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NATIONAL TECHNICAL ASSESSMENT ITB-KOT-2018/0727 1st Edition

This National Technical Assessment has been issued in accordance with the Regulation of the Minister of Infrastructure and Construction of November 17, 2016 on national technical assessments (Official Journal of the Republic of Poland (Dz. U.) of 2016, item 1968) by Instytut Techniki Budowlanej (the Building Research Institute (ITB)) in Warsaw, upon a request of

pgb-Polska Sp. z o.o.
ul. Fryderyka Wilhelma Redena 3, 41-807 Zabrze

National Technical Assessment ITB-KOT-2018/0727 1st Edition is a favourable assessment of the performance properties of the following construction products for their intended use:

**The plastic-metal anchors
OSPCK, OSPCK and 000SP**

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DIRECTOR
of Building Research Institute

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The Document of National Technical Assessment ITB-KOT-2018/0727, first edition, contains 14 pages, including 3 Annexes. The text of this document may only be copied in its entirety. Any publication or dissemination in any other form of excerpts from the text of the National Technical Assessment shall require written agreement with Instytut Techniki Budowlanej.

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1. TECHNICAL DESCRIPTION OF THE PRODUCT

This National Technical Assessment covers the plastic-metal anchors of types: 0SPKK, 0SPCK and 000SP manufactured by pgb-Polska Sp. z o.o., ul. Fryderyka Wilhelma Redena 3, 41-807 Zabrze, in manufacturing plant in Zabrze.

The anchors consist of plastic sleeves with a countersunk flange (the type: 0SPKK), a cylinder flange (the type: 0SPCK) and a mushroom flange (the type: 000SP) and steel pins with tapered head (Figures: A1, A2 and A3, Annex A).

The dimensions of the anchors are shown in Figures: A1, A2 and A3, and besides given in Tables: A1, A2 and A3 in Annex A. Dimension tolerances are in accordance with the standard: PN-EN 22768-1:1999 for linear dimensions m , and PN-EN ISO 965-2:2001 for thread dimensions.

Fixing with the anchors 0SPKK, 0SPCK and 000SP is shown in Figures B1 ÷ B3 in Annex B.

The sleeves of the anchors 0SPKK, 0SPCK and 000SP are made of polypropylene (PP) in grey colour characterized by a differential scanning calorimetry (DSC) curve, according to the standard: PN-EN ISO 11357-1:2016, in compliance with the standard established in the National Technical Assessment procedure.

The pins of the anchors 0SPKK, 0SPCK and 000SP are made of carbon steel in mechanical property class not lower than 4.8 according to the standard: PN-EN ISO 898-1:2013 and covered with zinc coating with thickness not less than 5 μm , in compliance with the standard: PN-EN ISO 4042:2001 or PN-EN ISO 2081:2011.

2. SPECIFICATION OF THE INTENDED USE OF THE PRODUCT

The anchors 0SPKK, 0SPCK and 000SP are designed for mechanical fixing of profile/boards, used as fastening elements for the insulation layer of external walls, in the substrates, as follows:

- made of normal concrete class C12/15 ÷ C50/60 according to the standard: PN-EN 206+A1:2016,
- made of ceramic solid bricks with compressive strength not less than 15 N/mm^2 (class not less than 15) according to the standard: PN-EN 771-1+A1:2015,
- made of silicate bricks, solid with a compressive strength of not less than 15 N/mm^2 (class not lower than 15) according to the standard: PN-EN 771-2+A1:2015

In order to determine the design characteristic tension resistance values of the anchors 0SPKK, 0SPCK and 000SP, the characteristic tension resistance values provided in Annex C shall be divided by the partial safety factor equal to 2,0.

The parameters for the installation and arrangement of the anchors 0SPKK, 0SPCK and 000SP are given in Annex B.

Due to the corrosion aggressiveness of the environment, the anchors 0SPKK, 0SPCK and 000SP shall be used in accordance with the requirements given in the standards: PN-EN ISO 12944-2:2001, PN-EN ISO 9223:2012 and PN-EN ISO 2081:2018.

