HILTI HIT-GLASS SYSTEM

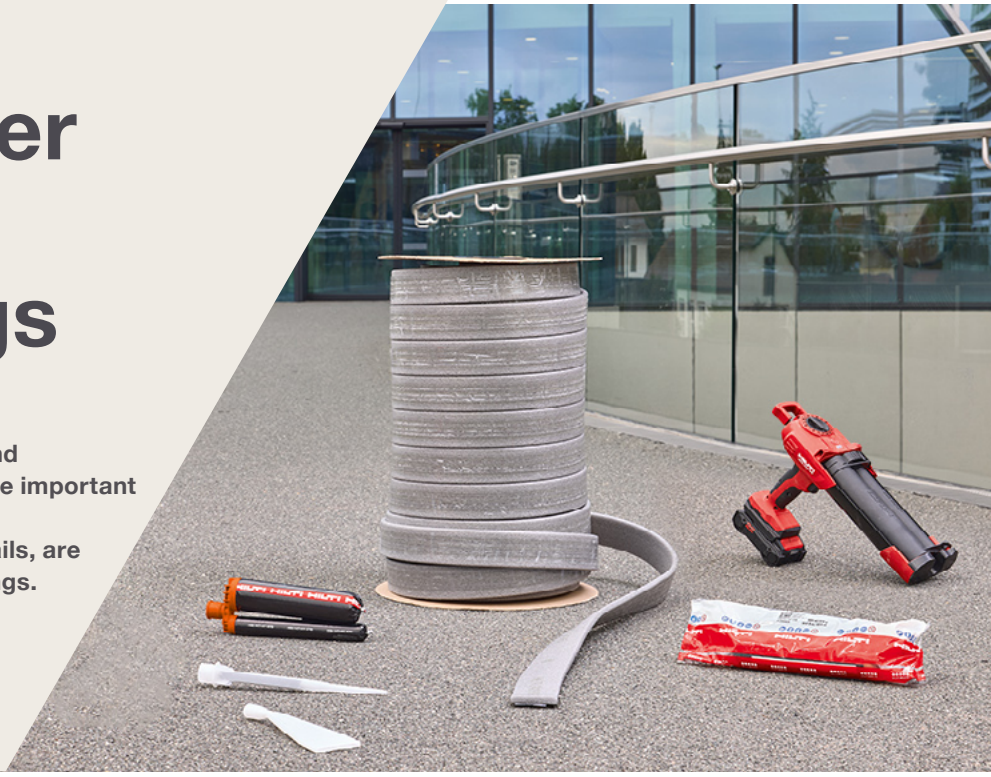
Glass balustrade

The faster, simpler, and safer solution for installation

March, 2026

Safety barrier glazing and glass railings

Due to its highly aesthetic appearance and architectural capability, glass has become important as supporting structural material. Balustrades, commonly known as handrails, are the new standard in many modern buildings.



HIT-Glass System overview

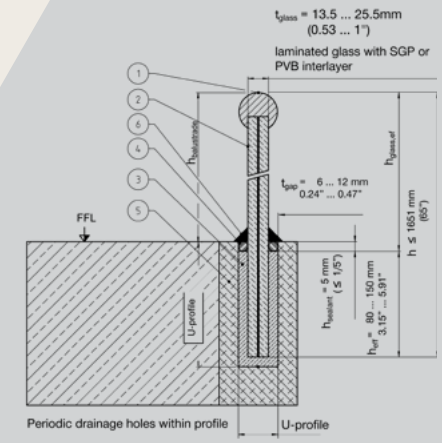
Hilti HIT-Glass System for glass balustrades offers a high performing solution that has been tested to industry standards and is capable of withstanding high static and impact load requirements. The system works via embedment of glass railings in U- or V-shaped profiles (channels) with Hilti HIT-HY 270 mortar. Loads are safely transferred through the glass elements via the mortar into the metal profiles. In addition to the high performing nature of the HIT-Glass system, there are many installation and maintenance advantages compared to traditional methods.

Installation advantages of HIT-Glass

- Up to 2.5 faster glass balustrade installations when compared to traditional grouting and mechanical solutions, significantly reducing labor costs
- Installation accessories allow for safer and faster injection from the protected side of balustrade
- Allows for easier glass adjustability when compared to mechanical wedge systems in both curved and straight glass applications
- HIT-Glass installation accessories and the viscosity of the Hilti HIT-HY 270 help to prevent the mortar from running down the profile in inclined applications (i.e. stair railings) up to 35°
- Unlike traditional grouts, Hilti HIT-HY 270 does not bond with the glass panes or metal profile, making removing and replacing glass panes easier
- Can be used in both U- or V-profile shapes that are compliant with the Hilti HIT-Glass system boundary conditions
- Capable of being installed in +5° C (+41° F) to +40° C (+104° F) environments

Installation designed to increase productivity

Hilti HIT-Glass Method was designed to make balustrade installation faster, simpler, and safer. The biggest benefit of this method is the ability to inject Hilti HIT-HY 270 mortar from the protected side of the glass, creating a safer and more productive workflow.



