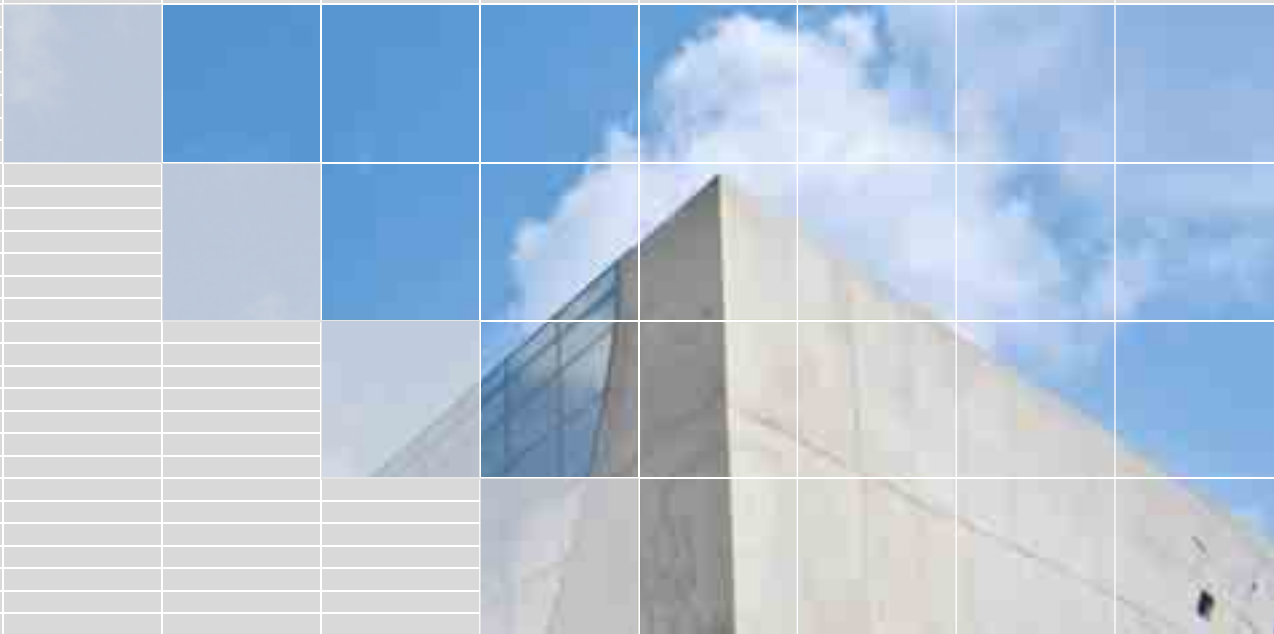


FRANK | Technologies for the construction industry





Max Frank GmbH & Co. KG

Mitterweg 1
94339 Leiblfing
Germany
Phone +49 9427 189-0
Fax +49 9427 1588

info@maxfrank.com
www.maxfrank.com



FRANK – almost 50 years of experience in reinforced concrete construction

For almost 50 years, Max Frank GmbH & Co. KG has designed, manufactured and sold technologically based products and services for the construction industry. FRANK originally started as a producer of extruded fibre concrete spacers and to this day, FRANK spacers continue to be a leading product in reinforced concrete construction. Over the years, additional innovative products in the fields of formwork, reinforcement, sealing and acoustics have been added to our product portfolio.

Since its foundation in 1962, both the company and its markets have changed and developed significantly. The company, however, continues to be guided by its core values: Highest product quality, technically comprehensive solutions and growth shared with customers, suppliers and partners alike – a tradition that the company is committed to maintaining.

Technologies for the construction industry

FRANK offers a range of technologies for the construction industry – this means that we provide you with solutions for all your construction project requirements.

The successful development of over 150 industrial property rights encourages us to continue developing technologies. Our in-house R&D department works with universities and internationally accredited test laboratories and special institutes on the innovation of new products and the continuous development of well-proven products for reinforced concrete construction.

The multidisciplinary approach of our in-house engineering team enables us to develop comprehensive solutions for your special requirements. Comprehensive technical service and customer assistance are of paramount importance to us. Besides that, we assist our customers by providing application instructions, expert advice on detailed layouts and workshop drawings and we make available technical documentations and software programmes.

FRANK acts as your partner – both for complex large-scale projects and for small bespoke structures.



Max Frank international

The FRANK group seeks to service the needs of our customers wherever in the world they may be working. Today, FRANK is an international group of companies with production, warehousing and sales offices in a number of countries.

As well as two major production facilities located in Leiblfing and Pressig in Germany, the group has further production facilities in five other countries. FRANK sales offices are present in 12 countries, with a comprehensive network of partners and traders distributors in more than 20 other countries.



Production facilities:

- Max Frank Germany
- Peca-Verbundtechnik Germany
- EGCO AG Switzerland
- Max Frank Austria
- Max Frank Slovakia
- Max Frank England
- Max Frank Middle East

Sales offices:

- Frank Italy
- Max Frank Poland
- Max Frank Singapore
- Max Frank Australia
- Max Frank Canada
- Max Frank Netherlands

FRANK Business Divisions

This brochure gives you an overview of the five business divisions and their individual product lines.

Spacers

Extruded fibre-reinforced concrete spacers, distance tubes and cones and spacers made from, cast concrete, plastic and steel

Formwork Technologies

Pecafil® universal formwork elements, Stremaform® formwork elements, Tubbox® column formers, Fratec formwork, Insitex® formwork liners, Permanent formwork, Formwork for box-outs and openings, Zemdrain® CPF liners, Formwork accessories

Reinforcement Technologies

Stabox® rebar connection system, threaded steel coupler system, Egcodorn dowel systems, Egcobox® cantilever connection system

