

Test report

005839 / 2025

Material: **Stoneglass**

Description: **---**

Date of testing **26.05.2025**

Applicant: **no information**

Production: **Italy**

Place of origin: **Italy**

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Attachment:

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Kind Regards

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Department ACT



Head of test laboratory: Joachim Lehmann



tested by: Rainer Huss

1 Flexural strength – Determination under concentrated load, 10mm

1.1 Results

Test No.	Geometrie				Load	bending strength
	height h ¹⁾	width b ¹⁾	length L	span l	F _u	
1	9,8 mm	90,4 mm	180 mm	100 mm	7,97 kN	138,3 MPa
2	9,8 mm	90,4 mm	180 mm	100 mm	7,00 kN	121,4 MPa
3	9,8 mm	90,2 mm	180 mm	100 mm	6,30 kN	109,8 MPa
4	9,8 mm	90,4 mm	180 mm	100 mm	7,41 kN	128,8 MPa
5	9,8 mm	90,5 mm	180 mm	100 mm	7,36 kN	127,3 MPa
6	9,7 mm	90,4 mm	180 mm	100 mm	7,32 kN	130,0 MPa
7	9,7 mm	90,4 mm	180 mm	100 mm	7,53 kN	133,6 MPa
8	9,5 mm	90,3 mm	180 mm	100 mm	7,43 kN	135,9 MPa
9	9,8 mm	89,3 mm	180 mm	100 mm	6,91 kN	120,9 MPa
10	9,7 mm	90,3 mm	180 mm	100 mm	7,64 kN	135,8 MPa

¹⁾ at line of fracture

Statistics:

number of tests: 10

mean ultimate bending strength β_{uM} : 128,2 MPa

standard deviation: 8,8 MPa

$v = 6,8\%$

confidence level:

75%

k-value: 2,104

expectancy value $\beta_{u5\%}$: 109,8 MPa

Remarks:

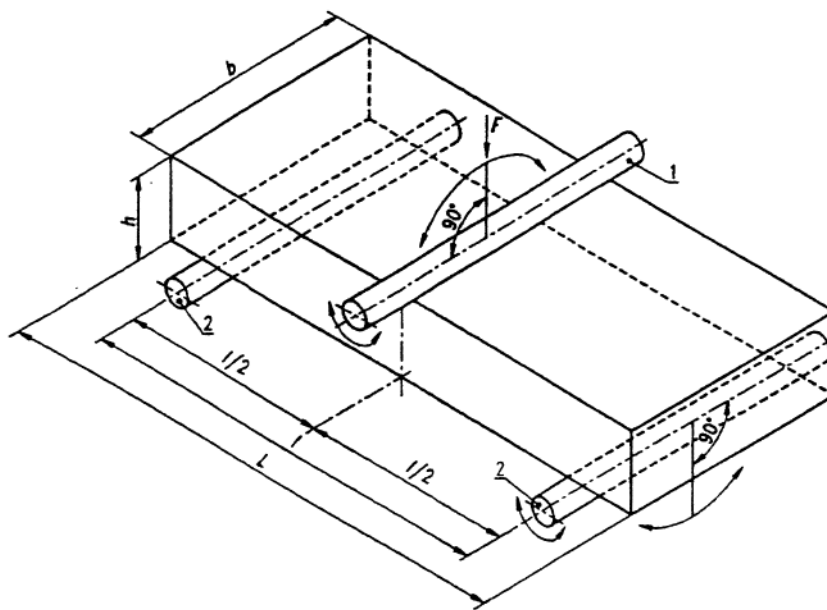
- 1 MPa = 1 N/mm²
- Type and location of break, if not at line of fracture
 - 1)
 - 2)
 - 3)
 - 4)
 - 5)
 - 6)
 - 7)
 - 8)
 - 9)
 - 10)

1.2 Annotations

The applicant has provided samples to test the flexural strength of the material. The tests are related to EN 12372 (Natural stone test methods – Determination of flexural strength under concentrated load) A detailed description of the test can be found in the fischer testing regulations.

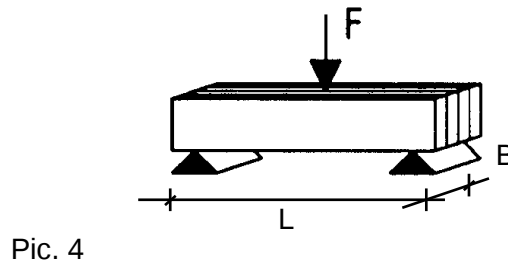
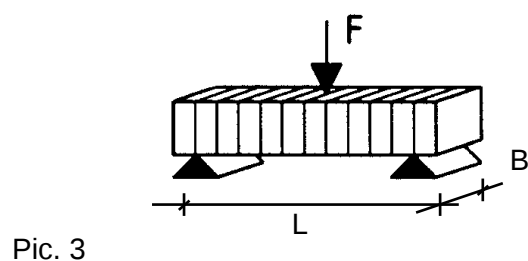
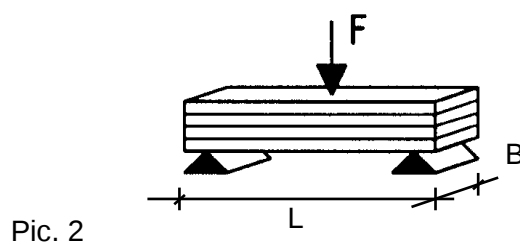
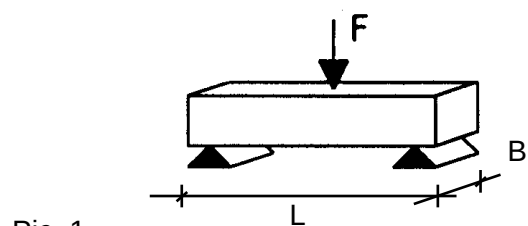
Generally, the tests are carried out at room temperature under equilibrium moisture content.

The tests are executed according to below pictures.



Arrangement for bending test.

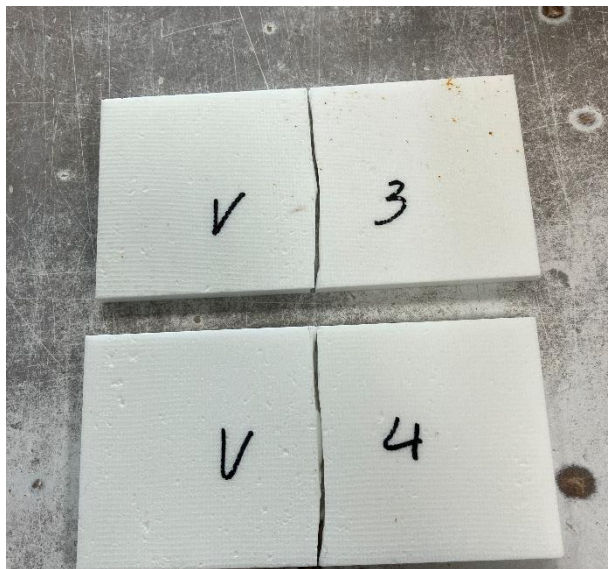
Arrangement of layered material **according to picture 1**, (visual check).



