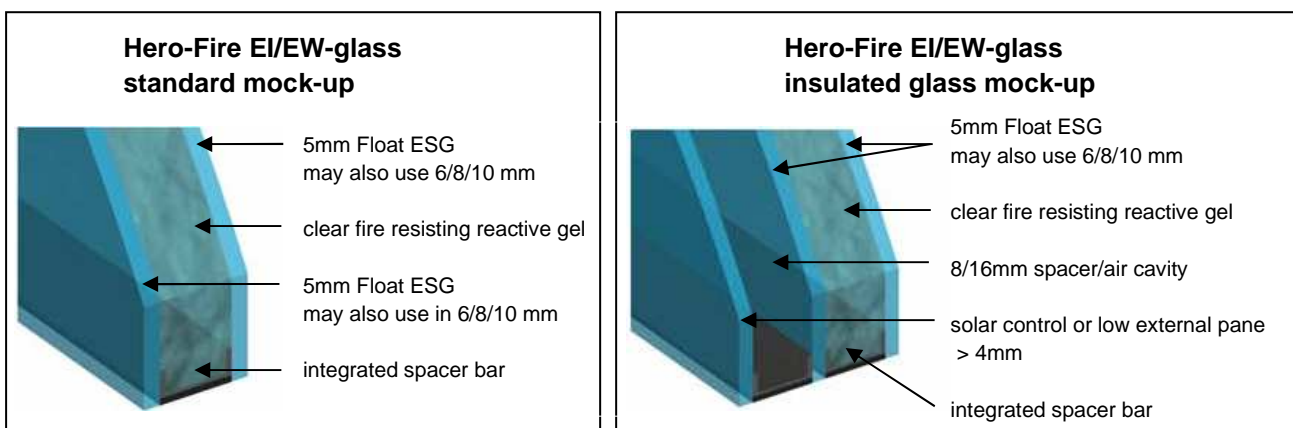


## What is fire-resistant glass?

Hero-Fire EI/EW-glass is a range of fire-resistant insulating glasses, for both integrity and insulation as defined under EN 1364. These glasses complement our high-performance framing systems and allow us to provide a complete and guaranteed glazing solution.

In the event of a fire each makeup of EI/EW-glass provides a barrier against the passage of flames and radiant heat through the glass. This safety specification is commonly used to protect building evacuation routes, the vulnerable areas of adjacent buildings, or where the prevention of fire spread caused by radiant heat is of prime importance.

The protection is achieved through the unique makeup of the glass unit, utilising a central layer of clear UV stable heat reactive gel, contained by two layers of clear toughened glass. Under heating of the unit, the water present within the gel, evaporates into steam, causing the exposed tempered glass to break. This then enables the chemical reaction of the gel to turn opaque and form a barrier against flame and heat.



## How is it packed and delivered?

Stabilised/upright timber glass crates will be produced with feet suitable for forklifting purposes only. If any anti-infestation pre-treatment is required for import requirements, this may be subject to additional cost and should be requested at time of order.

Unless otherwise stated, the glass will be delivered on the day indicated on the order confirmation (subject to the forwarding agents). Transport will normally be by groupage and curtain sided vehicles only.

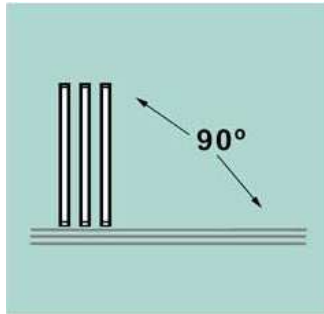
Before the crates are unloaded, they must be checked for damage. If damage is discovered, this must be noted and acknowledged with a photo and on the delivery note! Please report this damage to us immediately.

For export projects, steel shipping containers would be used. Again, a full inspection should be carried out before an item is moved. Forklifts should be made available for the site unloading of the vehicle and it should be fully unloaded within a reasonable time period.

## Glass handling directions

Due to the gel filling, EI/EW-glass units can be extremely heavy. Please refer to the product datasheets for the specific weight of your product.