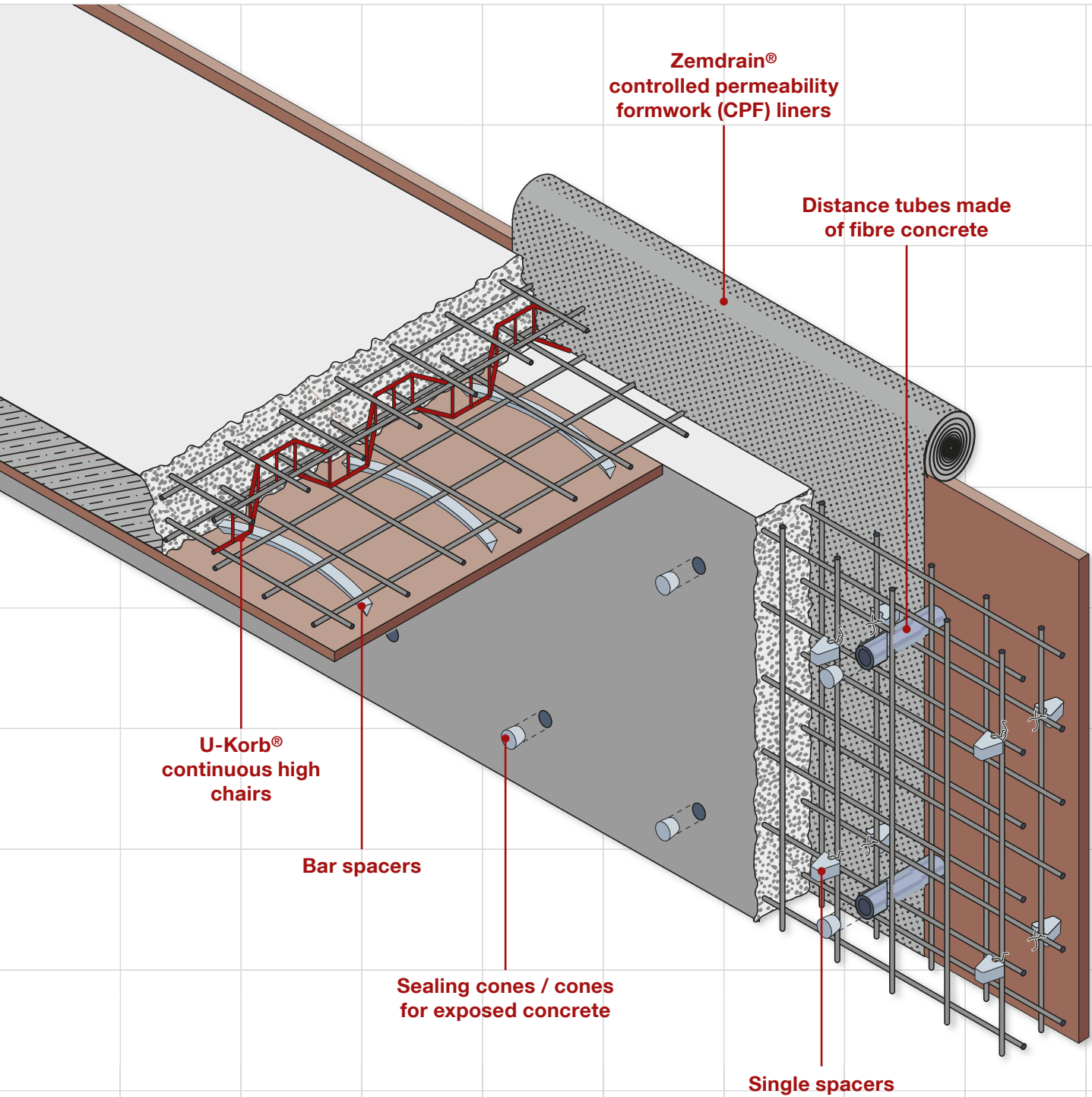
Sealing Technologies

Fradiflex metal water stop, Intec® injection hose systems, injection materials, Cresco® expanding water stops, Permur® liner pipes

Sound Insulation

Egcotritt acoustic dowels, Egcosono acoustic landing supports, Egcostep and Egcoscal stair flight bearing systems, Egcodist wall and slab bearing pads, Void formers

We are delighted about your interest in discovering the FRANK range of products.



Almost 50 years of experience in the production of spacers and distance tubes

Single and bar spacers

To ensure optimum cover to the reinforcement (both before and during concreting), we offer a full range of block and bar spacers, available in extruded fibre concrete, cast concrete and plastic.

We offer you the optimum spacer for any application:

- Extruded fibre-reinforced concrete spacers comply with all international standards
- Available: with or without tying wire, steel clips, cross-clips, plastic clips, loop wire
- Individual special shapes and sizes can be supplied on request
- Approved products for drinking water applications
- Spacers with defined durability properties and increased resistance to all forms of physical and chemical attack
- Suitable for use with aesthetic concrete



Fibre concrete distance tubes and sealing cones

Distance tubes are used to maintain the correct concrete wall thickness using reusable tie bars:

- Large contact area, therefore reduced pressure on the formwork
- Impermeable shutter ties can be produced – tested to 30 bar
- Fire resistant solutions with an R30 – R180 rating
- Sound-proof solutions using fibre concrete stoppers

Concrete sealing cones:

- Can be coloured to match the in-situ concrete surfaces
- Conform to exposed concrete quality grades SB3 or SB4
- Can be used as part of a watertight seal of concrete structures

