Deutsches Institut für Bautechnik

Zulassungsstelle für Bauprodukte und Bauarten

Bautechnisches Prüfamt

Eine vom Bund und den Ländern gemeinsam getragene Anstalt des öffentlichen Rechts

Kolonnenstraße 30 B
D-10829 Berlin
Tel.: +49 30 78730-0
Fax: +49 30 78730-320
E-Mail: dibt@dibt.de
www.dibt.de

Authorised and notified according to Article 10 of the Council Directive of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products (89/106/EEC)

Deutsches Institut für Bautechnik

DIBt

Mitglied der EOTA
Member of EOTA

European Technical Approval ETA-13/0911

English translation prepared by DIBt - Original version in German language

Handelsbezeichnung *Trade name*	MKT Rahmendübel R *MKT plastic anchor R*
Zulassungsinhaber *Holder of approval*	MKT Metall-Kunststoff-Technik GmbH & Co. KG Auf dem Immel 2 67685 Weilerbach DEUTSCHLAND
Zulassungsgegenstand und Verwendungszweck *Generic type and use of construction product*	Kunststoffdübel als Mehrfachbefestigung von nichttragenden Systemen zur Verankerung im Beton und Mauerwerk *Plastic anchor for multiple use in concrete and masonry for non-structural applications*
Geltungsdauer: *Validity:*	vom *from* 30 June 2013 bis *to* 30 June 2018
Herstellwerk *Manufacturing plant*	Werk 4

Diese Zulassung umfasst *This Approval contains*	78 Seiten einschließlich 66 Anhänge *78 pages including 66 annexes*

I LEGAL BASES AND GENERAL CONDITIONS

1 This European technical approval is issued by Deutsches Institut für Bautechnik in accordance with:

- Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products[1], modified by Council Directive 93/68/EEC[2] and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council[3];
- *Gesetz über das In-Verkehr-Bringen von und den freien Warenverkehr mit Bauprodukten zur Umsetzung der Richtlinie 89/106/EWG des Rates vom 21. Dezember 1988 zur Angleichung der Rechts- und Verwaltungsvorschriften der Mitgliedstaaten über Bauprodukte und anderer Rechtsakte der Europäischen Gemeinschaften (Bauproduktengesetz - BauPG) vom 28. April 1998[4], as amended by Article 2 of the law of 8 November 2011[5];*
- Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC[6];
- Guideline for European technical approval of "Plastic Anchors for Multiple Use in Concrete and Masonry for Non-structural Applications - Part 1: General", ETAG 020-01.

2 Deutsches Institut für Bautechnik is authorized to check whether the provisions of this European technical approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European technical approval and for their fitness for the intended use remains with the holder of the European technical approval.

3 This European technical approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those indicated on page 1 of this European technical approval.

4 This European technical approval may be withdrawn by Deutsches Institut für Bautechnik, in particular pursuant to information by the Commission according to Article 5(1) of Council Directive 89/106/EEC.

5 Reproduction of this European technical approval including transmission by electronic means shall be in full. However, partial reproduction can be made with the written consent of Deutsches Institut für Bautechnik. In this case partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European technical approval.

6 The European technical approval is issued by the approval body in its official language. This version corresponds fully to the version circulated within EOTA. Translations into other languages have to be designated as such.

1 Official Journal of the European Communities L 40, 11 February 1989, p. 12
2 Official Journal of the European Communities L 220, 30 August 1993, p. 1
3 Official Journal of the European Union L 284, 31 October 2003, p. 25
4 *Bundesgesetzblatt Teil I 1998*, p. 812
5 *Bundesgesetzblatt Teil I 2011*, p. 2178
6 Official Journal of the European Communities L 17, 20 January 1994, p. 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of product/ products and intended use

1.1 Definition of the construction product

The MKT Plastic Anchor in the range R 8 and R 10 is a plastic anchor consisting of a plastic sleeve made of polyamide and an accompanying specific screw of galvanised steel or of stainless steel.

The plastic sleeve is expanded by screwing in the specific screw which presses the sleeve against the wall of the drilled hole.

The installed anchor is shown in Annex 1 and 2.

1.2 Intended use

The anchor is intended to be used for anchorages for which requirements for safety in use in the sense of the Essential Requirement 4 of Council Directive 89/106/EEC shall be fulfilled and failure of the fixture represents an immediate risk to human life.

The anchor is to be used only for multiple fixing for non-structural applications.

The base material may consist of use category a, b, c and d as given in the following Table:

Use category	Anchor type	Remarks
a	MKT R 8 MKT R 10	• Concrete with strength class C12/15 at minimum and C50/60 at maximum according to EN 206-1:2000-12 • Cracked and non-cracked concrete • The anchor may also be used with requirements related to resistance to fire according 4.2.2.
	MKT R 8	• Precast prestressed hollow core elements according Annex 11 • Bottom flange thickness ≥ 35 mm • strength class C45/55 at minimum and C50/60 at maximum according to EN 206-1:2000-12
b	MKT R 8 MKT R 10	• Masonry walls according to Annex 6, 7 • Mortar strength class ≥ M 2,5 according to EN 998-2:2003
c	MKT R 8 MKT R 10	• Masonry walls according to Annex 7 to 10 • Mortar strength class ≥ M 2,5 according to EN 998-2:2003
d	MKT R 8 MKT R 10	• Non-cracked autoclaved aerated concrete (AAC blocks) according to Annex 61
	MKT R 10	• (prefabricated) reinforced components made of autoclaved aerated concrete (AAC) according to Annex 62

Specific screw of galvanised steel:

The specific screw made of galvanised steel may only be used in structures subject to dry internal conditions.

The specific screw made of galvanised steel with exception of the stair bolt according Annex 4 may also be used in structures subject to external atmospheric exposure, if the area of the head of the screw is protected against moisture and driving rain after mounting of the fixing unit in this way, that intrusion of moisture into the anchor shaft is prevented. Therefore there shall be an external cladding or a ventilated rainscreen mounted in front of the head of the screw and the head of the screw itself shall be coated with a soft plastic, permanently elastic bitumen-oil-combination coating (e. g. undercoating or body cavity protection for cars).

Specific screw of stainless steel:

The specific screw made of stainless steel may be used in structures subject to dry internal conditions and also in structures subject to external atmospheric exposure (including industrial and marine environment), or exposure in permanently damp internal conditions, if no particular aggressive conditions exist. Such particular aggressive conditions are e. g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e. g. in desulphurization plants or road tunnels where de-icing materials are used).

The anchor may be used in the following temperature range:

Temperature range b):	-40 °C to +80 °C	(max long term temperature +50 °C and max short term temperature +80 °C)
Temperature range c):	-40 °C to +50 °C	(max long term temperature +30 °C and max short term temperature +50 °C)

The provisions made in this European technical approval are based on an assumed working life of the anchor of 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

2 Characteristics of the product and methods of verification

2.1 Characteristics of the product

The anchor corresponds to the drawings and information given in Annex 3, 4 and 5. The characteristic material values, dimensions and tolerances of the anchor not given in these Annexes shall correspond to the respective values laid down in the technical documentation[7] of this European technical approval.

The characteristic values for the design of the anchorages are given in Annex 6, Annex 12 and Annex 14 to 66.

Each anchor is to be marked with the identifying mark, the type, the diameter and the length of the anchor according to Annex 3.

The minimum embedment depth shall be marked.

The anchor shall only be packaged and supplied as a complete unit.

[7] The technical documentation of this European technical approval is deposited at the Deutsches Institut für Bautechnik and, as far as relevant for the tasks of the approved bodies involved in the attestation of conformity procedure, is handed over to the approved bodies.

2.2 Methods of verification

The assessment of the fitness of the anchor for the intended use in relation to the requirements for safety in use in the sense of the Essential Requirement 4 has been made in compliance with the Guideline for European technical approval of "Plastic Anchors for Multiple Use in Concrete and Masonry for Non-structural Applications", ETAG 020,

- Part 1: "General",
- Part 2: "Plastic Anchors for Use in Normal Weight Concrete",
- Part 3: "Plastic Anchors for Use in Solid Masonry Materials",
- Part 4: "Plastic Anchors for Use in Hollow or Perforated Masonry" and
- Part 5: "Plastic Anchors for Use in Autoclaved Aerated Concrete (AAC)"

based on the use categories a, b, c and d.

In addition to the specific clauses relating to dangerous substances contained in this European technical approval, there may be other requirements applicable to the products falling within its scope (e. g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Directive, these requirements need also to be complied with, when and where they apply.

3 Evaluation and attestation of conformity and CE marking

3.1 System of attestation of conformity

According to the decision 97/463/EG of the European Commission[8] the system 2(ii) (referred to as system 2+) of attestation of conformity applies.

This system of attestation of conformity is defined as follows.

System 2+: Declaration of conformity of the product by the manufacturer on the basis of:

(a) Tasks for the manufacturer:
  (1) initial type-testing of the product;
  (2) factory production control;
  (3) testing of samples taken at the factory in accordance with a prescribed test plan.

(b) Tasks for the approved body:
  (4) certification of factory production control on the basis of:
    - initial inspection of factory and of factory production control;
    - continuous surveillance, assessment and approval of factory production control.

3.2 Responsibilities

3.2.1 Tasks of the manufacturer

3.2.1.1 Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall insure that the product is in conformity with this European technical approval.

The manufacturer may only use raw materials stated in the technical documentation of this European technical approval.

[8] Official Journal of the European Communities L 198 of 25.07.1997.

The factory production control shall be in accordance with the control plan which is part of the technical documentation of this European technical approval. The control plan is laid down in the context of the factory production control system operated by the manufacturer and deposited at Deutsches Institut für Bautechnik.[9]

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

3.2.1.2 Other tasks of manufacturer

The manufacturer shall, on the basis of a contract, involve a body which is approved for the tasks referred to in section 3.1 in the field of anchors in order to undertake the actions laid down in section 3.2.2. For this purpose, the control plan referred to in sections 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the approved body involved.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of this European technical approval.

3.2.2 Tasks of approved bodies

The approved body shall perform the

- initial inspection of factory and of factory production control,
- continuous surveillance, assessment and approval of factory production control,

in accordance with the provisions laid down in the control plan.

The approved body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report.

The approved certification body involved by the manufacturer shall issue an EC certificate of conformity of the factory production control stating the conformity with the factory production control of this European technical approval.

In cases where the provisions of the European technical approval and its control plan are no longer fulfilled the certification body shall withdraw the certificate of conformity and inform Deutsches Institut für Bautechnik without delay.

3.3 CE marking

The CE marking shall be affixed on each packaging of the anchor. The letters "CE" shall be followed by the identification number of the approved certification body, where relevant, and be accompanied by the following additional information:

- the name and address of the producer (legal entity responsible for the manufacturer),
- the last two digits of the year in which the CE marking was affixed,
- the number of the EC certificate for the factory production control,
- the number of the European technical approval,
- the number of the guideline for European technical approval
- use categories a, b, c and d.

[9] The control plan is a confidential part of the documentation of the European technical approval, but not published together with the ETA and only handed over to the approved body involved in the procedure of attestation of conformity. See section 3.2.2.

4 Assumptions under which the fitness of the product for the intended use was favourably assessed

4.1 Manufacturing

The European technical approval is issued for the product on the basis of agreed data/information, deposited with Deutsches Institut für Bautechnik, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to Deutsches Institut für Bautechnik before the changes are introduced. Deutsches Institut für Bautechnik will decide whether or not such changes affect the European technical approval and consequently the validity of the CE marking on the basis of the European technical approval and if so whether further assessment or alterations to the European technical approval shall be necessary.

4.2 Design of anchorages

4.2.1 General

Fitness for the intended use of the anchor is given under the following conditions:

- The design of anchorages is carried out in compliance with ETAG 020, Guideline for European technical approval of "Plastic Anchors for Multiple Use in Concrete and Masonry for Non-structural Applications", Annex C under the responsibility of an engineer experienced in anchorages.
- Verifiable calculation notes and drawings shall be prepared taking account of the loads to be anchored, the nature and strength of the base materials and the dimensions of the anchorage members as well as of the relevant tolerances.
- The anchor is to be used only for multiple fixing for non-structural applications.

  Therefore the design of the fixture may specify the number n_1 of fixing points to fasten the fixture and the number n_2 of anchors per fixing point. Furthermore by specifying the design value of actions N_{Sd} on a fixing point to a value $\leq n_3$ (kN) up to which the strength and stiffness of the fixture are fulfilled and the load transfer in the case of excessive slip or failure of one anchor need not to be taken into account in the design of the fixture.

  The following default values for n_1, n_2 and n_3 may be taken:

  $n_1 \geq 4$; $n_2 \geq 1$ and $n_3 \leq 4{,}5$ kN or

  $n_1 \geq 3$; $n_2 \geq 1$ and $n_3 \leq 3{,}0$ kN.
- Shear loads acting on an anchor may be assumed to act without lever arm if both of the following conditions are fulfilled:
  - The fixture shall be made of metal and in the area of the anchorage be fixed directly to the base material either without an intermediate layer or with a levelling layer of mortar with a thickness ≤ 3 mm.
  - The fixture shall be in contact with the anchor over its entire thickness. (Therefore the diameter of clearance hole in the fixture d_f has to be equal or smaller than the value given in Annex 5, Table 3.)

  If these two conditions are not fulfilled the lever arm is calculated according to ETAG 020, Annex C. The characteristic bending moment is given in Annex 6, Table 4.

4.2.2 Resistance in concrete (use category "a")

The characteristic values of resistance of the anchor for use in concrete are given in Annex 12, and 63 to 65. The design method is valid for cracked and non-cracked concrete.

The characteristic values of resistance of the anchor R 8 for use in precast prestressed hollow core slabs are given in Annexes 63, 64 and 65.

According to the Technical Report TR 020 "Evaluation of anchorages in concrete concerning resistance to fire" it can be assumed that for fastening of facade systems the load bearing behaviour of the MKT Plastic Anchor R 10 has a sufficient resistance to fire at least 90 minutes (R90) if the admissible load $[F_{Rk} / (\gamma_M \cdot \gamma_F)]$ is ≤ 0,8 kN (no permanent centric tension load).

4.2.3 Resistance in solid masonry (use category "b")

The characteristic values of resistance of the anchor for use in solid masonry are given in Annex 14, 41, 42, 48 to 53 and 66. These values are independent of the load direction (tension, shear or combined tension and shear) and the mode of failure.

The characteristic resistances given in Annex 14, 41, 42, 48 to 53 and 66 for use in solid masonry are only valid for the base material and the bricks according this tables or larger brick sizes and larger compressive strength of the masonry unit.

If smaller brick sizes are present on the construction site or if the mortar strength is smaller than the required value, the characteristic resistance of the anchor may be determined by job site tests according to 4.4.

4.2.4 Resistance in hollow or perforated masonry (use category "c")

The characteristic resistances for use in hollow or perforated masonry given in Annex 15 to 40, 43 to 47, 54 to 60 are only valid for the bricks and blocks according this tables regarding base material, size of the units, compressive strength and configuration of the voids.

These values are independent of the load direction (tension, shear or combined tension and shear) and the mode of failure and are valid for the given h_{nom} according the Annexes.

The influence of larger embedment depths and/or different bricks and blocks (according Annex 15 to 40, 43 to 47, 54 to 60 regarding base material, size of the units, compressive strength and configuration of the voids) has to be detected by job site tests according to 4.4.

4.2.5 Resistance in autoclaved aerated concrete (AAC - use category "d")

The characteristic values of resistance of the anchor for use in non-cracked autoclaved aerated concrete (AAC blocks) are given in Annex 61.

The characteristic values of resistance of the anchor type R 10 for use in reinforced autoclaved aerated concrete (prefabricated reinforced AAC members) are given in Annex 62.

These values given in Annex 61 and 62 are independent of the load direction (tension, shear or combined tension and shear) and the mode of failure.

The anchor shall not be installed and used in water saturated aerated concrete.

4.2.6 Specific conditions for the design method in solid masonry, hollow or perforated masonry and AAC

The mortar strength class of the masonry has to be M 2,5 according to EN 998-2:2003 at minimum.

The characteristic resistance F_{Rk} for a single plastic anchor may also be taken for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min}.

The distance between single plastic anchors or a group of anchors should be a ≥ 250 mm.

If the vertical joints of the wall are designed not to be filled with mortar then the design resistance N_{Rd} has to be limited to 2,0 kN to ensure that a pull-out of one brick out of the wall will be prevented. This limitation can be omitted if interlocking units are used for the wall or when the joints are designed to be filled with mortar.

If the joints of the masonry are not visible the characteristic resistance F_{Rk} has to be reduced with the factor α_j = 0,5.

If the joints of the masonry are visible (e.g. unplastered wall) following has to be taken into account:

- The characteristic resistance F_{Rk} may be used only, if the wall is designed such that the joints are to be filled with mortar.
- If the wall is designed such that the joints are not to be filled with mortar then the characteristic resistance F_{Rk} may be used only, if the minimum edge distance c_{min} to the vertical joints is observed. If this minimum edge distance c_{min} can not be observed then the characteristic resistance F_{Rk} has to be reduced with the factor α_j = 0,5.

For prefabricated reinforced components the following has to be taken into account if no special tests or calculation for the resistance of the member made of AAC will carried out:

- The design value of shear resistance in the member caused by the anchorage are less or equal to 40 % of the design value of resistance of the member in the critical cross section.
- The edge distance c is ≥ 150 mm for slabs of width ≤ 700 mm.
- The distance between single plastic anchors or a group of anchors should be a ≥ 600 mm.

4.2.7 Characteristic values, spacing and dimensions of anchorage member

The minimum spacing and dimensions of anchorage member according to Annex 13, Table 8 and 9 shall be observed depending on the base material.

4.2.8 Displacement behaviour

The displacements under tension and shear loading in concrete, masonry and autoclaved aerated concrete (AAC) are given in Annex 13, Table 7.

4.3 Installation of anchor

The fitness for use of the anchor can only be assumed if the following conditions of installation are met:

- Anchor installation carried out by appropriately qualified personnel under the supervision of the person responsible for technical matters on site.
- Use of the anchor only as supplied by the manufacturer without exchanging any component of the anchor.
- Anchor installation in accordance with the manufacturer's specifications and drawings using the tools indicated in this European technical approval:
- Checks before placing the anchor, to ensure that the characteristic values of the base material in which the anchor is to be placed, is identical with the values, which the characteristic loads apply for.
- Observation of the drill method according Annex 15 to 40, 43 to 47, 54 to 60 (Drill holes in hollow or perforated masonry may only be drilled using the rotary drill. Other drilling methods may also be used if job-site tests according to 4.4 evaluate the influence of hammer or impact drilling.)
- Placing drill holes without damaging the reinforcement.
- In the absence of national regulations, it is recommended that the distance between the side of the drill hole and the outside of prestressed reinforcement is at least 50 mm; for determining the position of the prestressed reinforcement in the structure, a suitable device (e.g. reinforcement detector) should be used. Annexes 63 to 65 show the admissible anchor positions.

- The anchor shall not be installed and used in water saturated aerated concrete (AAC).
- Holes to be cleaned of drilling dust.
- In case of aborted hole: New drilling at a minimum distance away of twice the depth of the aborted hole or smaller distance if the aborted drill hole is filled with high strength mortar.
- The plastic sleeve is inserted through the fixture by slight hammer blows and the special screw is screwed in until the head of the screw touches the sleeve. The anchor is correct mounted, if there is no turn-through of the plastic sleeve in the drill hole and if slightly move on turning of the screw is impossible after the complete turn-in of the screw.
- Temperature during installation of the anchor (plastic sleeve and base material):

  R 8: ≥ -40 °C; R 10: ≥ -20 °C

4.4 Job site tests according to ETAG 020, Annex B

4.4.1 General

In the absence of national requirements the characteristic resistance of the plastic anchor may be determined by job site tests, if the plastic anchor has already characteristic values given in Annex 12 and 14 to 66 for the same base material as it is present on the construction works.

