



# PRODUCTS GUIDE



# Ruredil, serving the construction industry for more than 60 years



Ruredil is **ISO 9001:2008** certified by Certiquality and ICMQ.



Certificate  
No. 950



Certificate  
No. 97156



Certificate  
No. 1737

For more than 60 years Ruredil has been helping improve quality in the construction industry with a highly innovative, technologically advanced product range. Ruredil has always had a strong focus on the **requirements of the building site**, offering **additives, release agents and flooring** products that significantly **increase mechanical resistance, impermeability and durability**.

Ruredil is at its customers' side to provide constant **technical assistance in concrete mixing plants** and with **special training courses**.

The courses address topics ranging from changes in **legislation to new special concretes with high added value**, such as extra-strong, colored, fiber-reinforced, S.C.C., impermeable or exposed concretes.

Ruredil always guarantees the **advanced technology and high quality** of its products. Most **products** are **CE marked**.

Our employees' skills and training are essential resources; we organize training courses in concrete technologies every year to ensure that our sales technicians are kept constantly up to date.

We offer **technical training programs** for salespeople and concrete technicians, concrete **mix and cement inspection study programs**, and host **conventions** for architects, builders and flooring installers.

**EcoRuredil** is a business certification based on the experience acquired in Research and Development of environmentally friendly products and is aimed at the recognition and assessment of certain requirements for the full range of Ruredil products. The assignment of one of the three EcoRuredil compatibility levels is based on the fulfillment of certain criteria put **forward by the LEED** (Leadership in Energy and Environmental Design) certification system.

This standard is applied in more than 100 countries around the world and is developed by the U.S. **Green Building Council**, a nonprofit association that promotes and provides a comprehensive approach to sustainability, giving recognition to good performance in key areas of human and environmental health.



# CONTENTS

<b>Build</b>	<b>2</b>
<b>Spacers and Profiles</b>	<b>6</b>
Plastic Spacers and Profiles	
Cement and Fiber-cement Spacers	
Metal Spacers for Concrete Flooring	
BWA Joining Parts	
Concrete/Masonry Connections	
<b>Binders</b>	<b>19</b>
Cement-base Binders	
<b>Release Agents</b>	<b>19</b>
Emulsifiable Release Agents	
Release Agents Ready for Use	
<b>Additives</b>	<b>22</b>
Superfluidifying Additives	
Flooring Additives	
Homogenizing Additives for Washed Concrete	
Accelerating and Antifreeze Additives	
Retardant and Air-Entraining Additives	
Air-Entraining Additives	
No-Shrinkage Additives	
Additives for Light Concrete	
Adhesion Promoters	
Mass Waterproofing Products	
<b>Adhesives, Fasteners and Anchoring Products</b>	<b>29</b>
Tile Adhesives	
Cement-Based Grouting	
Gruing with Resin	
Fastening with Resin	
<b>REPAIR AND RESTORE</b>	<b>32</b>
<b>Concrete Repair Cycle</b>	<b>40</b>
Passivation of Reinforcement Bars	
Thickness Repairs	
Smoothing layers	
Repairs by Pouring	
Repair of Concrete Pavements	
<b>Masonry Repair Cycle</b>	<b>44</b>
Dehumidifying Plasters	
Grout Injections	
Reinforced Slabs and Structural Screeds	
Barrier against Humidity	
<b>Plaster-holding Meshes</b>	<b>46</b>
Plaster-Holding Fiberglass Meshes	
<b>Heat Insulation</b>	<b>46</b>
"Overcoat" Insulation System	
<b>Protection Products for Concrete and Masonry</b>	<b>47</b>
Protection Layers	
Anti-Evaporating Products	
Water-Oil Repellents	
<b>REINFORCE THE STRUCTURES</b>	<b>48</b>
<b>FRCM reinforcement of concrete structures with PBO fibers</b>	<b>54</b>
Structural Reinforcement of Pillars	
Structural Reinforcement of Beams	
Structural Reinforcement of Floors and Ceilings	
Mortar for Reinforcement of Concrete Structures with PBO Fibers	
<b>FRCM Reinforcement of Masonry with PBO Fibers</b>	<b>55</b>
Structural Reinforcement of Vaults and Main Walls	
Structural Reinforcement for Protection against Floor and Ceiling	
Mortar for Reinforcement of Masonry Structures with PBO Fibers	
<b>FRCM Connectors with PBO Fibers</b>	<b>56</b>
Connection Systems of Structural PBO Reinforcements	
<b>FRCM Connectors Made of Carbon Fibers</b>	<b>56</b>
Connection Systems of Carbon Structural Reinforcements	
<b>FRCM Reinforcement of Structures with Carbon Fibers</b>	<b>57</b>
System For FRCM Reinforcement with Carbon Fibers	
<b>FRP Reinforcement of Structures</b>	<b>58</b>
Systems for Structural Reinforcement with Organic Matrix	