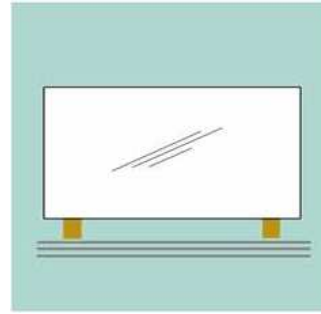
Heavy panes should be transported using glass suction cups. If possible, the suction cups should be attached to the fire-resistant glass side, both on standard EI-glass and ISO units! The greatest weight of the pane unit is on the fire-resistant glass side.



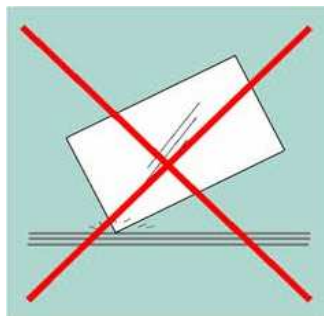
Ensure the glass is always stored in a vertical position.



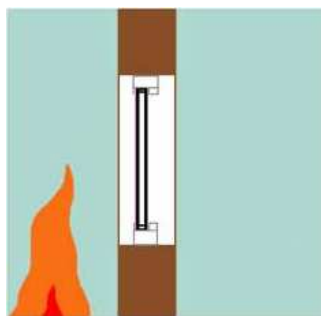
During storage, protect the glass from exposure to rain and extreme weather conditions.



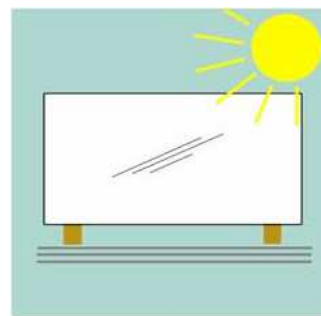
During storage or transport, ensure that the entire glass is always supported by evenly spaced wooden blocks.



Ensure no damage can occur to the edges of the glass during storage and handling.



Correct installation into the framing systems will ensure the fire performance of the glass.



For internal grade glass, ensure the products are shaded but ventilated during transport or site storage.

## Attention:

**The cutting of the fire protection glass and the edge seal is not allowed!**

### EI/EW Glass

#### Additional handling and quality notes

As with any specialty glass, extra care should be taken to ensure the glass is not subjected to impacts that can cause edge damage or excessive vibrations. Generally, EI glass should be protected from temperatures of below -20 °C and over +50 °C and EW glass from temperatures of below -10 °C and over +50 °C. The gel filling is completely UV-stable in its basic form and has undergone UV intensity and ambient temperature stability tests in accordance with EN 12543.

Inspection of the glass unit should be from a distance of 3 meters, directly perpendicular to the centre of the unit. The unit should be checked in a 90° upright position with a diffuse daylight. Complaints must not be specially marked. For the inspections of thickness, flatness or roller waves, the unit should be positioned and supported on its longest edge.

However, anything outside of this standard may compromise the optical stability. It should always be considered that EI/EW-glass is a functional item of construction and the absolute priority is the life safety of the building occupant / user. In order to provide this safety function, the glass must be made up to such a thickness that certain optical phenomena can occur.

The below guidelines have been developed from numbers of industry standards such as CWTC & Hadamar to offer a guide to the acceptable optical quality. Ultimately, the basis of these original standards are for thinner air filled units and as such cannot be directly related to fire rated gel filled products.

It should be noted that there is no recognised national or international standard for fire rated / functional / thick specialty glass, so this should be considered as a guide only. If there are specific optical requirements to the contract, this should be highlighted at time of enquiry and prior to supply.

#### Notes for using the glazing blocks

The fire-resistant glass must be placed on the glazing blocks with its two outer glass panes. In addition, it is **not allowed** to fix the glazing blocks with an adhesive.

#### IMPORTANT - Regarding Hero-Fire S products

Installation of the Hero-Fire S products must be carried out with the orientation sticker positioned as indicated on the pane - to the lower edge of the glass.