Furthermore job site tests for use in (different) solid masonry are possible only if the plastic anchor has already characteristic values given in Annex 14, 41, 42, 48 to 53 and 66 for use in solid masonry.

Job site tests for use in (different) hollow or perforated masonry are possible only if the plastic anchor has already characteristic values given in Annex 15 to 40, 43 to 47, 54 to 60 for use in hollow or perforated masonry.

Furthermore job site tests for use in different concrete only if the plastic anchor has already characteristic values given in Annex 12 for use in the equivalent base material.

Job site tests are also possible, if another drill method is been used as it is given in Annex 15 to 40, 43 to 47, 54 to 60.

The characteristic resistance to be applied to a plastic anchor should be determined by means of at least 15 pull-out tests carried out on the construction work with a centric tension load acting on the plastic anchor. These tests may also performed in a laboratory under equivalent conditions as used on construction work

Execution and evaluation of the tests as well as issue of the test report and determination of the characteristic resistance should be supervised by the person responsible for execution of works on site and be carried out by a competent person.

Number and position of the plastic anchors to be tested should be adapted to the relevant special conditions of the construction work in question and, for example, in the case of blind and larger areas be increased such that a reliable information about the characteristic resistance of the plastic anchor embedded in the base material in question can be derived. The tests should take account of the unfavourable conditions of practical execution.

4.4.2 Assembly

The plastic anchor to be tested shall be installed (e. g. preparation of drill hole, drilling tool to be used, drill bit, type of drilling hammer or rotation, thickness of fixture) and as far as spacing and edge distances are concerned be distributed in the same way as foreseen for the intended use.

Depending on the drilling tool hard metal hammer drill bits or hard metal percussion drill bits, respectively, according to ISO 5468 should be used. New drill bits should be used for one test series or drill bits with $d_{cut,m}$ = 8,25 mm < d_{cut} ≤ 8,45 mm = $d_{cut,max}$ (R 8) or $d_{cut,m}$ = 10,25 mm < d_{cut} ≤ 10,45 mm = $d_{cut,max}$ (R 10) respectively.

4.4.3 Execution of test

The test rig used for the pull-out tests shall provide a continuous slow increase of the load, controlled by a calibrated load cell. The load shall apply perpendicular to the surface of the base material and shall be transmitted to the anchor via a hinge. The reaction forces shall be transmitted into the base material such that possible breakout of the masonry is not restricted. This condition is considered as fulfilled, if the support reaction forces are transmitted either in adjacent masonry units or at a distance of at least 150 mm from the plastic anchors. The load shall be increased continuously in a way that the ultimate load is reached after about 1 minute. The load is measured when the ultimate load (N_1) is achieved.

If no pull-out failure occurs, other test methods are needed, e.g. proof-loading.

4.4.4 Test report

The test report shall include all information necessary to assess the resistance of the tested anchor. It shall be given to the person responsible for the design of the fastening and shall be included in the construction dossier.

The minimum data required are:

- Name of product
- Construction site, owner of building; date and location of the tests, air temperature
- Test rig
- Type of structure to be fixed
- Base material (e.g. strength class)
- Masonry (type of brick, strength class, all dimensions of bricks, mortar group if possible); visual assessment of masonry (flush joints, joint clearance, regularity)
- Plastic anchor and special screw
- value of the cutting diameter of hard metal hammer-drill bits, measured before and after drilling if no new drill bits are used
- Results of tests including the indication of value N_1; mode of failure
- Tests carried out or supervised by …; signature

4.4.5 Evaluation of test results

The characteristic resistance F_{Rk1} is derived from the measured values N_1 as follows

F_{Rk1} = 0,5 · N_1

The characteristic resistance F_{Rk1} has to be equal or smaller than the characteristic resistance F_{Rk} which is given in the European technical approval for similar masonry (bricks or blocks)

N_1 = the mean value of the five smallest measured values at ultimate load

In absence of national regulations the partial safety factors for the resistance of the plastic anchor may be taken as γ_{Mm} = 2,5 for use in masonry, γ_{MAAC} = 2.0 for use in AAC and γ_{Mc} = 1.8 for use in concrete.

5 Indications to the manufacturer

5.1 Responsibility of the manufacturer

It is in the responsibility of the manufacturer to ensure that the information on the specific conditions according to 1 and 2 including Annexes referred to 4 is given to those who are concerned. This information may be made by reproduction of the respective parts of the European technical approval. In addition, all installation data shall be shown clearly on the packaging and/or on an enclosed instruction sheet, preferably using illustrations.

The minimum data required are:

- base material for the intended use,
- ambient temperature of the base material during installation of the anchor,
- drill bit diameter (d_{cut}),
- overall anchor embedment depth in the base material (h_{nom}),
- minimum hole depth (h_0),
- information on the installation procedure,
- identification of the manufacturing batch.

All data shall be presented in a clear and explicit form.

5.2 Packaging, transport and storage

The anchor shall only be packaged and supplied as a complete unit.

The anchor shall be stored under normal climatic conditions in its original light-proof packaging. Before installation, it shall not be extremely dried nor frozen.

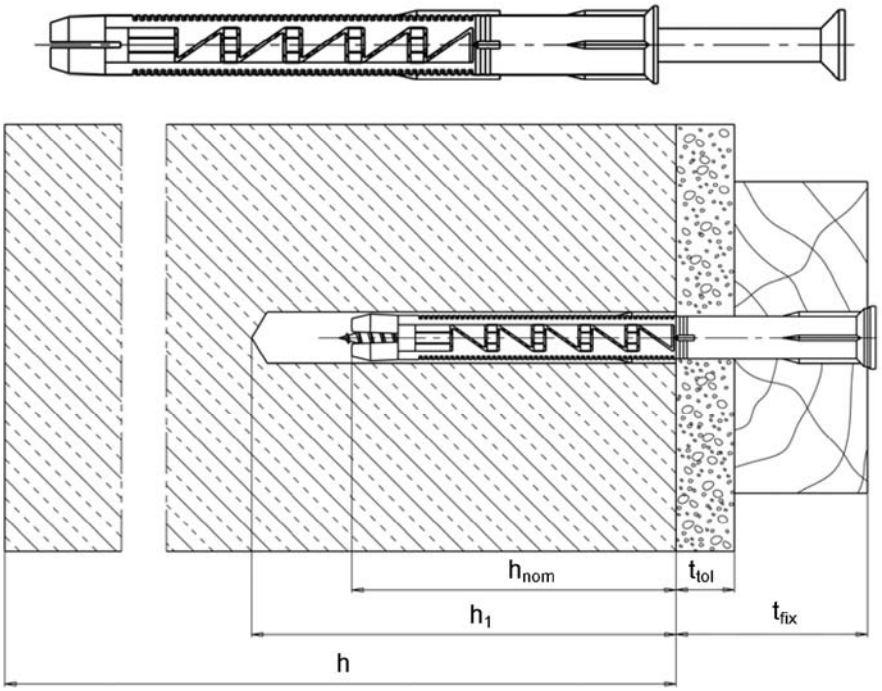
Uwe Bender
Head of Department

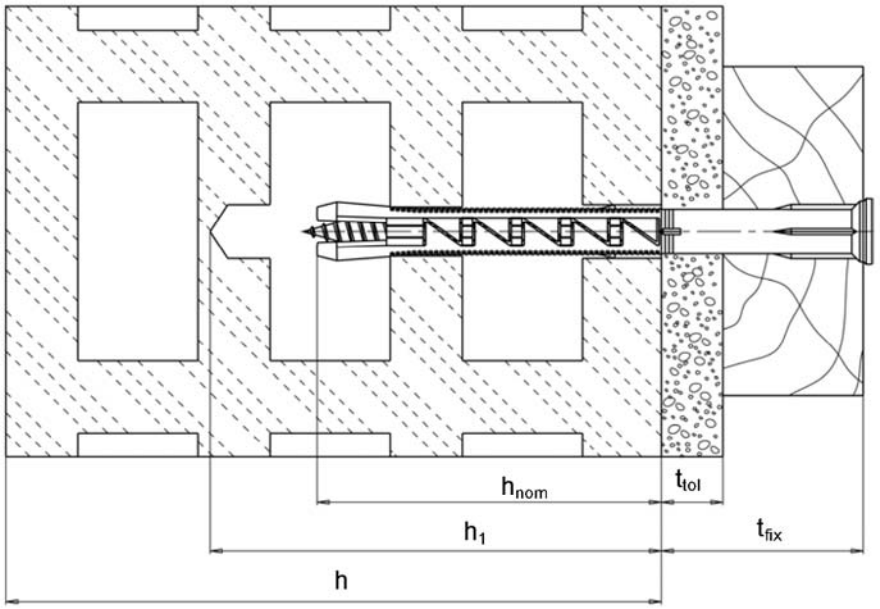
beglaubigt:
Bürger

Deutsches Institut für Bautechnik

DIBt

Plastic Anchor R 10



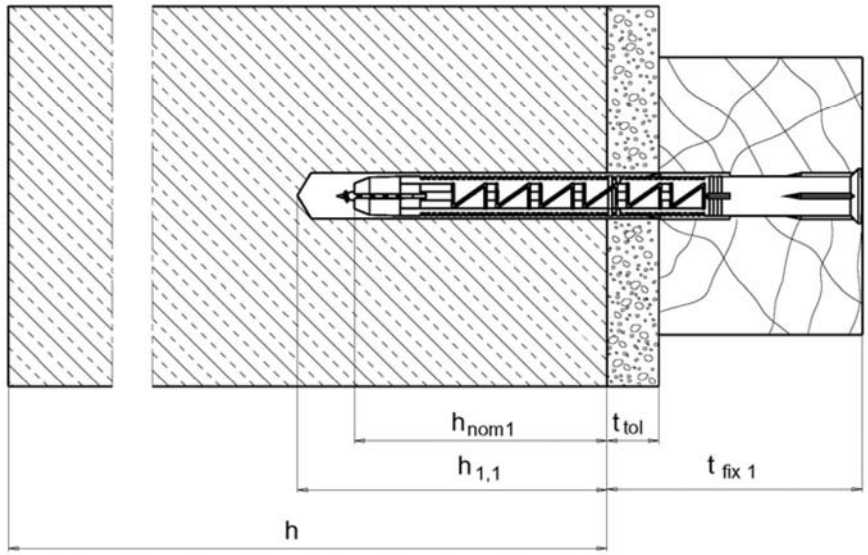


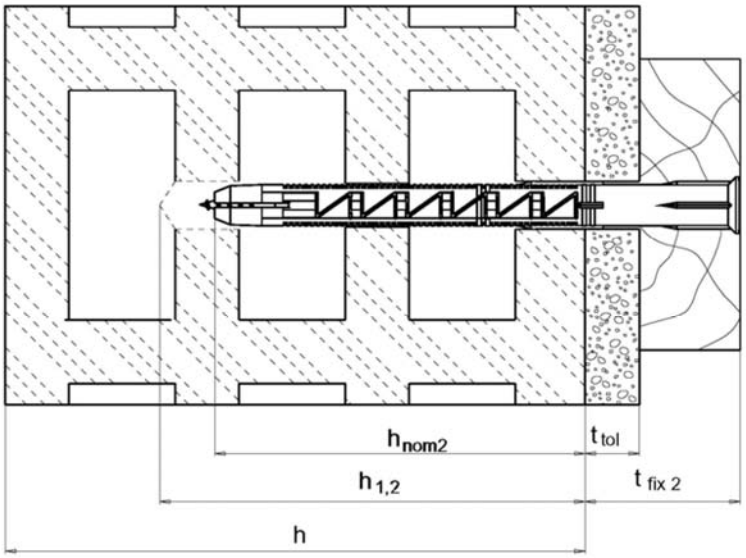
h_{nom}: Overall plastic anchor embedment depth in the base material
h_1: Depth of drill hole to deepest point
h: Thickness of member
t_{fix}: Thickness of fixture
t_{tol}: Thickness of non-load-bearing layer

MKT Plastic Anchor R	Annex 1
Intended use	

Deutsches Institut für Bautechnik DIBt

Plastic Anchor R 8





h_{nom1}: Overall plastic anchor embedment depth in the base material (1)
h_{nom2}: Overall plastic anchor embedment depth in the base material (2)
$h_{1,1}$: Depth of drill hole to deepest point (1)
$h_{1,2}$: Depth of drill hole to deepest point (2)
h: Thickness of member
t_{fix1}: Thickness of fixture (1)
t_{fix2}: Thickness of fixture (2)
t_{tol}: Thickness of non-load-bearing layer

MKT Plastic Anchor R	
Intended use	**Annex 2**

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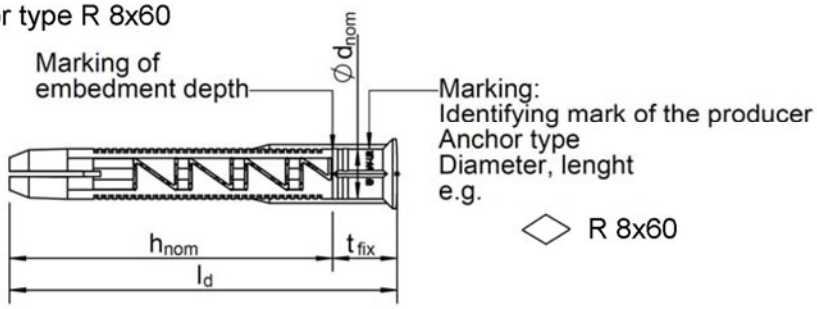
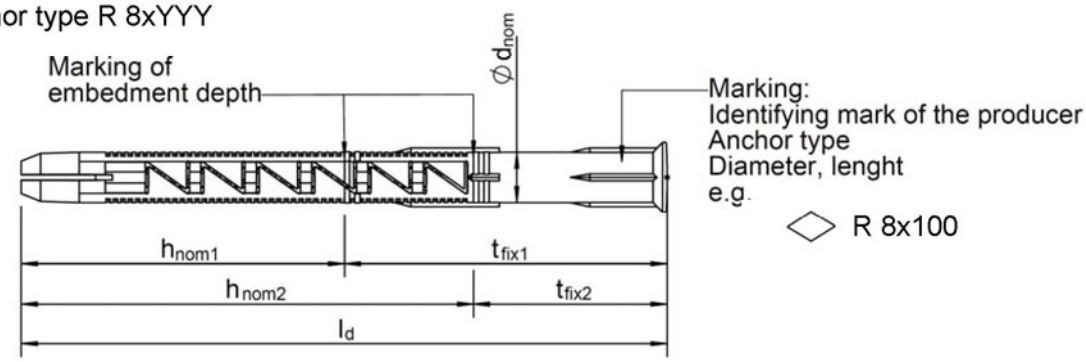
Plastic sleeve

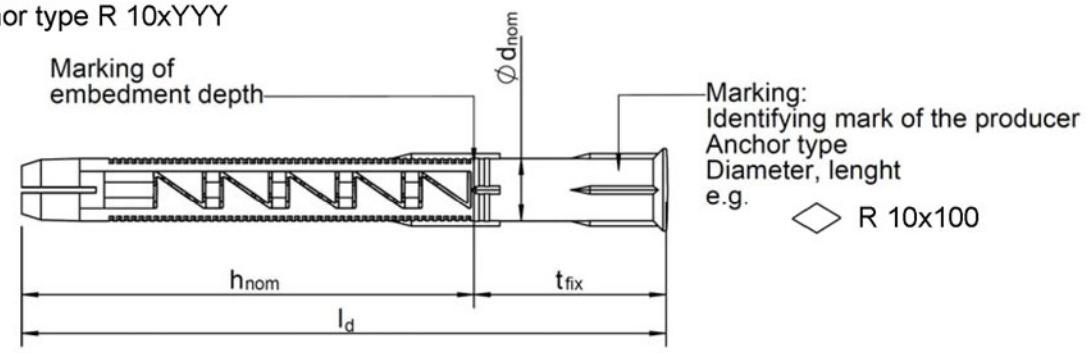
Anchor type R 8x60



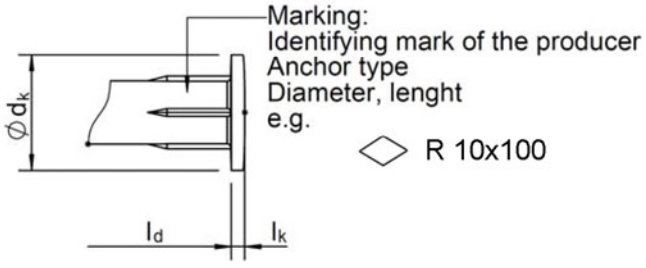
Anchor type R 8xYYY



Anchor type R 10xYYY



Anchor type R F 8 und R F 10



MKT Plastic Anchor R	
Plastic anchor - head versions	**Annex 3**

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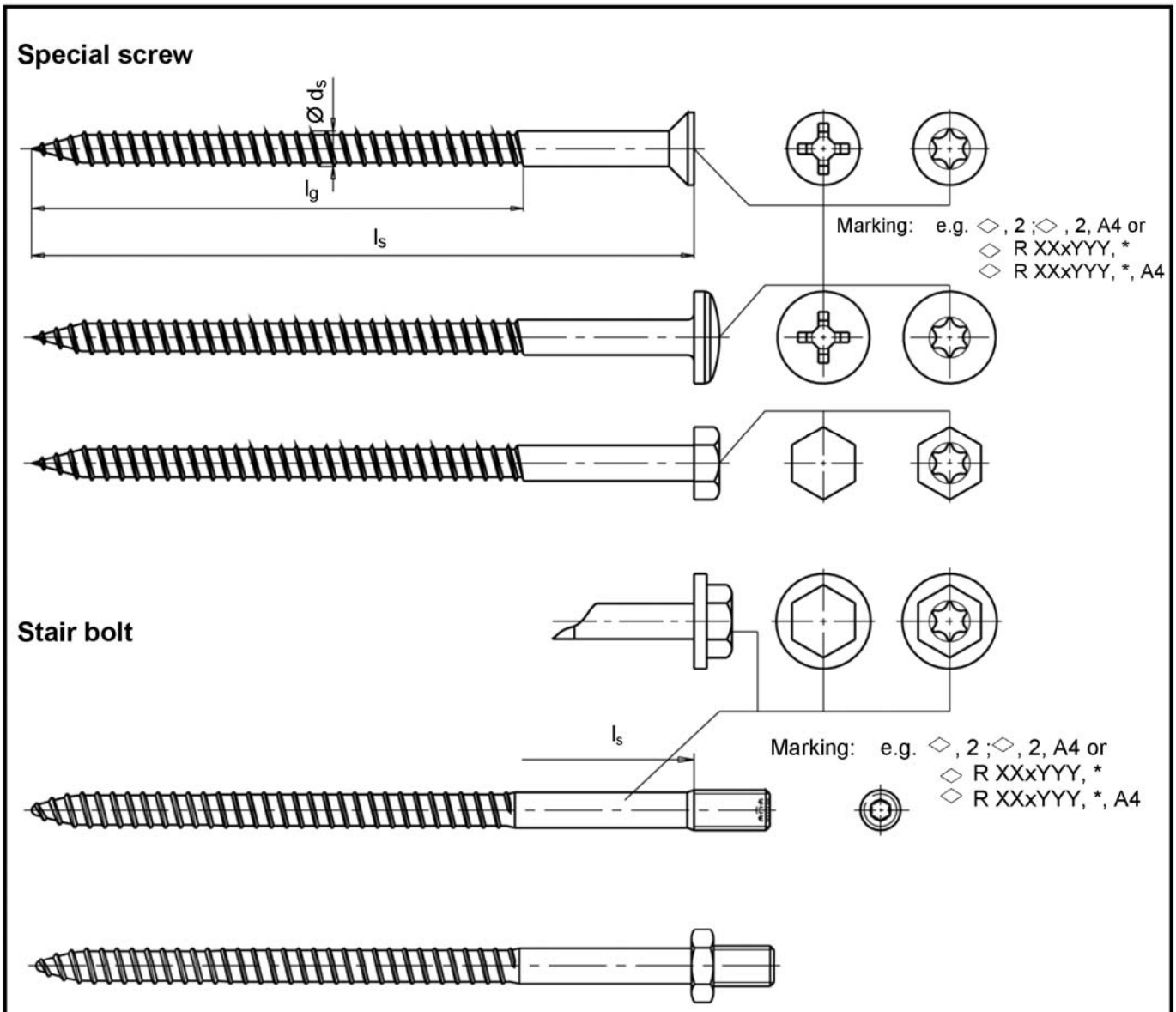

MKT Plastic Anchor R	Annex 4
Special screw - head versions	

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Table 1: Anchor dimensions

Anchor type			**R 8**		**R 10**
Overall plastic anchor embedment depth in the base material	$h_{nom} \geq$	[mm]	50 (h_{nom1})	70 (h_{nom2})	70
Plastic sleeve					
Plastic sleeve diameter	$\varnothing d_{nom}$	[mm]	8		10
Length of plastic sleeve	$l_d \geq$	[mm]	51	71	71
Flat collar diameter	$\varnothing d_k$	[mm]	14		18
Thickness of flat collar	$l_k \geq$	[mm]	1.6		2
Thickness of fixture	$t_{fix} \geq$	[mm]	1		1
Special screw					
Screw diameter	d_s	[mm]	6		7
Length of screw	l_s	[mm]	l_d + 5 mm		l_d + 5 mm
Length of thread	l_g	[mm]	75		75

Table 2: Materials

Designation	**Material**
Plastic sleeve	Polyamid, colour brown
Special screw	Steel acc. to DIN EN ISO 4042, galvanised Stainless steel, 1.4401, 1.4571 or 1.4578

Table 3: Installation parameters

Anchor type			**R 8**		**R 10**
Drill hole diameter	$d_0 =$	[mm]	8		10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45		10.45
Depth of drill hole to deepest point[1)]	$h_1 \geq$	[mm]	60 ($h_{1,1}$)	80 ($h_{1,2}$)	80
Overall plastic anchor embedment depth in the base material[1), 2)]	$h_{nom} \geq$	[mm]	50 (h_{nom1})	70 (h_{nom2})	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5		10.5

1) See Annex 1 and 2

2) For hollow and perforated masonry the influence of $h_{nom} > 70$ mm (R 8 and R 10) has to be detected by job site tests according 4.4.