① Top Rail (optional)
② Glass pane
③ Solid filler (HIT-HY 270)
④ Backer rod
⑤ U-profile
⑥ Weatherproof sealant / gasket

How-To video

Description of installation

The glass panes are embedded in Hilti HIT-HY 270 mortar from the base to the top of the profile in periodic locations along the length of the glass in the form of U- or V-shaped* pucks. HIT-Glass installation accessories are used to install Hilti HIT-HY 270 for maximum jobsite productivity and safety. During the application, the following must be observed:

1. Each pane of glass must have a minimum number of 3 injection sites, or pucks. The pucks must be spaced at no more than 457 mm (18") center-to-center down the length of each glass pane in the profile. Each puck is 60 mm (2.36") wide, which is the width of the Nozzle HIT-RE 60-Glass mixer attachment used for injection. The actual spacing of pucks for a given project results from the design report.

2. Hilti Insert HIT-Glass EP 9.5 foam or HIT-Glass EP 13 foam are continuous profiles of material in two thickness options that are used to cut positioning aids to the length required according to the Instructions for Use (IFU). The positioning aids are placed on either side of each puck location, and the adhesive strip allows them to stay in place while inserting the pane into the profile. Before installation of the glass pane the interior of the profile is cleaned from dust and debris that could compromise installation quality.

3. Hilti HIT-HY 270 mortar is injected from one side of the glass at each puck location, as the positioning aids create a gap that allows the mortar to pass below the pane and up the other side of the profile.

4. The mortar is injected to fill from the bottom to the top of the profile. Best practice is to allow for a 5 mm (1/5") maximum underfill from the top of the profile to allow for structural sealant or gasket to be installed.

5. Because the mortar does not bond to the glass pane or the profile, the installer must take measures to ensure that uplift of the glass panes will not occur in all installations, and that sliding of the glass panes will not occur in vertically inclined installations.

6. If a damaged glass pane needs to be replaced, the installer should remove and replace both the damaged glass pane and the existing mortar pucks. The new glass pane and Hilti HIT-HY 270 pucks are to be installed according to this method.

7. To be in compliance with the HIT-Glass Method:

   a. The gap between the profile and the glass pane (t_{gap}) shall be 6 – 12 mm (1/4" - 1/2") on all sides

   b. The effective height of the mortar puck (h_{ef}) shall be 80 – 150 mm (3.15" – 5.91")