1.3 Pictures



Picture 1: Test equipment



Picture 2: Typical material failure

2 Flexural strength – Determination under concentrated load, 12mm

2.1 Results

Test No.	Geometrie				Load	bending strength
	height h ¹⁾	width b ¹⁾	length L	span l	F _u	
1	12,3 mm	90,5 mm	180 mm	100 mm	6,63 kN	72,3 MPa
2	12,4 mm	90,6 mm	180 mm	100 mm	5,81 kN	62,7 MPa
3	12,4 mm	90,6 mm	180 mm	100 mm	6,48 kN	69,8 MPa
4	12,4 mm	90,6 mm	180 mm	100 mm	5,71 kN	61,9 MPa
5	12,3 mm	90,4 mm	180 mm	100 mm	7,04 kN	77,0 MPa
6	12,4 mm	90,6 mm	180 mm	100 mm	5,22 kN	56,2 MPa
7	12,4 mm	90,6 mm	180 mm	100 mm	6,92 kN	75,0 MPa
8	12,4 mm	90,6 mm	180 mm	100 mm	6,97 kN	75,3 MPa
9	12,4 mm	90,7 mm	180 mm	100 mm	6,66 kN	71,9 MPa
10	12,4 mm	90,6 mm	180 mm	100 mm	6,92 kN	75,0 MPa

¹⁾ at line of fracture

Statistics:

number of tests: 10

mean ultimate bending strength β_{uM} : 69,7 MPa

standard deviation: 7,0 MPa

$v = 10,1\%$

confidence level:

75%

k-value: 2,104

expectancy value $\beta_{u5\%}$: 54,9 MPa

Remarks:

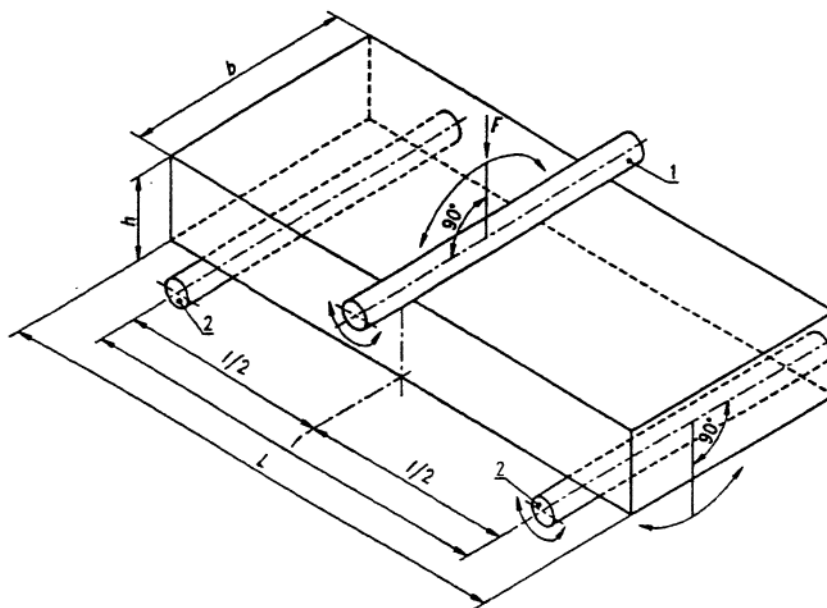
- 1 MPa = 1 N/mm²
- Type and location of break, if not at line of fracture
 - 1)
 - 2)
 - 3)
 - 4)
 - 5)
 - 6)
 - 7)
 - 8)
 - 9)
 - 10)

2.2 Annotations

The applicant has provided samples to test the flexural strength of the material. The tests are related to EN 12372 (Natural stone test methods – Determination of flexural strength under concentrated load) A detailed description of the test can be found in the fischer testing regulations.

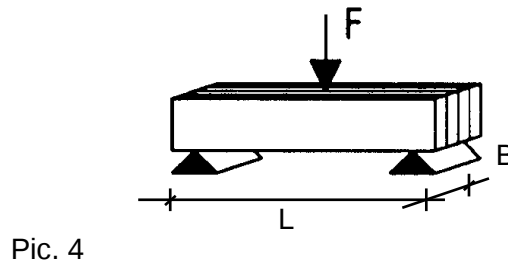
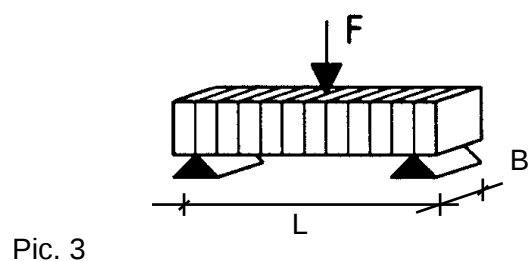
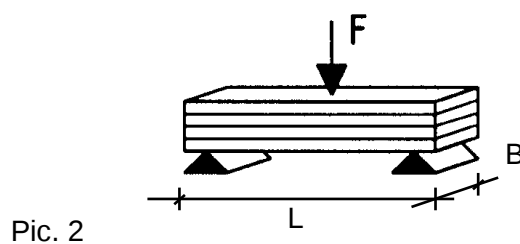
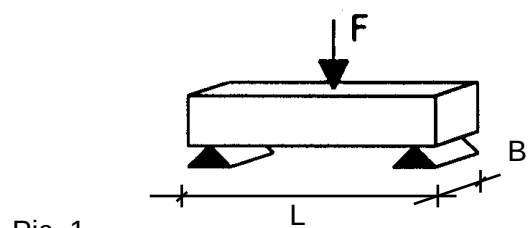
Generally, the tests are carried out at room temperature under equilibrium moisture content.

The tests are executed according to below pictures.



Arrangement for bending test.

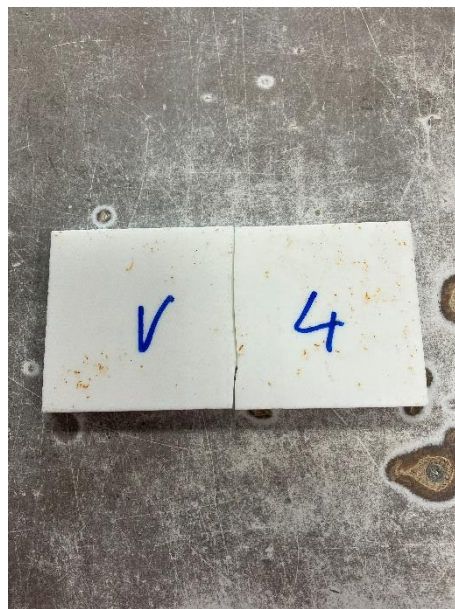
Arrangement of layered material **according to picture 1**, (visual check).



2.3 Pictures



Picture 3: Test equipment



Picture 4: Typical material failure

3 Flexural strength – Determination under concentrated load, 18mm

3.1 Results

Test No.	Geometrie				Load	bending strength
	height h ¹⁾	width b ¹⁾	length L	span l	F _u	
1	18,2 mm	90,6 mm	180 mm	100 mm	24,55 kN	123,5 MPa
2	17,9 mm	90,3 mm	180 mm	100 mm	24,14 kN	125,2 MPa
3	17,8 mm	90,3 mm	180 mm	100 mm	21,25 kN	112,0 MPa
4	17,9 mm	90,2 mm	180 mm	100 mm	22,22 kN	115,4 MPa
5	18,0 mm	90,1 mm	180 mm	100 mm	26,50 kN	136,6 MPa
6	17,8 mm	90,0 mm	180 mm	100 mm	22,61 kN	118,6 MPa
7	18,0 mm	90,4 mm	180 mm	100 mm	27,88 kN	142,4 MPa
8	17,9 mm	90,5 mm	180 mm	100 mm	25,77 kN	133,0 MPa
9	18,1 mm	90,5 mm	180 mm	100 mm	24,33 kN	123,1 MPa
10	18,1 mm	90,4 mm	180 mm	100 mm	24,87 kN	126,5 MPa

¹⁾ at line of fracture

Statistics:

number of tests: 10

mean ultimate bending strength β_{uM} : 125,6 MPa

standard deviation: 9,5 MPa

$v = 7,5\%$

confidence level: 75%

k-value: 2,104

expectancy value $\beta_{u5\%}$: 105,7 MPa

Remarks:

