

**TRANSLATION OF THE
MPA (BRAUNSCHWEIG) – CERTIFICATE (3019/272/07) -CM/NB-
OF 2007-11-01**

Note: *This translation was made by MKT GmbH & Co. KG to the best of our knowledge.*

March 2008, MKT GmbH & Co. KG

ABSTRACT OF THE ANALYSIS REPORT

DOCUMENT No.: (3019/272/07) –CM/NB- OF 2007-11-01

APPLICANT: MKT GMBH & Co. KG
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ORDER OF: JUNE 25, 2007

ORDER CIPHER: MR. DR. LI

RECEIPT OF ORDER: JUNE 25, 2007

ORDER TOPIC: TESTING AND EVALUATION OF THE FIRE BEHAVIOUR OF MKT CHEMICAL ANCHORS V COMBINED WITH ANCHOR RODS (IN THE SIZES M8 TO M24) MADE OF GALVANIZED STEEL AND STAINLESS STEEL A4 AS WELL AS OF HIGHLY CORROSION RESISTANT STEEL (HCR), ANCHORED IN THE TENSILE ZONE OF REINFORCED CONCRETE CEILINGS AND LOADED WITH AXIAL TENSION, IN ORDER TO EVALUATE THE FIRE RESISTANCE RATINGS

TESTING BASIS: DIN EN 1363-1:1999-10

RECEIPT OF SAMPLES: JULY 9, 2007

SAMPLE DRAWING: STATEMENTS REGARDING CERTIFIED SAMPLING WERE NOT PRESENTED TO THE INSPECTION AGENCY

SAMPLE CODING: NONE

VALID THRU: JULY 17, 2012

THIS ABSTRACT OF THE ANALYSIS REPORT COMPRISES 3 PAGES INCLUDING THE COVER SHEET. IT MAY ONLY BE PUBLISHED IN FULL.

1 General basics

An analysis report regarding the fire behaviour (concerning steel failure, pullout) of MKT chemical anchors V in case of a one-sided fire exposure according to DIN-EN 1363-1:1999-10 and loaded with tension load in order to evaluate the fire resistance ratings.

Technical basis:

- (1) DIN EN 1363-1: 1999-10,
- (2) MKT chemical anchor V with anchor rod V-A, made of galvanized steel in accordance with the technical documents of the applicant
- (3) ETA-05/0231 of July 26th, 2007
- (4) Analysis Report (3322/4573)-CM of August 18th, 2003.

2 Design recommendations

2.1 Design recommendations for MKT chemical anchor V with anchor rods V-A made of galvanized steel

Based on test results, the fire ratings dependent on the maximum tensile load of table 1 are recommended for MKT chemical anchors V with glass capsules V-P and anchor rods V-A made of galvanized steel (strength class ≥ 5.8). These chemical anchors are installed in uncracked standard concrete (strength classes $\geq C20/25$ and $\leq C50/60$) and exposed to a one-sided fire exposure according to DIN-EN 1363-1:1999-10.

Table 1: Fire resistance times of MKT chemical anchors V with anchor rods (sizes M8 to M24) made of galvanized steel (strength class ≥ 5.8) dependent on the maximum tensile load¹⁾

Anchor Size	Fire resistance time in minutes Maximum tensile load ¹⁾			
	30 max. F [kN]	60 max. F [kN]	90 max. F [kN]	120 max. F [kN]
M8	$\leq 2,30$	$\leq 1,29$	$\leq 0,79$	$\leq 0,53$
M10	$\leq 3,64$	$\leq 2,04$	$\leq 1,30$	$\leq 1,00$
M12	$\leq 5,26$	$\leq 3,07$	$\leq 2,00$	$\leq 1,50$
M16	$\leq 9,79$	$\leq 5,72$	$\leq 3,68$	$\leq 2,67$
M20	$\leq 15,28$	$\leq 8,93$	$\leq 5,75$	$\leq 4,16$
M24	$\leq 22,01$	$\leq 12,86$	$\leq 8,28$	$\leq 6,00$

¹⁾ In the future the loads resulting from the European Technical Approval might be standard for service conditions.

2.2 Design recommendations for MKT chemical anchor V with anchor rods V-A A4 and V-A HCR

Based on the these test results and the favourable high temperature behaviour of corrosion resistant steel concerning steel failure compared to galvanized steel loaded equally, the fire ratings according to table 1 are recommended for MKT chemical

anchors V with anchor rods V-A A4, resp. anchor rods V-A HCR made of corrosion resistant steel (material no. 1.4401, 1.4404, 1.4571 resp. 1.4578, strength class 70), resp. highly corrosion resistant steel (material no. 1.4529 resp. 1.4565, strength class 70), exposed to a one-sided fire exposure according to DIN-EN 1363-1:1999-10. See table 1 for details.

3 Specific indications

The analysis report no. (3019/272/07) – CM/NB of 2007-11-01 does not replace a general technical approval by the building authorities. The designer must consider that the fire exposure ratings for chemical anchors might in the future be governed within European Technical Approvals.

The preceding evaluation only applies for MKT chemical anchors V with glass capsules V-P installed with anchor rods V-A made of galvanized steel (strength class ≥ 5.8), corrosion resistant steel A4 or highly corrosion resistant steel (HCR), regarding the ancillary conditions of the applicants' technical documents.

The evaluation results for the above mentioned MKT chemical anchors are only valid for installations in one-sided exposed structures made of reinforced concrete with the same or higher class of fire resistance as the fire resistance of the anchors.

The validity of the analysis report no. (3019/272/07) – CM/NB of 2007-11-01 is valid thru 2012-07-17.