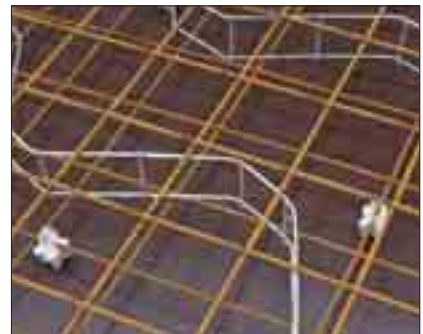


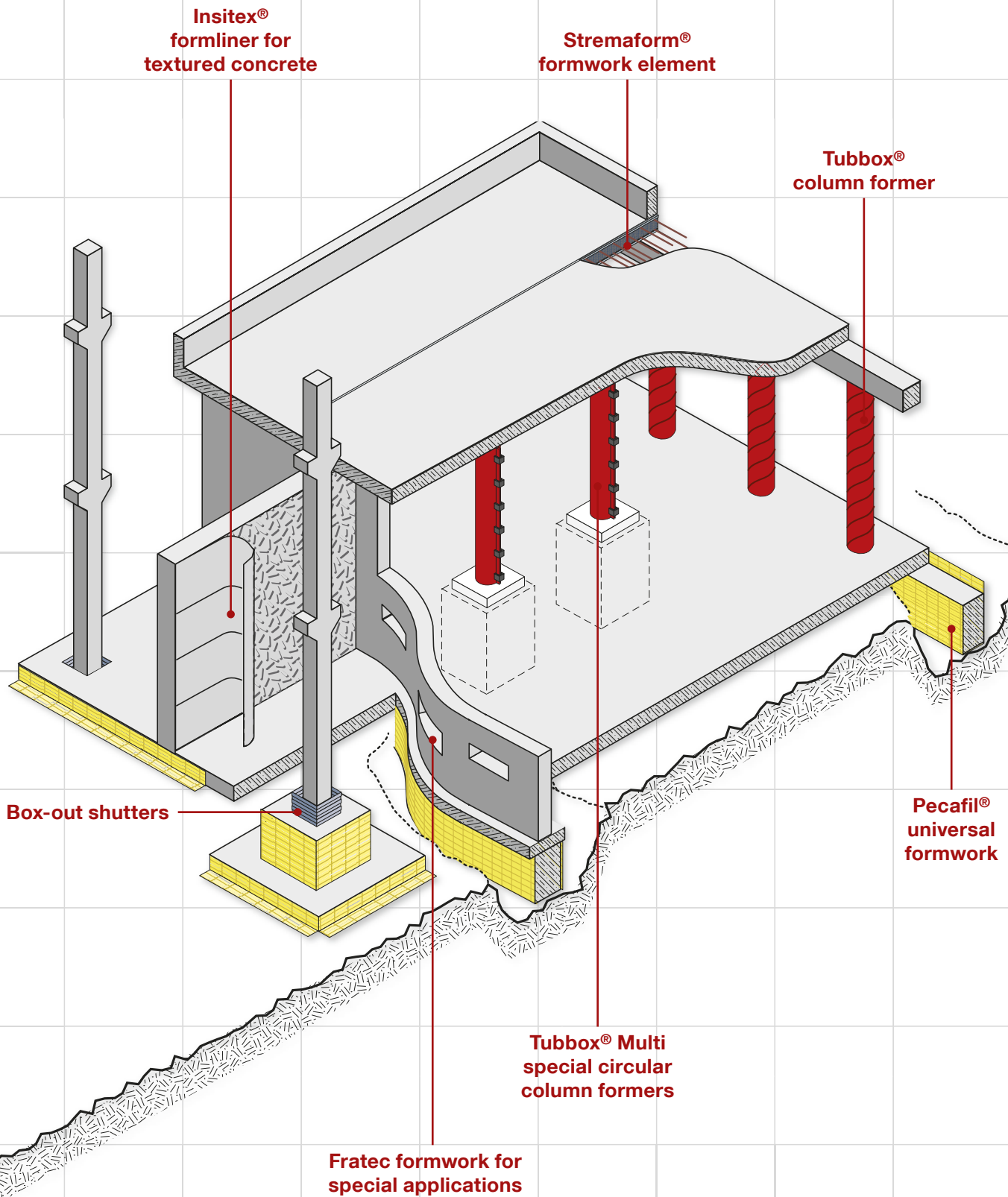
U-Korb® – steel spacers

Continuous high chairs (U-Korb®) are used as spacers between the lower and upper reinforcement layers in bases, slabs and walls, fixing the distance between both reinforcement layers and holding them in the correct structural position.

Safety for concrete cover, structural calculations and formwork:

- Saves labour time and material through fast laying and a support width of 200 mm
- Will not tip over due to a stable contact surface with the lower reinforcement
- No contact to the formwork, therefore no damage to the formwork skin and no rust stain formation on the concrete surface
- Suitable for use with both mat reinforcement and single bars





Pecafil® universal formwork elements

Pecafil® replaces timber/steel formwork for fast and economic construction of foundations (ground beams, pile caps, etc.) and as a separation layer between concrete and sheet piles/bored piles.

Pecafil® offers the following benefits:

- Curved or complicated foundation forms can be easily produced on site
- Factory produced panels based on site drawings delivered to short lead times
- No stripping, cleaning or return of the formwork
- Multiple-use is possible depending upon site conditions and construction types

Pecafil® universal formwork elements are composed of an individually designed special steel mesh with different bar sizes and with a heat shrunk polyethylene film that is neutral to ground water, recyclable and biologically degradable. Additionally Pecafil® can be used as temporary protection screens against weather, dust, etc., and for ribbed slab construction.



Stremaform® permanent formwork for joints

Stremaform® is a permanent formwork material designed for use in construction and expansion joints and for box-outs in bases, slabs and walls.

Stremaform® creates a rough joint surface that forms an excellent indented structure with the next concrete pour.

Stremaform® is made to order in the factory according to the construction site requirements and is supplied to site ready for installation.

- The bond between concrete and Stremaform® has a shear strength that is as high as that of monolithic concrete
- The permanent formwork material is cost saving – formwork removal is no longer required
- Metal, PVC or rubber water stops can be integrated
- Production of inclined formwork systems or formwork systems with hopper, round and octagonal
- Stremaform® spacer is used as formwork for concrete cover and reinforcement layers
- Cost saving – no concrete leakage, reduced cleaning time



Tubbox® column formers

Tubbox® formers enable the production of columns of virtually any geometrical shape. FRANK offer you a varied range of possibilities – round, square, rectangular, octagonal and special shapes.

- available in a range of surface qualities: “spiral”, “smooth”, “textured” and “blowhole free”.
- No release agents are required.
- Column formers are light and easy to erect and to strip off (weight and handling)
- Can be disposed of as cardboard – recycling is possible
- Cost effective – no need for cleaning and returning permanent formwork
- Special shapes and textured surfaces are supplied tailor-made
- Column formers can be used in drinking water structures

Tubbox® Multi is a reusable circular column former that can be used for the construction of multiple new columns of the same diameter and for the re-profiling of existing columns during redevelopment of old structures.