For anchorages in hollow and perforated masonry with anchor type R 8 (h_{nom1} = 50 mm, h_{nom2} = 70 mm) variable set in the range h_{nom1} = 50 mm $\leq h_{nom} <$ 70 mm = h_{nom2} the characteristic values F_{Rk} for h_{nom1} = 50 mm may be taken without performing additional job site tests (compare Annex 15, 43 and 45).

For anchorages in hollow and perforated masonry with anchor type R 8x60 (h_{nom} = 50 mm) the influence 50 < $h_{nom} \leq$ 59 mm always has to be detected by job site tests.

MKT Plastic Anchor R	
Anchor dimensions; **Materials;** **Installation parameters**	**Annex 5**

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Table 4: Characteristic bending resistance of the special screw

			Galvanised steel		Stainless steel	
			R 8	**R 10**	**R 8**	**R 10**
Characteristic bending resistance	$M_{Rk,s}$	[Nm]	8.8	17.7	10.3	20.6
Partial safety factor	γ_{Ms} [1)]	[mm]	1.25	1.25	1.56	1.56

[1)] In absence of other national regulations

Table 5.1: Base material: Concrete, solid masonry

Base material	**Format**	**Dimensions** [mm]	**Minimum compressive strength** [N/mm²]	**Bulk density class** [kg/dm³]	**Annex**
Concrete					
Concrete ≥ C12/15					**Annex 12**
Solid masonry					
Solid brick Mz acc. to DIN 105-100 EN 771-1	≥ NF	≥ 240x115x71	10 20 28 36	≥ 1.8	**Annex 14** AX
Sand-lime solid brick KS acc. to DIN V 106 EN 771-2	≥ NF	≥ 240x115x71	10 20 28	≥ 2.0	**Annex 41** K
Sand-lime solid brick Silka XL Basic, Sand-lime solid brick Silka XL Plus, acc. to DIN V 106 EN 771-2 Z-17.1-997		≥ 248x175x498	10 20 28	≥ 2.0	**Annex 42** W12
Concrete solid block - Vbn acc. to DIN 18153 EN 771-3	≥ NF	≥ 240x115x71	10 20 28	≥ 2.0	**Annex 48** O
Lightweight concrete solid brick e.g. Bisoclassic V acc. to DIN V 18152-100 EN 771-3 Bisotherm GmbH	≥ NF	≥ 240x115x71	2 4	≥ 0.9	**Annex 49** AI
Lightweight concrete solid brick e.g. BisoBims V acc. to DIN V 18152-100 EN 771-3 Bisotherm GmbH	≥ NF	≥ 240x115x71	2 4	≥ 1.0	**Annex 50** AH
Lightweight concrete solid block – Vbl acc. to DIN V 18152-100, e.g. Liapor Massive Wall Liapor GmbH & Co. KG	≥ 24DF	≥ 500x365x238	2	≥ 0.6	**Annex 51** LAC2

MKT Plastic Anchor R

Characteristic bending resistance
Base material: Concrete and solid masonry
Format, dimensions, minimum compressive strength, Annex

Annex 6

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Table 5.2: Base material: Solid masonry

Base material	Format	Dimensions [mm]	Minimum compressive strength [N/mm²]	Bulk density class [kg/dm³]	Annex
Solid masonry					
Lightweight concrete solid block – Vbl 2 acc. to DIN V 18152-100, Z-17.1-839 e.g. Liapor Compact Liapor GmbH & Co. KG Meier Betonwerke GmbH	≥ 16DF	≥ 498x240x239	2	≥ 0.65	**Annex 52** W5
Concrete solid block – Vbn acc. to DIN 18153, e.g. Liapor Element Wall Liapor GmbH & Co. KG	≥ 12DF	≥ 500x175x238	12	≥ 1.4	**Annex 53** LC16/18
Autoclaved aerated concrete acc. to DIN 4165 EN 771-4		≥ 499x175x249	2 7	≥ 0.3	**Annex 61**
Reinforced components autoclaved aerated concrete DIN 4223 EN 12602			2 - 7	≥ 0.4	**Annex 62**
Gypsum blocks: MultiGips R.max Schallschutzplatte DIN EN 12859		≥ 500x500x100	11.7	≥ 1.2	**Annex 66**

Table 5.3: Base material: Hollow or perforated masonry

Base material	Format	Dimensions [mm]	Minimum compressive strength [N/mm²]	Bulk density class [kg/dm³]	Annex
Hollow or perforated masonry					
Hollow brick HLz acc. to DIN 105-100 EN 771-1 e.g. Wienerberger GmbH e.g. Schlagmann Baustoffwerke GmbH & Co. KG	≥ 2DF	≥ 240x115x113	8 12 20	≥ 1.2	**Annex 15** E = AY
	≥ 12DF	≥ 373x240x238	6 8 10 12	≥ 1.2	**Annex 16** AB
Hollow brick POROTON Planziegel T14 acc. to EN 771-1, Z-17.1-625 Schlagmann Baustoffwerke GmbH & Co. KG	≥ 10DF	≥ 248x300x249	6	≥ 0.7	**Annex 17** AT
Hollow brick POROTON-T8-P **Hollow brick POROTON-T9-P** acc. to T8: EN 771-1; Z-17.1-982 T9: EN 771-1; Z-17.1-674 Wienerberger GmbH Schlagmann Baustoffwerke GmbH & Co. KG	≥ 10DF	≥ 248x300x249	6	≥ 0.6	**Annex 18** W2
Hollow brick POROTON-T8-MW acc. to EN 771-1; Z-17.1-1041 Wienerberger GmbH Schlagmann Baustoffwerke GmbH & Co. KG	≥ 12DF	≥ 248x365x249	6 8	≥ 0.65	**Annex 19** W22
Hollow brick POROTON Planziegel T10 acc. to EN 771-1; Z-17.1-889 Wienerberger GmbH Schlagmann Baustoffwerke GmbH & Co. KG	≥ 10DF	≥ 248x300x249	6	≥ 0.65	**Annex 20** W15

MKT Plastic Anchor R

Base material: Solid and hollow masonry and autoclaved aerated concrete:
Format, dimensions, minimum compressive strength, Annex

Annex 7

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Table 5.4: Base material: Hollow or perforated masonry

Base material	Format	Dimensions [mm]	Minimum compressive strength [N/mm²]	Bulk density class [kg/dm³]	Annex
Hollow or perforated masonry					
Hollow brick POROTON S10 acc. to EN 771-1 Z-17.1-1017 Wienerberger GmbH Schlagmann Baustoffwerke GmbH & Co. KG	≥ 10DF	≥ 248x300x249	6 8 10	≥ 0.75	**Annex 21** W17
Hollow brick POROTON-S11-P 30,0 acc. to EN 771-1 Z-17.1-812 Wienerberger GmbH Schlagmann Baustoffwerke GmbH & Co. KG	≥ 10DF	≥ 248x300x249	8	≥ 0.9	**Annex 22** W10
Hollow brick POROTON-S11-P 36,5 acc. to EN 771-1 Z-17.1-812 Wienerberger GmbH Schlagmann Baustoffwerke GmbH & Co. KG	≥ 12DF	≥ 248x365x249	6	≥ 0.9	**Annex 23** AA
Hollow brick for ceiling DIN 4160-BN 0.8-530-250-210 (system Filigran) acc. to DIN 4160 e.g. Wienerberger GmbH		≥ 530x250x210	4	0.8	**Annex 24** W16
Hollow brick POROTHERM 25-38 N+F acc. to EN 771-1 Wienerberger Ziegelindustrie GmbH; Austria		≥ 375x250x238	6 8 10	≥ 0.8	**Annex 25** P
Hollow brick Blocchi Leggeri EN 771-1 Wienerberger Brunori s.r.l.; Italy		≥ 250x120x330	6	≥ 0.6	**Annex 26** AD
Hollow brick for ceiling Blocchi per solaio a travetti EN 771-1 Wienerberger Tacconi s.r.l.; Italy		≥ 420x120x250	10 14	≥ 0.6	**Annex 27** AC
Hollow brick MURBRIC T20 and R20 EN 771-1 e.g. Wienerberger SAS; France		T20: ≥ 500x200x240 R20: ≥ 500x200x249	6 8 12	≥ 0.7	**Annex 28** AS
Hollow brick POROTHERM T30 and R30 EN 771-1 e.g. Wienerberger SAS; France		T30: ≥ 373x300x249 R30: ≥ 373x300x250	6 8	≥ 0.7	**Annex 29** AG
Hollow brick UNIPOR WS11 CORISO EN 771-1 Z-17.1-1011 UNIPOR Ziegel, Marketing GmbH	≥ 12DF	≥ 247x365x249	10	≥ 0.85	**Annex 30** W7
Hollow brick UNIPOR WS14 **Hollow brick UNIPOR WS12 CORISO** EN 771-1 Z-17.1-883 UNIPOR Ziegel, Marketing GmbH	≥ 10DF	≥ 247x300x249	10 12	≥ 0.8	**Annex 31** AM

MKT Plastic Anchor R

Base material: Hollow masonry:
Format, dimensions, minimum compressive strength, Annex

Annex 8

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Table 5.5: Base material: Hollow or perforated masonry

Base material	Format	Dimensions [mm]	Minimum compressive strength [N/mm²]	Bulk density class [kg/dm³]	Annex
Hollow or perforated masonry					
Hollow brick UNIPOR W14 EN 771-1 Z-17.1-679 Z-17.1-636 UNIPOR Ziegel, Marketing GmbH	≥ 10DF	W14-Plan: ≥ 240x300x249 W14-Block: ≥ 240x300x238	6	≥ 0.7	**Annex 32** AL
Hollow brick Ladrillo P NV R150 EN 771-1 Ceramica La Corona, S.A.; Spain		≥ 276x128x95	12 20 28 36	≥ 1.2	**Annex 33** AN
Hollow brick ThermoPlan MZ8 EN 771-1 Z-17.1-906 Mein Ziegelhaus GmbH & Co. KG	≥ 12DF	≥ 248x365x249	6 8	≥ 0.6	**Annex 34** W3
Hollow brick ThermoPlan MZ10 EN 771-1 Z-17.1-1015 Mein Ziegelhaus GmbH & Co. KG	≥ 10DF	≥ 248x300x249	6 8	≥ 0.75	**Annex 35** W21
Hollow brick ThermoPlan TS² EN 771-1 Z-17.1-993 Mein Ziegelhaus GmbH & Co. KG	≥ 9DF	≥ 373x175x249	6 8 10 12 20	≥ 0,9	**Annex 36** W8
Hollow brick ThermoPlan TS 13 EN 771-1 Z-17.1-914 Mein Ziegelhaus GmbH & Co. KG	≥ 10DF	≥ 248x300x248	8 10	≥ 0,75	**Annex 37** W20
Hollow brick THERMOPOR ISO-PD Plus EN 771-1 Z-17.1-840 Thermopor Ziegel-Kontor Ulm GmbH		≥ 307x240x249	6 8	≥ 0,7	**Annex 38** W14
Hollow brick THERMOPOR TV 7-Plan EN 771-1 Z-17.1-1005 Thermopor Ziegel-Kontor Ulm GmbH	≥ 12DF	≥ 247x365x249	8	≥ 0,5	**Annex 39** W18
Hollow brick THERMOPOR TV 9-Plan EN 771-1 Z-17.1-1006 Thermopor Ziegel-Kontor Ulm GmbH	≥ 10DF	≥ 247x300x249	4 6 8	≥ 0,65	**Annex 40** W19
Sand-lime perforated brick KS L acc. to DIN V 106 EN 771-2	≥ 2DF	≥ 240x115x113	6 8 10 12 16	≥ 1.6	**Annex 43** L = Y
Sand-lime perforated brick KS L acc. to DIN V 106 EN 771-2 e.g. Xella Deutschland GmbH	≥ 8DF	≥ 249x240x238	6 8 10 12 16	≥ 1.4	**Annex 44** AK

MKT Plastic Anchor R

Base material: Hollow masonry:
Format, dimensions, minimum compressive strength, Annex

Annex 9

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Table 5.6: Base material: Hollow or perforated masonry

Base material	Format	Dimensions [mm]	Minimum compressive strength [N/mm²]	Bulk density class [kg/dm³]	Annex
Hollow or perforated masonry					
Sand-lime perforated brick KS L acc. to DIN V 106 EN 771-2	≥ 12DF	≥ 373x240x238	6 8 10 12 16	≥ 1.4	**Annex 45** C
Sand-lime perforated brick KS L acc. to DIN V 106 EN 771-2 e.g. Xella Deutschland GmbH	≥ 9DF	≥ 373x175x249	6 8 10 12 20	≥ 1.4	**Annex 46** W9
Sand-lime perforated brick KS-NT acc. to P-1109/884/07-MPA BS BMO KS-Vertrieb Bielefeld-Münster-Osnabrück GmbH & Co. KG	≥ 4DF	≥ 249x115x248	12 20	≥ 1.2	**Annex 47** W11
Hollow brick lightweight concrete 1K Hbl DIN V 18151-100 EN 771-3 e.g. Stark Betonwerk GmbH & Co. KG	≥ 12DF	≥ 490x175x238	2 4	≥ 1.2	**Annex 54** AU(8)/ H(10)
Hollow brick lightweight concrete 3K Hbl DIN V 18151-100 EN 771-3 e.g. Heinzmann Baustoffe GmbH, Liapor GmbH & Co. KG	≥ 16DF	≥ 498x240x238	2 4 6	≥ 0.7	**Annex 55** R3K
Hollow brick lightweight concrete Liapor-Super-K EN 771-3 Z-17.1-501 Liapor GmbH & Co. KG	≥ 16DF	≥ 495x240x238	2 4	≥ 0.8	**Annex 56** S7K
Concrete hollow brick 2K Hbn DIN 18153 e.g. Stark Betonwerk GmbH & Co. KG	≥ 12DF	≥ 375x240x238	2 4 6 8	≥ 1.2	**Annex 57** W6
Hollow brick lightweight concrete Gisoton Wärme Dämm Block Z-17.1-873 Gisoton Wandsysteme, Baustoffwerke Gebhart & Söhne GmbH & Co.		≥ 375x300x248	4	≥ 0.8	**Annex 58** AO
Hollow brick lightweight concrete Gisoton Thermo Schall Z-15.2-18 Gisoton Wandsysteme, Baustoffwerke Gebhart & Söhne GmbH & Co.		≥ 498x300x248	2	≥ 0.45	**Annex 59** AP
Hollow brick lightweight concrete Bisomark[TEC] Z-17.1-1026 Bisotherm GmbH	≥ 20DF	≥ 497x300x249	1.6 2 4	≥ 0.4	**Annex 60** W23

MKT Plastic Anchor R

Base material: Hollow or perforated masonry
Format, dimensions, minimum compressive strength, Annex

Annex 10

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Table 5.7: Base material: Precast prestressed hollow core elements

Base material	Format	Dimensions [mm]	Minimum compressive strength [N/mm²]	Bulk density class [kg/dm³]	Annex
Precast prestressed hollow core elements VMM-L SCD 20 DIN EN 1168, Z-15.10-276 e.g. Ketonia GmbH		≥ 1200x800x200	C45/55	≥ 2.4	**Annex 63**
Precast prestressed hollow core elements VMM-L EPD 32 DIN EN 1168, Z-15.10-276 e.g. Ketonia GmbH		≥ 1200x800x320	C45/55	≥ 2.4	**Annex 64**
Precast prestressed hollow core elements VMM-L SCD 16 DIN EN 1168, Z-15.10-276 e.g. Ketonia GmbH		≥ 1200x400x160	C45/55	≥ 2.4	**Annex 65**

MKT Plastic Anchor R

Base material: Precast prestressed hollow core elements
Format, dimensions, minimum compressive strength, Annex

Annex 11

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Table 6: Characteristic resistance for use in concrete