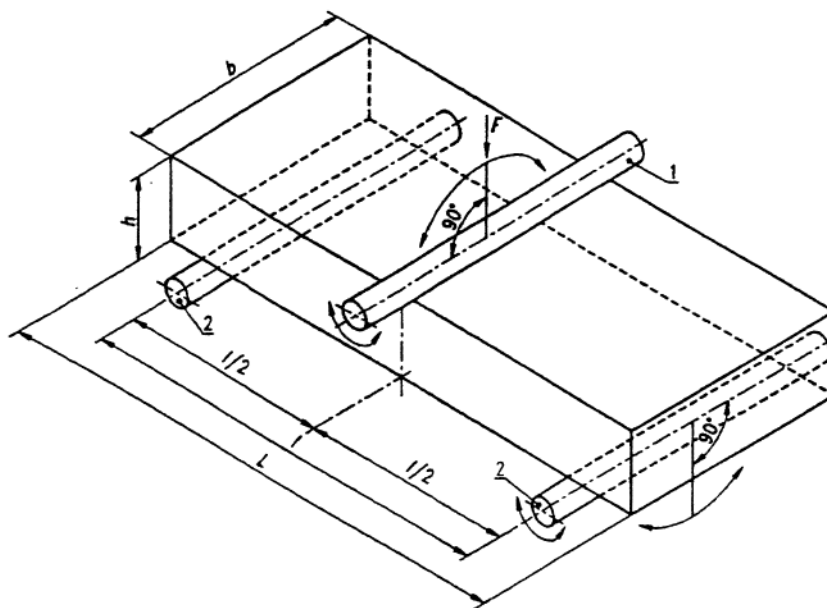
- 1 MPa = 1 N/mm²
- Type and location of break, if not at line of fracture
 - 1)
 - 2)
 - 3)
 - 4)
 - 5)
 - 6)
 - 7)
 - 8)
 - 9)
 - 10)

3.2 Annotations

The applicant has provided samples to test the flexural strength of the material. The tests are related to EN 12372 (Natural stone test methods – Determination of flexural strength under concentrated load) A detailed description of the test can be found in the fischer testing regulations.

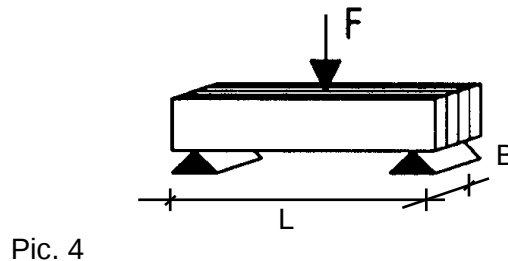
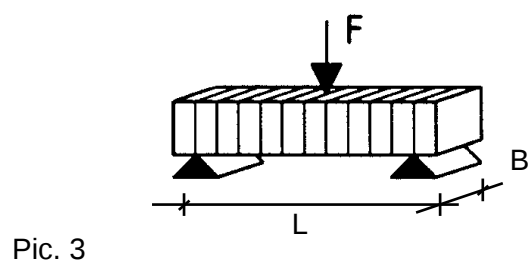
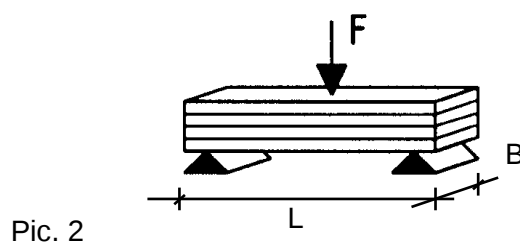
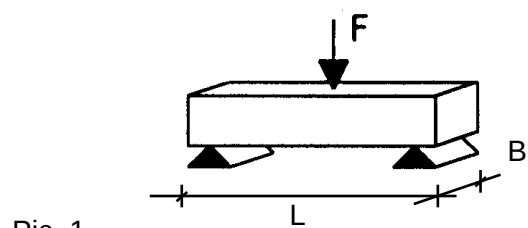
Generally, the tests are carried out at room temperature under equilibrium moisture content.

The tests are executed according to below pictures.



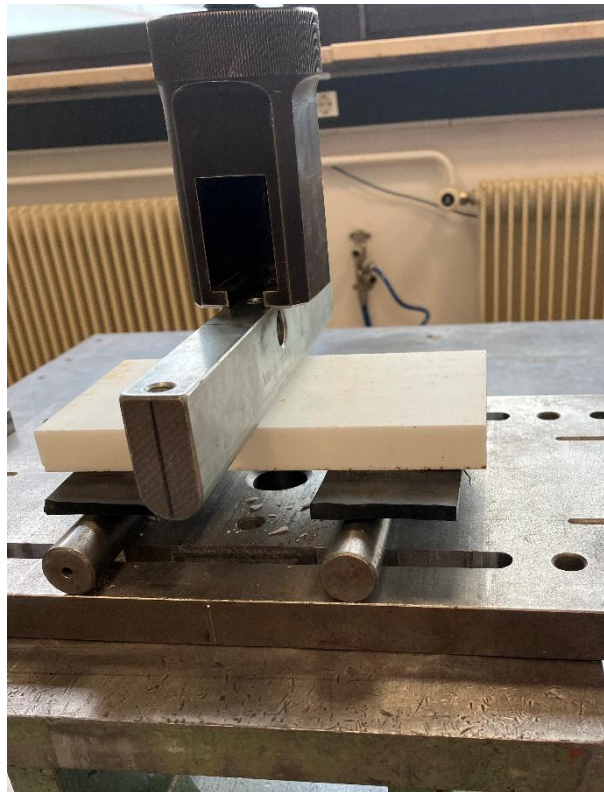
Arrangement for bending test.

Arrangement of layered material **according to picture 1**, (visual check).





3.3 Pictures



Picture 5: Test equipment



Picture 6: Typical material failure

4 FZP II T anchor tension test, 10mm

4.1 Results

Test results

Test No.	type of failure			Ultimate load N_u	Comments
	pull out cone	diameter	stone fracture	steel failure	
1			x		2,71 kN
2			x		3,40 kN
3			x		3,44 kN
4			x		3,38 kN
5			x		3,63 kN
6			x		3,58 kN
7			x		3,43 kN
8			x		3,44 kN
9			x		3,56 kN
10			x		3,36 kN

Statistics:

number of tests: 10

mean value N_{um} : 3,39 kN

standard deviation: 0,25 kN

$v = 7,4\%$

confidence level: 75%

k-value: 2,104

expectancy value $N_{u5\%}$: 2,86 kN

mean diameter of pull out cone: 0 mm

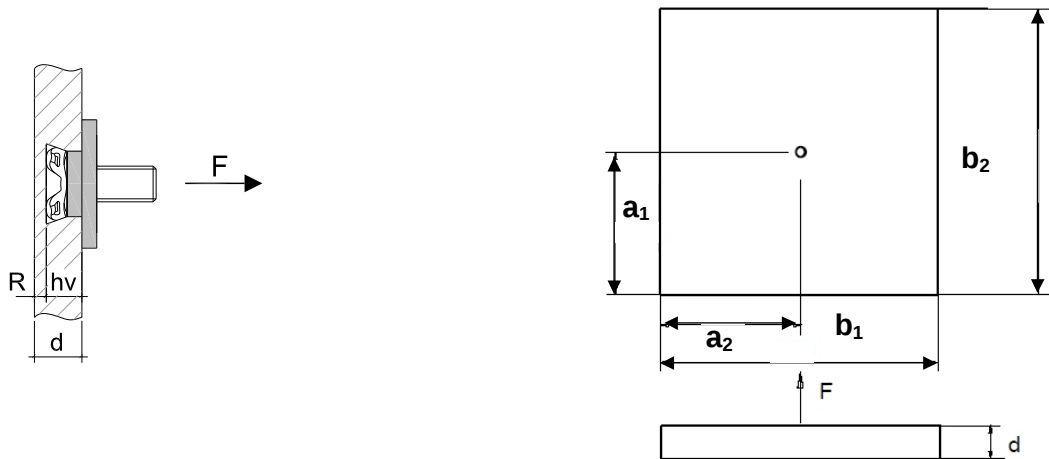
4.2 Annotations

The applicant has submitted samples for testing the load-bearing capacity with the fischer undercut anchor FZP II.