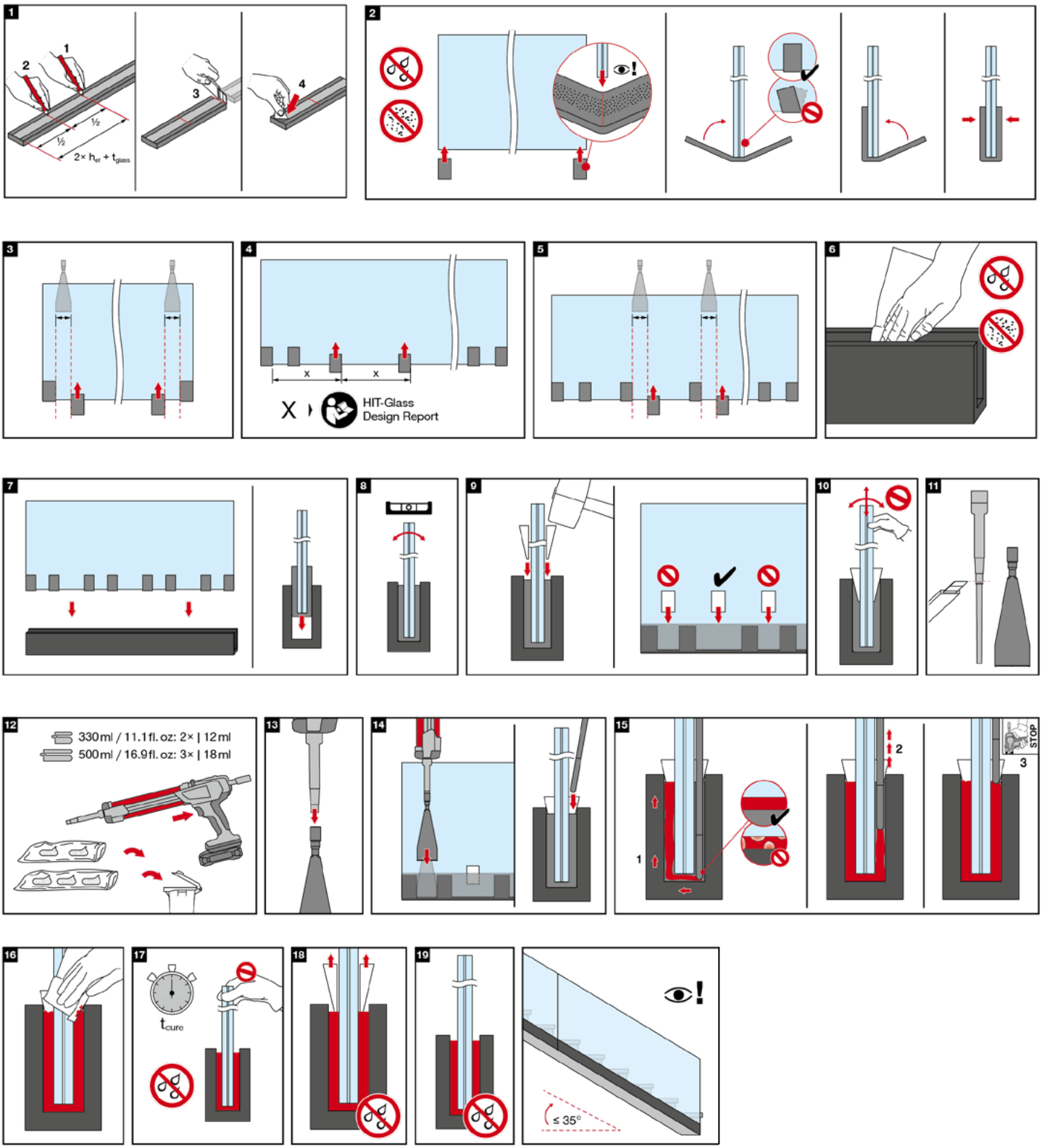
   c. The glass pane height (h) shall be 1.65 m or less (65" or less)

   d. The glass pane thickness (t_{glass}) shall be 13.52 – 25.52 mm (1/2" – 1").

If the balustrade geometries fall outside of the above parameters, please contact Hilti for an additional engineering assessment.

*For V-profiles, the gap between the profile and the glass pane will vary. Please verify that all gap dimensions comply with Insert HIT-Glass EP 9.5 foam or Insert HIT-Glass EP 13 foam according to the Instructions for Use (IFU).

Instructions for use



*For additional information, please check the full version of IFU.

Profis Engineering: Glass Balustrade module

For straight and level balustrade designs that will be installed according to the Hilti HIT-Glass Method, the new PROFIS Engineering Glass Balustrade module allows the user to create HIT-Glass Design Reports, providing peace of mind that specifications will be installed correctly.

Design assistance for straight and level balustrades

1. Enter design inputs

The Glass Balustrade module allows the user to enter the following design inputs:

- Service temperature range
- Glass balustrade parameters:
  - Glass pane height, length, and thickness
  - U-profile interior height and width
  - Total number of glass panes
- Service live load and service wind load (for outdoor designs) for ASCE Code Framework or design live load and design wind load for Eurocode Framework.

2. Specification calculations

The module then calculates the number of required mortar pucks per glass pane and puck spacing according to the specific needs of the application. The module assumes rectangular U-shaped geometry for the profile when calculating mortar resistance requirements.

3. Create design reports

The HIT-Glass design report provides a full summary of:

- Design assumptions and remarks
- Design inputs
- Description of mortar resistance calculation steps
- Design output results
- Bill of materials for Hilti HIT-HY 270 mortar and HIT-Glass installation accessories
- HIT-Glass system IFU

For curved and/or inclined glass balustrades, please refer to the Engineer Center article for further information

Check out the new glass balustrade module

Reliable and tested

Hilti has been a reliable partner in glass handrail construction for many years and has experience in a wide variety of large-scale projects.

Hilti HIT-HY 270's high level of compressive strength and resistance to adverse environmental conditions translate into a secure load transfer to the profile.

