ELASTOMER SERVICE ZENTRALE
WILFRIED BECKER GMBH

ESZ deformation bearing | Fire protection and fire behaviour

Explanations

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General information:

The introduction is intended to provide an overview of the applicable building regulations with regard to the fire protection classification of elastomer bearings. In order to be able to correctly classify the elastomer bearing building product in terms of fire protection, the specifications contained in the Model Building Regulations, the Building Product Regulations and the technical rules/standards are relevant.

In part 3 "General requirements for the building implementation" of the Model Building Regulations (Musterbauordnung [MBO]; revision 13/05/2016), the following requirements are set out in §14 Fire protection:

> *"Structural systems must be arranged, erected, modified and maintained in such a way that the development of a fire and the spread of fire and smoke (fire propagation) are prevented and the rescue of people and animals as well as effective extinguishing work are possible."*

Basic qualitative protective goals of fire protection are thus defined. The specific implementation of these protective goals is defined in the respective state building regulations.

In part 4 of the MBO, the following requirements are defined in § 26 Requirements for the fire behaviour of building materials:

> *"Building materials that are not at least normally flammable (easily flammable building materials) may not be used if they are not easily flammable in conjunction with other building materials."*

This means that proof of the fire behaviour is necessary for the elastomer bearings. This requirement is to be found in the majority of the state regulations.

In addition to the regulations there are directives which, from a legal point of view, do not have the same significance. They contain detailed specifications for the implementation of the requirements set out in the state building regulations. One example of this is the industrial/ school construction directives. Of the numerous fire protection standards, the standard series DIN 4102 (national) and EN 13501 (European) are relevant to elastomer bearings. In these standards building materials are subdivided into building material classes according to their fire behaviour. Both standards are currently valid. Through the European harmonisation, standardised classes for building products were created on the basis of the Building Products Regulations (BauPVO) so that they can be brought onto the market

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throughout Europe. The newly developed classification system differs from the national system. Hence, in addition to the building material classes or fire behaviour classes, the smoke development (s1, s2, s3) and the flaming droplets (d1, d2, d3) are also classified.

An overview of the classes on the national and European standards is shown in the following table. The corresponding classification standard EN 13501-1 has been adopted into the Building Regulation List as a valid verification.

German supervisory reqirement	no flaming droplets		EN 13501-1	DIN 4102-1
	no smoke	no flaming droplets		
not combustible without combustible components	x	x	A1	A1
not combustible with combustible components	x	x	A2-s1, d0	A2
fire retardant	x	x	B; C-s1, d0	B1
		x	A2; B; C-s2, d0	
		x	A2; B; C-s3, d0	
	x		A2; B; C-s1, d1	
	x		A2; B; C-s1, d2	
			A2; B; C-s3, d2	
normally flammable	x	x	D-s1, d0	B2
		x	D-s2, d0	
		x	D-s3, d0	
	x		D-s1, d2	
			D-s2, d2	
		x	D-s3, d2 E E-d2	
easily flammable			F	B3

Identification	Requirement
s1	no / hardly any smoke development
s2	limited smoke development
s3	unrestricted smoke development

Identification	Requirement
d0	no dripping
d1	limited dripping
d2	heavy dripping

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Fire resistance class:

The term "fire resistance classes" originates from DIN 4102-2. With the different fire resistance classes components are classified according to their fire resistance duration.
The identifying letter F is followed by the fire resistance duration in minutes. The fire resistance classes are defined in DIN 4102-2 as follows:

Fire resistance classes F	Fire resistance duration in minutes
F30	≥ 30
F60	≥ 60
F90	≥ 90
F120	≥ 100
F180	≥ 120

Classification into a fire resistance class is not possible for elastomer bearings because the fire resistance classes refer to building components and not to individual building materials. DIN 4102-2, Section 1 defines building components as follows:

> *"...Building components within the meaning of this standard are walls, floors, columns, joists, stairs, etc..."*

At European level the fire resistance of building components is governed by EN 13501-2. Part 2: Classification using data from fire resistance tests, excluding ventilation services, 13501-2:2007A1:2009.

This standard is concerned with the classification of the results of fire resistance tests on building components. The term building component is also clearly described in chapter 3 of this standard as:

> *"defined part of a structure, e.g. wall, partition wall, floor, roof, balcony or column (EN 1363-1:1999)."*

Accordingly, elastomer bearings cannot be treated as building components within the meaning of the European standard either. ESZ Wilfried Becker has the fire behaviour of building products tested in accordance with the European standard 13501-1. The results of these fire behaviour tests can be found in the classification report no.: 3107080304-A.

Constructive fire protection:

If bearing points in the construction are to be relevant in terms of fire protection, then constructive fire protection measures are necessary to protect the bearing against the effects of fire. The constructive fire protection can be implemented with designated fire protection products as follows:

- by sheathing the elastomer bearing with a suitable mineral wool
- by sealing the component joint
- by installing fire protection cords

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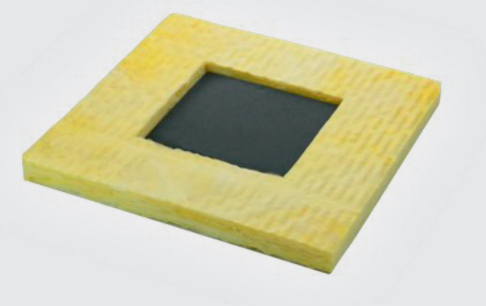

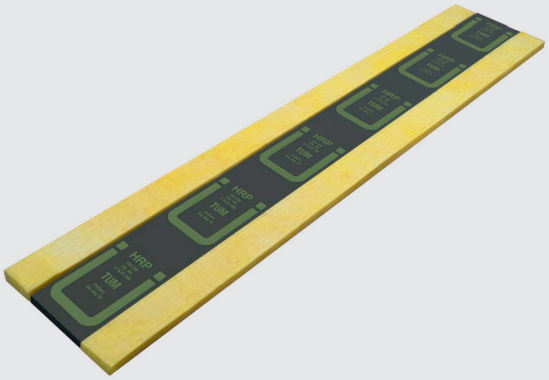

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