- Suited for multiple use
- Quick assembly and lightweight: no crane necessary
- Can be used in constricted areas
- Concreting can be done in several pours



Tubbox® column formers



Tubbox® Multi use circular column formers including fixing accessories

Fratec formwork for capitals and bases ideally complements the Tubbox® range of column formers.

Zemdrain® controlled permeability formliner (CPF)

Zemdrain® is used to improve the long-term durability of concrete by improving the physical and chemical resistance of the concrete surface. Zemdrain® is fixed to the formwork and the fine pores of the liner allow for controlled drainage of excess air and water from the outer surface of the concrete. This increases the density of the concrete surface and prevents penetration of aggressive elements.

Test results prove: The use of Zemdrain® considerably increases the service life of concrete structures by:

- Virtually eliminating blowholes and other blemishes
- Reducing the water/cement ratio at the surface
- Increased surface strength and abrasion resistance
- Increased freeze/thaw resistance
- Increased resistance to microbiological growth, improving hygiene
- Increased resistance to acid attack
- Increased resistance to the ingress of chlorides and carbonation
- Not using release agents, thus suitable for drinking water structures



Zemdrain® is DuPont's registered trademark.
www.zemdrain.com

Special formwork systems

An extensive range of formwork products developed to suit most applications.

Fratec: From a dimensioned drawing developed by the designer, special formwork can be manufactured to produce a wide range of architectural shapes. Fratec is mainly used for these special formwork shapes, as well as for capitals, bases, cornices and recesses.

Box-out shutters: Made of sheet steel, these box-out shutters can be easily transported and quickly erected on site. They meet the requirements of the joint category “interlocked”.

Permanent edging formwork made of fibre concrete: Extruded fibre concrete permanent edging formwork is used in the production of semi-precast elements such as balcony edges, lattice floors and openings in twin wall construction. Different profiles are available to match all requirements.

Floor-edge insulating forms DIS: DIS replaces floor edge shuttering around the whole perimeter when concreting floors in masonry structures and provides sufficient additional insulation in order to avoid cold bridging.

Box-out form: Made of coated cardboard, these box-out forms offer an economical and efficient solution for the construction of slab openings.



Fratec



Permanent edging formwork made of fibre-reinforced concrete

Please find information about formwork accessories and release agents www.maxfrank.com

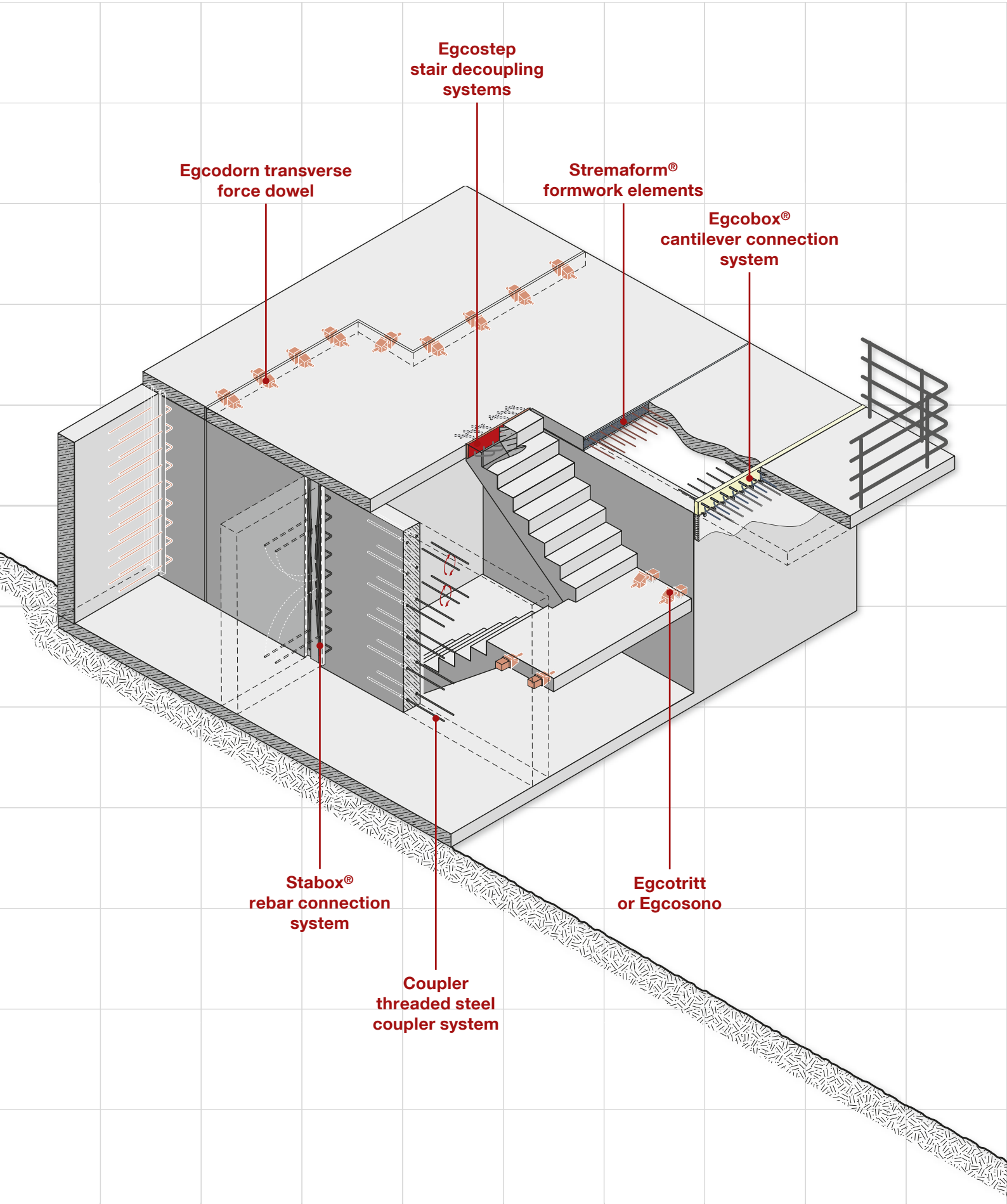
Insitex® profiled formliners

Insitex® profiled formliners provide a cost effective means of creating visual interest in concrete surfaces!