Anchor type				Galvanised steel			Stainless steel		
Failure of expansion element (special screw)				**R 8**		**R 10**	**R 8**		**R 10**
Overall plastic anchor embedment depth		h_{nom}	[mm]	**50**	**70**	**70**	**50**	**70**	**70**
Characteristic tension resistance		$N_{Rk,s}$	[kN]	11.8	11.8	18.7	13.7	13.7	21.8
Partial safety factor		γ_{Ms} [1)]	[-]	1.5	1.5	1.5	1.87	1.87	1.87
Characteristic shear resistance		$V_{Rk,s}$	[kN]	5.9	5.9	9.4	6.9	6.9	10.9
Partial safety factor		γ_{Ms} [1)]	[-]	1.25	1.25	1.25	1.56	1.56	1.56
Pull-out failure (plastic sleeve)									
Concrete ≥ C16/20									
Characteristic resistance	30°C [2)] / 50°C [3)]	$N_{Rk,p}$	[kN]	4.0	6.0	4.0	4.0	6.0	4.0
	50°C [2)] / 80°C [3)]	$N_{Rk,p}$	[kN]	3.5	5.0	3.5	3.5	5.0	3.5
Partial safety factor		γ_{Mc} [1)]	[-]	1.8	1.8	1.8	1.8	1.8	1.8
Concrete C12/15									
Characteristic resistance	30°C [2)] / 50°C [3)]	$N_{Rk,p}$	[kN]	3.0	4.0	2.5	3.0	4.0	2.5
	50°C [2)] / 80°C [3)]	$N_{Rk,p}$	[kN]	2.5	3.5	2.5	2.5	3.5	2.5
Partial safety factor		γ_{Mc} [1)]	[-]	1.8	1.8	1.8	1.8	1.8	1.8
Concrete cone failure and concrete edge failure for single anchor and anchor group									
Tension load [4)]									
$N_{Rk,c} = 7.2 \cdot \sqrt{f_{ck,cube}} \cdot h_{ef}^{1.5} \cdot \frac{c}{c_{cr,N}} = N_{Rk,p} \cdot \frac{c}{c_{cr,N}}$ with: $h_{ef}^{1.5} = \frac{N_{Rk,p}}{7.2 \cdot \sqrt{f_{ck,cube}}}$; $\frac{c}{c_{cr,N}} \le 1$									
Shear load [4)]									
$V_{Rk,c} = 0.45 \cdot \sqrt{d_{nom}} \cdot (h_{nom} / d_{nom})^{0.2} \cdot \sqrt{f_{ck,cube}} \cdot c_1^{1.5} \cdot \left(\frac{c_2}{1.5c_1}\right)^{0.5} \cdot \left(\frac{h}{1.5c_1}\right)^{0.5}$ with: $\left(\frac{c_2}{1.5 \cdot c_1}\right)^{0.5} \le 1$; $\left(\frac{h}{1.5 \cdot c_1}\right)^{0.5} \le 1$									
c_1 edge distance closest to the edge in loading direction									
c_2 edge distance perpendicular to direction 1									
$f_{ck,cube}$ nominal characteristic concrete compression strength (based on cubes), values for C50/60 at maximum									
Partial safety factor		γ_{Mc} [1)]	[-]	1.8					

1) In absence of other national regulations
2) Maximum long term temperature
3) Maximum short term temperature
4) The design method according to ETAG 020, Annex C is to be used

MKT Plastic Anchor R

Characteristic resistance for use in concrete

Annex 12

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Table 7: Displacements[1] under tension and shear loading in concrete, masonry and AAC

			Tension load			Shear load		
		h_{nom} [mm]	$F^{2)}$ [kN]	δ_{N0} [mm]	$\delta_{N\infty}$ [mm]	$F^{2)}$ [kN]	δ_{V0} [mm]	$\delta_{V\infty}$ [mm]
R 8	Concrete ≥ C16/20	50	1,8	0,26	0,52	1,8	0,96	1,44
R 8	Concrete ≥ C16/20	70	2,4	0,35	0,7	2,4	0,93	1,86
R 10	Concrete ≥ C16/20	70	1,8	0,16	0,32	1,8	1,18	1,76

1) Valid for all ranges of temperatures
2) Intermediate values by linear interpolation

Table 8: Minimum thickness of member, edge distance and anchor spacing in concrete

R 8: Fixing points with spacing a ≤ 100 mm are considered as a group with a max. characteristic resistance $N_{Rk,p}$ acc. to Table 6. For a > 100 mm, the anchors are considered as single anchors, each with a characteristic resistance $N_{Rk,p}$ acc. to Table 6.

R 10: Fixing points with spacing a ≤ 75 mm are considered as a group with a max. characteristic resistance $N_{Rk,p}$ acc. to Table 6. For a > 75 mm, the anchors are considered as single anchors, each with a characteristic resistance $N_{Rk,p}$ acc. to Table 6.

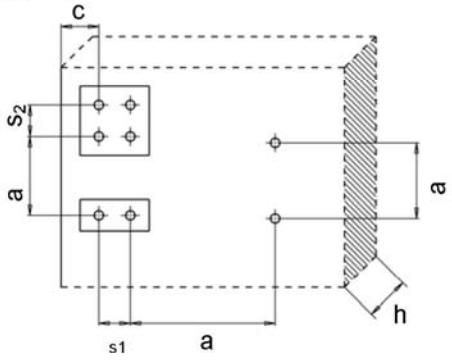
		h_{nom} [mm]	h_{min} [mm]	$c_{cr,N}$ [mm]	c_{min} [mm]	s_{min} [mm]
R 8	Concrete ≥ C16/20	= 50	100	40	40	40
	Concrete C12/15	= 50	100	60	60	60
	Concrete ≥ C16/20	> 50	100	50	50	50
	Concrete C12/15	> 50	100	70	70	70
R 10	Concrete ≥ C16/20	≥ 70	100	100	70	50
	Concrete C12/15	≥ 70	100	140	100	70

Table 9: Minimum thickness of member, edge distance and anchor spacing in masonry and AAC

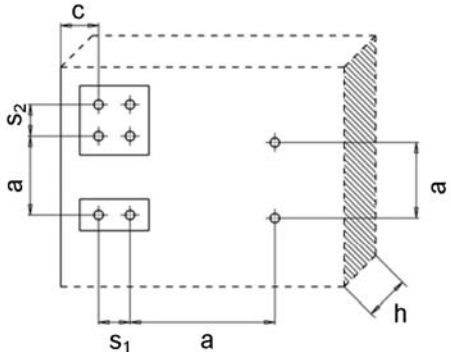
		Masonry		Autoclaved aerated concrete		(Prefabricated) Reinforced AAC
		R 8	**R 10**	**R 8**	**R 10**	**R 10**
Minimum thickness of member	h_{min} [mm]	100 [1)]	100 [1)]	175	175	175
Single anchor						
Minimum allowable spacing	a_{min} [mm]	250	250	250	250	600
Minimum allowable edge distance	c_{min} [mm]	100 [1)]	100 [1)]	60	80	150
Anchor group						
Spacing perpendicular to free edge	$s_{1,min}$ [mm]	100	100	80	100	100
Spacing parallel to free edge	$s_{2,min}$ [mm]	100	100	80	100	100
Minimum edge distance	c_{min} [mm]	100 [1)]	100 [1)]	80	100	150

1) h_{min} and c_{min} depend on the brick size and/or on the brick: See the following annexes 14 to 66!

Concrete: (Table 8)



Masonry and AAC: (Table 9)



MKT Plastic Anchor R

Displacements;
Minimum thickness of member, edge distance and anchor spacing

Annex 13

Deutsches Institut für Bautechnik DIBt

Base material solid masonry: Solid brick Mz, NF

Table 10.1.1: Brick data

Description of brick	AX		**Mz**
Type of brick			Solid brick Mz
Bulk density	$\rho \geq$	[kg/dm³]	1.8
Standard, approval			DIN 105-100; EN 771-1
Format (dimensions)		[mm]	≥ NF (≥ 240x115x71)
Minimum thickness of member	h_{min} =	[mm]	115

Table 10.1.2: Installation parameters

Anchor size			**R 8**		**R 10**
Drill hole diameter	d_0 =	[mm]	8		10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45		10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	60	80	80
Drill method		[-]	Hammer drilling		Hammer drilling
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	50	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5		10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100		100

Table 10.1.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			**R 8**		**R 10**
Overall plastic anchor embedment depth	hnom ≥	[mm]	**50**	**70**	**70**
Solid brick Mz, $f_b \geq 10$ N/mm²	30°C[3] / 50°C[4]	[kN]	1.2	1.5	2.0
Characteristic resistance F_{Rk}	50°C[3] / 80°C[4]	[kN]	1.2	1.5	1.5
Solid brick Mz, $f_b \geq 20$ N/mm²	30°C[3] / 50°C[4]	[kN]	2.0	2.0	3.0
Characteristic resistance F_{Rk}	50°C[3] / 80°C[4]	[kN]	2.0	2.0	2.0
Solid brick Mz, $f_b \geq 28$ N/mm²	30°C[3] / 50°C[4]	[kN]	2.5	3.0	4.0
Characteristic resistance F_{Rk}	50°C[3] / 80°C[4]	[kN]	2.5	3.0	3.0
Solid brick Mz, $f_b \geq 36$ N/mm²	30°C[3] / 50°C[4]	[kN]	3.5	4.0	5.0
Characteristic resistance F_{Rk}	50°C[3] / 80°C[4]	[kN]	3.5	4.0	4.0
Partial safety factor	γ_{Mm} [2]	[-]	2.5		2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Solid masonry: Solid brick Mz, NF
Brick data, installation parameters, characteristic resistance

Annex 14

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick HLz, 2DF

Table 10.2.1: Brick data

Description of brick	E = AY		HLz
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	1.2
Standard, approval			DIN 105-100; EN 771-1
Producer of brick			e.g. Wienerberger GmbH
Format (dimensions)		[mm]	≥ 2DF (≥ 240x115x113)
Minimum thickness of member	h_{min} =	[mm]	115

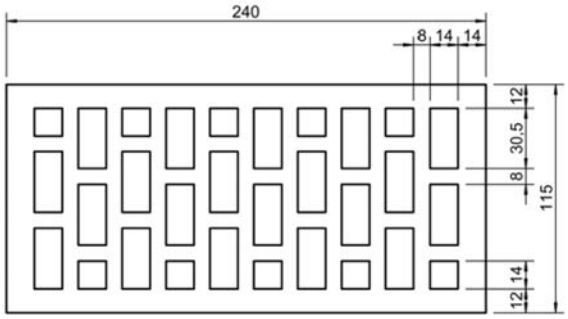


Table 10.2.2: Installation parameters

Anchor size			R 8		R 10
Drill hole diameter	d_0 =	[mm]	8		10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45		10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	60	80	80
Drill method		[-]	Rotary drilling		Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	50	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5		10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100		100

Table 10.2.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size				R 8		R 10
Overall plastic anchor embedment depth		h_{nom}	[mm]	**≥ 50** [5]	**= 70**	**= 70**
Hollow brick HLz, fb ≥ 8 N/mm²	30°C [3] / 50°C [4]		[kN]	0.6	0.9	0.9
Characteristic resistance F_{Rk}	50°C [3] / 80°C [4]		[kN]	0.5	0.75	0.75
Hollow brick HLz, fb ≥ 12 N/mm²	30°C [3] / 50°C [4]		[kN]	0.9	1.5	1.5
Characteristic resistance F_{Rk}	50°C [3] / 80°C [4]		[kN]	0.75	0.9	1.2
Hollow brick HLz, fb ≥ 20 N/mm²	30°C [3] / 50°C [4]		[kN]	1.5	2.5	2.5
Characteristic resistance F_{Rk}	50°C [3] / 80°C [4]		[kN]	1.2	1.5	2.0
Partial safety factor		γ_{Mm} [2]	[-]	2.5		2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.

2) In absence of other national regulations

3) Maximum long term temperature

4) Maximum short term temperature

5) The given values FRk in this column are valid for the embedment depth range 50 mm ≤ h_{nom} < 70 mm (see Annex 5, Table 3). For Plastic anchors R 8 set variable in this range no additional job site tests have necessarily to be performed.

MKT Plastic Anchor R

Hollow brick HLz, 2DF
Brick data, installation parameters, characteristic resistance

Annex 15

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick HLz, 12DF

Table 10.3.1: Brick data

Description of brick	AB		HLz
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	1.2
Standard, approval			DIN 105-100; EN 771-1
Producer of brick			e.g. Schlagmann Baustoffwerke GmbH & Co. KG
Format (dimensions)		[mm]	≥ 12DF (≥ 373x240x238)
Minimum thickness of member	h_{min} =	[mm]	240

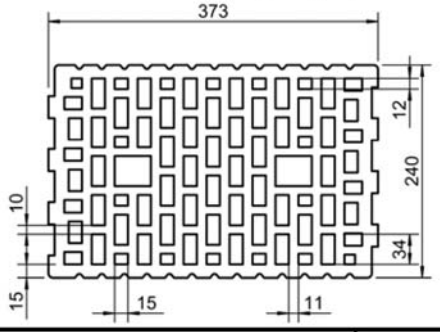


Table 10.3.2: Installation parameters

Anchor size			R 8	R 10
Drill hole diameter	d_0	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	45	100

Table 10.3.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 8	R 10
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**	**70**
Hollow brick HLz, fb ≥ 6 N/mm²	30°C [3] / 50°C [4]	[kN]	0.6	0.9
Characteristic resistance F_{Rk}	50°C [3] / 80°C [4]	[kN]	0.6	0.75
Hollow brick HLz, fb ≥ 8 N/mm²	30°C [3] / 50°C [4]	[kN]	0.9	1.2
Characteristic resistance F_{Rk}	50°C [3] / 80°C [4]	[kN]	0.9	0.9
Hollow brick HLz, fb ≥ 10 N/mm²	30°C [3] / 50°C [4]	[kN]	1.2	1.5
Characteristic resistance F_{Rk}	50°C [3] / 80°C [4]	[kN]	1.2	1.2
Hollow brick HLz, fb ≥ 12 N/mm²	30°C [3] / 50°C [4]	[kN]	1.2	2.0
Characteristic resistance F_{Rk}	50°C [3] / 80°C [4]	[kN]	1.2	1.5
Partial safety factor	γ_{Mm} [2]	[-]	2.5	2.5

[1] Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.

[2] In absence of other national regulations

[3] Maximum long term temperature

[4] Maximum short term temperature

MKT Plastic Anchor R

Hollow brick HLz, 12 DF
Brick data, installation parameters, characteristic resistance

Annex 16

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick POROTON Planziegel T14, 10DF

Table 10.4.1: Brick data

Description of brick AT		**POROTON Planziegel T14**
Type of brick		Hollow brick
Bulk density $\rho \geq$	[kg/dm³]	0.7
Standard, approval		EN 771-1; Z-17.1-625
Producer of brick		Schlagmann Baustoffwerke GmbH & Co. KG Ziegeleistraße 1 D-84367 Zeilarn
Format (dimensions)	[mm]	≥ 10DF (≥ 248x300x249)
Minimum thickness of member h_{min} =	[mm]	300

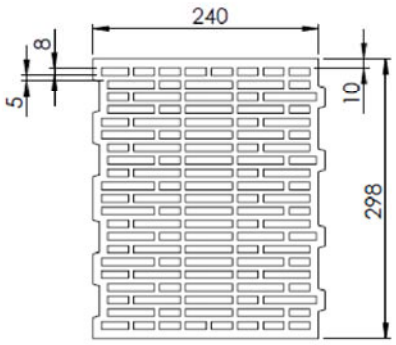


Table 10.4.2: Installation parameters

Anchor size			**R 8**
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.4.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			**R 8**
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Hollow brick POROTON Planziegel T14, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.4
	50°C[3] / 80°C[4]	[kN]	0.4
Partial safety factor	γ_{Mm} [2]	[-]	2.5

[1] Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.

[2] In absence of other national regulations

[3] Maximum long term temperature

[4] Maximum short term temperature

MKT Plastic Anchor R	
Hollow brick POROTON Planziegel T14, 10DF Brick data, installation parameters, characteristic resistance	**Annex 17**

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick POROTON-T8-30,0-P and POROTON-T9-30,0-P

Table 10.5.1: Brick data

Description of brick			POROTON-T8-30,0-P and POROTON-T9-30,0-P
Type of brick	w2		Hollow brick POROTON-T8-P, -T9-P
Bulk density	$\rho \geq$	[kg/dm³]	0.6
Standard, approval			T8: EN 771-1; Z-17.1-982 T9: EN 771-1; Z-17.1-674
Producer of brick			Wienerberger GmbH Oldenburger Allee 26 D-30659 Hannover Schlagmann Baustoffwerke GmbH & Co. KG Ziegeleistraße 1 D-84367 Zeilarn
Dimensions		[mm]	≥ 10DF (≥ 248x300x249)
Minimum thickness of member	h_{min} =	[mm]	300

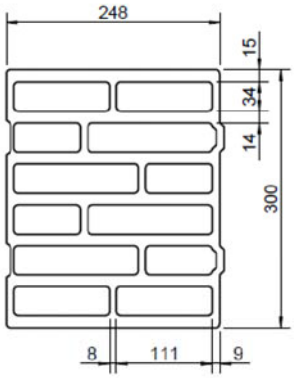


Table 10.5.2: Installation parameters

Anchor size			R 8	R 10
Drill hole diameter	d_0	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table 10.5.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size				R 8	R 10
Overall plastic anchor embedment depth		h_{nom} =	[mm]	**70**	**70**
POROTON-T8-30,0-P and POROTON-T9-30,0-P, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]		[kN]	0.9	1.5
	50°C [3] / 80°C [4]		[kN]	0.9	0.9
Partial safety factor		γ_{Mm} [2]	[-]	2.5	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Hollow brick: POROTON-T8-30,0-P, POROTON-T9-30,0-P
Brick data, installation parameters, characteristic resistance

Annex 18

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick POROTON-T8-36,5-MW

Table 10.6.1: Brick data

Description of brick	W22		POROTON-T8-36,5-MW
Type of brick			Hollow brick POROTON-T8-36,5-MW
Bulk density	$\rho \geq$	[kg/dm³]	0.65
Standard, approval			EN 771-1; Z-17.1-1041
Producer of brick			Wienerberger GmbH Oldenburger Allee 26 D-30659 Hannover
Dimensions		[mm]	≥ 12DF (≥ 248x365x249)
Minimum thickness of member	h_{min} =	[mm]	365

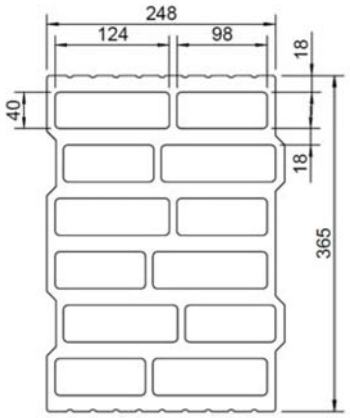


Table 10.6.2: Installation parameters

Anchor size			R 8	R 10
Drill hole diameter	d_0	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table 10.6.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 8	R 10
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**	**70**
POROTON-T8-36,5-MW, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.2	0.9
	50°C[3] / 80°C[4]	[kN]	0.9	1.2
POROTON-T8-36,5-MW, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.5	0.9
	50°C[3] / 80°C[4]	[kN]	1.5	1.2
Partial safety factor	γ_{Mm} [2]	[-]	2.5	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Hollow brick: POROTON-T8-36,5-MW
Brick data, installation parameters, characteristic resistance

Annex 19

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick POROTON Planziegel T10

Table 10.7.1: Brick data

Description of brick	W15		POROTON Planziegel T10
Type of brick			Hollow brick POROTON Planziegel T10
Bulk density	$\rho \geq$	[kg/dm³]	0.65
Standard, approval			T10: EN 771-1; Z-17.1-889
Producer of brick			Wienerberger GmbH Oldenburger Allee 26 D-30659 Hannover Schlagmann Baustoffwerke GmbH & Co. KG Ziegeleistraße 1 D-84367 Zeilarn
Dimensions		[mm]	≥ 10DF (≥ 248x300x249)
Minimum thickness of member	h_{min} =	[mm]	300

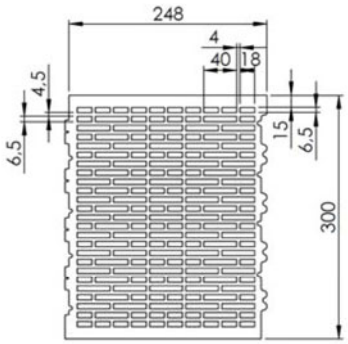


Table 10.7.2: Installation parameters

Anchor size			R 8
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.7.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 8
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
POROTON Planziegel T10-30, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	0.5
	50°C [3] / 80°C [4]	[kN]	0.5
Partial safety factor	γ_{Mm} [2]	[-]	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Hollow brick: POROTON Planziegel T10
Brick data, installation parameters, characteristic resistance

Annex 20

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick POROTON S10

Table 10.8.1: Brick data

Description of brick	W17		POROTON S10
Type of brick			Hollow brick POROTON S10
Bulk density	$\rho \geq$	[kg/dm³]	0.75
Standard, approval			S10: EN 771-1; Z-17.1-1017
Producer of brick			Wienerberger GmbH Oldenburger Allee 26 D-30659 Hannover Schlagmann Baustoffwerke GmbH & Co. KG Ziegeleistraße 1 D-84367 Zeilarn
Dimensions		[mm]	≥ 10DF (≥ 248x300x249)
Minimum thickness of member	h_{min} =	[mm]	300

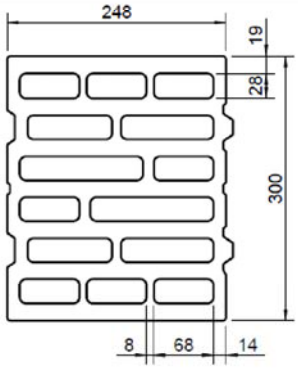


Table 10.8.2: Installation parameters

Anchor size			R 8	
Drill hole diameter	d_0	[mm]	8	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	
Drill method		[-]	Rotary drilling	
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	
Minimum allowable edge distance	$c_{min} \geq$	[mm]	50	100

Table 10.8.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 8	
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	
POROTON S10-30, $f_b \geq 6$ N/mm²	30°C[3] / 50°C[4]	[kN]	0.6	0.6
Characteristic resistance F_{Rk}	50°C[3] / 80°C[4]	[kN]	0.6	0.6
POROTON S10-30, $f_b \geq 8$ N/mm²	30°C[3] / 50°C[4]	[kN]	0.75	0.75
Characteristic resistance F_{Rk}	50°C[3] / 80°C[4]	[kN]	0.75	0.75
POROTON S10-30, $f_b \geq 10$ N/mm²	30°C[3] / 50°C[4]	[kN]	0.9	1.5
Characteristic resistance F_{Rk}	50°C[3] / 80°C[4]	[kN]	0.9	1.5
Partial safety factor	γ_{Mm} [2]	[-]	2.5	

[1] Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.