In order to perform fixings with the anchors 0SPKK, 0SPCK and 000SP, a hole shall be drilled in the substrate and a plastic sleeve inserted into it. Then a steel pin shall be driven into the sleeve

causing pressing the body to the inner surface of the hole and creating a permanent anchorage of the anchor.

The anchors 0SPKK, 0SPCK and 000SP shall be used in accordance with the technical design prepared taking into account Polish building standards and regulations, the provisions of this National Technical Assessment and in accordance with the manufacturer's instructions relating to the conditions for fixings with use of the aforementioned anchors.

3. PERFORMANCE PROPERTIES OF THE PRODUCT AND METHODS APPLIED TO ASSESS THE PROPERTIES

3.1 Performance properties of the product

3.1.1. Characteristic resistance of fixings with the anchors. Characteristic tension resistance of fixings with the anchors 0SPKK, 0SPCK and 000SP are provided in Annex C.

3.1.2. Working life of the anchors. Zinc coating with a thickness not less than 5 µm shall ensure the working life of the anchors to the extent resulting from article 2.

3.2. Methods used to assess performance properties

3.2.1. Characteristic resistance of fixings with the anchors. Characteristic tension resistance of fixings with the anchors 0SPKK, 0SPCK and 000SP shall be tested according to ETAG 020 2012 on the anchors seated in the substrates described in Annex C.

3.2.2. Working life of the anchors. Thickness of the zinc coating shall be tested according to the standard: PN-EN ISO 2178:2016 or PN-EN ISO 3497:2004.

4. PACKAGING, TRANSPORT AND STORAGE AND THE WAY OF PRODUCT MARKING

The anchors covered by this National Technical Assessment shall be delivered in sets and stored and transported in such a way as to ensure that their performance properties remain unchanged.

The manner of marking the products with the construction mark shall be in accordance with the Regulation of the Minister of Infrastructure and Construction of November 17, 2016 on the way of declaring the performance properties of construction products and the manner of marking them with the construction mark (Journal of Laws of the Republic of Poland (Dz. U.) of 2016, item 1966, as later amended).

Product marking with a construction mark shall be accompanied by the following information:

- the last two digits of the year in which the construction mark was first placed on the construction product;
- the name and address of the manufacturer's registered office or the identification mark allowing explicit identification of the name and address of the manufacturer's registered office;
- the name and type designation of the construction product;
- the number and year of issue of the National Technical Assessment, which served as the basis

for the declaration of performance properties; (ITB-KOT-2018/0727 1st edition);

- the number of the national declaration of performance properties;
- the level or class of the declared performance properties;
- the name of the certification body which participated in the assessment and verification of the constancy of performance properties of the construction product;
- the address of the manufacturer's website, if the national declaration of performance properties is made available on that website.

A safety data sheet and/or information on hazardous substances contained in a construction product referred to in the Article 31 or 33 of the Regulation (EC) No. 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and establishing the European Chemicals Agency shall be provided or made available together with the national declaration of performance properties, as appropriate.

Moreover, the marking of a construction product, being a hazardous mixture according to the REACH regulation, shall comply with the requirements of the Regulation (EC) No. 1272/2008 of the European Parliament and of the Council on Classification, Labelling and Packaging of Substances and Mixtures (CLP), amending and repealing the Directives 67/548/EEC and 1999/45/EC, and amending the Regulation (EC) No. 1907/2006.

5. ASSESSMENT AND VERIFICATION OF THE CONSTANCY OF PERFORMANCE (AVCP)

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

In accordance with the Regulation of the Minister of Infrastructure and Construction of November 17, 2016 on the manner of declaring the performance properties of construction products and the manner of marking them with a construction mark (Official Journal of the Republic of Poland (Dz. U.) of 2016, item 1966, as later amended), the system for the assessment and verification of the constancy of performance: 2+ shall be applicable.

