



SCHÖCK ISOLINK®

Energy-efficient concrete façades.



Composite glass fibre wall brackets for
the theoretically thermal bridge-free
connection of core-insulated concrete façades.

STRUCTURAL COMPONENT

Versatile concrete façades.

Precast concrete façades have a decisive influence on the energy efficiency and thus on the sustainability of a building, as they can be built with virtually no thermal bridges. In addition, exposed concrete in particular is characterised by its design diversity, individuality and uniqueness.

Your benefits

Lasting

Precast concrete façades are robust and durable. Furthermore, they have the advantage of being adaptable to existing architectures – whether in terms of colour, surface finish, corners or reveals.

Individual

When it comes to the design of surfaces, colour, feel and shape, concrete façades are characterised by their great versatility. Wet concrete provides a high degree of freedom in designing any surface, shape and quality, with the help of appropriate formwork systems.

Economical

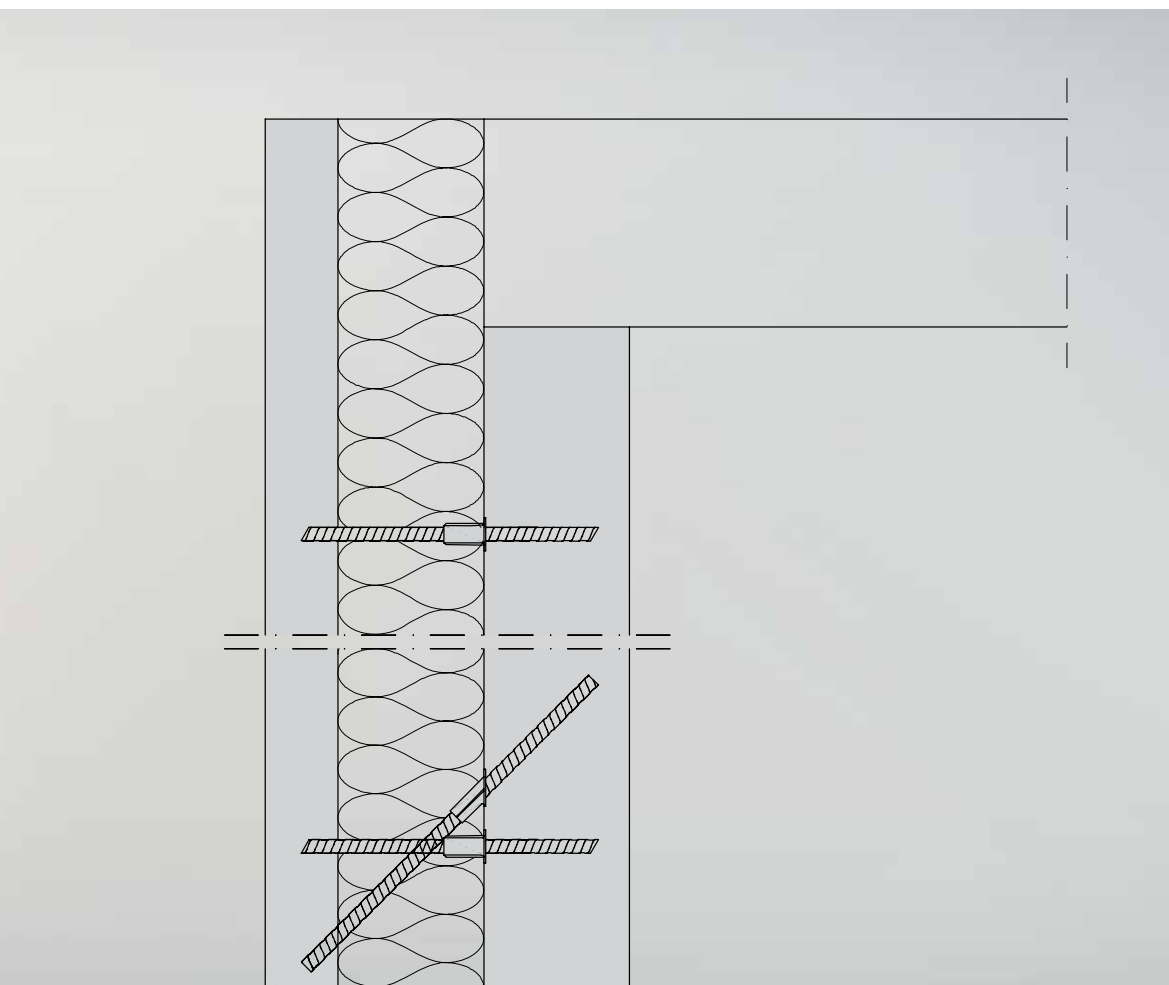
Large structural components offer economic benefits due to the combination of gap-free surfaces and structural functionality.

