

Summary of test report S 18 0826



TECHNISCHE
UNIVERSITÄT
DARMSTADT

Centre for Construction Material

State Institute for Material Testing Darmstadt
Field of Expertise and Institute for Materials
Technology
Prof. Dr.-Ing. Matthias Oechsner

Subject of examination:	Execution of stress tests with squAIR-timber® beams manufactured of carton fibre composite.
Date of examination:	From 20.06. to 22.06.2018
Auditor:	Dr.-Ing. Marcus Klein; Dipl.-Ing. (FH) F. Persichella
Test material overview:	See below table

Object	Test type	Description	Amount	Internal description
squAIR-timber® beams	Stress test	Beam with 1 core	6	t-1-1 to t-1-3
		Beam with 2 cores	5	t-2-1 to t-2-3
		Beam with 8 cores	3	t-8-1 to t-8-3

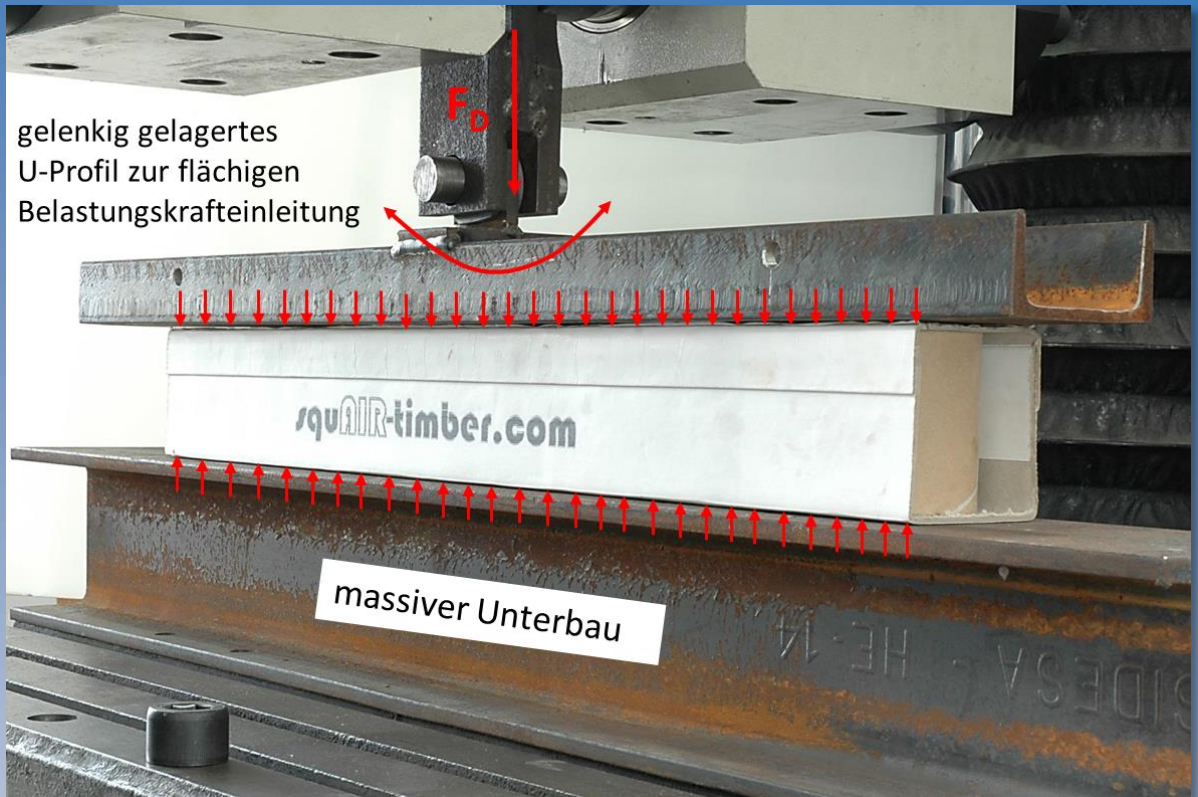
Audit process: In accordance with the task 3 single tests per beam dimension were effected. The respective beam was placed on a massive base and the load force was transferred through a tilt-mounted u-profile into the contact surface of the beam. In this process the resulting active force as well as the traverse path signal were recorded. See chart below.



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On the basis of the measured signals one parallel per compression force curve and traverse path curve was drawn to the elastic increase. This allows determination of critical load force respectively critical load mass in order to determine a component related plastification limit.