The description of the test can be found in the fischer testing regulations.

The undercut hole is drilled either by the provider of the samples or by the testing laboratory. The dimensions of the holes are checked, before the anchor is installed. All holes are within the required accuracy.

The pull-out load is equivalent to the ultimate load by the appearance of the first failure.



Type of anchor: **fischer FZP II 11 x 6 M6 T 10 PA**

Anchorage depth h_v : **6 mm**

drill hole diameter: **11 mm**

panel thickness d : **10 mm**

panel size b_1 : **200 mm**

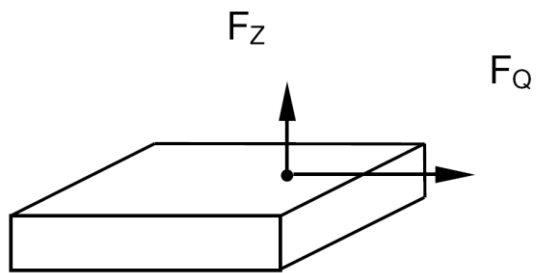
panel size b_2 : **200 mm**

edge space a_1 : **100 mm**

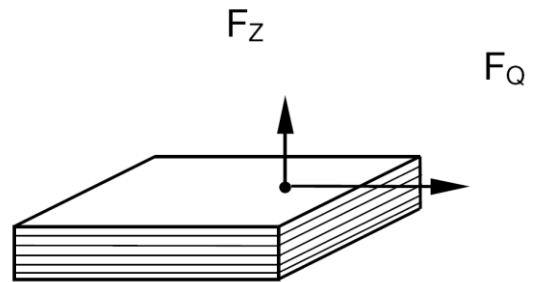
edge space a_2 : **100 mm**

Support diameter: **135 mm**

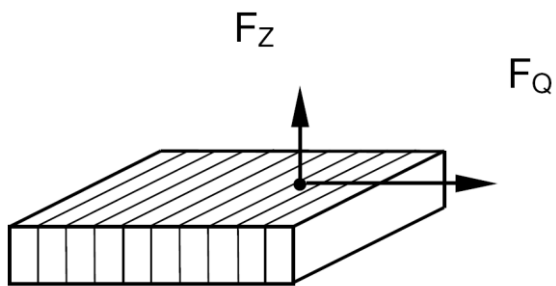
Arrangement of layered material **according to Picture 1.**



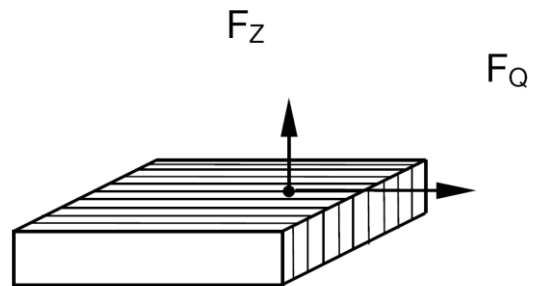
Picture 1



Picture 2



Picture 3

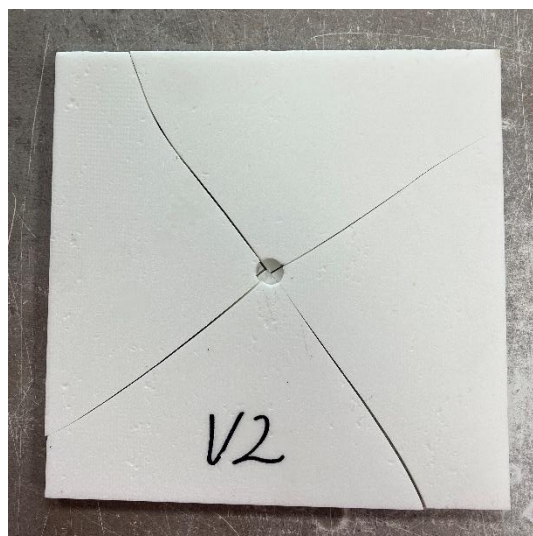


Picture 4

4.3 Pictures



Picture 7: Test specimen in Testing Machine



Picture 8: Typical failure

5 FZP II T anchor tension test, 12mm

5.1 Results

Test results

Test No.	type of failure			Ultimate load N _u	Comments
	pull out cone	diameter	stone fracture	steel failure	
1			x		4,15 kN
2			x		4,64 kN
3			x		3,97 kN
4			x		4,41 kN
5			x		3,51 kN
6			x		5,00 kN
7			x		3,97 kN
8			x		4,01 kN
9			x		3,72 kN
10			x		3,62 kN

Statistics:

number of tests: 10

mean value N_{um}: **4,10 kN**

standard deviation: **0,46 kN**

v = 11,2%

confidence level: 75%

k-value: 2,104

expectancy value N_{u5%}: **3,13 kN**

mean diameter of pull out cone: 0 mm

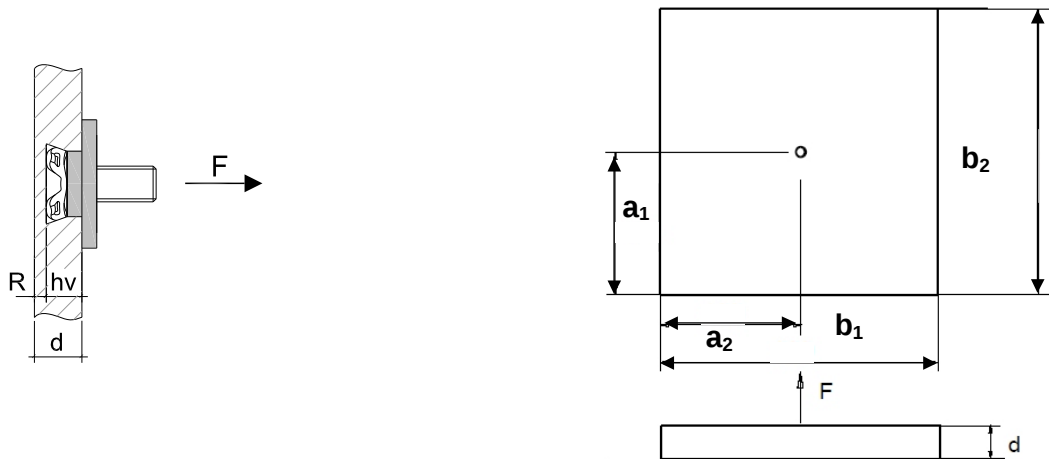
5.2 Annotations

The applicant has submitted samples for testing the load-bearing capacity with the fischer undercut anchor FZP II.

The description of the test can be found in the fischer testing regulations.

The undercut hole is drilled either by the provider of the samples or by the testing laboratory. The dimensions of the holes are checked, before the anchor is installed. All holes are within the required accuracy.

The pull-out load is equivalent to the ultimate load by the appearance of the first failure.



