

Civil Engineering Materials Testing Institute (MPA BS) • Beethovenstr. 52 • D-38106 Brunswick

Kurt Glass AG
Construction Materials Plant
Mr Michael Knobel
Gewerbestraße 13
79258 Feldkirch

Letter **8265/2012**

Our reference: (3546/721/12)-TM
Customer no. 15817
Case officer: Mr Mittmann
Division BM
0531-391-8262
Contact: t.mittmann@ibmb.tu-bs.de

Your reference: Dr. Unger
Your message dated: 21 May 2012
Date: 4 June 2012

Expert's Report on fire resistance rating of the fire resistance of a wood joist ceiling structure in the event of fire stress from the upper face of the ceiling

1 Annex

Dear Sirs,

In a letter dated 21 May 2012 the MPA Brunswick was tasked by Kurt Glass AG Baustoffwerke, Feldkirch to prepare an expert's report on the fire resistance rating of timber joist ceiling structures.

According to information from the client the ceiling must be constructed so that it can be classified in fire resistance class F90 in accordance with DIN 4102-2 : 1977-09 in the event of fire stress of the upper face of the ceiling.

The expert's report is required since a building authority approved certificate of fitness for purpose is not available for all the construction details (e.g. general building authority approved test certification in accordance with DIN 4102-2 : 1977-09).

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Notified body (0761-CPD)

The MPA Brunswick is a body approved and notified by the building authorities for testing, monitoring, inspection and certification. The MPA Brunswick is accredited as a testing and calibration laboratory in accordance with ISO/IEC 17025 and as an inspection centre in accordance with ISO/IEC 17020.

1 Documents and bases for the Expert's Report

The expert's report on the ceiling structure is produced on the basis of

- the Building Rules List 2012/1,
- DIN 4102-4 : 1994-03 and
- the engineering drawing in accordance with Annex 1.

As well as these documents the MPA Brunswick's extensive experience in testing floor structures in the event of fire stress of the upper face of the ceiling is included in the fire protection appraisal.

2 Description of the structure

A structural proposal developed by the client for the improvement of fire protection of wood joist ceiling structures should be assessed as to fire protection as part of this expert's report. The description is based on information from the client. In the following only the details of importance with respect to fire protection are described.

The existing wood joist ceiling consists of wooden beams and either a formwork consisting of chip board, a minimum of 13 mm thick or a jointed formwork, a minimum of 21 mm thick.

The ceiling construction on the upper face consists of mineral fibre insulation at least 10 mm thick in the mounted condition (rock wool, non-combustible, melting point 1000 °C) and a 35 mm thick steel fibre-reinforced, mineral RenoScreed® screed laid on top.

A suspended ceiling, which in accordance with a building authority approved certificate of fitness for purpose in conjunction with the wood joist ceiling has the fire resistance rating of at least F90, is positioned on the ceiling underside. This suspended ceiling structure is not a component of this expert's report.

The only materials used for the edge insulation strip are non-combustible construction materials.

Further details on the structural design of the ceiling structure can also be found in Annex 1.

3 Assessment of fire protection

On the basis of the specifications in the Building Rules List and further experience in testing ceiling structures in the event of fire stress to the upper face of the ceiling, the ceiling structure described in Section 2 and illustrated in Annex 1 can be classified in accordance with the uniform-temperature-time-curve (UTTC) in fire resistance class F 90 under the following boundary conditions:

- The thickness of the RenoScreed® screed is ≥ 40 mm and the thickness of the mineral fibre insulation (non-combustible, melting point 1000 °C) is 10 mm or alternatively
- the thickness of the RenoScreed® screed is ≥ 35 mm and the thickness of the mineral fibre insulation (non-combustible, melting point 1000 °C) is as a matter of principle 15 mm.


