

1st international seminar for Fire Safety of  
Facades - Paris, 14-15 November 2013

## The Italian National Guidelines for the fire safety of facades



### INTRODUCTION

The fire safety of the facades, especially for high-rise buildings for which there are major structural innovations, is a new theme in Italy and, for that reason, it's also to deal carefully with the necessary caution in relation to complex but inevitable problems it raises in relation to the safety of people and property in case of fire.

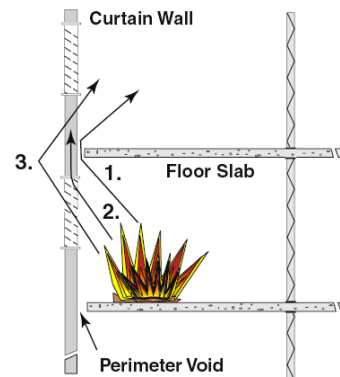
The choice of suitable materials for their 'reaction to fire', the requirements of 'fire resistance and compartmentation' of the elements of the facade, along with measures related to 'exodus of the occupants and the safety of rescue teams' make up the 'hinge design' of the new National Technical Guidance issued by the Fire Services of the Italian Ministry of Interior.

It's a fire code of voluntary application, issued by the Circular Letter n. 5043, 15 april 2013, of the **Ministry of Interior**

It's field of application are buildings with a "fire height" greater than 12 meters

### SAFETY GOALS

- reduce the occurrence of fire of façade and it's spread within the building, due to a fire that could be have both internal and external origin;
- reduce, in case of an outbreak of a fire, the falling of facade pieces (fragments of glass or other broken or burnt facades components) that may affect the safe exodus of the building occupants and the rescue and fighting operations of rescue teams



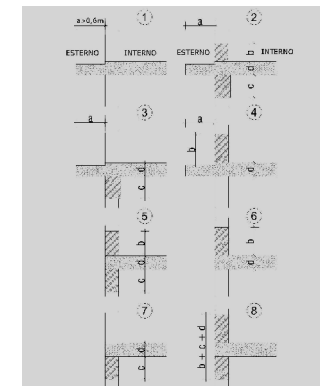
### STRUCTURE

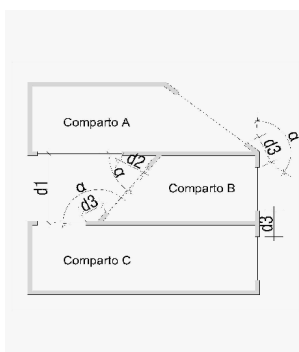
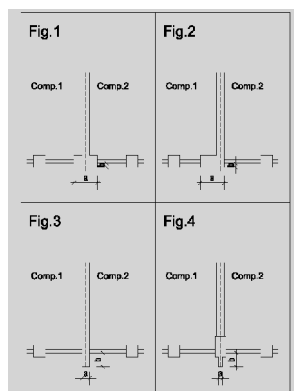


### SIMPLE FACADES AND CURTAIN WALLS

For simple skin façades or curtain walls bands of fire-resistant construction at regular intervals running up the façades are requested in the areas of intersection between elements of compartments (wall or slabs) of the building and the external covering façade. The Fire Resistant band rating should at least E60-ef (external fire) classified.

For Curtain wall, that are connected but not anchored to the head of the fire walls or slabs, the link zone must have a fire resistance class not less than EI60 ISO 834 curve fire attack





When the angle  $\alpha$  formed by the outer surfaces of two sides or parts of facades is between  $0^\circ$  (facades facing each other) and  $180^\circ$  (facades aligned), the minimum distance (in meters), measured between the portions that do not present requirements of fire resistance at least equal to E60ef (o  $\rightarrow$  i) must be equal to that indicated in the following table:

$\alpha$	Distanza minima
$0^\circ$	$d_1$
$0^\circ \div 90^\circ$	$d_2 = 1 + (d_1 - 1) \cdot \cos \alpha$
$90^\circ \div 180^\circ$	$d_3 = 1 \text{ m}$
$> 180^\circ$	$d_3 = 1 \text{ m}$ (applicato alla sviluppo)

## REACTION TO FIRE REQUIREMENTS

## BASIC PRINCIPLE

The Guideline focuses on façade materials and elements that, in case of fire, could be directly hit by flames and, due to their good combustibility performances, can support the fire propagation of a fire within the façade and the building itself.

Façade combustible materials must be at least class B-s3-d0 or Italian class 1 reaction to fire rated.

For insulating combustible materials, excluding the materials that lay around windows or doors for a 60 cm clearance zone, the reaction to fire requested could be as follow:

- insulating internal material C-s2-d0 classified, covered by an external layer A2 rated;
- insulating internal material E classified, covered by a 15 mm width layer A1 rated.

The latter exception is also valid for the first 3 meter façade band starting from the grounds

## ALTERNATIVE MEASURE FOR ACCESSIBLE DOUBLE SKIN FACADES

- an automatic water extinguish system (sprinkler) should be placed in the cavity; the extinguish system must be designed in order to achieve a discharge density at least equal to 10 l/min·m<sup>2</sup> on the internal panel of the facade walls;
- Glass wall must be HST type (Glazed facades);
- The automatic water extinguish system must be activated by a fire detection system that supervises the overall building

## SAFETY ESCAPE OF OCCUPANTS AND RESCUE TEAMS

The Guideline requires for facades made of fragile materials that in case of fire could break and falling down in non-minute pieces, that the design of the escape strategy for the occupant have to be designed in order to protect the safety exit routes by falling pieces. It is also requested that Firefighter Brigades

could easily reach the building and approach the façade in case of fire. The latter Guideline prescription requires that a proper free area must be reserved for Firefighters Engine and Ladder tracks nearby the building. In addition, the reserved Fire Brigade area must be also protected by falling façade parts risk. The Guideline forbids the use of cavities.

You can find the full test of Italian Guidelines for the fire safety of facades at the follow email address:

<http://www.vigilfuoco.it/allegati/biblioteca/All5043-GuidaTecnicaFacciateEdificiCivili.pdf>

[www.vigilfuoco.it](http://www.vigilfuoco.it)

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