Type of anchor: **fischer FZP II 11 x 8 M6 T 12 PA**

Anchorage depth h_v : **8 mm**

drill hole diameter: **11 mm**

panel thickness d : **12 mm**

panel size b_1 : **200 mm**

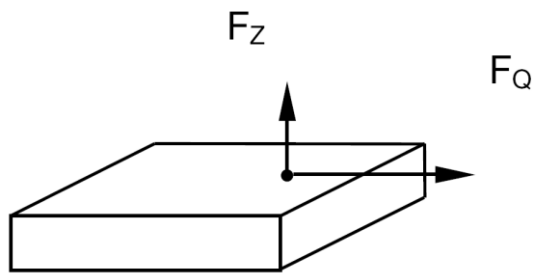
panel size b_2 : **200 mm**

edge space a_1 : **100 mm**

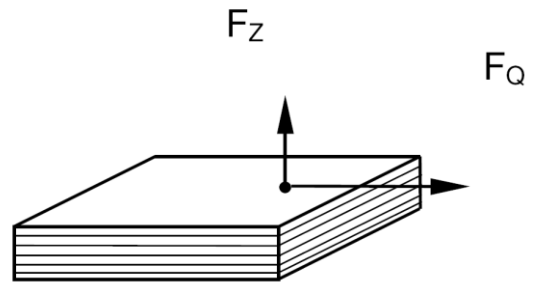
edge space a_2 : **100 mm**

Support diameter: **135 mm**

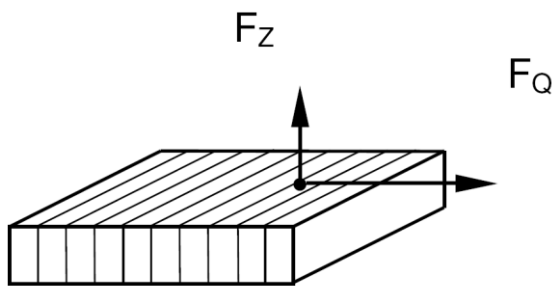
Arrangement of layered material **according to Picture 1.**



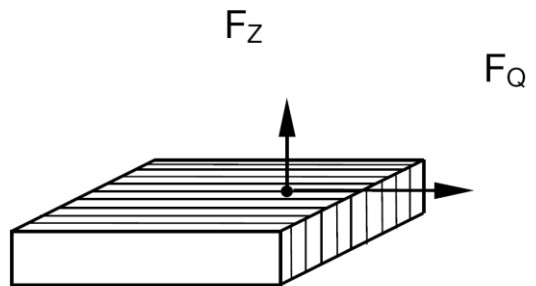
Picture 1



Picture 2



Picture 3

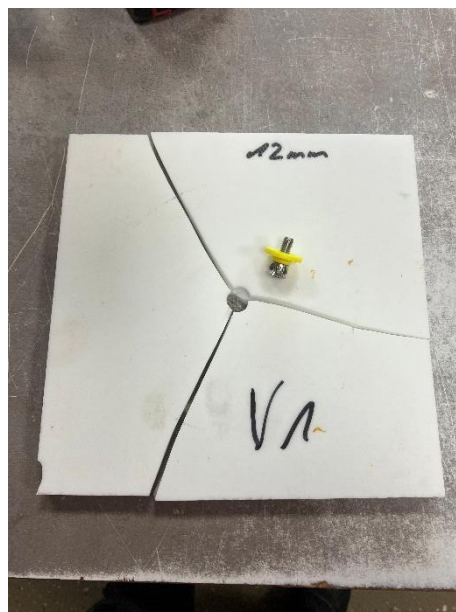


Picture 4

5.3 Pictures



Picture 9: Test specimen in Testing Machine



Picture 10: Typical failure

6 FZP II T anchor tension test, 18mm

6.1 Results

Test results

Test No.	type of failure			Ultimate load N_u	Comments
	pull out cone	diameter	stone fracture	steel failure	
1			x		8,46 kN
2			x		11,58 kN
3			x		11,07 kN
4			x		9,91 kN
5			x		11,99 kN
6			x		10,75 kN
7			x		11,23 kN
8			x		11,14 kN
9			x		11,67 kN
10			x		10,03 kN

Statistics:

number of tests: 10

mean value N_{um} : 10,78 kN

standard deviation: 1,05 kN

$v = 9,7\%$

confidence level: 75%

k-value: 2,104

expectancy value $N_{u5\%}$: 8,57 kN

mean diameter of pull out cone: 0 mm

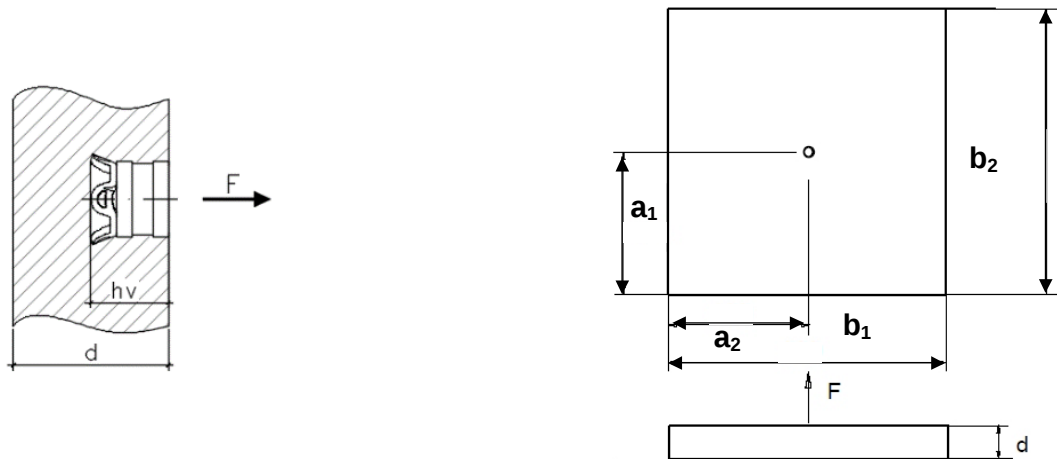
6.2 Annotations

The applicant has submitted samples for testing the load-bearing capacity with the fischer undercut anchor FZP II.

The description of the test can be found in the fischer testing regulations.

The undercut hole is drilled either by the provider of the samples or by the testing laboratory. The dimensions of the holes are checked, before the anchor is installed. All holes are within the required accuracy.

The pull-out load is equivalent to the ultimate load by the appearance of the first failure.



Type of anchor: **fischer FZP II 13 x 12 M6 I**

Anchorage depth h_v : **12 mm**

drill hole diameter: **13 mm**

panel thickness d : **18 mm**

panel size b_1 : **200 mm**

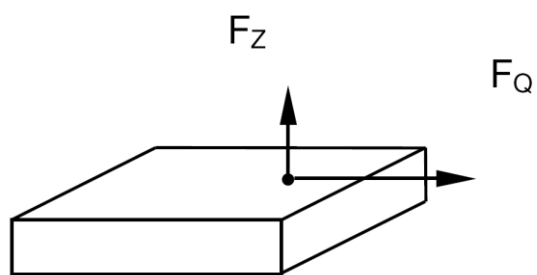
panel size b_2 : **200 mm**

edge space a_1 : **100 mm**

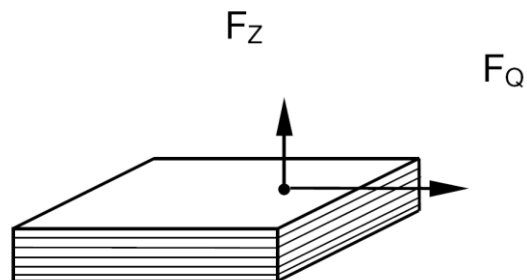
edge space a_2 : **100 mm**

Support diameter: **135 mm**

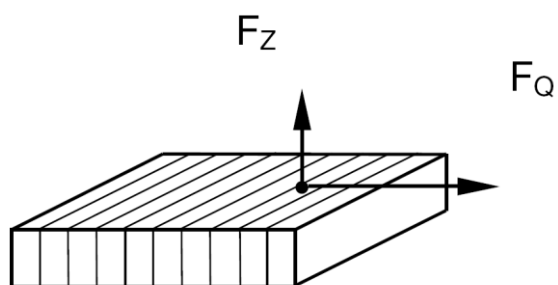
Arrangement of layered material **according to Picture 1.**