A solution, which complies with the specification in the Building Rules List for the fire resistance class REI 90 in the event of fire stress to the upper face of the ceiling, is achieved and the ceiling structure can therefore be used in conjunction with a test certificate with general approval from the building authorities for a wood joist ceiling structure in fire resistance class F 90 in conjunction with a suspended ceiling structure and/or cladding in the process approved by the building authorities. The other boundary conditions in the generally building authority approved test certificate for the wood joist ceiling must be taken into account, since under German building law ceiling structures must basically comply with a fire resistance rating on the upper face and on the bottom face of the ceiling.

4 Specific notes

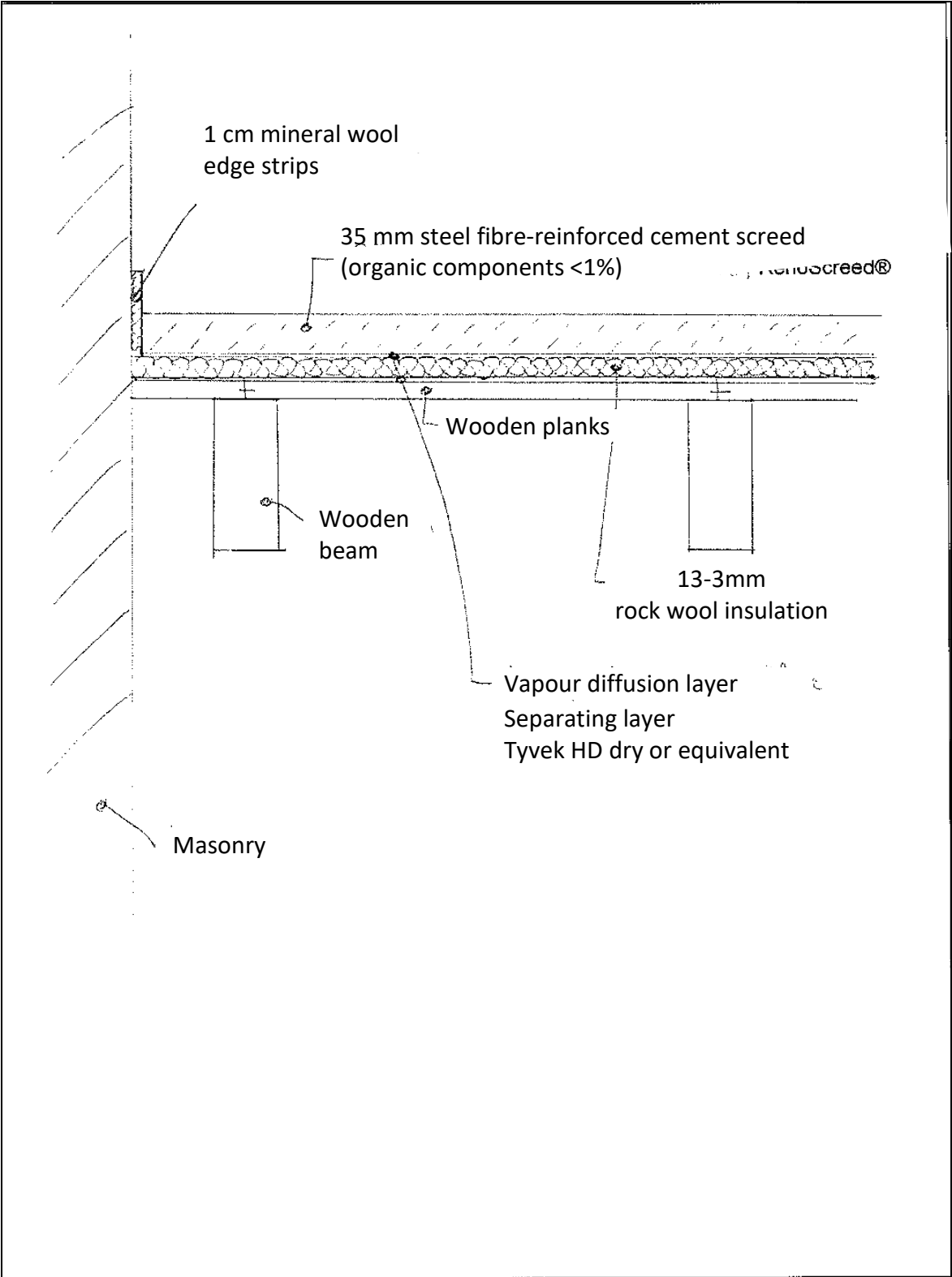
4.1 This expert's report may be used in conjunction with a certificate generally approved by the building authorities for wood joist ceilings in conjunction with a suspended ceiling in fire resistance class F 90 in the process approved by the building authorities as the basis for the certificate of conformity, since the deviation from the certificate referred to above is assessed as "not material" in terms of fire protection. The manufacturer of the structure must issue a certificate of conformity for the construction (with the note that in the structure produced there is a "not material" deviation as regards the construction principles and boundary conditions pursuant to the fire protection certificate referred to above).