High quality

Concrete façades have a high level of soundproofing and fire protection. Furthermore, non-metallic anchors minimise thermal bridges through the insulation and thus lead to an optimum U value. In addition, the high storage mass of concrete sandwich walls ensures a high level of comfort inside the building.



Façade element with concrete structural layer, insulation of expanded polystyrene and concrete cover layer



Cross-section through a core-insulated concrete façade

FAÇADE DESIGN

Individual use.

Concrete façades differ in numerous aspects. The joint forms range from gap or dummy joints to recesses or openings. Large panels allow the number of joints to be reduced. In addition to the equally diverse processing methods, there is also a wide range of surface structures.

Marcus Riedelsheimer
GmbH building,
Großaitingen



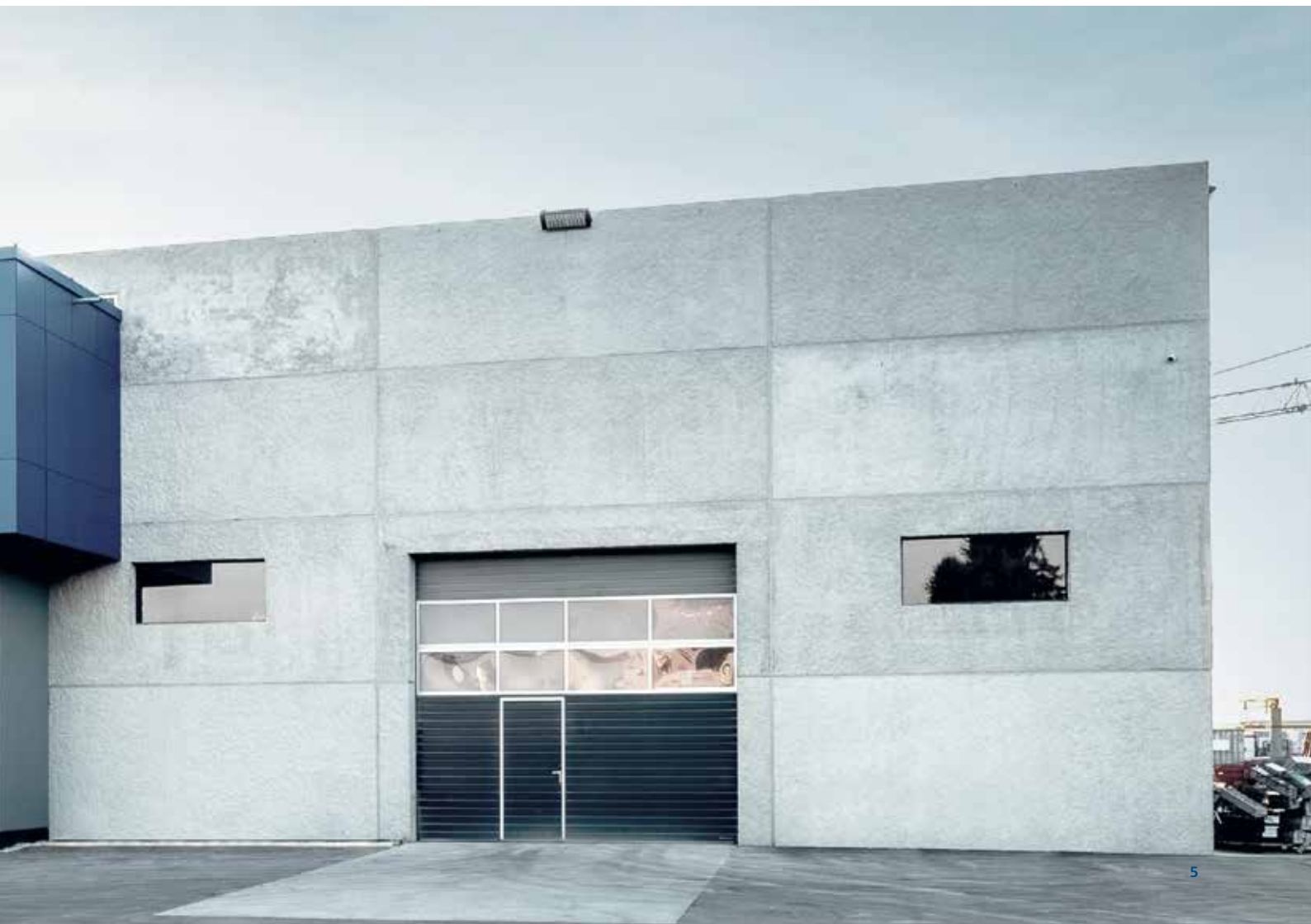


High-quality concrete façade in natural stone look for the Marcus Riedelsheimer GmbH industrial building

Industrial building in natural stone look

When building the precast concrete factory for Marcus Riedelsheimer GmbH, the challenge was to harmonise appearance and energy efficiency. Structural matrices were used for the exposed concrete surfaces. The concrete was left uncoloured

in order to create an optical contrast with the existing building. Isolink® for sandwich façades was used to create an energy-efficient and at the same time architecturally aesthetic façade with an exposed concrete look.



High-quality and identical exposed concrete quality of the façade elements characterises the appearance of the new Karlsruhe tax office building



The façade is made up of more than 350 precast concrete elements



Tax office in uniform precision

The concrete façade of the Karlsruhe tax office was built using the sandwich construction method. Great importance was attached to a high quality of exposed concrete in order to preserve the unusual façade structure. Each of the façade elements produced in the precast plant was sandblasted to create a special texture and uniform surface appearance. Since no large glass surfaces were desired, the façade was to have a miniaturised character. All the façade elements were produced at the precast plant.