Profiles replicate brickwork, blockwork, timber and many other geometric features. Bespoke designs are possible, as are corporate logos or signature designs.

- New profiles can easily be developed
- Lightweight and easy to handle
- Liner design disguises panel joints, as well as underlying formwork joints
- Low number multiple use is possible when handled with care
- Recommended to be used with Trennfit Super release agent





Egobox® cantilever connection system

Since 1997, Egobox® has been an approved certificated system for preventing thermal bridging between buildings and cantilevered components, such as balconies, consoles, walls etc. The Egobox® system is impressive in its versatility: In addition to the well-known and popular standard elements, special Egobox® elements can be designed and manufactured in-line with the individual static and geometrical requirements of your site. Elements are produced to order and supplied direct to site with short lead times.

- Possibility of individual configuration, various element geometries are possible (round, variable concrete covers and element lengths, 60 – 120 mm insulation material widths, etc.)
- The system allows for the use of a range of insulation materials
- Special elements can be produced within five working days
- Approved by DIBt and many other European construction supervising authorities

NEW: Egobox® GDL with axial thrust bearing made of high-grade concrete for optimised thermal insulation and handling



Freeware Egobox® software
www.maxfrank.com – find details on page 25!

Threaded Coupler range

Couplers are used to join rebar in areas where lapping is not appropriate. This Coupler system gives you the opportunity to connect rebars simply, quickly and cost-effectively.

- 100% load transmission
- Suited for static and dynamic loads
- The system holds a general approval issued by the DIBt of Berlin, Germany, Z-1.5-100
- Standard lengths in three rebar diameters are available ex stock
- Special lengths are produced upon request

Coupler – more than just a threaded steel connection system

Coupler threaded steel connection systems are also manufactured and delivered to site as combined products in-line with the requirements of your construction site, e.g.:

- Coupler with Stabox® as an interlocked installation aid
- Coupler as a tie bar extension for Egobox®
- Coupler with Stremaform® formwork elements – also with interlocked joint



Stabox® reinforcement continuity system

Stabox® rebar connection systems provide a cost effective solution for connecting building elements where reinforcement continuity is required between sequential concrete pours. Time-consuming formwork erection is thus avoided.

- Rebar components are BSt 500 WR grade – to DIN 488 with guaranteed re-bend properties
- Manufacture and dimensioning to DIN 1045-1 and technical guidelines issued in the “Rebending Code of Practice of the German Concrete Association” (DBV)
- Special case profiles for all applications, calculation of transverse and shearing force resistance VRd
- Highest category “interlocked” to DIN 1045-1 for transverse force transmission
- No approval is required by the construction supervising authorities
- Special solutions, e.g. “Stabox® F” including integrated, coated metal water stop can be produced upon request



Stabox® T rebar connection for shearing force parallel to the construction joint “interlocked”

Stabox® T was developed especially for construction joints exposed to shearing forces parallel to the construction joint. The special very solid trapezoidal sheet steel plate of the Stabox® T fulfils maximum requirements according to DIN 1045-1 section 10.3.6 “interlocked” parallel to joint direction.

- Shearing force parallel to construction joint, category “interlocked”
- We shall be delighted to design special dimensions or special types upon request



Egcodorn shear force connector

Egcodorn is a high-performance corrosion-proof transverse force dowel which transfers maximum loads whilst having a minimum component thickness. Using the stainless steel dowel system, extensive formwork for expansion joints is not necessary.

- Unique corrosion protection and the use of high-quality materials guarantee highest safety
- DIBt approval
- Maximum load transmission for minimum component thicknesses
- Absorption of longitudinal and transverse movements
- Simple joint production
- Optimum load transmission into the concrete
- Transmission of dynamic and static loads