- 4.2 This expert's report applies only to fire protection. More extensive requirements may arise from the building regulations and the current State building law applicable to the wood joist ceiling and/or from the regulations on special construction – e.g. structural physics, statics, electronic engineering, air conditioning technology and the like.
- 4.3 The overall fire protection concept is not the object of this expert's report.
- 4.4 The fire protection assessment referred to above applies only if the load-bearing (load-diverting and bracing) components have as a minimum the same fire resistance rating as the wood joist ceiling.
- 4.5 Amendments and additions to construction details (derived from this expert's report) are possible only on consultation with MPA Brunswick.
- 4.6 Performance in correct and proper form is the sole responsibility of the contracting companies.
- 4.7 This expert's report shall cease to apply on 4 June 2017. The term of validity can be extended on application and as a function of the state of the art.

Kind regards,

p.p. 
ORR Dr. Ing. Rohling
Head of Division


p.p.
Dr. Ing. Mittmann
Case Officer



<p align="center">Structural design of the ceiling structure</p> <p align="center">Detail: vertical cross-section</p>	<p align="center">Annex 1 to the Letter No. 8265/2012</p>
<p align="center">Civil Engineering Materials Testing Institute (MPA BS)</p> <p align="center">Institute of Building Materials, Concrete Construction and Fire Safety of the Technical University Brunswick</p>	

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Kurt Glass AG
Baustoffwerke
Mr Werner Geib
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79258 Feldkirch

Letter

9512/2017

Our reference: (2100/328/17)-TM
Customer no. 15853
Case officer: Mr Mittmann
Division BM
Contact: 0531-391-8262
t.mittmann@ibmb.tu-bs.de
Your reference: Mr Werner Geib
Your message dated: 13 February 2017
Date: 8 May 2017

Extension of validity of the Export's Report in Letter No. 8265/2012 dated 4 June 2012

Dear Mr Geib,

By virtue of your commission we inform you that the validity of the opinion expressed in the expert's report in Letter No. 8265/2012 dated 4 June 2012 with respect to

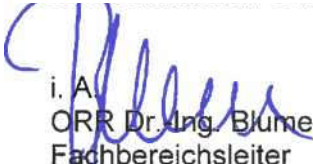
the fire resistance rating of a fire-resistant wood joist ceiling with cladding on the underside in the event of fire stress to the upper face of the ceiling structure

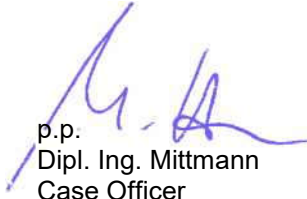
has been extended. The current number in the Building Rules List in Section 1 is 2015/2.

The validity of the expert's report in Letter No. 8265/2012 dated 4 June 2012 and this letter ends on 4 June 2022. The term of validity can be extended on application.

The expert opinion does not represent any certificate of fitness for purpose in the building approval process.

Kind regards,


i. A.
ORR Dr. Ing. Blume
Fachbereichsleiter


p.p.
Dipl. Ing. Mittmann
Case Officer

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