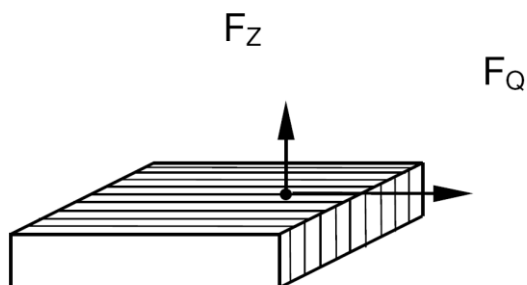
Picture 1



Picture 2



Picture 3

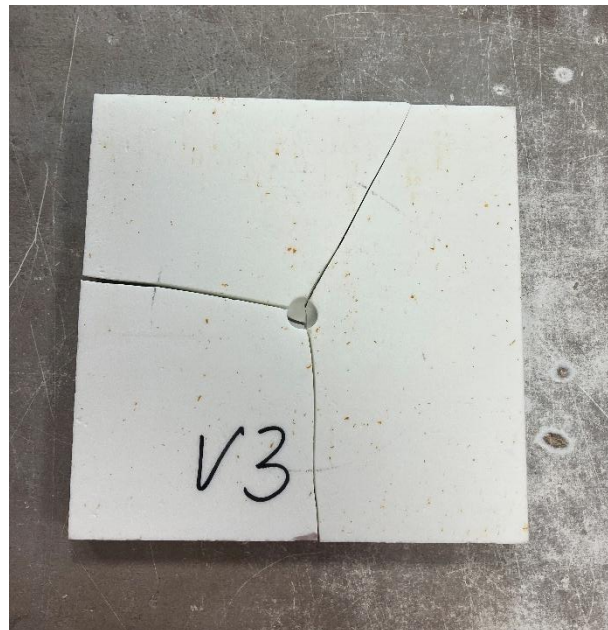


Picture 4

6.3 Pictures



Picture 11: Test specimen in Testing Machine



Picture 12: Typical failure

7 FZP II T anchor shear load, 10mm

7.1 Results

Test No.	type of failure			Ultimate load	Comments
	pull out cone	stone fracture	steel failure	V_u	
1		x		5,59 kN	
2		x		5,46 kN	
3		x		6,08 kN	
4		x		5,70 kN	
5		x		5,61 kN	
6		x		5,59 kN	
7		x		5,46 kN	
8		x		6,08 kN	
9		x		5,70 kN	
10		x		5,61 kN	

Double tests two times counted

Statistics:

number of tests: 10

mean value V_{uM} : 5,68 kN

standard deviation: 0,22 kN

$v = 3,9\%$

confidence level: 75%

k-value: 2,104

expectancy value $V_{u5\%}$: 5,22 kN

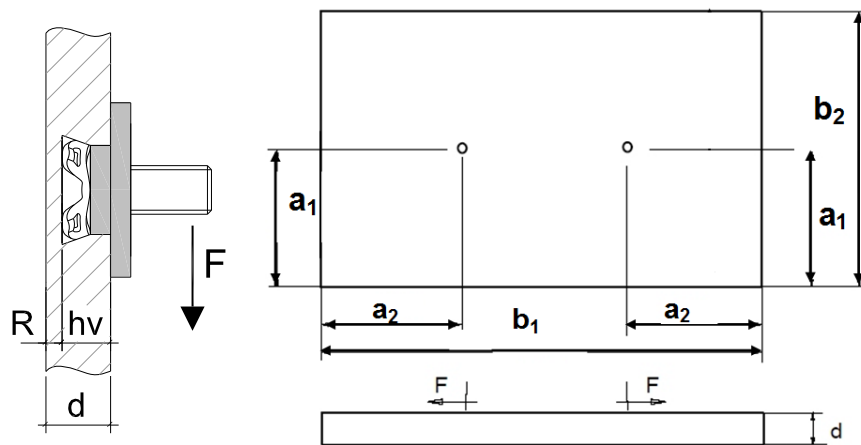
7.2 Annotations

The applicant has submitted samples for testing the shearload-bearing capacity with the fischer undercut anchor FZP II.

The description of the test can be found in the fischer testing regulations.

The undercut hole is drilled either by the provider of the samples or by the testing laboratory. The dimensions of the holes are checked, before the anchor is installed. All holes are within the required accuracy.

The pull-out load is equivalent to the ultimate load by the appearance of the first failure.



Type of anchor: **fischer FZP II 11 x 6 M6 T 10 PA**

Anchorage depth h_v : **6 mm**

drill hole diameter: **11 mm**

panel thickness d : **10 mm**

panel size b_1 : **400 mm**

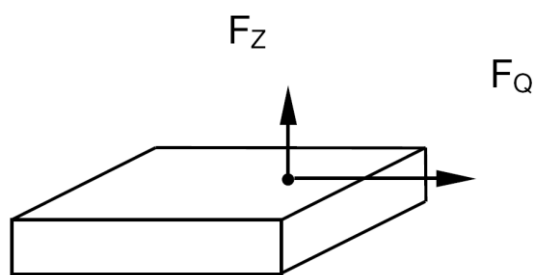
panel size b_2 : **200 mm**

edge space a_1 : **100 mm**

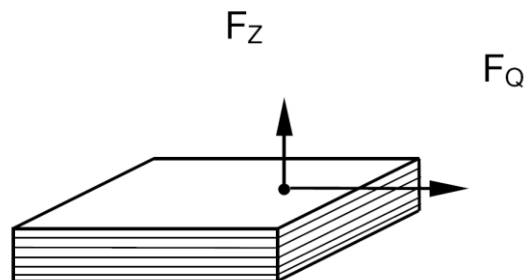
edge space a_2 : **100 mm**

distance to attached bracket: **2,5 mm**

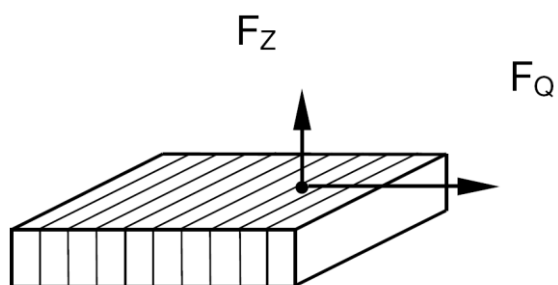
Arrangement of layered material **according to Picture 1.**