Material advantages of Hilti HIT-Glass

Maximum application flexibility

- Mortar with high compressive strength
- Minimal planning work required
- Can be used in U- and V-profile
- Compensation for different internal profile widths
- Load distribution by means of embedding

Capable of withstanding environmental conditions

- UV resistance
- Temperature resistance from -40° C (-40° F) to 80° C (176° F)
- Short term water exposure
- Resistant to cleaning agents

Tested for strength, durability and compatibility	Reference*

Tested for strength and durability
• Compressive strength of mortar tested under adverse environmental conditions (temperature, load duration, contact with surfactants, exposure to seaside conditions)
• Panel system with one-sided support consisting of glass pane mounted with Hilti HIT HY-270 in steel or aluminum U-profile.
  • 678 J (500 ft-lb) perpendicular impact load (shotbag) in the top center of the glass
  • 1.33 kN (300 lbf) and 1.62 kN (365 lbf) concentrated load on the top center of the glass (30 min loading time)
  • 220 N (50 lbf) concentrated load on the center of the glass
  • 0.73 kN/m (50 lbf/ft) and 0.88 kN/m (60 lbf/ft) horizontal and vertical line load on the top edge of the glass pane (30 min loading time)
	Report Statement:
	1006-2024 IBS 24.06.2025
	
	Test Reports and ASTM 2358 Classification:
	- 24/2977 01
	gbd TEC gmbH 16.05.2025
	- WG079 Thomas BellWright 27.02.2023

Compatibility • Compatible with PVB, EVA and SGP interlayered laminated glass • Compatibility with EPDM films (ethylene propylene diene monomer rubber) in the case of seals • Compatibility with silicone caulking compounds • Compatibility with stainless steel and aluminum surfaces	**Test Report**: 2025-8010 LSL GmbH 03.04.2025

*Test reports available upon request

Testing

Testing standards

Testing and Classification of the Hilti HIT-HY 270 was carried out in accordance with:

- 2021 International Building Code (IBC) Section 1607.9
- ASTM E935-13: Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings
- ASTM E2353-21: Standard Test Methods for Performance of Glazing in Permanent Railing System, Guards, and Balustrade.
- ASTM E2358-17: Standard Specification for Performance of Glazing in Permanent Railing Systems, Guards, and Balustrades

Explanation of testing

Extensive testing was conducted with the purpose of confirming the suitability and durability of the mortar for this application. The following tests were conducted:

- Impact testing: ability of the mortar to hold during a sudden loading event.
- Continuous load testing: ability of the mortar to maintain its hold under static loads.

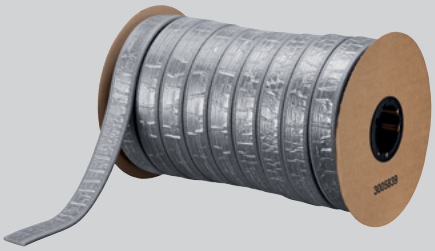
Material properties of the Hilti HIT-Glass System

Curing time	30 minutes at 21° C (69° F)
Characteristic value of the mortar's long-term compressive strength (application range up to 60° C (140° F))	33.6 N/mm² (4,872 psi)
Characteristic value of the mortar's short-term compressive strength (application range from 60° C (140° F) to 80° C (176° F))	28.0 N/mm² (4,060 psi)
Modulus of elasticity	1.700 N/mm² (246,564 psi)
Viscosity (at 20° C / 68° F ASTM D2556 T-B; 8,5 1/min)	115 Pas
Shore D hardness (ISO 868, at 23° C / 73° F)	83
Thermal expansion coefficient (effect on glass tension)	32 [10^{-6}/K]

System components

Explore Hilti HIT-Glass System products

Prepare the glass pane with positioning aids



EP 9.5 foam/ or EP 13 foam

HIT-Glass positioning aid

Use positioning aids for the glass panel which are cut from Hilti Insert HIT-Glass EP 9.5 foam or Insert HIT-Glass EP 13 to position the glass pane in the metal U-profile which supports the glass pane. The positioning aids create a gap that allows the mortar to pass below the glass pane and up the other side of the profile and create a formwork for the mortar to create the mortar puck.

Prepare the dispenser

HIT-HY 270

Mortar foil pack

+

HDE 500-22

Cordless adhesive dispenser

Prepare the cordless dispenser with the battery or the manual dispenser with the foil cartridge fitting to the foilpack size of Hilti HIT-HY 270 mortar. After adding the mixer tip discard the required amount of mortar.

Inject HIT-HY 270 to create mortar puck

HIT-RE 60 Glass

Glass mixer attachment

The Nozzle HIT-RE 60-Glass is placed on the mixer tip. The nozzle ensures that the mortar can be dispensed at the bottom of the metal U-profile and an even mortar puck without air bubbles can be created.

Hilti Aktiengesellschaft
9494 Schaan, Liechtenstein
P +423-234 2965

www.facebook.com/hiltigroup
www.hilti.group