Each façade element was sandblasted at the precast plant

Structural challenge

A concrete sandwich façade with integrated core insulation was chosen because of the good structural and physical properties of concrete. The inside of the façade construction was made as a load-bearing shell and insulated with mineral wool. The window geometry with the deep reveals resulted in insulation packages with a thickness of up to 35 centimetres. The Schöck Isolink® type C was the solution chosen for the force-fit connection of the outer facing shell to the inner concrete shell and, at the same time, for the thermal decoupling of the concrete façade.



PRODUCT

Unique solution.

The topics of sustainability and climate protection are posing new challenges, especially for the construction industry. Since 2021, all new buildings must be constructed to the lowest energy standard. The building shell is one of the areas where attention must therefore be paid to avoiding thermal bridges.



Isolink® type C is approved by the German Institute for Structural Engineering (DIBt) (Z-21.8-1894).

The energy-efficient solution

Schöck Isolink® type C is the theoretically thermal bridge-free fastener for all types of core-insulated concrete walls and façades. Approved by the DIBt since 2009, Isolink® is

used in the most diverse types of building: from industrial halls and warehouses to offices and residential buildings.



Isolink® type C holds the European Technical Assessment (ETA).



The sustainability of Isolink® type C has been verified by the Environmental Product Declaration (EPD).



Isolink® type C-SH and C-SD with depth stop for fastening sandwich-type exposed concrete façades.



Isolink® type C has been awarded the highest classification phA+ for all weight classes by the German Passive House Institute (PHI).



Isolink® type C-EH and C-ED for fastening concrete façades of precast elements.