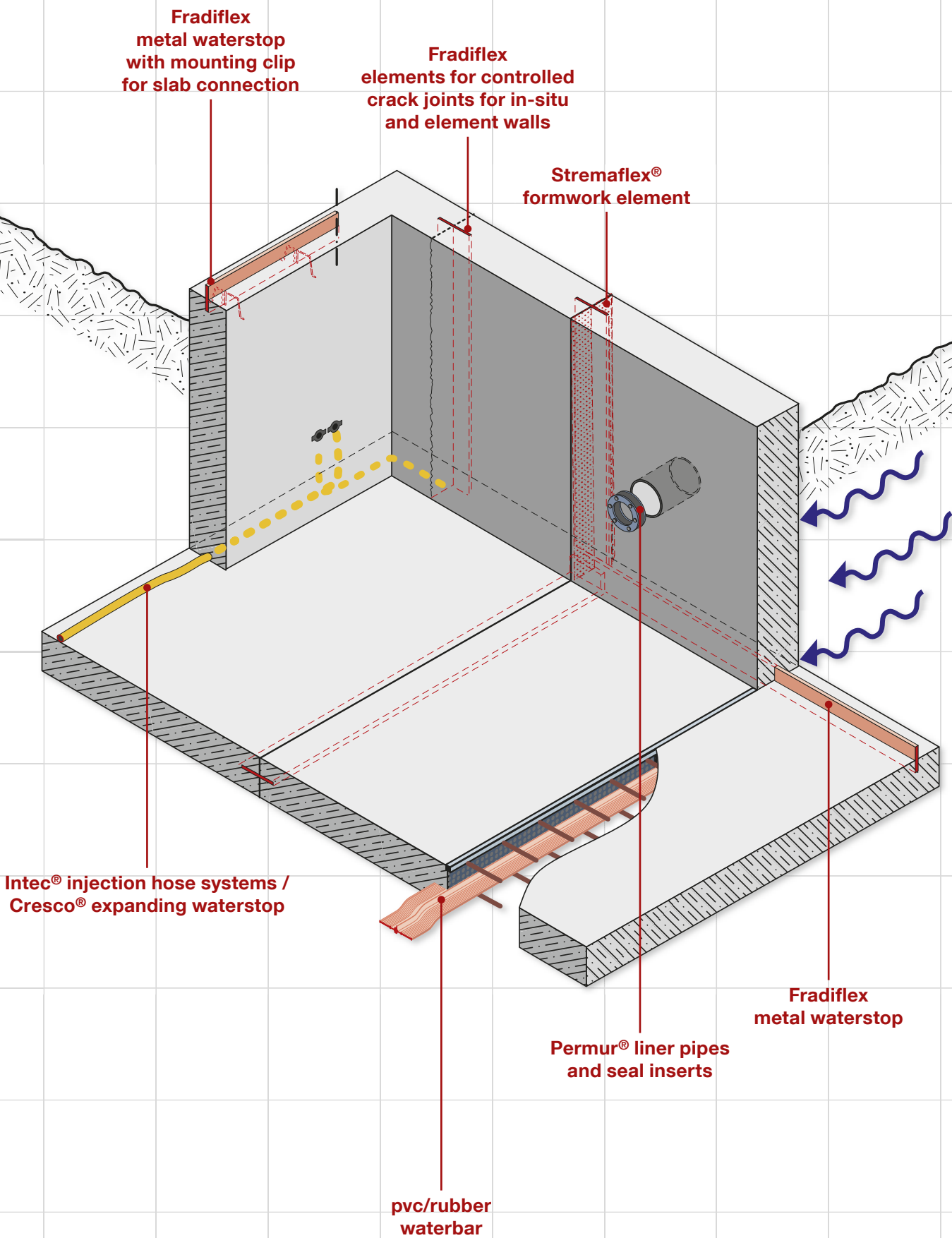


Egcodubel

Egcodubel for expansion joints is a system for transmission of transverse forces in joints of plate-shaped structural elements. Dowels are mainly used for subordinate structural elements (e.g. base slabs, roadways), in which expansion joints must only allow for transverse forces.

- Can be supplied in various designs
- Available both with and without sleeves
- High steel qualities
- Optimum corrosion protection





Intec® injection hose systems

Intec® injection hose systems provide a secure, simple and rapid method for sealing horizontal and vertical construction joints for watertight concrete. Intec® injection hose systems are a well-proven means of ensuring high-quality watertight basements. According to the guideline for watertight structures, Intec® injection hose systems can be used for all types of structures and under all loading conditions.

Intec® is supplied with a range of approved resins and accessories. Special resins for use in the injection hose sealing of drinking water structures are also available.

- **Intec® Premium** injection hose – internal hose with slits bound with a tightly wound textile braiding, **for multiple injections** with PUR, acrylic and EP resins
- **Intec® Standard** injection hose – hose with slits, **for single injection** with PUR, acrylic and EP resins
- **Intec® Cem N** injection hose – **for multiple injections** with cement suspension, PUR, acrylic and EP resins



Intec® Premium and Intec® Cem N injection hoses are worldwide unique injection hoses suited for multiple injections with PUR resins

Cresco® expanding waterstops

Cresco® waterstops expand in a controlled manner in contact with water to reliably seal concrete construction joints. According to the guidelines for watertight structures, Cresco® waterstops can be used for all types of structures and loadings.

- Long-lasting swelling properties
- Excellent chemical resistance
- Reliable, homogeneous and reversible swelling properties
- Cresco®'s shape remains unchanged
- Also suited for use in areas with wet and dry cycles
- No concrete spalling due to controlled expansion behaviour
- Fixing is fast and simple using Cresco® fixing glue
- Containment cages are not required

The Cresco® range includes:

- **Cresco® BT** sodium bentonite based expanding waterstop
- **Cresco® PU** polyurethane based expanding waterstop
- **Cresco® AC** acrylate polymer based expanding waterstop
- **Intec® Combi**, a combination of an expanding waterstop with a single use injection hose, provides double safety for high-quality structures



Fradiflex metal waterstops

Fradiflex is a coated metal waterstop that forms an excellent bond with fresh concrete to reliably and quickly seal construction joints. Fradiflex can be used for all types of structures and loading conditions according to the guideline for watertight structures.

- General approval of the construction supervising authorities
- Bond with fresh concrete unaffected by temperature
- Simple and quick fixing to the upper reinforcement layer
- Roll lengths of 25 m mean fewer joints and faster installation
- available with or without fixing clamps

Select the appropriate Fradiflex metal water stop in-line with your requirements:

- Fradiflex Premium - metal waterstop with double-sided coating
- Fradiflex Standard - metal waterstop with single-sided coating
- Fradiflex Standard TW - metal waterstop with single-sided coating, suited for drinking water applications with KTW approval



Stremaflex® formwork element

Stremaflex® is a combination of a coated metal waterstop with Stremaform® formwork elements. The rough surface of the construction joint guarantees excellent interlocking between pours and the special coating of the metal waterstop is an additional seal.

- Excellent bond with fresh concrete
- Very high shear force resistance of interlocked joint
- Approved for construction joints and controlled crack joints
- In accordance with the guideline for watertight structures
- General approval of the construction supervising authorities
- Formwork elements can be supplied including interlocked joints



Fradiflex controlled crack inducer

We offer you different products for production of controlled cracks by weakening of the concrete cross section.

Our controlled crack inducers ensure that cracks produced inside the concrete are produced and sealed intentionally.

We supply appropriate solutions both for in-situ concrete and precast concrete elements.

Fradiflex controlled crack inducer:

The controlled crack inducer consists of a metal waterstop with special coating and laterally protruding crack induction plates.

- Quick and simple fixing due to excellent inherent stability
- No time-consuming welding required, overlaps are glued
- Suited for all types of structures and loadings in conformity with guidelines for watertight structures
- With general approval by the construction supervising authorities



