

Expert Opinion

Egcopal, Egcopal SPH, Egcopal SP light

(previously: Egcotritt, Egcotritt HL, Egcotritt light)

Structural fire protection of the impact sound insulating shear force dowel connection

G16-051 | 11.11.2016

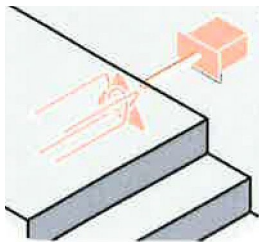
tested by: H+P Ingenieure GmbH, Aachen

(Translation of the original German text by MAX FRANK, not checked by the author!)

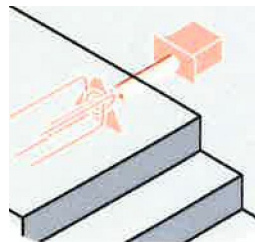
EXPERT OPINION

- SHORT VERSION -

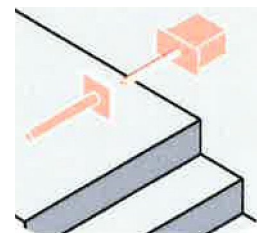
CONSTRUCTIVE FIRE PROTECTION OF THE IMPACT SOUND INSULATING SHEAR FORCE DOWEL CONNECTION EGCOTRITT, EGCOTRITT HL AND EGCOTRITT LIGHT



Egcotritt



Egcotritt HL



Egcotritt light

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This opinion comprises 4 pages. Any publication, including excerpts, as well as use for advertising purposes requires the consent of the expert in each individual case.

1 INDUCEMENT AND OBJECTIVES

The company Max Frank GmbH & Co KG has commissioned the engineering office H+P Ingenieure GmbH to carry out an expert opinion on the constructive fire protection of the sound-insulated impact sound insulation dowel type Egcotritt, Egcotritt HL and Egcotritt light.

Max Frank GmbH & Co KG already has the building authority approval DIBt Z-15.7-305 [1] for the impact sound insulation dowels Egcotritt and Egcotritt HL, which serve as shear force dowels in reinforced concrete construction. For the type Egcotritt light, the usability is determined by a type static analysis [15].

According to a previous assessment by the Materials Testing Institute of the Technical University of Braunschweig [2 to 5], the fire resistance duration F120 was determined for the predecessor models of the Egcodorn shear dowels DNS and DQB and Egcotritt platform bearings DNB from the company Max Frank by means of orienting fire tests on nine unloaded design variants on the basis of DIN 4102-4 and DIN 4102-22 [6].

In the present report, it is to be examined, based on the previously mentioned investigations, whether the structural fire protection of the current impact sound insulation dowels Egcotritt, Egcotritt HL and Egcotritt light can be classified against the background of the current Eurocode DIN EN 1992-1-2 [7].

[...]

2 DESCRIPTION OF THE SUBJECT CONSTRUCTION

2.1 GENERAL

The shear force dowels Egcotritt, Egcotritt HL and Egcotritt light are used for shear force transmission in structural joints between reinforced concrete components, taking sound insulation into account. The Egcotritt element consists of a mandrel part with an anchor body and a corresponding sleeve part (Fig. 1). The sleeve part has an elastomer bearing to ensure that the sound insulation requirements are met.

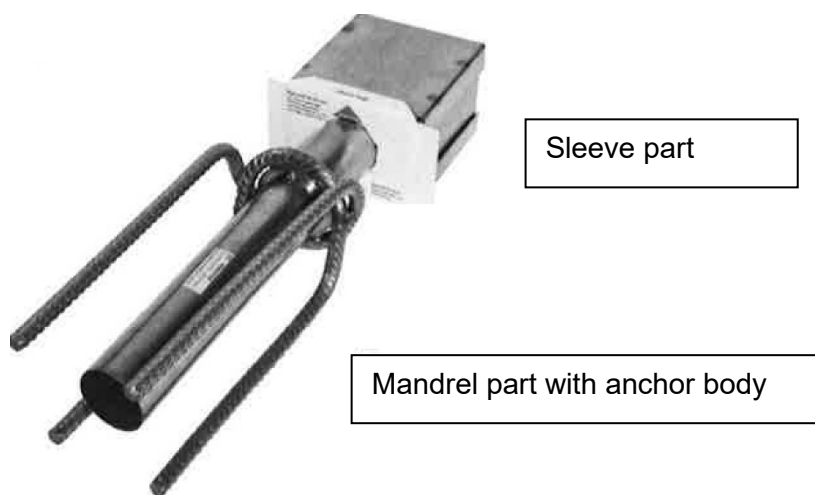


Figure 1: Product view Egcotritt (catalogue extract)

The Egcotritt, Egcotritt HL and Egcotritt light impact sound elements are manufactured as normally displaceable N-version and horizontally displaceable Q-version, so that displacements in the direction of the mandrel longitudinal axis and perpendicular to the mandrel axis are possible. The joint width between the components to be connected may be 0 - 60 mm for Egcotritt, 61 -100 mm for Egcotritt HL and up to 60 mm for Egcotritt light according to [1].

The sound enclosure is made of galvanised sheet steel according to DIN 10152 and the load distribution plate of materials with the material numbers 1.4301 or 1.4571. The bearings are made of EPDM according to DIN 4141-150 (dimensioning according to DIN EN 1337-3). All material properties of the components can be found in the approval Z-15.7-305 [1].

The application is limited to normal concrete of strength class greater than or equal to C20/25.

[...]

5 SUMMARY

In this report, the structural fire protection of connections of reinforced concrete components with the Egcotritt platform bearings Egcotritt, Egcotritt HL and Egcotritt light of the company Max Frank is assessed on the basis of Eurocode 2-1-2. According to the classification of the predecessor models Egcodorn DQB and DNB as well as Egcotritt DOB by the Technical University of Braunschweig in the fire resistance class F120, the classification for the Egcotritt, Egcotritt HL and Egcotritt light impact sound elements can be made in the fire resistance class R120 if

- (1.) the joint width between the building components in case of fire is ≤ 70 mm,
- (2.) the table values according to section 5 of DIN EN 1992-1-2, Eurocode 2, are used for the adjacent ceiling slabs or stair landings and
- (3.) the special instructions from [2] to [5] are observed.

The adjacent reinforced concrete components are to be designed in accordance with Eurocode 2, Section 5. These specifications largely correspond to the tables of DIN 4102-4 and DIN 4102-22. Taking into account the specifications of Eurocode 2, Section 5 as well as DIN 4102-4 and DIN 4102-22, the adjacent reinforced concrete floor slabs and landings can be classified in the respective fire protection class. -platforms can be classified in the respective fire protection class (cf. also chapter 4.2 of this document).

Aachen, 11. November 2016

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