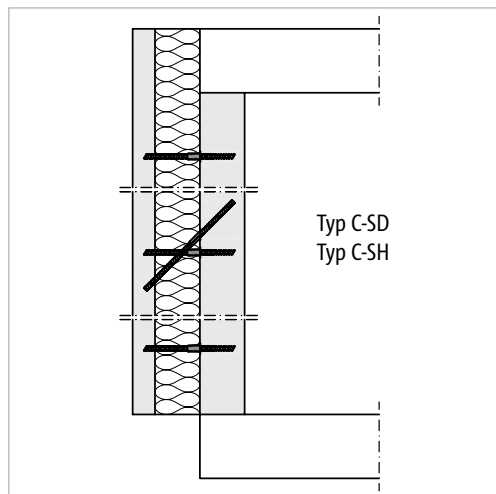


Plastic depth stops on Schöck Isolink® ensure the correct insertion depth

One product for all applications

Sandwich walls

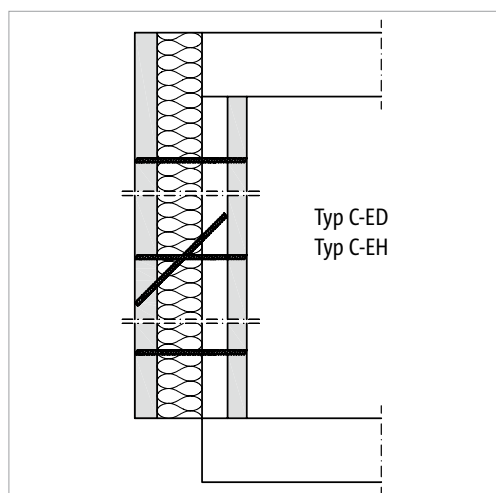
Isolink® type C-SH is suitable for the construction of core-insulated sandwich walls with supported cover layer. It is used in combination with Isolink® type C-SD for freely suspended cover layers. In combination with depth stops, these Isolink® types enable the construction of concrete façades for higher exposed concrete classes.



Cross-section through a core-insulated sandwich wall with free-hanging facing shell

Element walls

Isolink® type C-EH is suitable for the construction of core-insulated element walls with supported cover layer. It is used in combination with Isolink® type C-ED for freely suspended cover layers.



Cross-section through a core-insulated element wall with free-hanging facing shell

MATERIAL

Innovative combination.

The outstanding feature of the passive house-certified Schöck Isolink® is the unusual material from which it is made. This makes it unique compared with other façade fasteners.

Schöck Combar®

The rod-shaped façade anchor is made from the Schöck Combar® pultruded fibre composite polymer whose outstanding material characteristics reflect the most up-to-date developments in technology and modern construction. The glass fibres are bundled together in a matrix, unidirectionally aligned and permanently impregnated with a vinyl ester resin. Thanks to its extremely high glass content of 88%, Combar® has been classified in the material fire class “flame retardant”. The high fibre content of Combar® and the linear,

parallel arrangement of the fibres result in a very high strength and rigidity of the material. The vinyl ester resin is diffusion-tight. Each glass fibre is completely surrounded by resin. This creates a maximum durability of up to 100 years in concrete. By contrast with steel, Combar® behaves linearly until it breaks.

The measured Young's modulus is over 60,000 N/mm², and the characteristic short-term tensile strength of the glass fibre composite is over 1000 N/mm².

Material properties		Reinforcing-steel	Stainless steel	Schöck Combar®
Characteristic tensile strength	f_{tk} [N/mm ²]	500	460 – 650	≥ 1000
Young's modulus	$E_{tension}$ [N/mm ²]	200,000	200,000	60,000
Thermal conductivity	λ [W/(m · K)]	50 – 60	13 – 15	0.7
Specific mass	ρ [g/cm ³]	8.0	8.0	2.2
Material fire class		Non-combustible	Non-combustible	Flame-retardant

Direct comparison of material properties



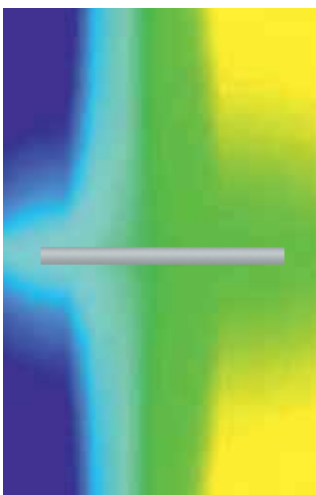
In-house production

Schöck Combar® is manufactured in a two-stage process that has been optimised for the requirements of reinforcing bars. In the first step, the pultrusion, high-strength glass fibres are bundled as densely as

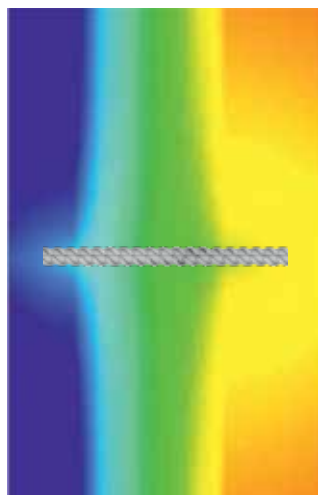
possible and drawn through a die where they are impregnated with liquid synthetic resin. In the second step, the profiling, the ribs are cut into the cured bars. The bars are subsequently lacquered.