[2] In absence of other national regulations

[3] Maximum long term temperature

[4] Maximum short term temperature

MKT Plastic Anchor R

Hollow brick: POROTON S10
Brick data, installation parameters, characteristic resistance

Annex 21

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick POROTON-S11-30,0-P

Table 10.9.1: Brick data

Description of brick W10			**Hollow brick POROTON-S11-30,0-P**
Type of brick			Hollow brick S11-30,0-P
Bulk density	$\rho \geq$	[kg/dm³]	0.9
Standard, approval			EN 771-1; Z-17.1-812
Producer of brick			Wienerberger GmbH Oldenburger Allee 26 D-30659 Hannover Schlagmann Baustoffwerke GmbH & Co. KG Ziegeleistraße 1 D-84367 Zeilarn
Dimensions		[mm]	≥ 10DF (≥ 248x300x249)
Minimum thickness of member	h_{min} =	[mm]	300

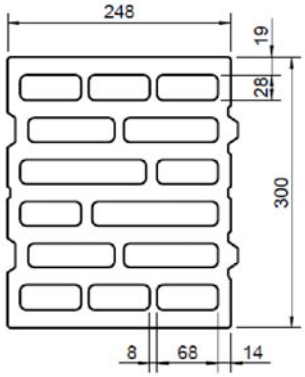


Table 10.9.2: Installation parameters

Anchor size			**R 8**	**R 10**
Drill hole diameter	d_0	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table 10.9.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			**R 8**	**R 10**
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**	**70**
POROTON-S11-30,0-P $f_b \geq 8$ N/mm²	30°C [3] / 50°C [4]	[kN]	2.0	1.5
Characteristic resistance F_{Rk}	50°C [3] / 80°C [4]	[kN]	2.0	1.5
Partial safety factor	γ_{Mm} [2]	[-]	2.5	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Hollow brick: POROTON-S11-30,0-P
Brick data, installation parameters, characteristic resistance

Annex 22

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick POROTON-S11-36,5-P

Table 10.10.1: Brick data

Description of brick	AA		Hollow brick POROTON-S11-36,5-P
Type of brick			Hollow brick S11-36,5-P
Bulk density	$\rho \geq$	[kg/dm³]	0.9
Standard, approval			EN 771-1; Z-17.1-812
Producer of brick			Wienerberger GmbH Oldenburger Allee 26 D-30659 Hannover Schlagmann Baustoffwerke GmbH & Co. KG Ziegeleistraße 1 D-84367 Zeilarn
Dimensions		[mm]	≥ 248x365x249
Minimum thickness of member	h_{min} =	[mm]	365

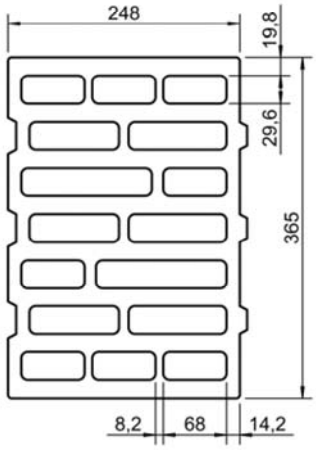


Table 10.10.2: Installation parameters

Anchor size			R 8	R 10
Drill hole diameter	d_0	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table 10.10.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 8	R 10
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**	**70**
POROTON-S11-36,5-P $f_b \geq 6$ N/mm²	30°C [3] / 50°C [4]	[kN]	2.0	2.0
Characteristic resistance F_{Rk}	50°C [3] / 80°C [4]	[kN]	2.0	1.5
Partial safety factor	γ_{Mm} [2]	[-]	2.5	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Hollow brick: POROTON-S11-36,5-P
Brick data, installation parameters, characteristic resistance

Annex 23

Deutsches Institut für Bautechnik DIBt

Base material hollow brick for ceiling DIN 4160-BN 0,8-530-250-210 (system Filigran)

Table 10.11.1: Brick data

Description of brick W16			Brick for ceiling (system Filigran)
Type of brick			Brick for ceiling
Bulk density	$\rho \geq$	[kg/dm³]	0.8
Standard, approval			DIN 4160
Producer of brick			Wienerberger GmbH Oldenburger Allee 26 D-30659 Hannover
Dimensions		[mm]	≥ 530x250x210
Minimum thickness of member	h_{min} =	[mm]	210

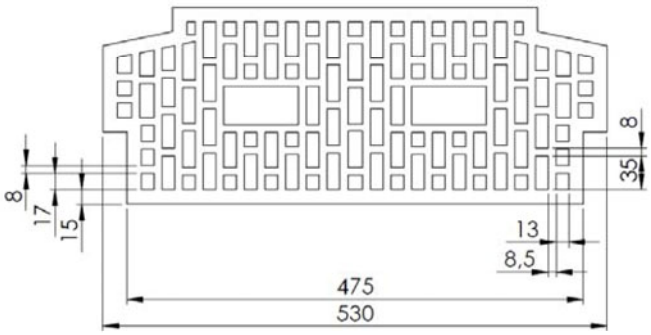


Table 10.11.2: Installation parameters

Anchor size			R 8
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.11.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 8
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Brick for ceiling (system Filigran), $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.9
	50°C[3] / 80°C[4]	[kN]	0.9
Partial safety factor	γ_{Mm} [2]	[-]	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Brick for ceiling (system Filigran)
Brick data, installation parameters, characteristic resistance

Annex 24

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick POROTHERM 25-38 N+F

Table 10.12.1: Brick data

Brick data	P		POROTHERM 25-38 N+F
Type of brick			Hollow brick POROTHERM 25-38 N+F
Bulk density	$\rho \geq$	[kg/dm³]	0.8
Standard, approval			EN 771-1
Producer of brick			Wienerberger Ziegelindustrie GmbH Hauptstraße A-2332 Hennersdorf, Austria
Dimensions		[mm]	≥ 375x250x238
Minimum thickness of member	h_{min} =	[mm]	250

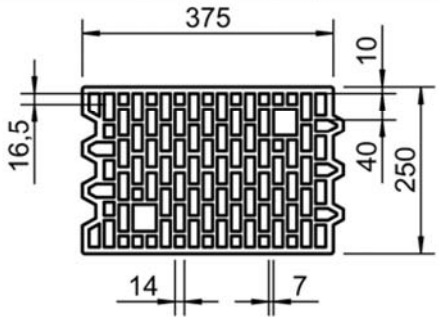


Table 10.12.2: Installation parameters

Anchor size			R 8	R 10
Drill hole diameter	d_0	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table 10.12.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size				R 8	R 10
Overall plastic anchor embedment depth		h_{nom} =	[mm]	**70**	**70**
Hollow brick POROTHERM 25-38 N+F, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]		[kN]	0.75	0.9
	50°C [3] / 80°C [4]		[kN]	0.6	0.6
Hollow brick POROTHERM 25-38 N+F, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]		[kN]	0.9	1.2
	50°C [3] / 80°C [4]		[kN]	0.9	0.9
Hollow brick POROTHERM 25-38 N+F, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]		[kN]	1.2	1.5
	50°C [3] / 80°C [4]		[kN]	0.9	1.2
Partial safety factor		γ_{Mm} [2]	[-]	2.5	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Hollow brick: POROTHERM 25-38 N+F
Brick data, installation parameters, characteristic resistance

Annex 25

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick Blocchi Leggeri

Table 10.13.1: Brick data

Description of brick	AD		Blocchi Leggeri
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.6
Standard, approval			EN 771-1
Producer of brick			Wienerberger Brunori s.r.l. Via Ringhiera 1 I-40020 Mordano (Bologna) fraz. Bubano Italy
Dimensions		[mm]	≥ 250x120x330
Minimum thickness of member	h_{min} =	[mm]	120

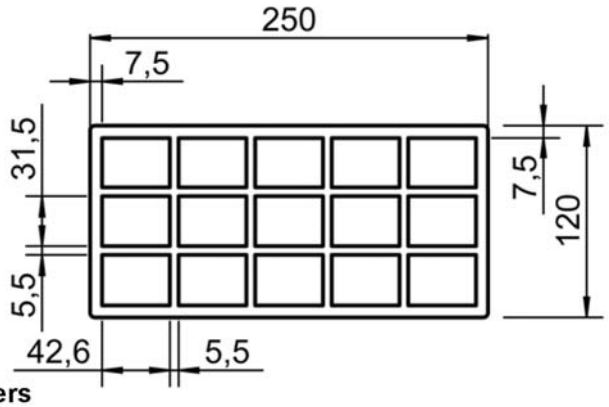


Table 10.13.2: Installation parameters

Anchor size			R 8	R 10
Drill hole diameter	d_0	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table 10.13.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size				R 8	R 10
Overall plastic anchor embedment depth		h_{nom} =	[mm]	**70**	**70**
Hollow brick Blocchi Leggeri, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]		[kN]	0.9	0.3
	50°C [3] / 80°C [4]		[kN]	0.6	0.3
Partial safety factor		γ_{Mm} [2]	[-]	2.5	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R	
Hollow brick Blocchi Leggeri Brick data, installation parameters, characteristic resistance	**Annex 26**

Deutsches Institut für Bautechnik DIBt

Hollow brick for ceiling: Blocchi per solaio a travetti

Table 10.14.1: Brick data

Description of brick	AC		Blocchi per solaio a travetti
Type of brick			Hollow brick for ceiling
Bulk density	$\rho \geq$	[kg/dm³]	0.6
Standard, approval			EN 771-1
Producer of brick			Wienerberger Tacconi s.r.l. Via Ringhiera 1 I-40020 Mordano (Bologna) fraz. Bubano Italy, Werk Terni
Dimensions		[mm]	≥ 420x120x250
Minimum thickness of member	h_{min} =	[mm]	120

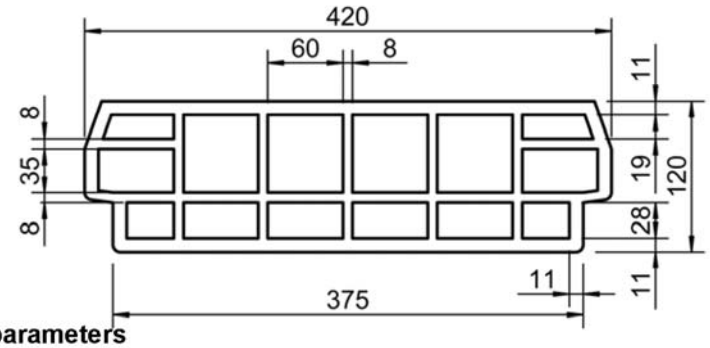


Table 10.14.2: Installation parameters

Anchor size			R 8	R 10
Drill hole diameter	d_0	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table 10.14.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 8	R 10
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**	**70**
Hollow brick for ceiling Blocchi per solaio a travetti, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.2	0.9
	50°C[3] / 80°C[4]	[kN]	0.9	0.6
Hollow brick for ceiling Blocchi per solaio a travetti, $f_b \geq 14$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.5	1.2
	50°C[3] / 80°C[4]	[kN]	1.2	0.9
Partial safety factor	γ_{Mm} [2]	[-]	2.5	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Hollow brick for ceiling Blocchi per solaio a travetti
Brick data, installation parameters, characteristic resistance

Annex 27

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick POROTHERM MURBRIC T20 and R20

Table 10.15.1: Brick data

Brick data	AS		POROTHERM MURBRIC T20 and R20
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.7
Standard, approval			EN 771-1
Producer of brick			e.g. Wienerberger SAS 8, Rue du Canal - Achenheim 67087 Strasbourg, France
Dimensions		[mm]	T20: 500x200x240 R20: 500x200x249
Minimum thickness of member	h_{min} =	[mm]	200

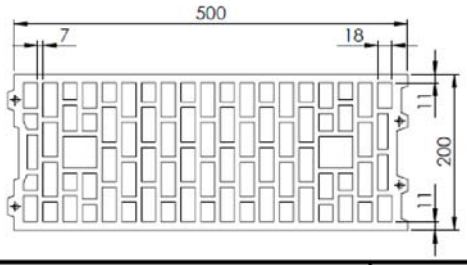


Table 10.15.2: Installation parameters

Anchor size			R 8
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.15.3: Characteristic resistance F_{Rk}[1] in [kN] for single anchor

Anchor size			R 8
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Hollow brick POROTHERM MURBRIC T20 and R20, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.3
	50°C[3] / 80°C[4]	[kN]	0.3
Hollow brick POROTHERM MURBRIC T20 and R20, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.4
	50°C[3] / 80°C[4]	[kN]	0.4
Hollow brick POROTHERM MURBRIC T20 and R20, $f_b \geq 12$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.6
	50°C[3] / 80°C[4]	[kN]	0.6
Partial safety factor	γ_{Mm}[2]	[-]	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Hollow brick: POROTHERM MURBRIC T20 and R20
Brick data, installation parameters, characteristic resistance

Annex 28

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick POROTHERM T30, POROTHERM R30

Table 10.16.1: Brick data

Brick data	AG		POROTHERM T30 and R30
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.7
Standard, approval			EN 771-1
Producer of brick			Wienerberger SAS 8, Rue du Canal - Achenheim 67087 Strasbourg France
Dimensions		[mm]	T30: 373x300x249 R30: 373x300x250
Minimum thickness of member	h_{min} =	[mm]	300

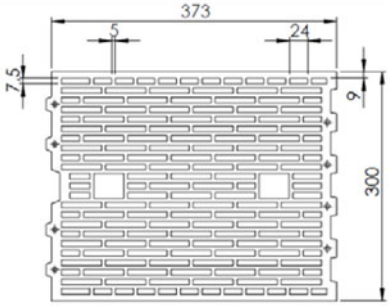


Table 10.16.2: Installation parameters

Anchor size			R 8
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.16.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size				R 8
Overall plastic anchor embedment depth		h_{nom} =	[mm]	**70**
Hollow brick POROTHERM R30, Hollow brick POROTHERM T30, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]		[kN]	0.4
	50°C [3] / 80°C [4]		[kN]	0.3
Hollow brick POROTHERM R30, Hollow brick POROTHERM T30, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]		[kN]	0.5
	50°C [3] / 80°C [4]		[kN]	0.4
Partial safety factor		γ_{Mm} [2]	[-]	2.5

[1] Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.

[2] In absence of other national regulations

[3] Maximum long term temperature

[4] Maximum short term temperature

MKT Plastic Anchor R

Hollow brick: POROTHERM R30 and T30
Brick data, installation parameters, characteristic resistance

Annex 29

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick UNIPOR WS11 CORISO

Table 10.17.1: Brick data

Brick data			UNIPOR WS11 CORISO
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.85
Standard, approval			EN 771-1, Z-17.1-1011, DIN V 105-2
Producer of brick			UNIPOR Ziegel Marketing GmbH Landsberger Straße 392 D-81241 München
Dimensions		[mm]	12DF (≥ 247x365x249)
Minimum thickness of member	h_{min} =	[mm]	365

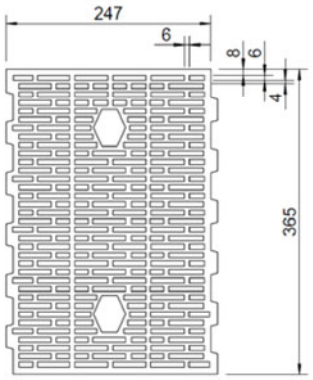


Table 10.17.2: Installation parameters

Anchor size			R 8
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.17.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 8
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Hollow brick UNIPOR WS11 CORISO, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	0.9
	50°C [3] / 80°C [4]	[kN]	0.75
Partial safety factor	γ_{Mm} [2]	[-]	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Hollow brick: UNIPOR WS11 CORISO
Brick data, installation parameters, characteristic resistance

Annex 30

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick UNIPOR WS14 and UNIPOR WS12 CORISO

Table 10.18.1: Brick data

Brick data	AM		**UNIPOR WS14 and UNIPOR WS12 CORISO**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.8
Standard, approval			EN 771-1, Z-17.1-883, DIN V 105-2
Producer of brick			UNIPOR Ziegel Marketing GmbH Landsberger Straße 392 D-81241 München
Dimensions		[mm]	10DF (≥ 247x300x249)
Minimum thickness of member	h_{min} =	[mm]	300

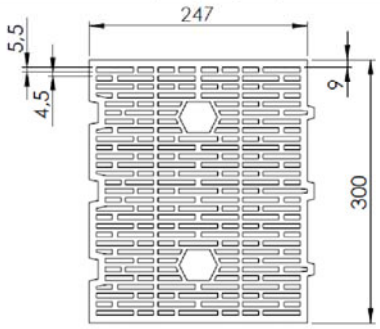


Table 10.18.2: Installation parameters

Anchor size			**R 8**
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.18.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			**R 8**
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Hollow brick UNIPOR WS14 and UNIPOR WS12 CORISO, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	0.6
	50°C [3] / 80°C [4]	[kN]	0.6
Hollow brick UNIPOR WS14 and UNIPOR WS12 CORISO, $f_b \geq 12$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	0.75
	50°C [3] / 80°C [4]	[kN]	0.75
Partial safety factor	γ_{Mm} [2]	[-]	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Hollow brick: UNIPOR WS14 and UNIPOR WS12 CORISO
Brick data, installation parameters, characteristic resistance

Annex 31

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick UNIPOR W14

Table 10.19.1: Brick data

Brick data	AL		UNIPOR W14
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.7
Standard, approval			W14-Plan: EN 771-1, Z-17.1-679, DIN V 105-2 W14-Block: EN 771-1, Z-17.1-636, DIN V 105-2
Producer of brick			UNIPOR Ziegel Marketing GmbH Landsberger Straße 392 D-81241 München
Dimensions		[mm]	W14-Plan: 10DF (≥ 240x300x249) W14-Block: 10DF (≥ 240x300x238)
Minimum thickness of member	h_{min} =	[mm]	300