5.2. Type testing

The performance properties assessed in article 3 shall constitute the product type testing unless the changes in raw materials, components, production line or manufacturing plant have been introduced.

5.3. Factory production control

At the manufacturing plant the manufacturer shall have implemented a factory production control system. All the elements, requirements and provisions adopted by the manufacturer for the system shall be documented in a systematic manner in the form of written policies and procedures, including test records. The factory production control shall be adapted to the manufacturing processes and ensure the achievement of the declared performance properties of the product in serial production.

The factory production control includes the specification and verification of raw materials and components, inspections and tests to be carried out during manufacture process and control tests

(according to article 5.4), conducted by the manufacturer in accordance with the established test plan and according to the principles and procedures specified in the documentation of the factory production control.

The results of production control shall be recorded on a regular basis. The records of the register shall confirm whether the products have satisfied the criteria of the assessment and verification of the constancy of performance properties. Individual products or batches of products and related manufacturing details shall be fully identifiable and traceable.

5.4. Control tests

5.4.1. Test plan. The test plan shall include:

- a) ongoing tests,
- b) periodic tests.

5.4.2. Ongoing tests. The ongoing tests shall include verification of:

- a) the shape and dimensions,
- b) the thickness of zinc coating.

5.4.3. Periodic tests. The periodic tests shall include verification of characteristic resistance of fixings with the anchors.

5.5. Frequency of tests

The ongoing tests shall be conducted in accordance with the prescribed test plan, but not less frequently than for each batch of the products. The size of a batch of products shall be specified in the documentation of factory production control.

The periodic tests shall be performed at least once every 3 years.

6. INSTRUCTIONS

6.1. The National Technical Assessment ITB-KOT-2018/0727 1st edition is a favourable assessment of the performance properties of those essential characteristics of the plastic-metal anchors 0SPKK, 0SPCK and 000SP which, in accordance with the intended use, resulting from the provisions of the Assessment, influence the fulfilment of basic requirements by the construction objects in which the product will be applied.

6.2. The National Technical Assessment ITB-KOT-2018/0727 1st edition is not a document authorizing to mark a construction product with a construction mark.

Pursuant to the Act on Construction Products of April 16, 2004, as later amended (Journal of Laws of the Republic of Poland (Dz. U.) of 2016, item 1570, as later amended), the products to which this National Technical Assessment applies may be marketed or made available on the domestic market, if the manufacturer has assessed and verified the constancy of performance properties, drawn up a national declaration of performance properties in accordance with the National Technical Assessment ITB-KOT-2018/0727 1st edition and marked the products with a construction mark in compliance with the applicable regulations.

6.3. The National Technical Assessment ITB-KOT-2018/0727 1st edition does not infringe the rights resulting from the provisions on industrial property protection, and in particular from the Act

of June 30, 2000 – Industrial Property Law (consolidated text: Journal of Laws of the Republic of Poland (Dz. U.) of 2017, item 776). Ensuring these rights shall be the responsibility of the users of this ITB National Technical Assessment.

6.4. When issuing the National Technical Assessment, ITB shall not be held responsible for any possible infringement of exclusive and acquired rights.

6.5. The National Technical Assessment shall not release the manufacturer of products from responsibility for their proper quality, while the contractors of construction works from responsibility for their proper use.

6.6. The validity of this National Technical Assessment may be extended for further periods not exceeding 5 years.

7. LIST OF DOCUMENTS USED IN THE PROCEEDINGS

7.1. Reports, test reports, evaluations, classifications

- 1) LZK00-06026/18/R43NZK. Test report concerning the anchors OSPKK, OSPCK and 000SP. Department of Building Constructions, Geotechnics and Concrete of the Building Research Institute (ITB), Katowice, 2018.
- 2) 51/2018. Test report concerning the plastics. Institute for Engineering of Polymer Materials and Dyes, Gliwice, 2018.

