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Institut für Baustoffe, Massivbau und Brandschutz | Materialprüfanstalt für das Bauwesen

Companion Sheet to Test Report

- Translation -

Document No.:	(3309/370/14) – NB dated 21/05/2014
Client:	Adolf Würth GmbH & Co. KG Rheinhold-Würth-Straße 12-16 74653 Künzelsau Deutschland
Order date:	18/02/2013
Order Ref.:	-
Order received:	18/02/2013
Subject:	"Würth Injection System WIT-PE 500 for concrete" bonded anchors, placed in non-cracked RC members 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 for one-sided fire exposure
Test basis:	DIN EN 1363-1 : 1999-10
Test material received:	11/06/2008
Sampling:	Sampling information is not available to the Testing House.
Test material marking:	None
Test date:	27/06/2008, 27/08/2008, 01/09/2008 and 30/09/2008
Valid until:	07 January 2019

This Companion Sheet consist 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 "Würth Injection System WIT-PE 500 for concrete" bonded anchors, which are subjected to centric tension and tested for steel failure / bonding failure on the basis of 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) "Würth Injection System WIT-PE 500 for concrete", European Technical Approval ETA-09/0040 of 14-06-2013, issued by DIBt, Berlin.

Using the results achieved in the fire test, the "Würth Injection System WIT-PE 500 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 "Würth Injection System WIT-PE 500 for concrete" bonded anchors (dimensions M8 to M30) in connection with anchor rods made from electrogalvanised steel (strength class 5.6)

Using the test results achieved for "Würth Injection System WIT-PE 500 for concrete" bonded anchors made from electrogalvanised steel (strength class 5.6) as a basis, fire resistance periods are proposed for the "Würth Injection System WIT-PE 500 for concrete" bonded anchors (dimensions M8 to M30) made from electrogalvanised steel (strength class 5.6, 5.8 and 8.8) as a function of the maximum centric tensile load as shown in table 2-1 below.

Based on the results achieved in the tests, and departing from the evaluation specifications in TR 020 : 2004-05, the ratings for "Würth Injection System WIT-PE 500 for concrete" bonded anchors made from galvanised steel have been increased with regard to the 30-minute fire resistance time.

Table 2-1-: Proposed rating for "Würth Injection System WIT-PE 500 for concrete" bonded anchors (dimensions M8 – M30) made from electrogalvanised steel, regarding their fire resistance times as a function of stress σs when exposed to centric tensile loads, and as a function of the minimum set depth

Designation	**"Würth Injection System WIT-PE 500 for concrete" bonded anchors**							
Fire resistance time t_u [min]	**Maximum tensile load [1] F [kN]**							
	M8	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
Minimum set depth [mm]	80	90	110	125	170	210	250	280
30	0.90	3.20	4.20	8.25	17.25	24.85	32.30	39.50
60	0.50	1.80	2.30	5.30	10.20	14.75	19.15	23.40
90	0.30	1.10	1.40	3.80	6.70	9.70	12.60	15.40
120	0.20	0.75	0.90	3.00	5.00	7.20	9.30	11.35

[1] Loads resulting from European Technical Approval ETA-09/0040 of 14-06-2013 may be decisive for the service condition.

3 Proposed rating for "Würth Injection System WIT-PE 500 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 "Würth Injection System WIT-PE 500 for concrete" bonded anchors, when adequate anchor rods and nuts made from stainless steel (material No. 1.4401 (A4) and 1.4571 (A5), 1.4529 (HCR), strength class 50 and 70, respectively) are used.

4 Annotations

4.1 This Test Report does not replace the required building code attestation (General Building Code Test Certificate - abP; National Technical Approval - abZ, ETA). It should, in particular, be noted that the fire load density values of "Würth Injection System WIT-PE 500 for concrete" bonded anchors can be regulated by European Technical Approvals.

4.2 The above evaluation shall only apply to the tested "Würth Injection System WIT-PE 500 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 Adolf Würth GmbH & Co.KG.

4.3 The "Würth Injection System WIT-PE 500 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 07 January 2019.

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Braunschweig, 21/05/2014