Fibre guide during the pultrusion process at the Schöck plant in Halle (Saale)

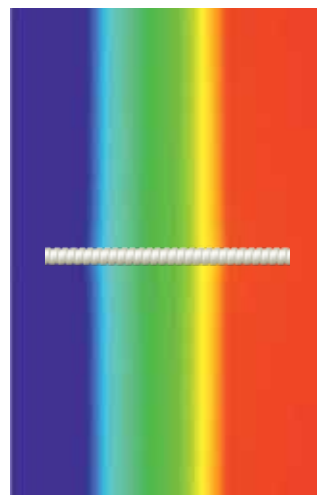
Influence of the materials on the U value



Isotherm with reinforcing steel: 50-60 W/(m · K)



Isotherm with stainless steel: 13-15 W/(m · K)



Isotherm with Combar®: 0.7 W/(m · K)

Low thermal conductivity

Schöck Isolink®, which is made from Schöck Combar®, is particularly impressive due to its low thermal conductivity. The thermographs show the superiority of the glass-fibre composite compared with steel materials. With a thermal conductivity of 0.7 W/(m · K), the material is a thermally superior alternative to concrete and stainless steel.

INSTALLATION

Simple installation.

With its compact dimensions and ease of installation, Schöck Isolink® ensures greater efficiency in the production of precast concrete elements. The façade anchor can be used in conjunction with any type of insulating material, thus offering precast plants and architects a future-proof construction material for thermal breaks in façades.

Isolink® in sandwich façades

1. Cover freshly concreted cover layer with thermal insulation panels



2. Predrill holes in the insulation



3. Install reinforcement for structural layer





Installation of Isolink® type C at the precast plant



4. Insert Schöck Isolink® type C-SH into the predrilled thermal insulation layer



5. If necessary, insert diagonal bars (Schöck Isolink® type C-SD)



6. Pour concrete for structural layer and compact

SERVICE

Reliable planning.

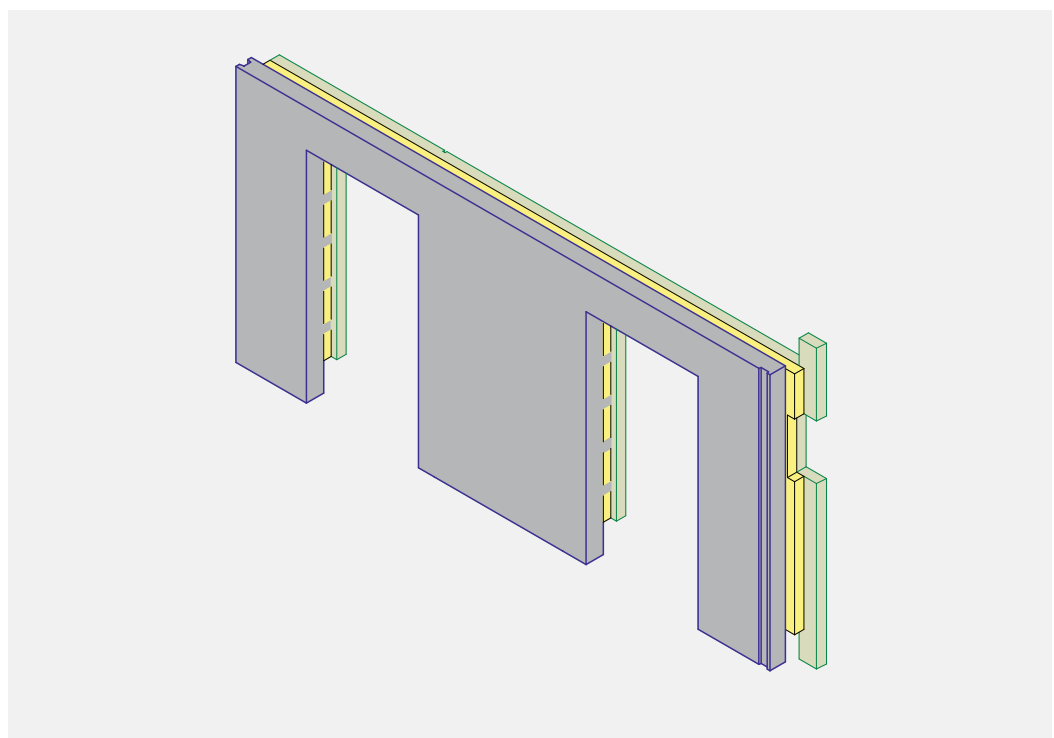
Whether during the planning or on site: Schöck has experts on hand to provide advice at every stage of the project. The scope of services is thereby always tailored to fit the individual needs of every project. When it comes to overcoming challenges, Schöck's team of experts draws on many years of expertise as a reliable partner.