7.2. Related standards and documents

PN-EN 206+A1: 2016	<i>Beton. Część 1: Wymagania właściwości, produkcja i zgodność (Concrete – Requirements, properties, production and compliance)</i>
PN-EN 771-1+A1::2015	<i>Wymagania dotyczące elementów murowych. Część 1: Elementy murowe ceramiczne (Requirements relating to masonry units. Part 1: Ceramic masonry units)</i>
PN-EN 771-2+A1:2015	<i>Wymagania dotyczące elementów murowych – Część 2: Elementy murowe silikatowe (Requirements relating to masonry units – Part 2: Silicate masonry units)</i>
PN-EN 10025-2:2007	<i>Wyroby walcowane na gorąco ze stali konstrukcyjnych. Część 2: Warunki techniczne dostawy stali konstrukcyjnych niestopowych. "Hot rolled products of structural steels – Part 2: Technical delivery conditions for non-alloy structured steels"</i>
PN-EN 14592+A1:2012	<i>Konstrukcje drewniane. Łączniki trzpieniowe. Wymagania. Timber structures. Dowel-type fasteners. Requirements.</i>
PN-EN 22768-1:1999	<i>Tolerancje ogólne. Tolerancje wymiarów liniowych i kątowych bez indywidualnych oznaczeń tolerancji (Tolerances for linear and angular dimensions without individual tolerance indications)</i>
PN-EN ISO 898-1:2013	<i>Własności mechaniczne części złącznych wykonanych ze stali węglowej i stopowej - Śruby i śruby dwustronne (Mechanical properties of fasteners made of carbon steel and alloy steel. - The anchors and studs)</i>
PN-EN ISO 965-2:2001	<i>Gwinty metryczne ISO ogólnego przeznaczenia. Tolerancje. Część 2: Wymiary graniczne gwintów zewnętrznych i wewnętrznych ogólnego przeznaczenia. Klasa średniodokładna. (ISO general-purpose metric screw threads. Part 2: Limits of sizes for</i>

	<i>general purpose external and internal screw threads. Medium quality.)</i>
PN-EN ISO 2081:2018	<i>Powłoki metalowe i inne nieorganiczne. Elektrolityczne powłoki cynkowe z obróbką dodatkową na żelazie lub stali (Metallic and other inorganic coatings. Electroplated coatings of zinc with supplementary treatments on iron or steel.)</i>
PN-EN ISO 2178:2016	<i>Powłoki niemagnetyczne na podłożu magnetycznym. Pomiar grubości powłok. Metoda magnetyczna stali (Non-magnetic coatings on magnetic substrates. Measurement of coating thickness. Magnetic method for steel.)</i>
PN-EN ISO 3497:2004	<i>Powłoki metalowe i tlenkowe. Pomiar grubości powłok. Metody spektrometrii rentgenowskiej. (Metallic and oxygen coatings. Measurements of coating thickness. Roentgen spectrometric method)</i>
PN-EN ISO 9223:2012	<i>Korozja metali i stopów. Korozyjność atmosfer. Klasyfikacja, określenie i ocena. (Corrosion of metals and alloys. Corrosivity of atmospheres. Classification, determination and estimation.)</i>
PN-EN ISO 11357-1:2016	<i>Tworzywa sztuczne. Różnicowa kalorymetria skaningowa (DSC). Część 1: Zasady ogólne. (Plastics. Differential scanning calorimetry (DSC). Part 1: General principles.)</i>
PN-EN ISO 12944-2:2001	<i>Farby i lakiery. Ochrona przed korozją konstrukcji stalowych za pomocą ochronnych systemów malarskich. Część 2: Klasyfikacja środowisk. (Paints and varnishes. Corrosion protection of steel structures by protective paint systems. Part 2: Classification of environments.)</i>
EAD 330196-00-0604	<i>Plastic anchors for fixing of external thermal insulation composite systems with rendering</i>