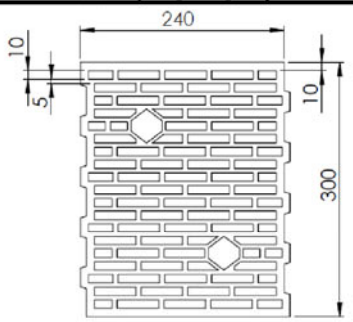


Table 10.19.2: Installation parameters

Anchor size			R 8
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.19.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 8
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Hollow brick UNIPOR W14, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.4
	50°C[3] / 80°C[4]	[kN]	0.4
Partial safety factor	γ_{Mm} [2]	[-]	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Hollow brick: UNIPOR W14
Brick data, installation parameters, characteristic resistance

Annex 32

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick Ladrillo P NV R150

Table 10.20.1: Brick data

Brick data	AN		Hollow brick Ladrillo P NV R150
Type of brick			Hollow brick Ladrillo P NV R150
Bulk density	$\rho \geq$	[kg/dm³]	1.2
Standard, approval			EN 771-1
Producer of brick			Ceramica La Corona, S.A. Carreta de Caldes, km 8, 9 08420 Canovelles, Spain
Dimensions		[mm]	≥ 276x128x95
Minimum thickness of member	h_{min} =	[mm]	128

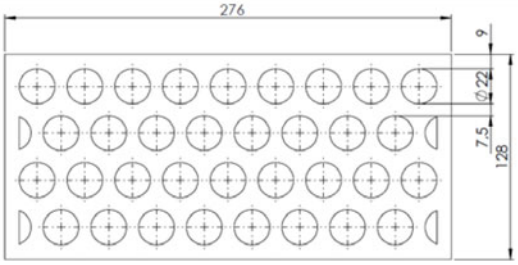


Table 10.20.2: Installation parameters

Anchor size			R 8
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.20.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 8
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Hollow brick Ladrillo P NV R150, $f_b \geq 12$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.6
	50°C[3] / 80°C[4]	[kN]	0.5
Hollow brick Ladrillo P NV R150, $f_b \geq 20$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.2
	50°C[3] / 80°C[4]	[kN]	0.9
Hollow brick Ladrillo P NV R150, $f_b \geq 28$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.5
	50°C[3] / 80°C[4]	[kN]	1.2
Hollow brick Ladrillo P NV R150, $f_b \geq 36$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	2.0
	50°C[3] / 80°C[4]	[kN]	1.5
Partial safety factor	γ_{Mm} [2]	[-]	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Hollow brick: Ladrillo P NV R150
Brick data, installation parameters, characteristic resistance

Annex 33

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick ThermoPlan MZ8

Table 10.21.1: Brick data

Brick data			**ThermoPlan MZ8**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.6
Standard, approval			EN 771-1, Z-17.1-906
Producer of brick			Mein Ziegelhaus GmbH & Co. KG Märkerstraße 44 D-63755 Alzenau
Dimensions		[mm]	≥ 12DF (≥ 248x365x249)
Minimum thickness of member	h_{min} =	[mm]	365

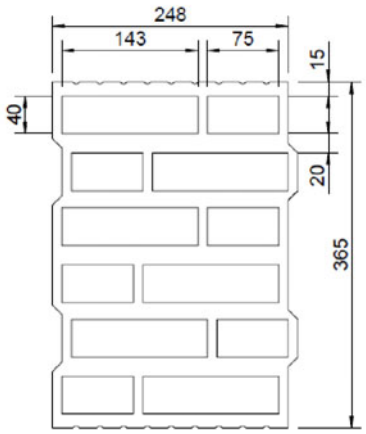


Table 10.21.2: Installation parameters

Anchor size			**R 8**
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.21.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			**R 8**
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Hollow brick ThermoPlan MZ8, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	0.9
	50°C [3] / 80°C [4]	[kN]	0.75
Hollow brick ThermoPlan MZ8, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	1.2
	50°C [3] / 80°C [4]	[kN]	0.9
Partial safety factor	γ_{Mm} [2]	[-]	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Hollow brick: ThermoPlan MZ8
Brick data, installation parameters, characteristic resistance

Annex 34

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick ThermoPlan MZ10

Table 10.22.1: Brick data

Brick data	W21		ThermoPlan MZ10
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.75
Standard, approval			EN 771-1, Z-17.1-1015
Producer of brick			Mein Ziegelhaus GmbH & Co. KG Märkerstraße 44 D-63755 Alzenau
Dimensions		[mm]	≥ 10DF (≥ 248x300x249)
Minimum thickness of member	h_{min} =	[mm]	300

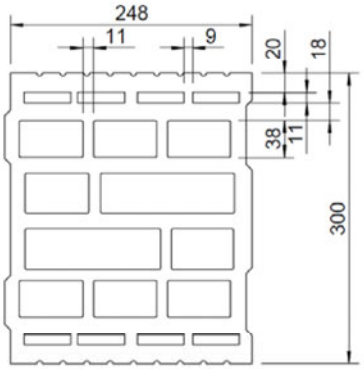


Table 10.22.2: Installation parameters

Anchor size			R 8
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.22.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size				R 8
Overall plastic anchor embedment depth		h_{nom} =	[mm]	**70**
Hollow brick ThermoPlan MZ10, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]		[kN]	2,0
	50°C[3] / 80°C[4]		[kN]	1.5
Partial safety factor		γ_{Mm} [2]	[-]	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Hollow brick: ThermoPlan MZ10
Brick data, installation parameters, characteristic resistance

Annex 35

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick ThermoPlan TS²

Table 10.23.1: Brick data

Brick data	W8		ThermoPlan TS²
Type of brick			Hollow brick
Bulk density	ρ ≥	[kg/dm³]	0.9
Standard, approval			EN 771-1, Z-17.1-993
Producer of brick			Mein Ziegelhaus GmbH & Co. KG Märkerstraße 44 D-63755 Alzenau
Dimensions		[mm]	≥ 9DF (≥ 373x175x249)
Minimum thickness of member	h_{min} =	[mm]	175

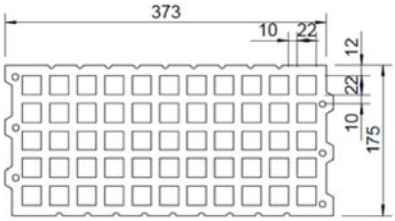


Table 10.23.2: Installation parameters

Anchor size			R 8
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.23.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 8
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Hollow brick ThermoPlan TS², $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.6
	50°C[3] / 80°C[4]	[kN]	0.4
Hollow brick ThermoPlan TS², $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.75
	50°C[3] / 80°C[4]	[kN]	0.6
Hollow brick ThermoPlan TS², $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.9
	50°C[3] / 80°C[4]	[kN]	0.75
Hollow brick ThermoPlan TS², $f_b \geq 12$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.2
	50°C[3] / 80°C[4]	[kN]	0.9
Hollow brick ThermoPlan TS², $f_b \geq 20$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	2.0
	50°C[3] / 80°C[4]	[kN]	1.5
Partial safety factor	γ_M[2]	[-]	2.5

[1] Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
[2] In absence of other national regulations
[3] Maximum long term temperature
[4] Maximum short term temperature

MKT Plastic Anchor R

Hollow brick: ThermoPlan TS²
Brick data, installation parameters, characteristic resistance

Annex 36

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick ThermoPlan TS 13

Table 10.24.1: Brick data

Brick data	W20		ThermoPlan TS 13
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.75
Standard, approval			EN 771-1, Z-17.1-914
Producer of brick			Mein Ziegelhaus GmbH & Co. KG Märkerstraße 44 D-63755 Alzenau
Dimensions		[mm]	≥ 10DF (≥ 248x300x248)
Minimum thickness of member	hmin =	[mm]	300

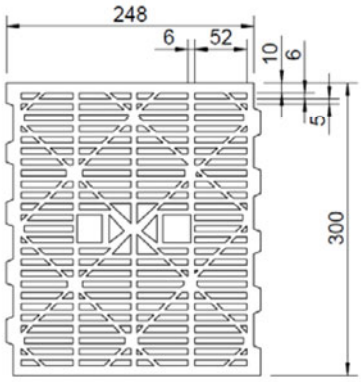


Table 10.24.2: Installation parameters

Anchor size			R 8
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.24.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 8
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Hollow brick ThermoPlan TS 13, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.6
	50°C[3] / 80°C[4]	[kN]	0.6
Hollow brick ThermoPlan TS 13, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.75
	50°C[3] / 80°C[4]	[kN]	0.75
Partial safety factor	γ_{Mm} [2]	[-]	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R	
Hollow brick: ThermoPlan TS 13 Brick data, installation parameters, characteristic resistance	**Annex 37**

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick THERMOPOR ISO-PD Plus Objektziegel

Table 10.25.1: Brick data

Brick data	W14		THERMOPOR ISO-PD Plus
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.7
Standard, approval			EN 771-1, Z-17.1-840
Producer of brick			Thermopor Ziegel-Kontor Ulm GmbH Olgastraße 94 D-89073 Ulm
Dimensions		[mm]	≥ 307x240x249
Minimum thickness of member	hmin =	[mm]	240

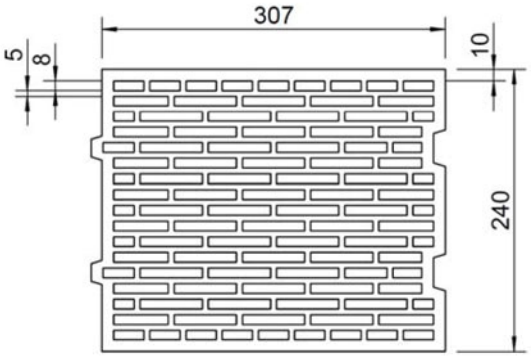


Table 10.25.2: Installation parameters

Anchor size			R 8
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.25.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 8
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
THERMOPOR ISO-PD Plus Objektziegel, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.5
	50°C[3] / 80°C[4]	[kN]	0.4
THERMOPOR ISO-PD Plus Objektziegel, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.6
	50°C[3] / 80°C[4]	[kN]	0.6
Partial safety factor	γ_{Mm} [2]	[-]	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Hollow brick: THERMOPOR ISO-PD Plus, Objektziegel
Brick data, installation parameters, characteristic resistance

Annex 38

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick THERMOPOR TV 7-Plan

Table 10.26.1: Brick data

Brick data	W18		THERMOPOR TV 7-Plan
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.5
Standard, approval			EN 771-1, Z-17.1-1005
Producer of brick			Thermopor Ziegel-Kontor Ulm GmbH Olgastraße 94 D-89073 Ulm
Dimensions		[mm]	≥247x365x249
Minimum thickness of member	h_{min} =	[mm]	365

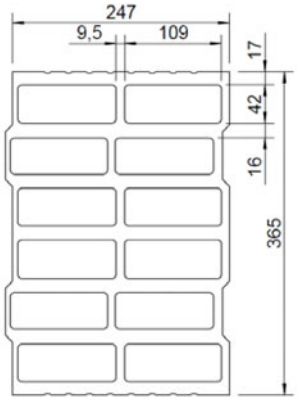


Table 10.26.2: Installation parameters

Anchor size			R 8
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.26.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 8
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Hollow brick THERMOPOR TV 7-Plan, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	0.9
	50°C [3] / 80°C [4]	[kN]	0.9
Partial safety factor	γ_{Mm} [2]	[-]	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing smin according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Hollow brick: THERMOPOR TV 7-Plan
Brick data, installation parameters, characteristic resistance

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Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick THERMOPOR TV 9-Plan

Table 10.27.1: Brick data

Brick data	W19		THERMOPOR TV 9-Plan
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.65
Standard, approval			EN 771-1, Z-17.1-1006
Producer of brick			Thermopor Ziegel-Kontor Ulm GmbH Olgastraße 94 D-89073 Ulm
Dimensions		[mm]	≥247x300x249
Minimum thickness of member	h_{min} =	[mm]	300

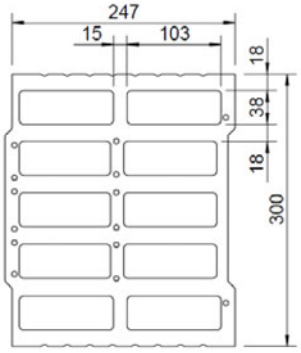

Table 10.27.2: Installation parameters

Anchor size			R 8
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.27.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 8
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Hollow brick THERMOPOR TV 9-Plan, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.75
	50°C[3] / 80°C[4]	[kN]	0.75
Hollow brick THERMOPOR TV 9-Plan, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.9
	50°C[3] / 80°C[4]	[kN]	0.9
Hollow brick THERMOPOR TV 9-Plan, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.5
	50°C[3] / 80°C[4]	[kN]	1.5
Partial safety factor	γ_{Mm} [2]	[-]	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Hollow brick: THERMOPOR TV 9-Plan
Brick data, installation parameters, characteristic resistance

Annex 40

Deutsches Institut für Bautechnik DIBt

Base material solid masonry, sand-lime solid brick KS, NF

Table 10.28.1: Brick data

Description of brick		[-]	**KS**
Type of brick			Sand-lime solid brick
Bulk density	$\rho \geq$	[kg/dm³]	2.0
Standard, approval			DIN V 106; EN 771-2
Producer of brick			-
Format (Dimensions)		[mm]	≥ NF (≥ 240x115x71)
Minimum thickness of member	h_{min} =	[mm]	115

Table 10.28.2: Installation parameters

Anchor size			**R 8**		**R 10**
Drill hole diameter	d_0	[mm]	8		10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45		10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	60	80	80
Drill method		[-]	Hammer drilling		Hammer drilling
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	50	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5		10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100		100

Table 10.28.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			**R 8**		**R 10**
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	**50**	**70**	**70**
Sand-lime solid brick KS, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.5	1.5	2.0
	50°C[3] / 80°C[4]	[kN]	1.5	1.5	1.5
Sand-lime solid brick KS, $f_b \geq 20$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	2.5	2.5	3.0
	50°C[3] / 80°C[4]	[kN]	2.0	2.5	2.5
Sand-lime solid brick KS, $f_b \geq 28$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	3.5	3.5	4.5
	50°C[3] / 80°C[4]	[kN]	3.0	3.5	3.5
Partial safety factor	γ_{Mm} [2]	[-]	2.5		2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R	
Sand-lime solid brick KS, NF Brick data, installation parameters, characteristic resistance	**Annex 41**

Deutsches Institut für Bautechnik DIBt

Base material solid masonry, sand-lime solid brick Silka XL Basic, Silka XL Plus

Table 10.29.1: Brick data

Description of brick	W12		Silka XL Basic, Silka XL Plus
Type of brick			Sand-lime solid brick
Bulk density	$\rho \geq$	[kg/dm³]	2.0
Standard, approval			DIN V 106; EN 771-2, Z-17.1-997
Producer of brick			Xella Deutschland GmbH Dr.-Hammacher-Str. 49 D-47119 Duisburg
Format (Dimensions)		[mm]	≥ 248x175x498
Minimum thickness of member	h_{min} =	[mm]	175

Table 10.29.2: Installation parameters

Anchor size			R 8	R 10
Drill hole diameter	d_0	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Hammer drilling	Hammer drilling
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	50	50

Table 10.29.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size				R 8	R 10
Overall plastic anchor embedment depth		$h_{nom} \geq$	[mm]	**70**	**70**
Sand-lime solid brick Silka XL Basic, Silka XL Plus, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]		[kN]	1.5	2.5
	50°C [3] / 80°C [4]		[kN]	1.5	2.5
Sand-lime solid brick Silka XL Basic, Silka XL Plus, $f_b \geq 20$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]		[kN]	2.5	3.5
	50°C [3] / 80°C [4]		[kN]	2.5	3.5
Sand-lime solid brick Silka XL Basic, Silka XL Plus, $f_b \geq 28$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]		[kN]	3.5	4.5
	50°C [3] / 80°C [4]		[kN]	3.5	3.5
Partial safety factor		γ_{Mm} [2]	[-]	2.5	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Sand-lime solid brick Silka XL Basic, Silka XL Plus
Brick data, installation parameters, characteristic resistance

Annex 42

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry, sand-lime perforated brick KS L, 2DF

Table 10.30.1: Brick data

Description of brick	L = Y		KS L
Type of brick			Sand-lime perforated brick
Bulk density	$\rho \geq$	[kg/dm³]	1.6
Standard, approval			DIN V 106; EN 771-2
Producer of brick			-
Format (Dimensions)		[mm]	≥ 2DF (≥ 240x115x113)
Minimum thickness of member	h_{min} =	[mm]	115

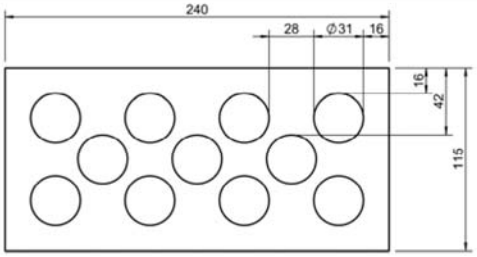

Table 10.30.2: Installation parameters

Anchor size			R 8		R 10
Drill hole diameter	d_0	[mm]	8		10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45		10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	60	80	80
Drill method		[-]	Rotary drilling		Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	50	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5		10.5

Table 10.30.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			R 8		R 10
Overall plastic anchor embedment depth	h_{nom}	[mm]	**≥ 50**[5)]	**= 70**	**= 70**
Sand-lime perforated brick KS L, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.6	1.2	0.9
	50°C[3)] / 80°C[4)]	[kN]	0.5	1.2	0.9
Sand-lime perforated brick KS L, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.9	1.5	1.2
	50°C[3)] / 80°C[4)]	[kN]	0.6	1.5	1.2
Sand-lime perforated brick KS L, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.9	2.0	1.5
	50°C[3)] / 80°C[4)]	[kN]	0.9	2.0	1.5
Sand-lime perforated brick KS L, $f_b \geq 12$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	1.2	2.5	2.0
	50°C[3)] / 80°C[4)]	[kN]	0.9	2.5	2.0
Sand-lime perforated brick KS L, $f_b \geq 16$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	1.5	2.5	2.5
	50°C[3)] / 80°C[4)]	[kN]	1.2	2.5	2.5
Partial safety factor	γ_{Mm}[2)]	[-]	2.5		2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature
5) The given values F_{Rk} in this column are valid for the embedment depth range 50 mm ≤ h_{nom} < 70 mm (see Annex 5, Table 3). For Plastic anchors R 8 set variable in this range no additional job site tests have necessarily to be performed.