Permur® pipe penetration systems and seal inserts

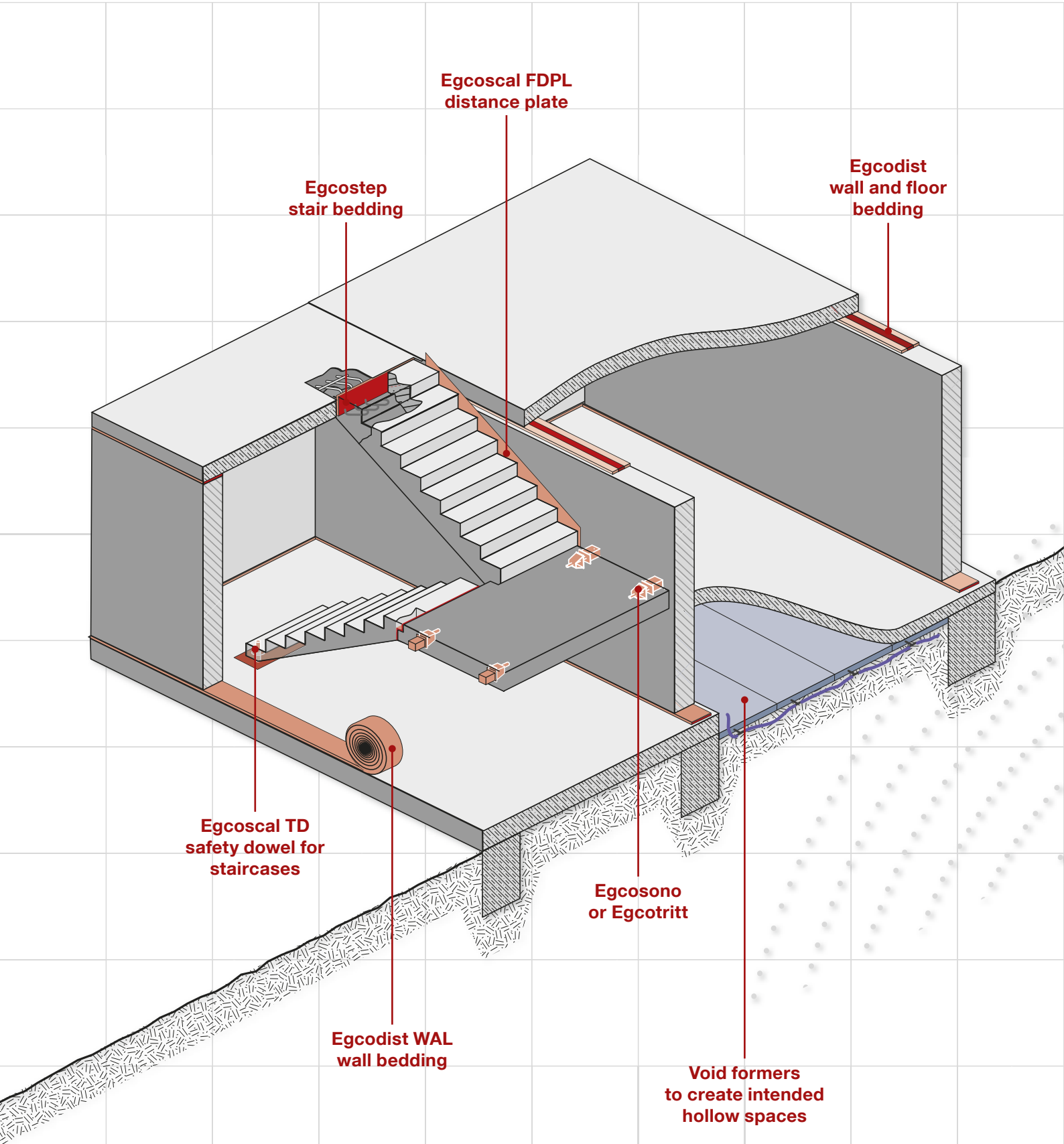
Permur® is a well proven system for ensuring the watertightness of the penetration points of services into a structure. The Permur® pipe penetration system is mainly used for watertight concrete structures and it has proved to be the optimal solution for the sealing of service and sanitation pipe entry into basements.

Permur® PFR fibre cement tubes or Permur® Monolith special moulds are used to produce circular chases cast in a concrete wall. The resulting formed holes are then ready for direct installation of our PDE Permur® sealing inserts.

The following seal inserts are available:

- Galvanised design
- Stainless steel design
- Closed, parted design and multiple lead-throughs
- Plastic link chains





Egcotritt acoustic shear force connectors

The Egcotritt range is a shear force dowel system (dowel part/acoustic box) for structural elements made of concrete, reinforced concrete or masonry, for which acoustic decoupling is required.

Egcotritt protects against undesired impact sound transmissions from the stairwell by the acoustic decoupling of the staircase and landing from the remainder of the structure.

- Shear force connection with impact sound reduction of up to ΔL_w 32 dB*
- With general approval by DIBt
- Joint width up to 100 mm
- Suitable for both in-situ and precast applications
- Fire resistance rating R120**

* Impact sound reduction (to DIN ISO 140-8) up to ΔL_w 32 dB according to test report no. 1181-001-08 dated 3rd December 2008

** Fire resistance rating R120 to DIN 4102-2, according to fire protective assessment by MPA Braunschweig



Egcosono acoustic landing supports

Egcosono is used for the acoustic decoupling of landings and stairwells, thereby preventing flanking sound transmission from other building elements in single wall constructions.

- Impact sound reduction of up to ΔL_w 27 dB*
- Fire resistance rating F90**
- Elastomer bedding with general approval by DIBt
- Statics according to DIN 1045-1

* Impact sound reduction (to DIN ISO 140-8) up to ΔL_w 27 dB according to test report no. 1111-001-007 dated 2nd October 2007

** Fire resistance rating R90 to DIN 4102-2, according to fire protective assessment by MPA Braunschweig



Egcoscal stair bearing system

The Egcoscal stair bearing system separates the interlocking elements of the landing and the stair by providing an insulating layer between them. Egcoscal stair bearing systems guarantee impact sound reductions.

- Impact sound reduction up to ΔL_w 31 dB*
- The stair bedding is specifically adapted to the staircase load
- Fire protection: building materials class B1 to DIN 4102

Egcoscal S stair bedding – for acoustic decoupling of components, flexible product, special lengths available

Egcoscal F stair bedding – for acoustic decoupling between the stair flight and the base slab

Egcoscal TD stair securing dowel – for acoustic decoupling between the stair flight and the base slab and simultaneous structural securing

Egcoscal FDPL distance plate – sealing the joints and durably protecting them against soiling

* tested to ISO 717-2, test report issued by the Test institute for Airborne Sound Insulation SG-Bauakustik, August 2006, impact sound reduction ΔL_w up to 31 dB



Egcoscal S stair bedding



Egcoscal TD stair securing dowel

Egcostep acoustic stair hanging system

Egcostep is used for the acoustic decoupling of staircase from the landing, thereby reducing Impact Sound Transmission between the two building elements.

