads should be even and smooth, without any cracks, burrs and sharp edges, discolorations, protrusions and notches. The edges of corners marking the corner line should be even and smooth, free from mechanical damage.