MKT Plastic Anchor R

Sand-lime perforated brick KS L, 2DF
Brick data, installation parameters, characteristic resistance

Annex 43

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry, sand-lime perforated brick KS L, 8DF

Table 10.31.1: Brick data

Description of brick AK		**KS L**
Type of brick		Sand-lime perforated brick
Bulk density $\rho \geq$	[kg/dm³]	1.4
Standard, approval		DIN V 106; EN 771-2
Producer of brick		e.g. Xella Deutschland GmbH
Format (Dimensions)	[mm]	≥ 8DF (≥ 248x240x238)
Minimum thickness of member h_{min} =	[mm]	240

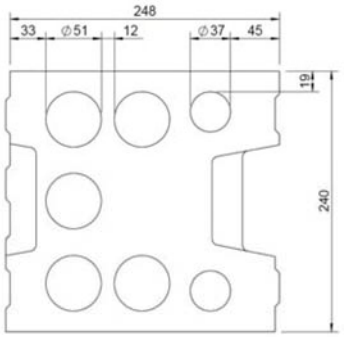

Table 10.31.2: Installation parameters

Anchor size			**R 8**	**R 10**
Drill hole diameter	d_0	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	60	100

Table 10.31.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			**R 8**	**R 10**
Sand-lime perforated brick KS L, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	0.9	0.9
	50°C [3] / 80°C [4]	[kN]	0.6	0.75
Sand-lime perforated brick KS L, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	1.2	1.2
	50°C [3] / 80°C [4]	[kN]	0.9	0.9
Sand-lime perforated brick KS L, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	1.5	1.5
	50°C [3] / 80°C [4]	[kN]	0.9	1.2
Sand-lime perforated brick KS L, $f_b \geq 12$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	1.5	2.0
	50°C [3] / 80°C [4]	[kN]	1.2	1.5
Sand-lime perforated brick KS L, $f_b \geq 16$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	2.0	2.5
	50°C [3] / 80°C [4]	[kN]	1.5	2.0
Partial safety factor	γ_{Mm} [2]	[-]	2.5	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Sand-lime perforated brick KS L, 8DF
Brick data, installation parameters, characteristic resistance

Annex 44

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry, sand-lime perforated brick KS L, 12DF

Table 10.32.1: Brick data

Description of brick	c		KS L
Type of brick			Sand-lime perforated brick
Bulk density	$\rho \geq$	[kg/dm³]	1.4
Standard, approval			DIN V 106; EN 771-2
Producer of brick			-
Format (Dimensions)		[mm]	≥ 12DF (≥ 373x240x238)
Minimum thickness of member	h_{min} =	[mm]	240

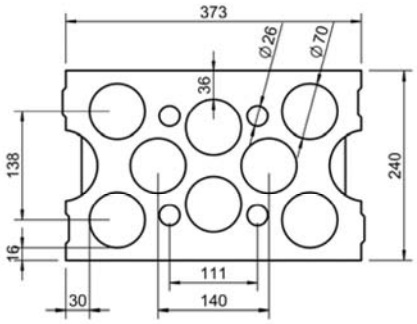

Table 10.32.2: Installation parameters

Anchor size			R 8		R 10
Drill hole diameter	d_0	[mm]	8		10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45		10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	60	80	80
Drill method		[-]	Rotary drilling		Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	50	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5		10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100		100

Table 10.32.3: Characteristic resistance FRk[1)] in [kN] for single anchor

Anchor size				R 8	R 10
Overall plastic anchor embedment depth		h_{nom}	[mm]	50 mm ≤ h_{nom} ≤ 70 mm [5)]	**= 70** [5)]
Sand-lime perforated brick KS L, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.6	0.9
	50°C[3)] / 80°C[4)]		[kN]	0.5	0.6
Sand-lime perforated brick KS L, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.9	1.2
	50°C[3)] / 80°C[4)]		[kN]	0.6	0.75
Sand-lime perforated brick KS L, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.9	1.5
	50°C[3)] / 80°C[4)]		[kN]	0.6	0.9
Sand-lime perforated brick KS L, $f_b \geq 12$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.2	1.5
	50°C[3)] / 80°C[4)]		[kN]	0.9	1.2
Sand-lime perforated brick KS L, $f_b \geq 16$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.5	2.0
	50°C[3)] / 80°C[4)]		[kN]	1.2	1.5
Partial safety factor		γ_{Mm}[2)]	[-]	2.5	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature
5) The influence of h_{nom} > 70 mm has to be detected by job site tests according 4.4.

MKT Plastic Anchor R

Sand-lime perforated brick KS L, 12DF
Brick data, installation parameters, characteristic resistance

Annex 45

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry, sand-lime perforated brick KS L, 9DF

Table 10.33.1: Brick data

Description of brick	W9		**KS L**
Type of brick			Sand-lime perforated brick
Bulk density	$\rho \geq$	[kg/dm³]	1.4
Standard, approval			DIN V 106; EN 771-2
Producer of brick			Xella Deutschland GmbH Dr.-Hammacher-Str.49 D-47119 Duisburg
Format (Dimensions)		[mm]	≥ 9DF (≥ 373x175x249)
Minimum thickness of member	h_{min} =	[mm]	175

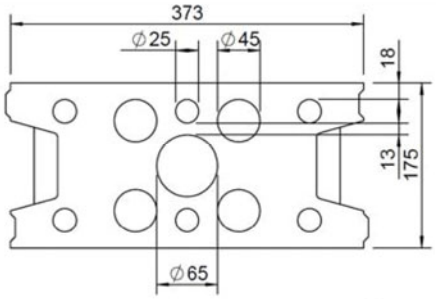

Table 10.33.2: Installation parameters

Anchor size			**R 8**
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.33.3: Characteristic resistance F_{Rk}[1] in [kN] for single anchor

Anchor size			**R 8**
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Sand-lime perforated brick KS L, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.6
	50°C[3] / 80°C[4]	[kN]	0.4
Sand-lime perforated brick KS L, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.75
	50°C[3] / 80°C[4]	[kN]	0.6
Sand-lime perforated brick KS L, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.9
	50°C[3] / 80°C[4]	[kN]	0.75
Sand-lime perforated brick KS L, $f_b \geq 12$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.2
	50°C[3] / 80°C[4]	[kN]	0.9
Sand-lime perforated brick KS L, $f_b \geq 20$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	2.0
	50°C[3] / 80°C[4]	[kN]	1.5
Partial safety factor	γ_{Mm}[2]	[-]	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Sand-lime perforated brick KS L, 9DF
Brick data, installation parameters, characteristic resistance

Annex 46

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry, sand-lime perforated brick KS-NT, 4DF

Table 10.34.1: Brick data

Description of brick	W11		**KS-NT**
Type of brick			Sand-lime perforated brick
Bulk density	$\rho \geq$	[kg/dm³]	1.2
Standard, approval			P-1109/884/07-MPA BS
Producer of brick			BMO KS-Vertrieb Bielefeld-Münster-Osnabrück GmbH & Co. KG Averdiekstr. 9; D-49078 Osnabrück
Format (dimensions)		[mm]	≥ 4DF (≥ 249x115x248)
Minimum thickness of member	h_{min} =	[mm]	115

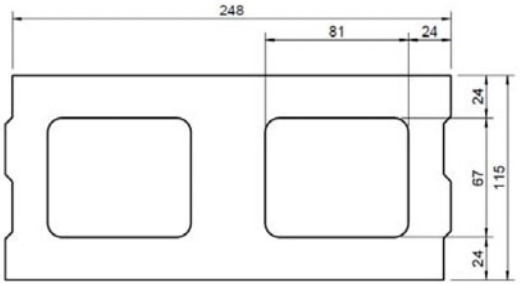

Table 10.34.2: Installation parameters

Anchor size			**R 8**
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.34.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			**R 8**
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Sand-lime perforated brick KS-NT, $f_b \geq 12$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.5
	50°C[3] / 80°C[4]	[kN]	1.2
Sand-lime perforated brick KS-NT, $f_b \geq 20$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	2.5
	50°C[3] / 80°C[4]	[kN]	2
Partial safety factor	γ_{Mm} [2]	[-]	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R	
Sand-lime perforated brick KS-NT, 4DF Brick data, installation parameters, characteristic resistance	**Annex 47**

Deutsches Institut für Bautechnik DIBt

Base material solid masonry, Concrete solid block Vbn, NF

Table 10.35.1: Brick data

Description of brick	ov		**Vbn**
Type of brick			Concrete solid block
Bulk density	$\rho \geq$	[kg/dm³]	2.0
Standard, approval			DIN 18153; EN 771-3
Producer of brick			-
Format (dimensions)		[mm]	≥ NF (≥ 240x115x71)
Minimum thickness of member	h_{min} =	[mm]	115

Table 10.35.2: Installation parameters

Anchor size			**R 8**		**R 10**
Drill hole diameter	d_0	[mm]	8		10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45		10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	60	80	80
Drill method		[-]	Hammer drilling		Hammer drilling
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	50	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5		10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100		100

Table 10.35.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size				**R 8**	**R 10**
Overall plastic anchor embedment depth		$h_{nom} \geq$	[mm]	**50**	**70**
Concrete solid block Vbn, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]		[kN]	1.5	2.0
	50°C [3] / 80°C [4]		[kN]	1.5	2.0
Concrete solid block Vbn, $f_b \geq 20$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]		[kN]	2.5	3.0
	50°C [3] / 80°C [4]		[kN]	2.5	3.0
Concrete solid block Vbn, $f_b \geq 28$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]		[kN]	3.5	4.5
	50°C [3] / 80°C [4]		[kN]	3.5	4.5
Partial safety factor		γ_{Mm} [2]	[-]	2.5	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.

2) In absence of other national regulations

3) Maximum long term temperature

4) Maximum short term temperature

MKT Plastic Anchor R	
Concrete solid block Vbn, NF Brick data, installation parameters, characteristic resistance	**Annex 48**

Deutsches Institut für Bautechnik DIBt

Base material solid masonry, Lightweight concrete solid brick V, NF

Table 10.36.1: Brick data

Description of brick	[1]		**V**
Type of brick			Lightweight concrete solid brick
Bulk density	$\rho \geq$	[kg/dm³]	0.9
Standard, approval			EN 771-3, DIN V 18152-100
Producer of brick			e.g. Bisoclassic V Bisotherm GmbH Eisenbahnstraße 12 D-56218 Mühlheim-Kärlich
Format (dimensions)		[mm]	≥ NF (≥ 240x115x71)
Minimum thickness of member	h_{min} =	[mm]	115

Table 10.36.2: Installation parameters

Anchor size			**R 8**
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Hammer drilling
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.36.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			**R 8**
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	**70**
Lightweight concrete solid brick V2, $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	0.6
	50°C [3] / 80°C [4]	[kN]	0.5
Lightweight concrete solid brick V4, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	1.2
	50°C [3] / 80°C [4]	[kN]	0.9
Partial safety factor	γ_{Mm} [2]	[-]	2.5

[1] Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.

[2] In absence of other national regulations

[3] Maximum long term temperature

[4] Maximum short term temperature

MKT Plastic Anchor R	
Lightweight concrete solid brick V, NF Brick data, installation parameters, characteristic resistance	**Annex 49**

Deutsches Institut für Bautechnik DIBt

Base material solid masonry, Lightweight concrete solid brick V, NF

Table 10.37.1: Brick data

Description of brick	AH		**V**
Type of brick			Lightweight concrete solid brick
Bulk density	$\rho \geq$	[kg/dm³]	1.0
Standard, approval			EN 771-3, DIN V 18152-100
Producer of brick			e.g. BisoBims, Bisotherm GmbH Eisenbahnstraße 12 D-56218 Mühlheim-Kärlich
Format (dimensions)		[mm]	≥ NF (≥ 240x115x71)
Minimum thickness of member	h_{min} =	[mm]	115

Table 10.37.2: Installation parameters

Anchor size			**R 8**	
Drill hole diameter	d_0	[mm]	8	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	60	80
Drill method		[-]	Hammer drilling	
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	50	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	

Table 10.37.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size				**R 8**	
Overall plastic anchor embedment depth		$h_{nom} \geq$	[mm]	**50**	**70**
Lightweight concrete solid brick V 2, $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]		[kN]	0.4	0.6
	50°C [3] / 80°C [4]		[kN]	0.3	0.6
Lightweight concrete solid brick V 4, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]		[kN]	0.9	1.2
	50°C [3] / 80°C [4]		[kN]	0.75	1.2
Partial safety factor		γ_{Mm} [2]	[-]	2.5	

[1] Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.

[2] In absence of other national regulations

[3] Maximum long term temperature

[4] Maximum short term temperature

MKT Plastic Anchor R	
Lightweight concrete solid brick V, NF Brick data, installation parameters, characteristic resistance	**Annex 50**

Deutsches Institut für Bautechnik DIBt

Base material: Lightweight concrete solid block Vbl

Table 10.38.1: Brick data

Description of brick LAC2			**Vbl 2-0,6-24DF**
Type of brick			Lightweight Aggregate Concrete
Bulk density	$\rho \geq$	[kg/dm³]	0.6
Standard, approval			DIN V 18152-100
Producer of brick			e.g. Liapor Massive Wall LAC2 by: Liapor GmbH & Co. KG D-91352 Hallerndorf
Dimensions		[mm]	≥ 24DF
Minimum thickness of member	h_{min} =	[mm]	365

Table 10.38.2: Installation parameters

Anchor size			**R 8**	**R 10**
Drill hole diameter	d_0	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Hammer drilling	Hammer drilling
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table 10.38.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			**R 8**	**R 10**
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	70	70
Lightweight concrete solid block Vbl 2, $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	1.2	1.5
	50°C [3] / 80°C [4]	[kN]	1.2	1.5
Partial safety factor	γ_{Mm} [2]	[-]	2.5	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R	
Lightweight concrete solid block Vbl Brick data, installation parameters, characteristic resistance	**Annex 51**

Deutsches Institut für Bautechnik DIBt

Base material: Lightweight concrete solid block Vbl

Table 10.39.1: Brick data

Description of brick	W5		**Vbl 2-16DF**
Type of brick			Lightweight Aggregate Concrete
Bulk density	$\rho \geq$	[kg/dm³]	0.65
Standard, approval			DIN 18152, Z-17.1-839
Producer of brick			e.g. Liapor Compact by: Liapor GmbH & Co. KG D-91352 Hallerndorf Meier Betonwerke GmbH Zur Schanze 2 92283 Lauterhofen
Dimensions		[mm]	≥ 16DF (≥ 498x240x239)
Minimum thickness of member	h_{min} =	[mm]	240

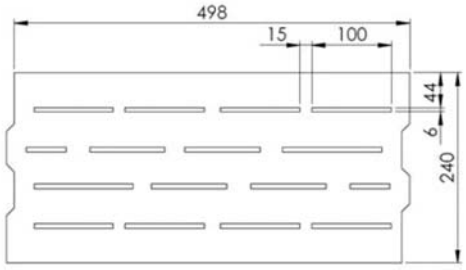

Table 10.39.2: Installation parameters

Anchor size			**R 8**
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Hammer drilling
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.39.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			**R 8**
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	**70**
Lightweight concrete solid block Vbl 2, $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	1.2
	50°C [3] / 80°C [4]	[kN]	0.9
Partial safety factor	γ_{Mm} [2]	[-]	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.

2) In absence of other national regulations

3) Maximum long term temperature

4) Maximum short term temperature

MKT Plastic Anchor R

Lightweight concrete solid block Vbl
Brick data, installation parameters, characteristic resistance

Annex 52

Deutsches Institut für Bautechnik DIBt

Base material: Concrete solid block Vbn

Table 10.40.1: Brick data

Description of brick LC16/18			**Vbn 12-1,4-12DF**
Type of brick			Concrete
Bulk density	$\rho \geq$	[kg/dm³]	1.4
Standard, approval			DIN 18153
Producer of brick			e.g. Liapor Element Wall LC16/18 by: Liapor GmbH & Co. KG D-91352 Hallerndorf
Format (dimensions)		[mm]	≥ 12DF
Minimum thickness of member	h_{min} =	[mm]	175

Table 10.40.2: Installation parameters

Anchor size			**R 8**	**R 10**
Drill hole diameter	d_0	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Hammer drilling	Hammer drilling
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table 10.40.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			**R 8**	**R 10**
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	**70**	**70**
Concrete solid block Vbn 12, $f_b \geq 12$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	3.5	3.5
	50°C[3] / 80°C[4]	[kN]	3.5	3.5
Partial safety factor	γ_{Mm} [2]	[-]	2.5	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Concrete solid block Vbn
Brick data, installation parameters, characteristic resistance

Annex 53

Deutsches Institut für Bautechnik DIBt

Base material hollow brick lightweight concrete 1K Hbl

Table 10.41.1: Brick data

Description of brick			**1K Hbl**
Type of brick			Hollow brick lightweight concrete 1K Hbl
Bulk density	$\rho \geq$	[kg/dm³]	1.2
Standard, approval			DIN V 18151-100; EN 771-3
Producer of brick			e.g. Stahl Betonwerk GmbH & Co. KG D-74547 Untermünkheim-Kupfer
Format (dimensions)		[mm]	≥ 12DF (≥ 490x175x238)
Minimum thickness of member	h_{min} =	[mm]	175

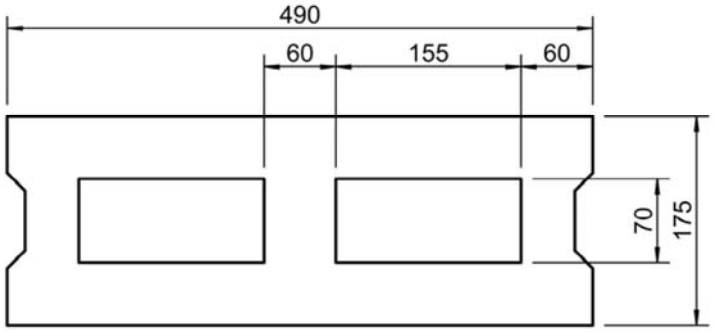

Table 10.41.2: Installation parameters

Anchor size			**R 8**	**R 10**
Drill hole diameter	d_0	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table 10.41.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size				**R 8**	**R 10**
Overall plastic anchor embedment depth		h_{nom} =	[mm]	**70**	**70**
Hollow brick lightweight concrete 1K Hbl, $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]		[kN]	0.9	0.9
	50°C[3] / 80°C[4]		[kN]	0.9	0.75
Hollow brick lightweight concrete 1K Hbl, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]		[kN]	2.0	2.0
	50°C[3] / 80°C[4]		[kN]	2.0	1.5
Partial safety factor		γ_{Mm} [2]	[-]	2.5	2.5

[1] Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.

[2] In absence of other national regulations

[3] Maximum long term temperature

[4] Maximum short term temperature

MKT Plastic Anchor R

Hollow brick lightweight concrete 1K Hbl
Brick data, installation parameters, characteristic resistance

Annex 54

Deutsches Institut für Bautechnik DIBt

Base material hollow brick lightweight concrete 3K Hbl

Table 10.42.1: Brick data

Description of brick R3K		**3K Hbl**
Type of brick		Hollow brick lightweight concrete 3K Hbl
Bulk density $\rho \geq$	[kg/dm³]	0.7
Standard, approval		DIN V 18151-100; EN 771-3
Producer of brick		e.g. Heinzmann Baustoffe GmbH, Liapor GmbH & Co. KG
Format (dimensions)	[mm]	≥ 16DF (≥ 498x240x238)
Minimum thickness of member h_{min} =	[mm]	240

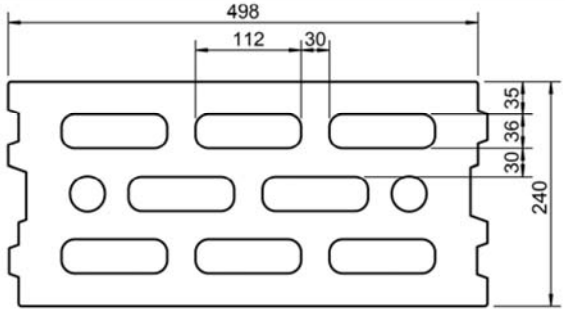

Table 10.42.2: Installation parameters

Anchor size			**R 8**	**R 10**
Drill hole diameter	d_0	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table 10.42.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			**R 8**	**R 10**
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**	**70**
Hollow brick lightweight concrete 3K Hbl, $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	0.6	0.5
	50°C [3] / 80°C [4]	[kN]	0.4	0.3
Hollow brick lightweight concrete 3K Hbl, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	1.2	0.9
	50°C [3] / 80°C [4]	[kN]	0.9	0.6
Hollow brick lightweight concrete 3K Hbl, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	1.5	1.5
	50°C [3] / 80°C [4]	[kN]	1.2	0.9
Partial safety factor	γ_{Mm} [2]	[-]	2.5	2.5

[1] Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.