Condition of object t-1-2 after end of the test. Fork and bolt mount for tilt-mounted flat load force transmission.



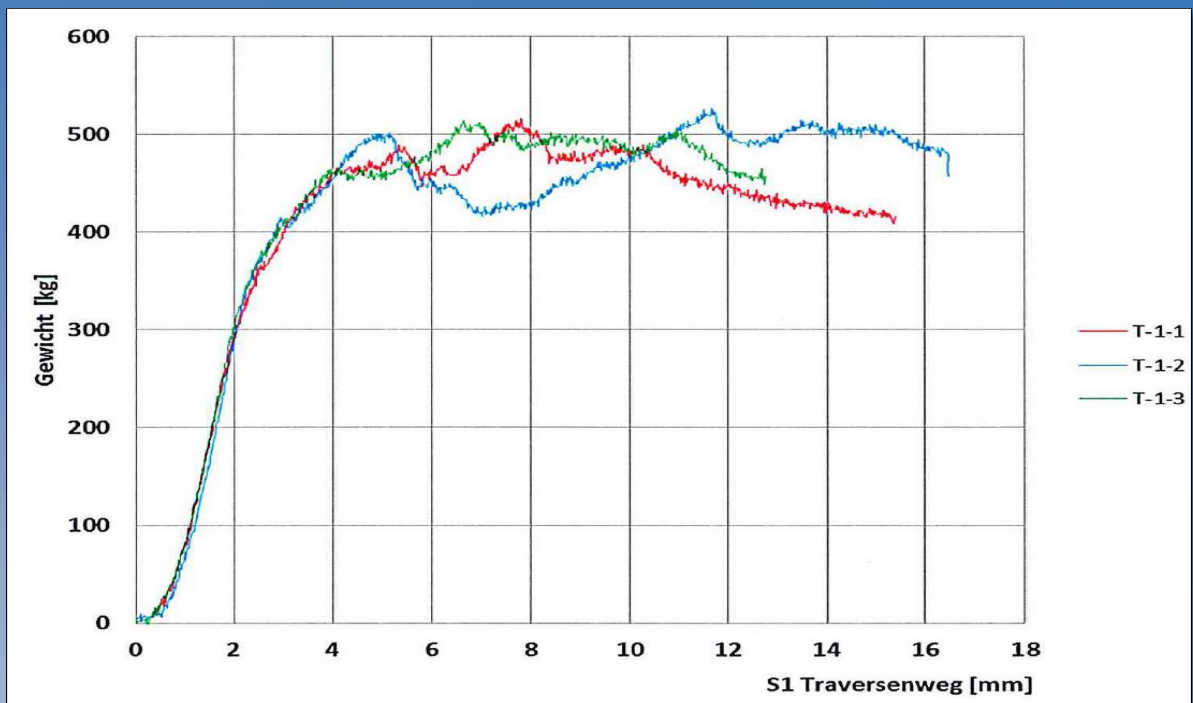
Cross-sectional view in order to show the failure pattern of the object.



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Load tests, squAIR-timber® beams with one core. Multiple graphic in the scale mass.

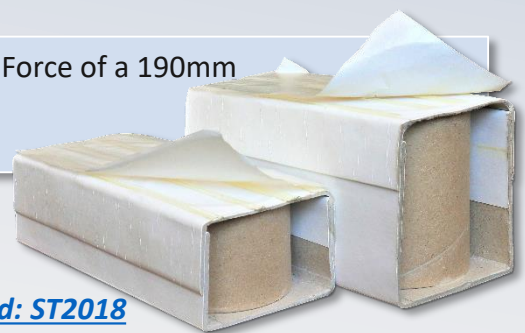
Test results:

The resulting maximum load forces and limit forces (F_{dmax} and F_{dG}) of the individual tests are summarized in the following table:

Object Identifier	Maximum Load Force F_{dmax}		Critical Load Force F_{dG}	
	in [kN]	in [kg]	in [kN]	in [kg]
t-1-1	5,06	516	2,9	296
t-1-2	5,17	527	3,1	316
t-1-3	5,04	514	3	306
t-2-1	9,71	990	6,5	663
t-2-2	10,14	1034	6	612
t-2-3	9,24	942	6	612
t-8-1	32,14	3276	19	1937
t-8-2	32,71	3334	21	2141
t-8-3	34,29	3495	21,5	2192

Conclusion:

Average Maximum Load Force of a 190mm squAIR-timber® beam:
988,67 kg



Original test report:

[here available. Password: ST2018](#)



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