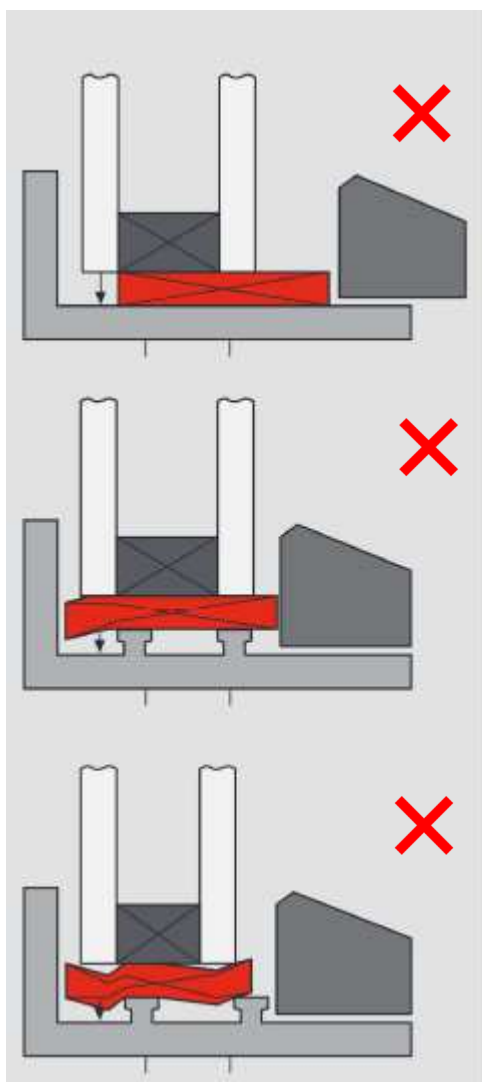
Incorrect orientation of the glass pane will immediately invalidate any warranty claim.



## Glazing block position

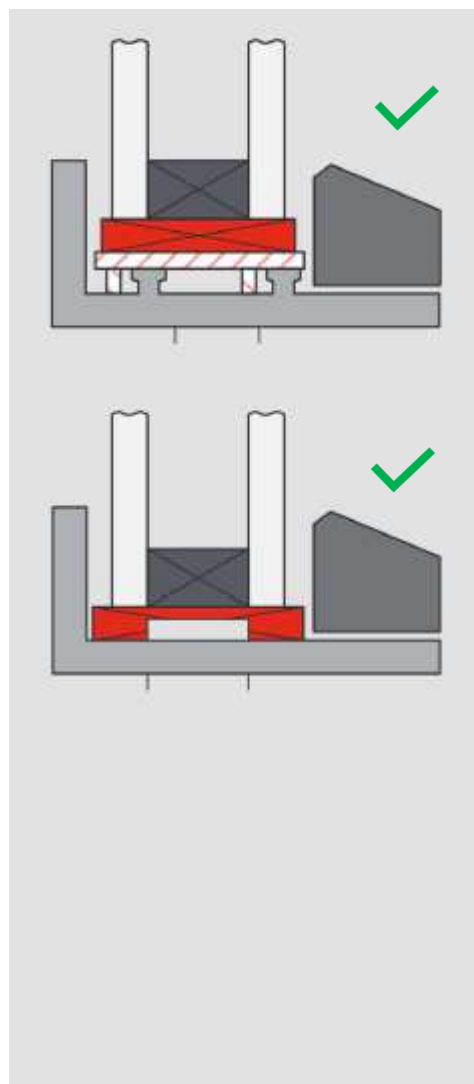
### Wrong position

The block is often incorrectly inserted below the edge of the insulating glass. The following sketches show schematically how the risk of glass breakage is increased or the edge bond can be damaged, respectively.