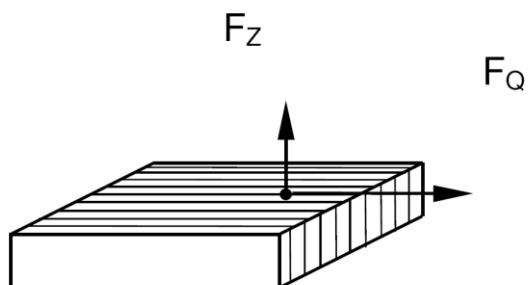
Picture 1



Picture 2

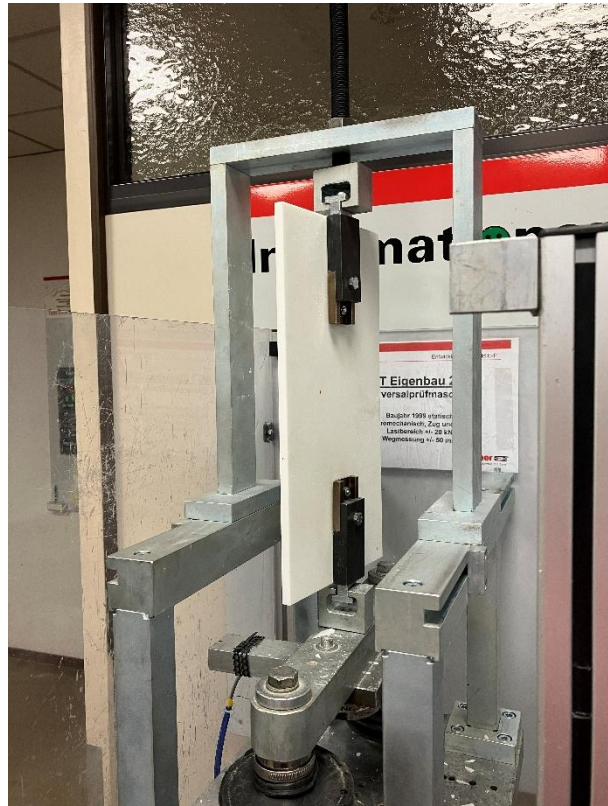


Picture 3

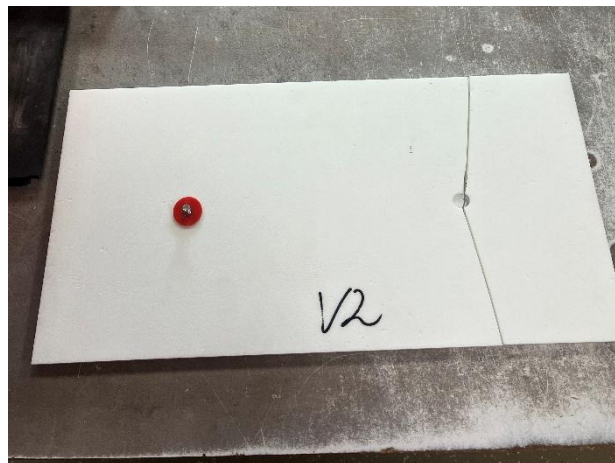


Picture 4

7.3 Pictures



Picture 13: Test specimen in Testing Machine



Picture 14: Typical failure

8 FZP II T anchor shear load, 12mm

8.1 Results

Test No.	type of failure			Ultimate load	Comments
	pull out cone	stone fracture	steel failure	V_u	
1		x		5,66 kN	
2		x		5,41 kN	
3		x		5,64 kN	
4		x		4,97 kN	
5		x		5,74 kN	
6		x		5,66 kN	
7		x		5,41 kN	
8		x		5,64 kN	
9		x		4,97 kN	
10		x		5,74 kN	

Double tests two times counted

Statistics:

number of tests:	10	
mean value V_{uM} :	5,48 kN	
standard deviation:	0,29 kN	$v = 5,3\%$
confidence level:	75%	
k-value:	2,104	
expectancy value $V_{u5\%}$:	4,87 kN	

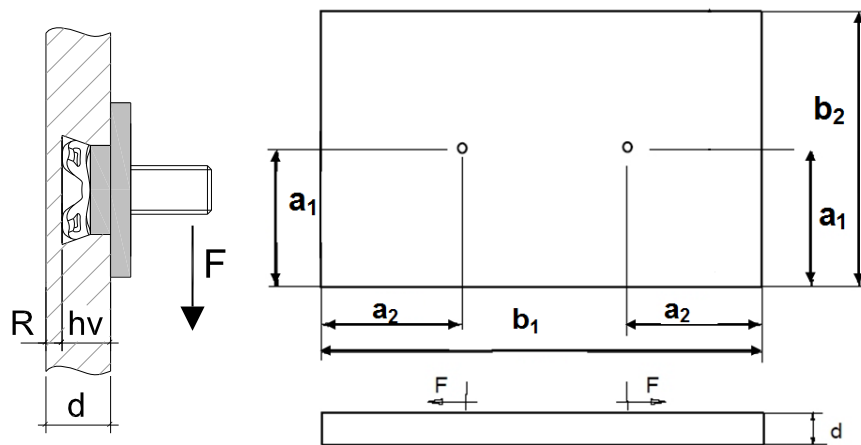
8.2 Annotations

The applicant has submitted samples for testing the shearload-bearing capacity with the fischer undercut anchor FZP II.

The description of the test can be found in the fischer testing regulations.

The undercut hole is drilled either by the provider of the samples or by the testing laboratory. The dimensions of the holes are checked, before the anchor is installed. All holes are within the required accuracy.

The pull-out load is equivalent to the ultimate load by the appearance of the first failure.



Type of anchor: **fischer FZP II 11 x 8 M6 T 12 PA**

Anchorage depth h_v : **8 mm**

drill hole diameter: **11 mm**

panel thickness d : **12 mm**

panel size b_1 : **400 mm**

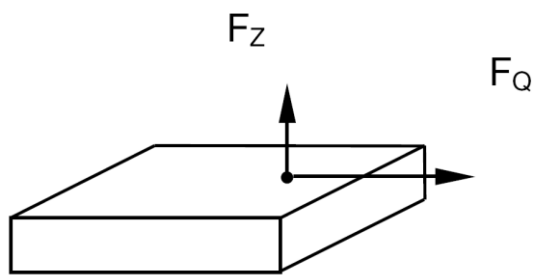
panel size b_2 : **200 mm**

edge space a_1 : **100 mm**

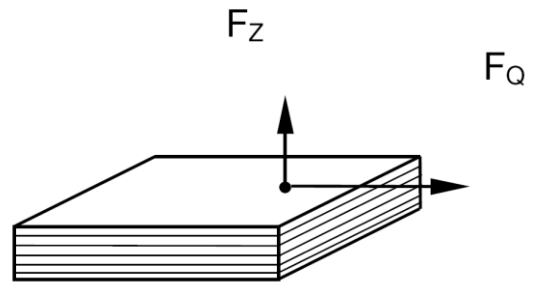
edge space a_2 : **100 mm**

distance to attached bracket: **2,5 mm**

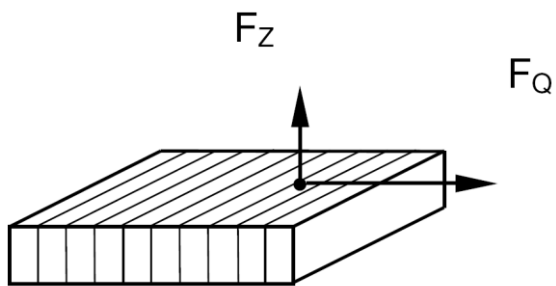
Arrangement of layered material **according to Picture 1.**