[2] In absence of other national regulations

[3] Maximum long term temperature

[4] Maximum short term temperature

MKT Plastic Anchor R

Hollow brick lightweight concrete 3K Hbl
Brick data, installation parameters, characteristic resistance

Annex 55

Deutsches Institut für Bautechnik DIBt

Base material hollow brick lightweight concrete: Liapor-Super-K

Table 10.43.1: Brick data

Description of brick S7K		**Liapor-Super-K**
Type of brick		Hollow brick lightweight concrete 7K
Bulk density $\rho \geq$	[kg/dm³]	0.8
Standard, approval		EN 771-3; Z-17.1-501
Producer of brick		Liapor GmbH & Co. KG D-91352 Hallerndorf
Format (dimensions)	[mm]	≥ 16DF (≥ 495x240x238)
Minimum thickness of member h_{min} =	[mm]	240

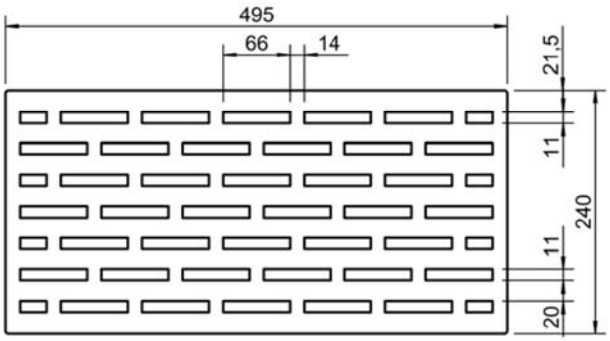

Table 10.43.2: Installation parameters

Anchor size			**R 8**	**R 10**
Drill hole diameter	d_0	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table 10.43.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			**R 8**	**R 10**
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**	**70**
Hollow brick lightweight concrete Liapor-Super-K, $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.75	0.9
	50°C[3] / 80°C[4]	[kN]	0.6	0.6
Hollow brick lightweight concrete Liapor-Super-K, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.5	2.0
	50°C[3] / 80°C[4]	[kN]	1.2	1.2
Partial safety factor	γ_{Mm} [2]	[-]	2.5	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R	
Hollow brick lightweight concrete: Liapor-Super-K Brick data, installation parameters, characteristic resistance	**Annex 56**

Deutsches Institut für Bautechnik DIBt

Base material hollow brick concrete 2K Hbn

Table 10.44.1: Brick data

Description of brick	W6		**2K Hbn**
Type of brick			Hollow brick concrete
Bulk density	$\rho \geq$	[kg/dm³]	1.2
Standard, approval			DIN 18153
Producer of brick			e.g. Stark Betonwerk GmbH & Co. KG D-74547 Untermünkheim-Kupfer
Format (dimensions)		[mm]	≥ 12DF (≥ 375x240x238)
Minimum thickness of member	h_{min} =	[mm]	240

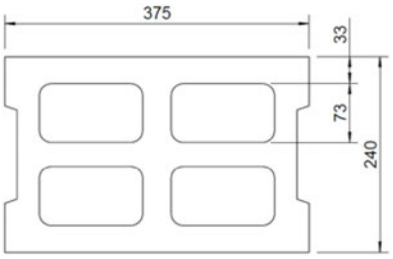

Table 10.44.2: Installation parameters

Anchor size			**R 8**
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8,5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.44.3: Characteristic resistance F_{Rk}[1] in [kN] for single anchor

Anchor size			**R 8**
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Hollow brick concrete 2K Hbn 2, $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.75
	50°C[3] / 80°C[4]	[kN]	0.6
Hollow brick concrete 2K Hbn 4, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.5
	50°C[3] / 80°C[4]	[kN]	1.2
Hollow brick concrete 2K Hbn 6, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	2.0
	50°C[3] / 80°C[4]	[kN]	1.5
Hollow brick concrete 2K Hbn 8, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	3.0
	50°C[3] / 80°C[4]	[kN]	2.0
Partial safety factor	γ_{Mm}[2]	[-]	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Hollow brick concrete Hbn
Brick data, installation parameters, characteristic resistance

Annex 57

Deutsches Institut für Bautechnik DIBt

Base material hollow brick lightweight concrete: Gisoton WärmeDämmBlock

Table 10.45.1: Brick data

Description of brick	AO		**Gisoton WärmeDämmBlock**
Type of brick			Hollow brick lightweight concrete
Bulk density	$\rho \geq$	[kg/dm³]	0.8
Standard, approval			Z-17.1-873
Producer of brick			Gisoton Wandsysteme Baustoffwerke Gebhart & Söhne GmbH & Co. Hochstraße 2 D-88317 Aichstetten
Format (dimensions)		[mm]	≥ 375x300x248
Minimum thickness of member	h_{min} =	[mm]	300

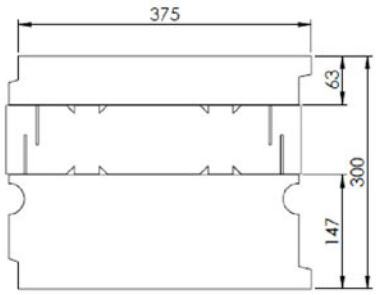

Table 10.45.2: Installation parameters

Anchor size			**R 8**
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	df ≤	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.45.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			**R 8**
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Gisoton WärmeDämmBlock, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	1.5
	50°C [3] / 80°C [4]	[kN]	1.5
Partial safety factor	γ_{Mm} [2]	[-]	2.5

[1] Characteristic resistance F_{RK} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.

[2] In absence of other national regulations

[3] Maximum long term temperature

[4] Maximum short term temperature

MKT Plastic Anchor R	
Gisoton WärmeDämmBlock Brick data, installation parameters, characteristic resistance	**Annex 58**

Deutsches Institut für Bautechnik DIBt

Base material hollow brick lightweight concrete: Gisoton Thermo Schall

Table 10.46.1: Brick data

Description of brick	AP		Gisoton Thermo Schall
Type of brick			Hollow brick lightweight concrete
Bulk density	$\rho \geq$	[kg/dm³]	0.45
Standard, approval			Z-15.2-18
Producer of brick			Gisoton Wandsysteme Baustoffwerke Gebhart & Söhne GmbH & Co. Hochstraße 2 D-88317 Aichstetten
Format (dimensions)		[mm]	≥ 498x300x248
Minimum thickness of member	h_{min} =	[mm]	300

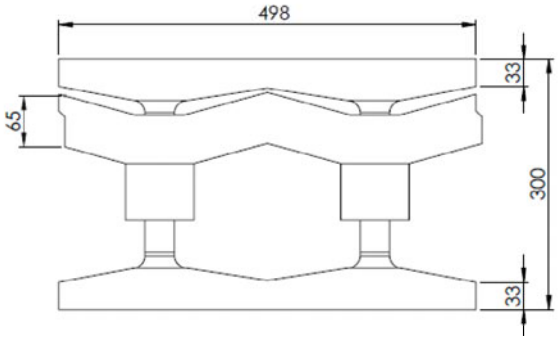

Table 10.46.2: Installation parameters

Anchor size			R 8
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.46.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 8
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Gisoton Thermo Schall, $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	1.5
	50°C [3] / 80°C [4]	[kN]	1.5
Partial safety factor	γ_{Mm} [2]	[-]	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Gisoton Thermo Schall
Brick data, installation parameters, characteristic resistance

Annex 59

Deutsches Institut für Bautechnik DIBt

Base material hollow brick lightweight concrete: Bisomark^{TEC}

Table 10.47.1: Brick data

Description of brick	W23		**Bisomark^{TEC}**
Type of brick			Hollow brick lightweight concrete
Bulk density	$\rho \geq$	[kg/dm³]	0.4
Standard, approval			Z-17.1-1026
Producer of brick			Bisotherm GmbH Eisenbahnstraße 12 D-56218 Mühlheim-Kärlich
Format (dimensions)		[mm]	≥ 20DF (≥ 497x300x249)
Minimum thickness of member	h_{min} =	[mm]	300

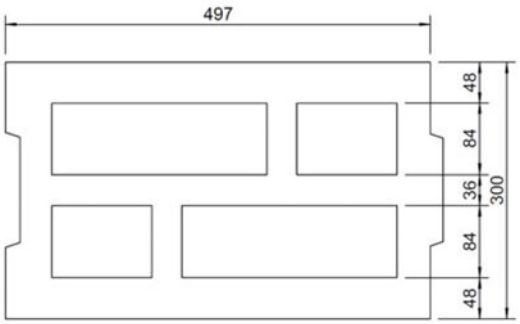

Table 10.47.2: Installation parameters

Anchor size			**R 8**
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table 10.47.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			**R 8**
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Bisomark^{TEC}, $f_b \geq 1.6$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.6
	50°C[3] / 80°C[4]	[kN]	0.5
Bisomark^{TEC}, $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.75
	50°C[3] / 80°C[4]	[kN]	0.6
Bisomark^{TEC}, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.5
	50°C[3] / 80°C[4]	[kN]	1.2
Partial safety factor	γ_{Mm}[2]	[-]	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Bisomark^{TEC}
Brick data, installation parameters, characteristic resistance

Annex 60

Deutsches Institut für Bautechnik DIBt

Base material solid masonry: Autoclaved Aerated Concrete AAC

Table 10.48.1: Brick data

Description of brick AAC			**AAC**
Type of brick			Autoclaved Aerated Concrete
Bulk density	$\rho \geq$	[kg/dm³]	0.3
Standard, approval			DIN 4165; EN 771-4
Format (dimensions)		[mm]	≥ 499x175x249
Minimum thickness of member	h_{min} =	[mm]	175

Table 10.48.2: Installation parameters

Anchor size			**R 8**	**R 10**
Drill hole diameter	d_0	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Hammer drilling	Hammer drilling
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5

Table 10.48.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			**R 8**	**R 10**
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	**70**	**70**
Autoclaved Aerated Concrete AAC $f_b \geq 2$ N/mm² [5] Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	0.5	0.75
	50°C [3] / 80°C [4]	[kN]	0.4	0.6
Autoclaved Aerated Concrete AAC $f_b \geq 7$ N/mm² [5] Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	2.98	3.09
	50°C [3] / 80°C [4]	[kN]	2.38	2.47
Partial safety factor	γ_{MAAC} [2]	[-]	2.0	2.0

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature
For the strength between AAC 2 and AAC7 the characteristic resistance F_{Rk} shall be determined by linear interpolation.

MKT Plastic Anchor R	
Solid masonry: Autoclaved Aerated Concrete Brick data, installation parameters, characteristic resistance	**Annex 61**

Deutsches Institut für Bautechnik DIBt

(Prefabricated) Reinforced components made of autoclaved aerated concrete (AAC)

Table 10.49.1: Data

Description			(Prefabricated) Reinforced components made of autoclaved aerated concrete
Bulk density	$\rho \geq$	[kg/dm³]	0.4
Standard, approval			EN 12 602, DIN 4223
Minimum thickness of member	h_{min} =	[mm]	175

Table 10.49.2: Installation parameters

Anchor size			R 10
Drill hole diameter	d_0	[mm]	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Hammer drilling
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	150

Table 10.49.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 10
(Prefabricated) Reinforced AAC $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.5
	50°C[3] / 80°C[4]	[kN]	0.4
(Prefabricated) Reinforced AAC $f_b \geq 3$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.98
	50°C[3] / 80°C[4]	[kN]	0.86
(Prefabricated) Reinforced AAC $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.49
	50°C[3] / 80°C[4]	[kN]	1.3
(Prefabricated) Reinforced AAC $f_b \geq 4.5$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.75
	50°C[3] / 80°C[4]	[kN]	1.53
(Prefabricated) Reinforced AAC $f_b \geq 5$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.75
	50°C[3] / 80°C[4]	[kN]	1.53
(Prefabricated) Reinforced AAC $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.75
	50°C[3] / 80°C[4]	[kN]	1.53
(Prefabricated) Reinforced AAC $f_b \geq 7$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.75
	50°C[3] / 80°C[4]	[kN]	1.53
Partial safety factor	γ_{MAAC}[2]	[-]	2.0

[1] Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.

[2] In absence of other national regulations

[3] Maximum long term temperature

[4] Maximum short term temperature

MKT Plastic Anchor R

Solid masonry: Reinforced components of autoclaved aerated concrete
Brick data, installation parameters, characteristic resistance

Annex 62

Deutsches Institut für Bautechnik DIBt

Base material precast prestressed hollow core elements: VMM-L SCD 20

Table 10.50.1: Data

Description			VMM-L SCD 20
Type			Precast prestressed hollow core elements
Bulk density	$\rho \geq$	[kg/dm³]	2.4
Standard, approval			DIN EN 1168: 2008-10; Z-15.10-276
Producer of brick			e.g. Ketonia GmbH Spannbeton-Fertigteilwerk Almesbach 4 D-92637 Weiden
Format (dimensions)		[mm]	≥ 1200x800x200
Minimum thickness of member	h_{min} =	[mm]	200

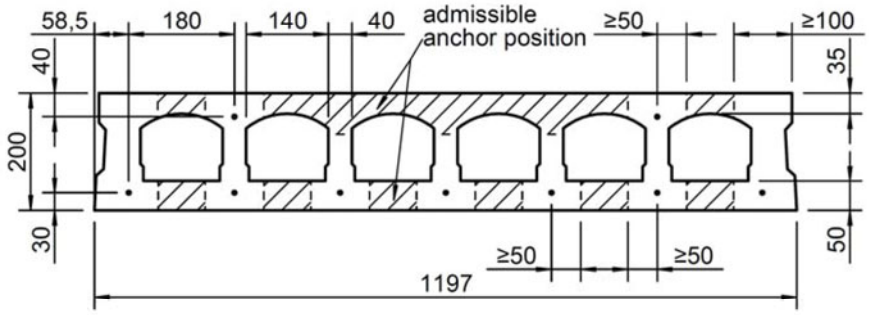

Table 10.50.2: Installation parameters

Anchor size			R 8
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Hammer drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5

Table 10.50.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 8
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Precast prestressed hollow core elements VMM-L SCD 20, C45/55 Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	1.5
	50°C [3] / 80°C [4]	[kN]	1.2
Partial safety factor	γ_{Mc} [2]	[-]	1.8

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Precast prestressed hollow core elements VMM-L SCD 20
Brick data, installation parameters, characteristic resistance

Annex 63

Deutsches Institut für Bautechnik DIBt

Base material precast prestressed hollow core elements: VMM-L EPD 32

Table 10.51.1: Data

Description			VMM-L EPD 32
Type			Precast prestressed hollow core elements
Bulk density	$\rho \geq$	[kg/dm³]	2.4
Standard, approval			DIN EN 1168: 2008-10; Z-15.10-276
Producer of brick			e.g. Ketonia GmbH Spannbeton-Fertigteilwerk Almesbach 4 D-92637 Weiden
Format (dimensions)		[mm]	≥ 1200x800x320
Minimum thickness of member	h_{min} =	[mm]	320

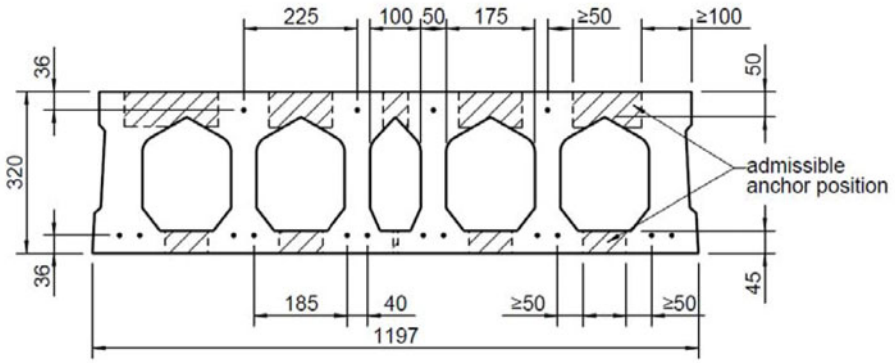

Table 10.51.2: Installation parameters

Anchor size			R 8
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Hammer drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5

Table 10.51.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 8
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Precast prestressed hollow core elements VMM-L EPD 32, C45/55 Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	2.5
	50°C [3] / 80°C [4]	[kN]	1.5
Partial safety factor	γ_{Mc} [2]	[-]	1.8

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.

2) In absence of other national regulations

3) Maximum long term temperature

4) Maximum short term temperature

MKT Plastic Anchor R

Precast prestressed hollow core elements VMM-L EPD 32
Brick data, installation parameters, characteristic resistance

Annex 64

Deutsches Institut für Bautechnik DIBt

Base material precast prestressed hollow core elements: VMM VSD 16

Table 10.52.1: Data

Description			VMM VSD 16
Type			Precast prestressed hollow core elements
Bulk density	$\rho \geq$	[kg/dm³]	2.4
Standard, approval			DIN EN 1168: 2008-10; Z-15.10-276
Producer of brick			z.B. Ketonia GmbH Spannbeton-Fertigteilwerk Almesbach 4 D-92637 Weiden
Format (dimensions)		[mm]	≥ 1200x400x160
Minimum thickness of member	h_{min} =	[mm]	160

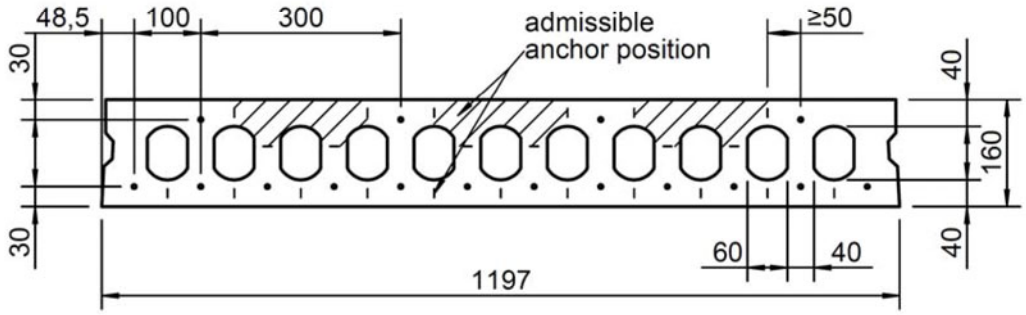

Table 10.52.2: Installation parameters

Anchor size			R 8
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Hammer drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5

Table 10.52.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 8
Overall plastic anchor embedment depth	hnom =	[mm]	**70**
Precast prestressed hollow core elements VMM VSD 16, C45/55 Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	2.5
	50°C[3] / 80°C[4]	[kN]	2.0
Partial safety factor	γMc[2]	[-]	1.8

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading. The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R	
Precast prestressed hollow core elements VMM VDS 16 Brick data, installation parameters, characteristic resistance	**Annex 65**

Deutsches Institut für Bautechnik DIBt

Base material gypsum blocks: MultiGips R.max Schallschutzplatte

Table 10.53.1: Brick data

Description of brick			MultiGips R.max Schallschutzplatte
Type of brick			Gypsum blocks
Bulk density	$\rho \geq$	[kg/dm³]	1.2
Standard, approval			DIN EN 12859
Producer of brick			VG-ORTH GmbH & Co. KG Holeburgweg 24 D-37627 Stadtoldendorf
Format (dimensions)		[mm]	≥ 500x500x100
Minimum thickness of member	h_{min} =	[mm]	100

Table 10.53.2: Installation parameters

Anchor size			R 8
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$_{df} \leq$	[mm]	8.5

Table 10.53.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			R 8
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	**70**
Gypsum blocks: MultiGips R.max Schallschutzplatte, $f_b \geq 11{,}7$ N/mm² Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	1.2
	50°C [3] / 80°C [4]	[kN]	1.2
Partial safety factor	γ_{Mm} [2]	[-]	2.5

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s_{min} according to Table 9. The specific conditions for the design method have to be considered according to chapter 4.2.6 of the ETA.
2) In absence of other national regulations
3) Maximum long term temperature
4) Maximum short term temperature

MKT Plastic Anchor R

Gypsum blocks: MultiGips R.max Schallschutzplatte
Brick data, installation parameters, characteristic resistance

Annex 66