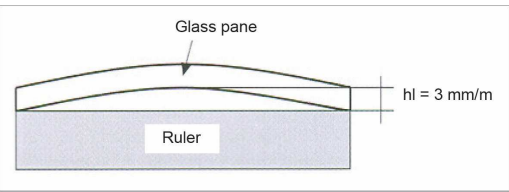


### Correct position

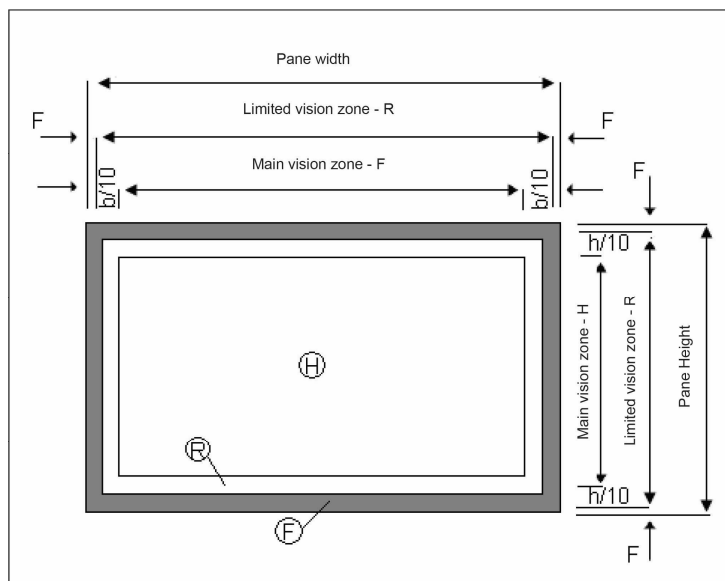
The function of the glazing is ensured by using the appropriate block systems and making the appropriate selection.



**Tolerances**

Measurable features	Tolerances										
Dimensions	<table border="1"> <thead> <tr> <th>Dimension</th> <th>Tolerance</th> </tr> </thead> <tbody> <tr> <td>≤ 1 m</td> <td>± 2,0 mm</td> </tr> <tr> <td>≤ 2 m</td> <td>± 2,0 mm</td> </tr> <tr> <td>&gt; 2 m</td> <td>± 3,0 mm</td> </tr> <tr> <td colspan="2">&gt; 8 mm thickness of a single glass, the minimum tolerance is ± 2,0 mm</td> </tr> </tbody> </table>	Dimension	Tolerance	≤ 1 m	± 2,0 mm	≤ 2 m	± 2,0 mm	> 2 m	± 3,0 mm	> 8 mm thickness of a single glass, the minimum tolerance is ± 2,0 mm	
Dimension	Tolerance										
≤ 1 m	± 2,0 mm										
≤ 2 m	± 2,0 mm										
> 2 m	± 3,0 mm										
> 8 mm thickness of a single glass, the minimum tolerance is ± 2,0 mm											
Pane offset	Within the allowed tolerance, but max. 2 mm										
Thickness Mono	-1 / +2 mm										
Thickness DGU	-1 / +3 mm										
Flatness	<p>Allowed value: 3 mm per m at the edge or diagonal</p> 										
Angularity	Difference of diagonals, allowed value 1 mm per m										

**Optical quality limitations of Hero-Fire fire-resisting glass**



- Area F** revolving width 20mm
- Area R** zone width 10% of clear width and height dimensions
- Main area H** remaining area

Visual features	Permissibilities per unit		
Test conditions	See "additional handling and quality notes" (page 3)		
Assessments for edge area <b>Area F</b>	Up to 20 mm from the edge:	All faults allowed, except mechanical damages that effect the strength	
<b>Area R</b>	Up to 10 of the width and the height of the glass	Punctual features	As glass pane area all marks $\varnothing \leq 3$ mm, streaks, inhomogeneity inside the hydrogel / silicate are allowed
		Linear features	Scratches up to 30 mm length. Sum of lengths max. 90 mm and hair-like inclusions in the hydrogel / silicate are allowed.
Assessments for glass pane area <b>Main area H</b>	Punctual features per m <sup>2</sup> glass	size: 0,5 mm < $\varnothing$ ≤ 1 mm	size: 1 mm < $\varnothing$ ≤ 3 mm
		15 marks, but no accumulation	3
	Marks < $\varnothing$ 0,5 mm are non-valuated Marks > $\varnothing$ 3 mm are unallowable		
	Linear features	Error-free under the test conditions Hair-like pale inclusions with a thickness of ≤1mm are product-related and therefore permissible	
Plane features	Product-specific features such as slight streaking are production-related and therefore permissible.		
Definition:	Accumulation: A cluster of defects occurs when four or more defects are <200mm apart.		

The fire protection function is generally not affected by optical phenomena, such as streaks and bubbles.