

EINGEGANGEN AM 27. MAI 2014

MPA
iBMB TU BRAUNSCHWEIG

Institute for Building Materials,
Concrete Construction
and Fire Protection

Braunschweig Civil
Engineering Materials
Testing Institute

Materialprüfanstalt (MPA) für das Bauwesen · Beethovenstr. 52 · D-38106 Braunschweig

Friulsider S.p.A.
Via Trieste 1
33048 San Giovanni al Natisone
Italien

Letter

9898/2014

Our Ref.: (3332/393/14)-NB
Customer-No.: 11893
Official in Charge: Frau Bollmohr
Dept.: BS
Contact: 0531-391-5461
n.bollmohr@ibmb.tu-bs.de

Your Ref.:
Your message of:

Date: 08.01.2014

Validity of Test Report No. (3764/829/09)-NB of 10/03/2009

Dear Sir or Madam,

In reply to your enquiry we wish to inform you that the statements made in the above Test Report No. (3764/829/09)-NB of 10/03/2009 regarding the reaction to fire of centrally tensioned "Friulsider Injection system KEM-UP 934 for concrete" bonded anchors, consisting of

"Friulsider Injection system KEM-UP 934 for concrete" anchors in connection with anchor rods (M8 to M30 made from electrogalvanised steel; strength class ≥ 5.8),

"Friulsider Injection system KEM-UP 934 for concrete" anchors in connection with anchor rods (M8 to M30 made from stainless steel; material No. 1.4401 (A4) or 1.4571 (A5); strength class ≥ 70),

"Friulsider Injection system KEM-UP 934 for concrete" anchors in connection with HCR anchor rods (M8 to M30 made from highly corrosion-resistant HCR steel (1.4529 or 1.4565; strength class ≥ 70),

which are set in uncracked reinforced concrete (strength class at least C20/25 and not higher than C50/60) and exposed to a fire in accordance with the DIN EN 1363-1 standard temperature-time curve (ETK), continue to apply until 7 January 2019.

This letter consists of 3 pages and contains an abstract of the above Test Report.



This document may only be circulated as a complete text without alterations. Excerpts or abridged versions of this document are subject to approval in writing of MPA Braunschweig. Translations of this document that are made without the approval of MPA Braunschweig must bear the note "translation of the German original not examined by the Materials Testing Institute". The first sheet of this document and the page carrying the signatures bear the official stamp of MPA Braunschweig. Documents without signature and the official stamp are invalid. This document is prepared independently of building code approvals and is not subject to accreditation.

Materialprüfanstalt (MPA)
für das Bauwesen
Beethovenstraße 52
D-38106 Braunschweig

Fon +49 (0)531-391-5400
Fax +49 (0)531-391-5900
info@mpa.tu-bs.de
www.mpa.tu-bs.de

Norddeutsche LB Hannover
106 020 050 BLZ 250 500 00
Swift-Code: NOLADE 2H
VAT.-ID-Nr. DE183500654
Tax-Reg. No.: 14/201/22859
IBAN: DE5825050000106020050

Notified body (0761-CPD)

MPA Braunschweig has been approved and notified as a civil engineering testing, inspection and certifying body. MPA Braunschweig has been accredited as a testing and calibration laboratory in compliance with ISO/IEC 17025, and as an inspection body in compliance with ISO/IEC 17020.

1 General information

In view of the results that were achieved in the fire test, the fire resistance times that are listed in the table in section 2 below can be assigned to the "Friulsider Injection system KEM-UP 934 for concrete" anchors for the given maximum tensile loads, due consideration being given to the notes in section 3 below. The edge and centre distances have to be selected, so the steel failure / the mortar failure (failure as a result of ETK temperature exposure) becomes decisive.

2 Evaluation of test results

Table 2-1: Fire resistance times for the "Friulsider Injection system KEM-UP 934 for concrete" anchors (dimensions M8 – M30) made from electrogalvanised steel, stainless steel and highly corrosion-resistant HCR steel, set in substrates made from uncracked reinforced concrete (strength class at least C20/25 and not higher than C50/60), as a function of stress σ_s under centric tensile load and the minimum placement depth

Designation	"Friulsider Injection system KEM-UP 934 for concrete" anchor							
	Maximum tensile load ¹⁾							
	F [kN]							
Fire resistance time t_u [min]	M8	M10	M12	M16	M20	M24	M27	M30
Min. placement 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) For the normal intended use, loads resulting from the ETA-09/0061 European Technical Approval may be decisive

If the edge distance c is so large that steel failure becomes the failure mode, the load values in table 2-1 can also be applied to anchors that are subjected to shear loads.

3 Additional information

The above-mentioned Test Report does together with this letter not replace an approval (Building Code Test Certificate - abP, National Technical Approval - abZ, European Technical Approval - ETA) that is required under the German building code procedure. It should, in particular, be noted that fire load values for "Friulsider Injection system KEM-UP 934 for concrete" anchors may be regulated by a National Technical Approval (abZ) or a European Technical Approval (ETA).


The above assessment only applies to the tested "Friulsider Injection system KEM-UP 934 for concrete" anchors on the basis of the conditions that are set out in the Technical Data Sheets of Friulsider S.p.A.. In accordance with the specifications provided by Friulsider S.p.A. the anchors must be installed in compliance with European Technical Approval No.ETA-09/0061 of 14/06/2013.

The assessment for the above "Friulsider Injection system KEM-UP 934 for concrete" anchors only applies in connection with substrates made from uncracked reinforced concrete (strength class at least C20/25 and not higher than C50/60) that can at least be classified under a fire resistance class that corresponds to that of the anchors. It must also be considered that the anchors have for the time being only been approved of for normal intended use in uncracked reinforced concrete.

The validity of Test Report No. (3764/829/09)-NB of 10/03/2009 will, together with this letter, expire on 7 January 2019.



Kind regards,

i. A. 
ORR Dr.-Ing. Rohling
Head of Department

i. A. 
Dipl.-Ing. Bollmohr
Official/engineer in charge