Calculation in the CAD program

The aim of the software solutions is to reduce the number of interfaces in order to achieve an error-free design and calculation. Plug-in programs allow the positioning and dimensioning of the Schöck Isolink® façade anchors to be carried out directly in the usual design programs such

as Tekla, Planbar and STRAKON.

Different design bases are mapped – whether according to the national building authority approval or according to the European concept of the European Technical Approval (ETA).



CAD drawing of a sandwich wall for the Tafelgelände residential complex in Nuremberg



Further services

Technical advice

Experts from the application technology department are on hand to provide advice.

Calculation tables

Calculation tables are available for technical support during the detail planning.

Installation video

The film shows the installation steps at the prefabricating plant.

Further information

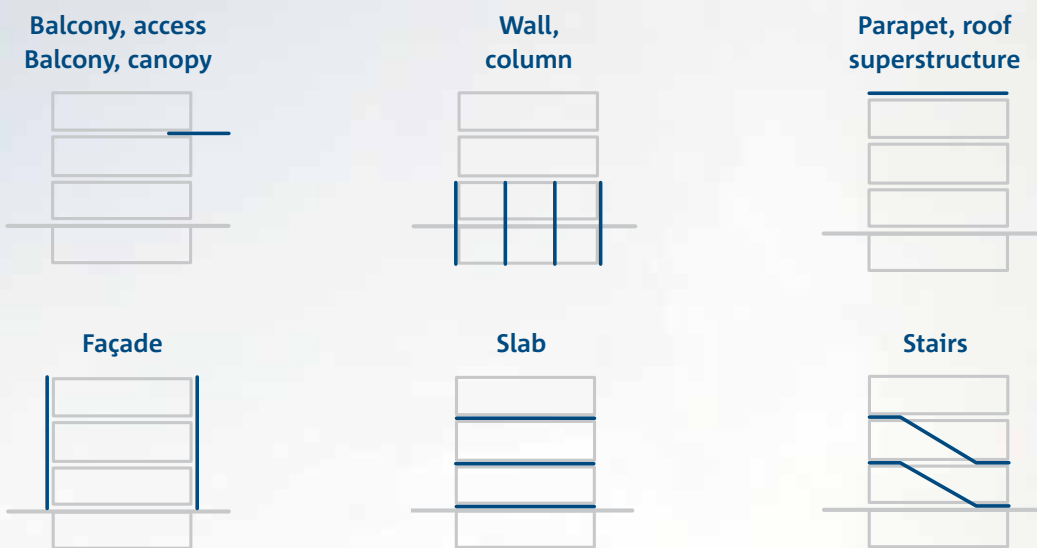
All documents and films on Schöck Isolink® type C are to be found on our website www.schoeck.com/isolink-type-c/en



COMPREHENSIVE EXPERTISE

Dependably the right solution.

Using forward-looking product solutions and systems, we fulfil the physical, static and design requirements for various applications in new-build and existing projects. The main focus of our activities is on reducing thermal bridges and impact sound as well as reinforcement technology.



Schöck Bauteile GmbH
Schöckstrasse 1
76534 Baden-Baden, Germany
Telephone: +49 7223 967-144
export@schoeck.com
www.schoeck.com



Subject to technical modifications.
Date of publication: June 2021