ANNEXES

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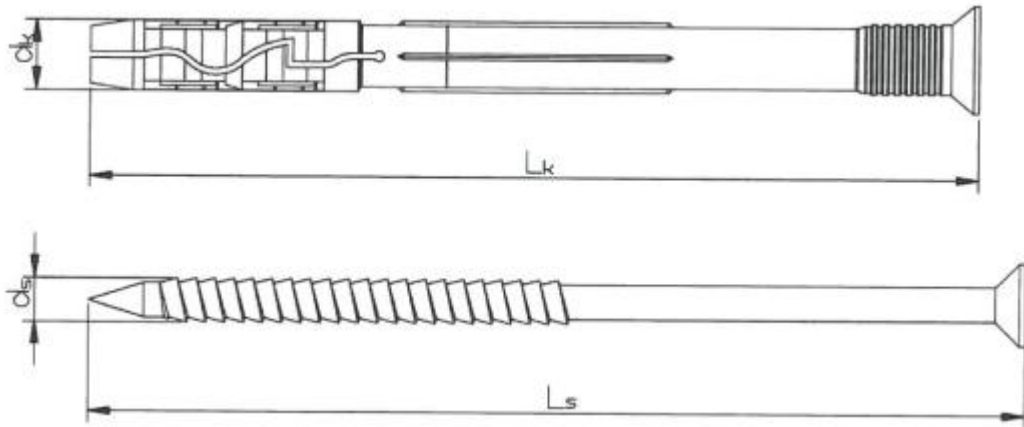
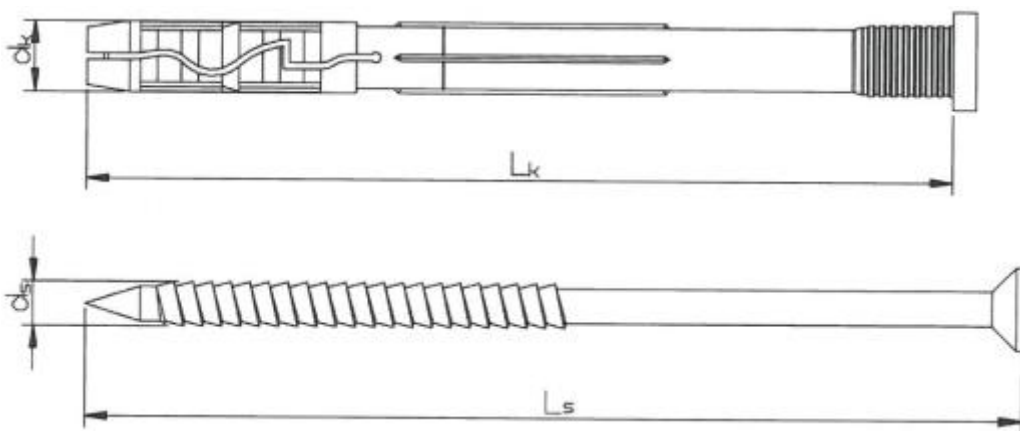
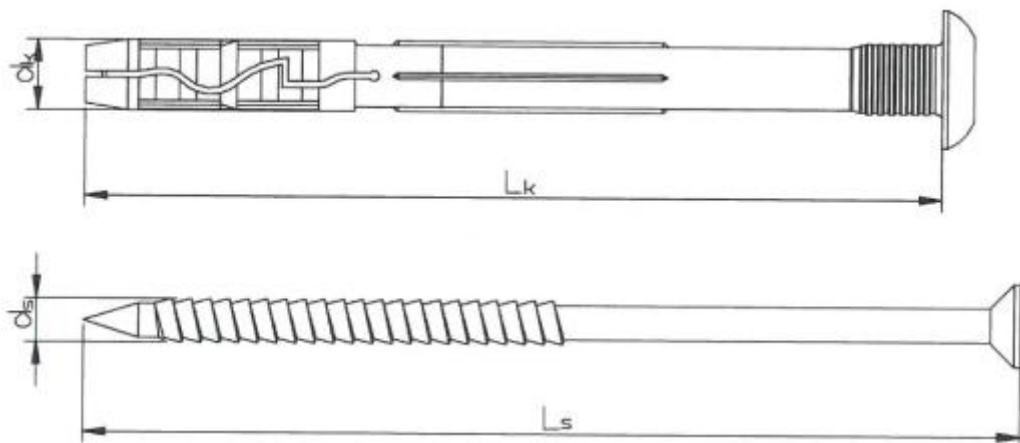
Annex A.