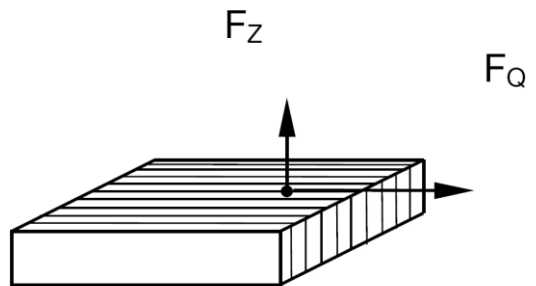
Picture 1



Picture 2

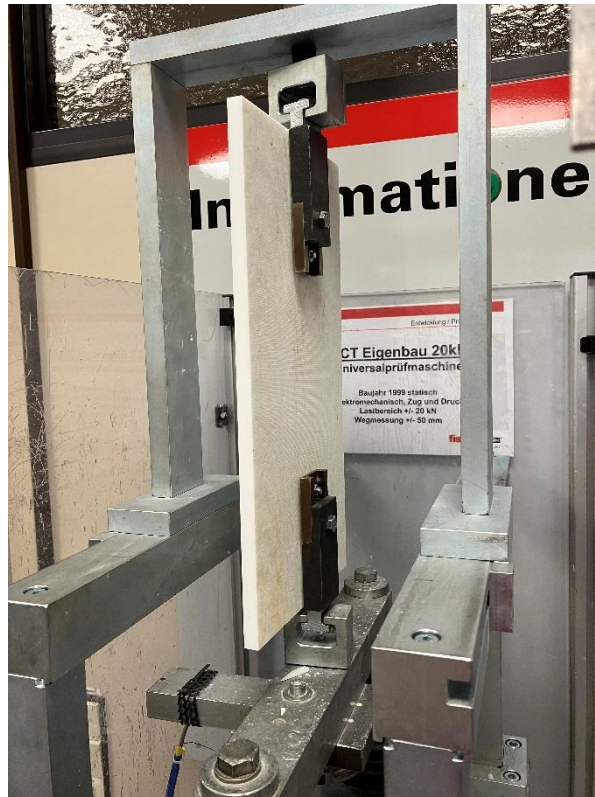


Picture 3

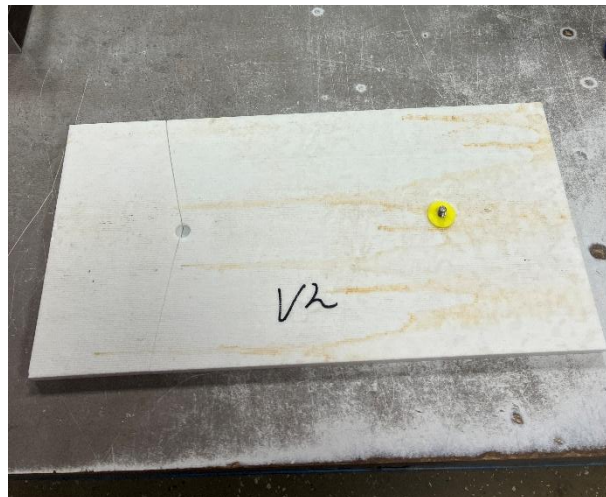


Picture 4

8.3 Pictures



Picture 15: Test specimen in Testing Machine



Picture 16: Typical failure

9 FZP II T anchor shear load, 18mm

9.1 Results

Test No.	type of failure			Ultimate load V_u	Comments
	pull out cone	stone fracture	steel failure		
1		x		10,67 kN	
2		x		10,23 kN	
3		x		9,93 kN	
4		x		10,90 kN	
5		x		10,42 kN	
6		x		10,67 kN	
7		x		10,23 kN	
8		x		9,93 kN	
9		x		10,90 kN	
10		x		10,42 kN	

Double tests two times counted

Statistics:

number of tests:	10	
mean value V_{uM} :	10,43 kN	
standard deviation:	0,35 kN	$v = 3,4\%$
confidence level:	75%	
k-value:	2,104	
expectancy value $V_{u5\%}$:	9,69 kN	

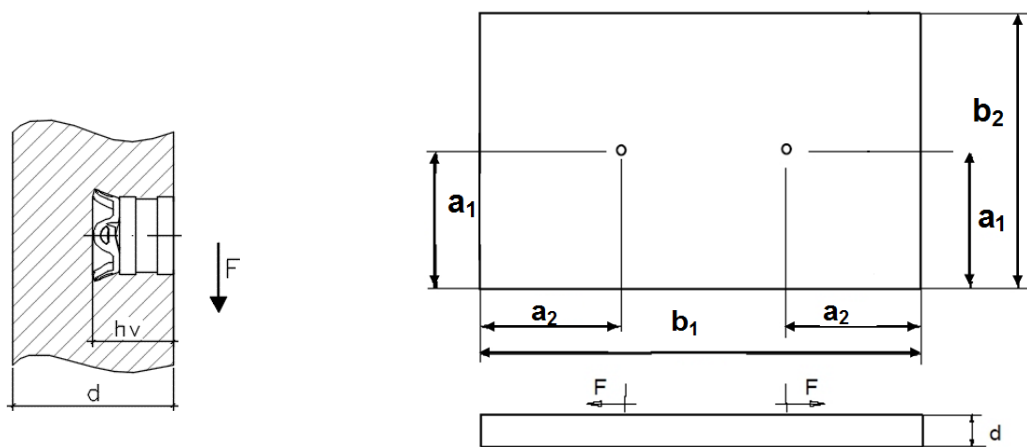
9.2 Annotations

The applicant has submitted samples for testing the shearload-bearing capacity with the fischer undercut anchor FZP II.

The description of the test can be found in the fischer testing regulations.

The undercut hole is drilled either by the provider of the samples or by the testing laboratory. The dimensions of the holes are checked, before the anchor is installed. All holes are within the required accuracy.

The pull-out load is equivalent to the ultimate load by the appearance of the first failure.



Type of anchor: **fischer FZP II 13 x 12 M6 I**

Anchorage depth h_v : **12 mm**

drill hole diameter: **13 mm**

panel thickness d : **18 mm**

panel size b_1 : **400 mm**

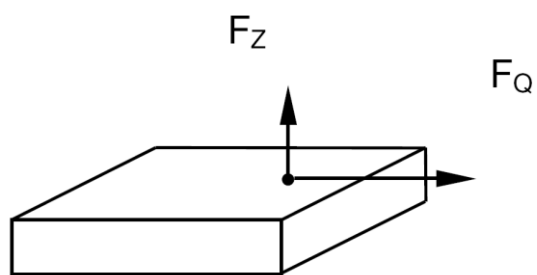
panel size b_2 : **200 mm**

edge space a_1 : **100 mm**

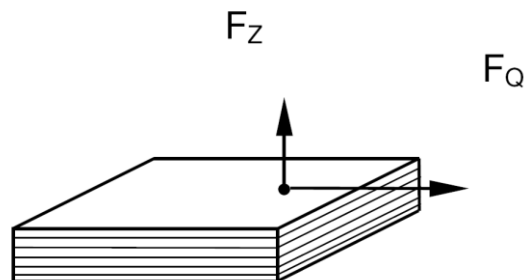
edge space a_2 : **100 mm**

distance to attached bracket: **0 mm**

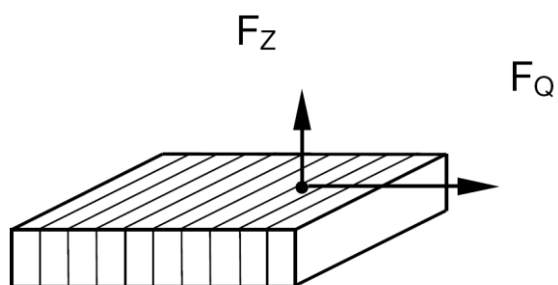
Arrangement of layered material **according to Picture 1.**



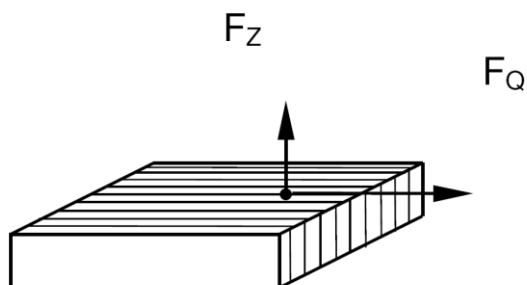
Picture 1



Picture 2



Picture 3

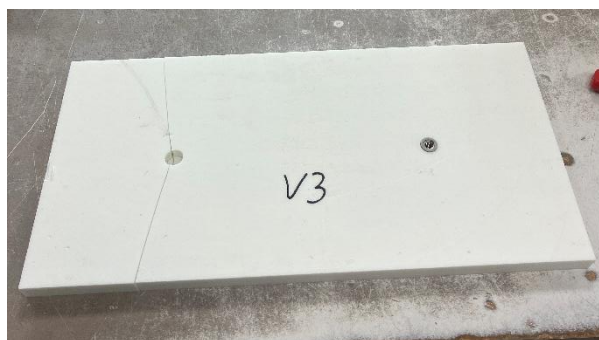


Picture 4

9.3 Pictures



Picture 17: Test specimen in Testing Machine



Picture 18: Typical failure