- Reduction of impact sound transmission by up to 14 dB*
- Fire resistance rating R90**
- Suitable for both in-situ and precast applications

* Impact sound reduction (to DIN ISO 140-8) up to ΔL_w 14 dB according to test report no. 1111-001-07 dated 2nd October 07

** Fire resistance rating R90 to DIN 4102-2, according to fire protective assessment by MPA Braunschweig



Egcodist wall / slab glide bearings

These types of slab glide bearings are used where bearing forces from slabs and walls must be specifically distributed over the supporting masonry. The slab glide bearing will absorb modifications in the length of the massive slab – caused by creep and shrinkage or by temperature changes – and will prevent cracks in the adjacent masonry walls.

Egcodist DEL control / slide bearing

Egcodist DETEL control bearing with temporary slide bearing

Egcodist DEDAL control bearing with permanent slide bearing

Egcodist DAL and **Egcodist DAL-POM** slide bearing

Egcodist WAL wall bearing



Void formers – for intended voids

The void former is designed as lost formwork for creating voids under base slabs and other construction components. Voids may be needed for anti-vibration protection, etc. Voids are created by a delayed process where the void formers are irrigated using an integrated tube system, the load bearing capacity will then decrease immediately and the intended void is thus created.

Voids under base slabs or pile head beams:

- Gap for expanding jointing material
- Optimum load distribution
- In below-ground sites, excessive loads on surfaces caused by concrete slabs are avoided
- Sound and vibration decoupling of base slab and ground (void former = addition to elastic construction site bearing elements)

Separation layer / lost formwork:

- Smooth, lost formwork as a separation layer between the structure and retaining shutters
- Vertical separation from existing foundations



**You find the following information
on www.maxfrank.com:**

Test reports

The efficiency of our products in their relevant fields of application has been approved by general test certificates issued according to the regulations of the construction supervising authorities in many countries.

Tender texts

You find detailed product descriptions, descriptions of the fields of application and DIN norms for individual products for establishing your tender specifications.

CAD drawings

Details and dimensions of individual products are available for download of the data directly into your computer programmes.



Egcobox® Software

Quick designing and dimensioning of Egcobox® insulating cantilever connectors.

The free-of-charge Egcobox® software assists architects and engineers in designing and dimensioning all Egcobox® insulating cantilever connectors.

This dimensioning software assists users in choosing between various standard geometries with variable dimensions, in the calculation of cut sizes and their dimensioning as well as provision of plan view and cross-sectional drawings.



Free-of-charge download from www.maxfrank.com

The Egcobox® Software allows for calculation of the following balcony types:

- Cantilevered balcony
- Loggia balcony recessed
- Re-entering of circumferential corner balcony
- Corner balcony
- Supported balcony
- Beam-supported balcony

Different languages can be chosen within the software:

- German
- English
- French
- Italian
- Dutch
- Norwegian
- Polish
- Russian
- Slovenian
- Czech

Different country-specific design standards can be chosen within the software:

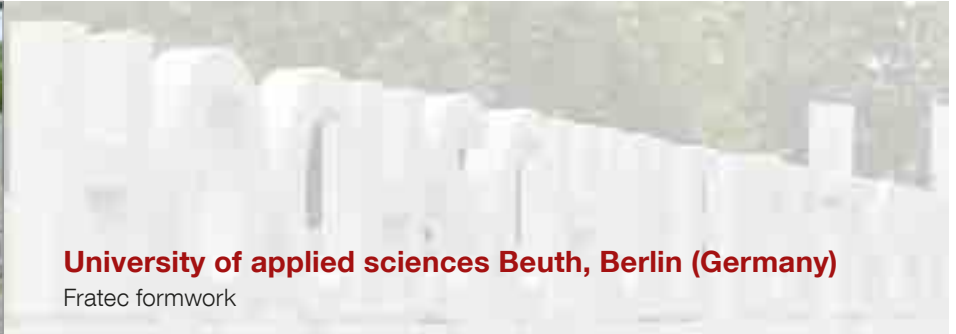
- Germany
- Great Britain
- Italy
- Norway
- Austria
- Poland
- Switzerland
- Slovenia
- Czech Republic
- Ukraine



Al Garhoud Bridge, Dubai (United Arab Emirates)
Zemdrain® formwork liner



University of applied sciences Beuth, Berlin (Germany)
Fratec formwork



Finnetunnel, railway line Erfurt - Leipzig/Halle (Germany)
Spacers made of fibre-reinforced concrete, Zemdrain® formwork liner,
Stremaform® formwork elements

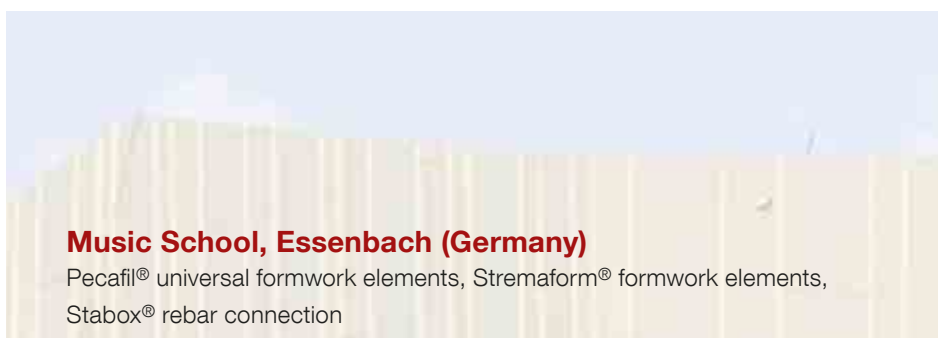


Residential Complex Lister Gracht Hanover (Germany)
Egcobox® cantilever connector



Administrative building, Munich (Germany)
Fratec formwork







Max Frank GmbH & Co. KG

Mitterweg 1
94339 Leiblfing
Germany

Phone +49 9427 189-0

Fax +49 9427 1588

info@maxfrank.com

www.maxfrank.com