Figure A1. The plastic-metal anchors OSPKK

Figure A2. The plastic-metal anchors OSPCK

Figure A2. The plastic-metal anchors 000SP

Table A1. Dimensions of the plastic-metal anchors 0SPKK

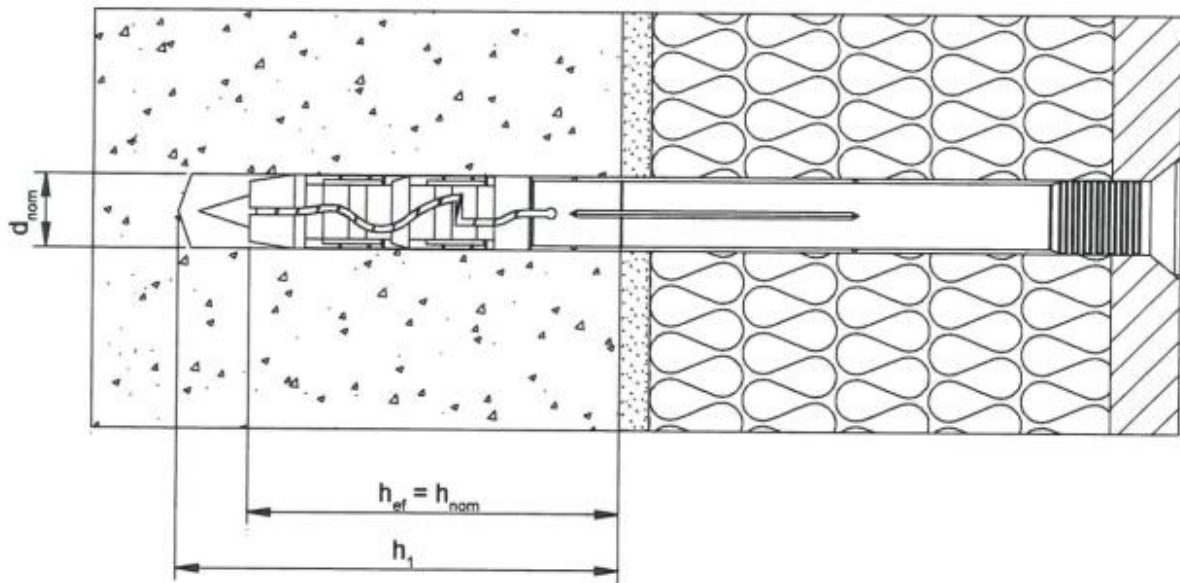
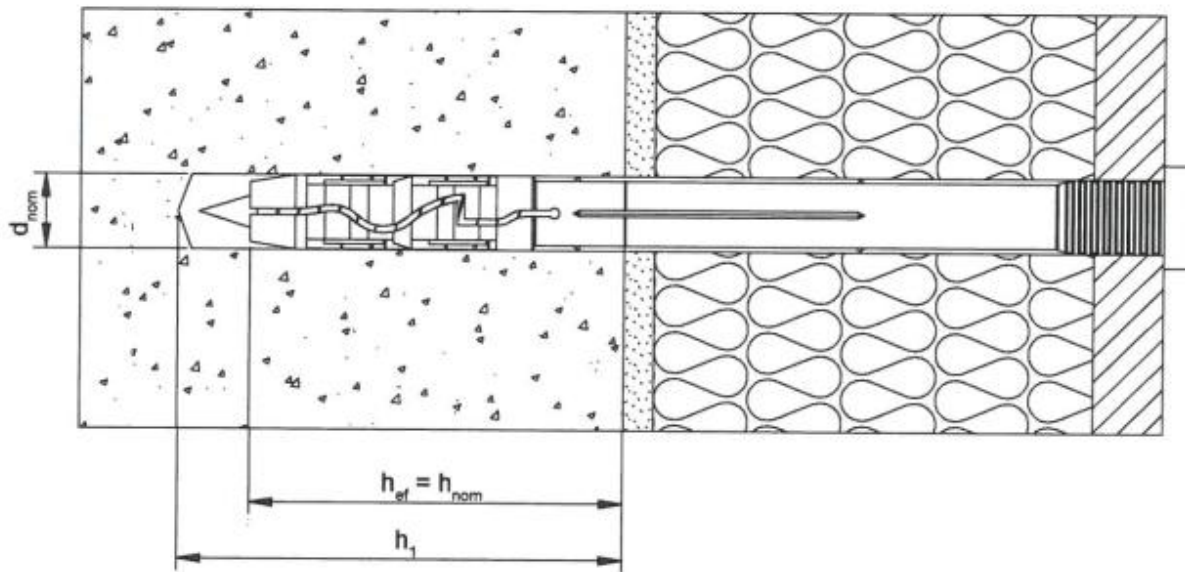
Item	Designation of the anchor	d _k mm	L _k mm	d _s mm	L _s mm
1	2	3	4	5	6
1	0SPKK Ø6 x 40	6	40	3,65	43
2	0SPKK Ø6 x 60	6	60	3,65	63
3	0SPKK Ø6 x 80	6	80	3,65	83

