

Document Number: 3081/203/07 –NB Dated 11th December 2007  
Principal: B+BTec  
Munterij 8  
4762 AH Zevenbergen

Order Date: 30th November 2007

Test Specification: Tensile pull testing of chemically bonded anchors reference B+BTec VDP with all thread rods sizes M8 to M24 inclusive in grade 5.8 zinc plated steel, grade AISI 316 stainless steels and high corrosion resistant stainless steels. Anchors were installed in the tensile zone of reinforced concrete. The objective of the test programme was to check the behaviour of the anchors in fire conditions and to determine their fire resistance capacity.

Test Procedure based on: DIN EN 1363-1: 1999-10

Samples Supplied: 9th July 2007

Testing of Samples: No details available.

Anchor Testing Dates: 17th July 2007 and 20th July 2007.

Validity: 1st November 2012

## **1 General Principles**

The standard requires that a test report is issued detailing the performance of chemically bonded anchors under tensile load denoting the mode of failure (steel failure, pull out etc.) under a one-sided fire load condition as specified in DIN EN 1363-1: 1999-10, to determine the fire resistance capacity.

Principle References:

1. Din EN 1363-1: 1999-10
2. B+BTec Technical Data Sheet for bonded anchors reference VDP with zinc plated steel all thread rods
3. ETA-05/215 dated 29th June 2007

## **2 Recommended Loads**

### **2.1 Recommended loads for B+BTec VDP Chemical Anchors used with grade 5.8 zinc plated all thread rods**

Load data is based on test results in a one sided fire load condition as required in DIN EN 1363-1: 1999-10. Please consult table 1 to establish the maximum permitted fire resistance tensile capacity when using B+BTec VD chemical anchors with reference VDP-EA glass capsules and grade 5.8 steel all thread in uncracked reinforced concrete, strength class range C20/25 – C50/60.

Table 1: Tensile Fire Resistance Load Capacity for Grade 5.8 Zinc Plated Steel  
All Thread Rods (M8 to M24) with B+BTec VDP Chemical Anchors

Anchor Dimension	Fire resistance in minutes at maximum tensile load <sup>1)</sup>			
	30 max. F [kN]	60 max. F [kN]	90 max. F [kN]	120 max.F [kN]
<b>M8</b>	≤ 2,30	≤ 1,29	≤ 0,79	≤ 0,53
<b>M10</b>	≤ 3,64	≤ 2,04	≤ 1,30	≤ 1,00
<b>M12</b>	≤ 5,26	≤ 3,07	≤ 2,00	≤ 1,50
<b>M14</b>	≤ 7,17	≤ 4,19	≤ 2,70	≤ 1,95
<b>M16</b>	≤ 9,79	≤ 5,72	≤ 3,68	≤ 2,67
<b>M20</b>	≤ 15,28	≤ 8,93	≤ 5,75	≤ 4,16
<b>M24</b>	≤ 22,01	≤ 12,86	≤ 8,28	≤ 6,00

(1) To determine safe working loads please consult technical data sheets and/or European Technical Approval documents which may take precedence.

## 2.2 Recommended loads for B+BTec VDP Chemical Anchors used with grade AISI 316 and high corrosion resistance stainless steel all thread rods.

Load data is based on the test results and the knowledge that stainless steels perform better at higher temperatures than zinc plated carbon steels. The safe working loads for B+BTec VDP chemical anchors with stainless steel grades reference 1.4401, 1.4404 and 1.4571, strength classes 70 and 80 and high corrosion resistance grades 1.4529 and 1.4565, strength class 70 can therefore be taken from table 1.

### **3 Special Notes**

Test Report number 3081/203/07 – NB dated 11th December 2007 cannot be used as a replacement for official technical approvals. It is probable that future issues of the European Technical Approvals will include fire resistance capacity data and this should be considered at design stage.

Technical data and supporting information is only valid for the B+BTec VDP chemical anchors used in the test program. These are all thread rods in grade 5.8 zinc plated steel and stainless steels grade AISI 316 and high corrosion resistance used with reference VDP-EA glass capsules. Please refer to the conditions in B+BTec technical data sheet for additional information.

This chemical anchor data can only be considered as valid for applications having one sided fire loading of reinforced concrete elements. Anchors must be capable of meeting the minimum requirements of the fire load classification for the area in which they are to be installed.

The validity of this Test Report number 3081/203/07 – NB dated 11th December 2007 ends on 1st November 2010.