

Companion Sheet to Test Report

- Translation -

Document No.: (3276/166/14) – NB dated 29.09.2014

Client: Metall-Kunststoff-Technik GmbH & Co.KG
Auf dem Immel 2
67685 Weilerbach
Deutschland

Order date: 16.08.2013

Order Ref.: -

Order received: 16.08.2013

Subject: "MKT Injection System VMU plus for concrete", bonded anchors placed in the non-cracked tension zone of RC floor sections, strength class \geq C20/25, and subjected to centric tension loads, to be tested and evaluated in connection with anchor rods (dimensions M8 to M30) for their reaction to fire to determine their fire resistance time

Test basis: DIN EN 1363-1 : 1999-10

Test material received: Week 46/2006

Sampling: The Testing House does not have any information indicating official sampling.

Test material marking: None

Test date: 21/11/2006, 28/11/2006, 06/12/2006, 24/01/2007 and 20/02/2007

Valid until: 06/03/2018

This Companion Sheet consists of 4 pages, incl. cover sheet.



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1 Background and general statement

Under the order placed with the Testing House, a Test Report was to be drawn up on the reaction to fire of “MKT Injection System VMU plus for concrete” bonded anchors, which are subjected to centric tension and tested for steel failure in compliance with section 2.3 of TR 020 : 2004-05, when exposed to a fire in compliance with DIN EN 1363-1 : 1999-10 to determine their fire resistance time.

Related documents:

- (1) DIN EN 1363-1 : 1999-10, Fire resistance tests - Part 1: General requirements,
- (2) EOTA Technical Report TR 020 : 2004-05 - Evaluation of anchorages in concrete concerning resistance to fire,
- (3) “MKT Injection System VMU plus for concrete”, European Technical Approval ETA-11/0415 of 20-06-2013, issued by DIBt, Berlin.

Using the results achieved in the fire test, the “MKT Injection System VMU plus for concrete” bonded anchors were to be examined and evaluated respecting requirements (steel failure, pullout) specified in EOTA Technical Report TR 020 : 2004-05.

2 Proposed rating for the “MKT Injection System VMU plus for concrete” bonded anchors (dimensions M8 to M30) in connection with anchor rods made from electro-galvanized steel (strength class ≥ 5.8)

Using the results achieved in the tests as a basis, fire resistance periods are proposed for the “MKT Injection System VMU plus for concrete” bonded anchors (dimensions M8 to M30) made from electro-galvanized steel as shown in table 2-1 below as a function of the maximum centric tensile load.

Based on the results achieved in the tests, and departing from the evaluation specifications in TR 020 : 2004-05, the ratings for “MKT Injection System VMU plus for concrete” bonded anchors made from electro-galvanized steel have been increased with regard to the 30-minute fire resistance time.

Table 2-1: Proposed rating for “MKT Injection System VMU plus for concrete” bonded anchors (dimensions M8 – M30) made from electro-galvanized steel and stainless steel, regarding their fire resistance times as a function of stress σ_s when exposed to centric tensile loads

| Designation | “MKT Injection System VMU plus for concrete” bonded anchor | | | | | | |
|--|---|------|------|------|------|-------|-------|
| | Maximum tensile load ¹⁾ | | | | | | |
| | F [kN] | | | | | | |
| Fire resistance time t_u [min] | M8 | M10 | M12 | M16 | M20 | M24 | M30 |
| Minimum set depth [mm] | 80 | 90 | 110 | 125 | 175 | 210 | 280 |
| 30 | 1.64 | 2.60 | 3.35 | 6.25 | 9.75 | 14.04 | 18.26 |
| 60 | 1.12 | 1.77 | 2.59 | 4.82 | 7.52 | 10.84 | 14.10 |
| 90 | 0.59 | 0.94 | 1.82 | 3.40 | 5.30 | 7.64 | 9.94 |
| 120 | 0.33 | 0.52 | 1.44 | 2.69 | 4.19 | 6.04 | 7.86 |


¹⁾ Loads resulting from European Technical Approval ETA-11/0415 of 20-06-2013 may be decisive for the service condition.

3 Proposed rating for the “MKT Injection System VMU plus for concrete” bonded anchors (dimensions M8 – M30) in connection with anchor rods made from stainless steel


Starting from the results achieved in the tests, the same characteristic tensile stresses (cf. table 2-1) are recommended for the “MKT Injection System VMU plus for concrete” bonded anchors, when adequate anchor rods made from stainless steel (material No. 1.4401 (A4) or 1.4571 (A5), 1.4529 (HCR) strength class 70) and nuts made from stainless steel (A4, strength class A-70) are used.

4 Annotations

- 4.1** This Test Report does not replace the attestation (General Building Code Test Certificate - abP; National Technical Approval - abZ, ETA) required under the German building code procedure. It should, in particular, be noted that the fire load density values of “MKT Injection System VMU plus for concrete” bonded anchors can in the future be regulated by European Technical Approvals.
- 4.2** The above evaluation shall only apply to the tested “MKT Injection System VMU plus for concrete” bonded anchors, due consideration being given to the boundary conditions shown in the technical annexes attached to this Test Report and/or the technical data sheets of Metall-Kunststoff-Technik GmbH & Co.KG.
- 4.3** The “MKT Injection System VMU plus for concrete” bonded anchors may be used for anchoring applications in non-cracked reinforced concrete (strength class C20/25 as a minimum and C50/60 as a maximum) when primarily subjected to static loads.
- 4.4** The evaluation shall only apply in connection with members made from reinforced concrete, which can as a minimum be classified under the same fire resistance class as that of the anchors.
- 4.5** The validity of the Test Report will expire on 06/03/2018.


ORR Dr.-Ing. Blume
Head of Testing Laboratory



by order 
Dipl.-Ing. Bollmohr
Engineer in charge

Braunschweig, dated 29.09.2014