Table A2. Dimensions of the plastic-metal anchors 0SPCK

Item	Designation of the anchor	d _k mm	L _k mm	d _s mm	L _s mm
1	2	3	4	5	6
1	0SPCK Ø6 x 40	6	40	3,65	43
2	0SPCK Ø6 x 60	6	60	3,65	63
3	0SPCK Ø6 x 80	6	80	3,65	83

Table A3. Dimensions of the plastic-metal anchors 000SP

Item	Designation of the anchor	d _k mm	L _k mm	d _s mm	L _s mm
1	2	3	4	5	6
1	000SP Ø6 x 40	6	40	3,65	43
2	000SP Ø6 x 60	6	60	3,65	63
3	000SP Ø6 x 80	6	80	3,65	83

Annex B.

Figure B1. Installation parameters of the anchors OSPKK

Figure B2. Installation parameters of the anchors OSPCK

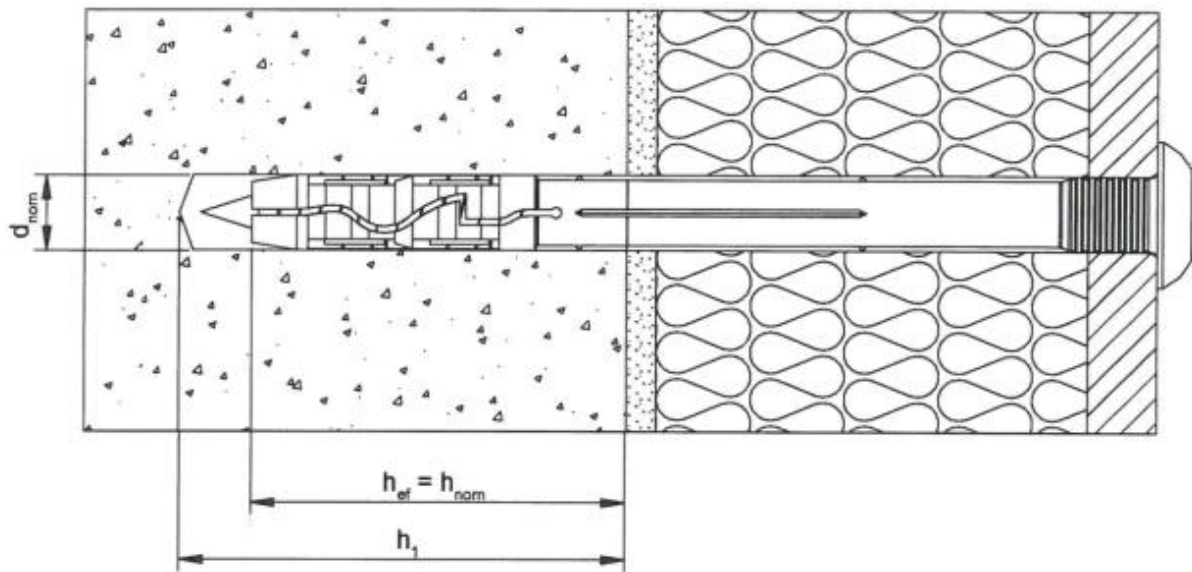


Figure B3. Installation parameters of the anchors 000SP

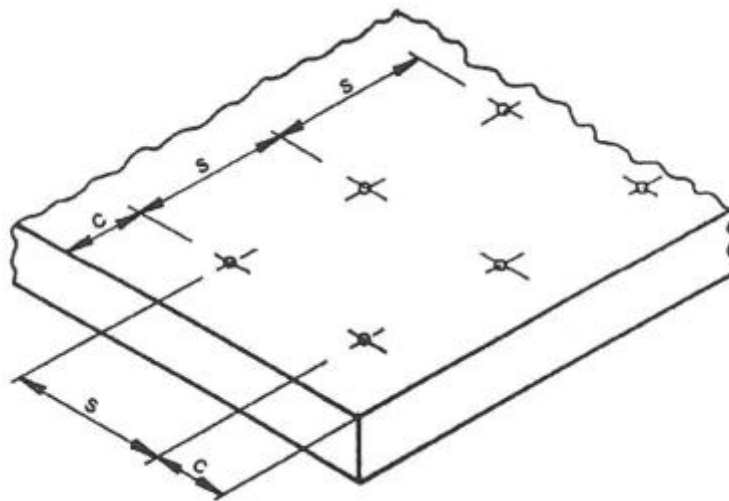


Figure B4. Arrangement parameters of the anchors 0SPKK, 0SPCK or 000SP in the substrate
 s – axial spacing of the anchors, c – anchor distance from the substrate edge

Table B1. Parameters for installation and arrangement of the anchors 0SPKK, 0SPCK and 000SP

Item	Parameter	Designation of the anchor		
