

## Fire safe glazing with additional requirements

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### 1 Abstract

An essential element of fire protection, in addition to the appropriate design of load-bearing components (fire resistance), is the subdivision of buildings into fire compartments. In modern architecture is a demand for transparent fire-resistant components, which are then made of glass. Verifications of the load-bearing capacity against static loads such as wind usually are done by calculation whereas fire resistance is proofed by tests. In most cases, fire-resistant glass has no further proof, transparent glass components are either classified for fire or to meet other special requirements such as fall protection (e.g. for floor-ceiling façade elements) or “walk-on”. The paper gives an overview about the possibilities to fulfill the requirements for static glass design (including fall protection and walk-on element) as well as for fire protection, respectively. To complete the picture, examples of realized projects are presented. For several types of vertical and horizontal fire-protective glazing, testing to verify impact resistance were carried out. For a walk-on-overhead-glazing installed in a subway station testing in a furnace against fire and in laboratory against walking people was done.

**Keywords:** Fire protective glazing, design of structural glass, glass balustrade, walk-on glass floor, testing.

### 2 Introduction

The use of material glass is increasing, in number as well as in size of single elements. Moreover, glass elements more and more become a standard application substituting “classic” materials. By this, they of course do have to take over the full responsibility. As sometimes glass is regarded as fragile and still something special in some applications, compared to “classic” materials more focus is put on the fulfillment of these

requirements. Basic requirements for construction works according to BauPV Annex I [1] are the following

1. Mechanical resistance and stability
2. Safety in case of fire
3. Hygiene, health and the environment
4. Safety and accessibility in use
5. Protection against noise
6. Energy economy and heat retention
7. Sustainable use of natural resources

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