		0SPKK	0SPCK	000SP
1	2	3	4	5
1	Nominal diameter of a drill d_{nom} , mm	6	6	6
2	Depth of a drilled hole h_1 , mm	35	35	35
3	Effective depth of anchorage h_{ef} , mm equal to nominal depth of anchorage h_{nom} , mm	30	30	30
4	Minimum spacing of the anchors s , mm	100	100	100
5	Minimum distance of the anchor from the substrate edge c , mm	100	100	100

Annex C.
Table C1. Characteristic tension resistance of fixings with the anchors 0SPKK, 0SPCK and 000SP – $N_{R,k}$

Item	Designation of a type of the anchor	Type of the substrate	Effective depth of anchorage h_{ef} , mm	Characteristic tension resistance $N_{R,k}$, kN
1	2	3	4	5
1	0SPKK 0SPCK 000SP	Concrete, class C12/15 ⁽¹⁾	30	0,30
2		Concrete, class C20/25 ÷ C50/60 ⁽¹⁾	30	0,45
3		Ceramic bricks, full ⁽²⁾	30	0,20
4		Silicate bricks, full ⁽³⁾	30	0,20
⁽¹⁾ - according to the standard PN-EN 206+A1:2016 ⁽²⁾ - class 15 according to the standard PN-EN 771-1+A1: 2015 ⁽³⁾ - class 15 according to the standard PN-EN 771-2+A1: 2015				