<b>REINFORCE CONCRETE WITH FIBERS</b>	<b>60</b>
<b>Synthetic Structural Fibers</b>	<b>62</b>
Concrete Placements for Flooring Footings and Other Items	
<b>WATERPROOF</b>	<b>64</b>
<b>Waterproofing of Joints and Concrete Placement Joints</b>	<b>72</b>
Bentonite Joints	
Polyurethane and Rubber Joints	
Injection Joints	
<b>Waterproofers</b>	<b>74</b>
Cementitious Waterproofers	
Osmotic Waterproofers	
Bentonite Waterproofers	
Waterproofers for Holes and Water Drains	
Waterproofing Paints	
<b>ARCHITECTURAL PAVEMENTS</b>	<b>78</b>
<b>Pavements for Outdoor Use</b>	<b>81</b>
Stabilized Pavements	
<b>PREFABRICATION</b>	<b>82</b>
<b>Lifting Systems</b>	<b>94</b>
R-System	
Lifting System with Threaded Bushing	
<b>Systems for Panels with Thermal Cutting</b>	<b>99</b>
Konnektor - Technical Cutting for Panels	
<b>Cantilever Systems</b>	<b>100</b>
Girella and Tirella	
<b>Structural Anchoring and Connections</b>	<b>101</b>
Fisis 30 - Earthquake - Resistent Anchors for Panels	
Fisis 15 - Earthquake - Resistent Anchors for Panels	
Kaptor - Mechanical Connection for Prefabricated Structures	
Boccola RUR - Connection for Threaded Bars	
<b>Anti-Burst Devices</b>	<b>107</b>
Jet - Anti-Burst Devices	
<b>Safety Systems</b>	<b>108</b>
Rurefast 3 - Fall-Prevention System with Quick Connect	
<b>PRODUCTS ON REQUEST</b>	<b>110</b>
<b>Special Waterproofing</b>	<b>112</b>
Waterproofing Products for Holes and Water Drains	
Injection Joints	
Sealing Tapes	
Injection Resins	
Injection Equipment	
<b>Protective Products for Concrete and Masonry</b>	<b>115</b>
Anti-Evaporation Products	
<b>GRIND ADDITIVES</b>	<b>116</b>
<b>Process Additives for Cement</b>	<b>118</b>
Grinding Aids and Strength Enhancers	

<b>ANALYTICAL ALPHABETICAL INDEX</b>	<b>120</b>
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# BUILD



**Sea Bridge** Pescara - Italy



**Viaduct Castropignano** Campobasso - Italy

Products for completion of formwork as accessories for concrete placement steps; certified steel elements, to ensure safe casting of reinforcing dowel bars and tie bars; PVC molded parts that allow to obtain special finishes on uncoated concrete, which is more and more used in modern construction sites.

## Spacers and Profiles

### Plastic Spacers and Profiles

Spacers and profiles have been designed in various shapes, in order to best meet the needs in buildings sites. They are made of high-density polyethylene and are **resistant to chemical corrosion, rot proof and crushproof**; they are also resistant to mechanical loads.

The profiles are made of high quality PVC. They are available in elements suitable for any type of structure and are made of different shapes and designs to meet the requirements of modern architectures.



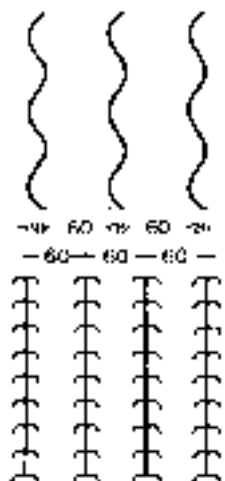
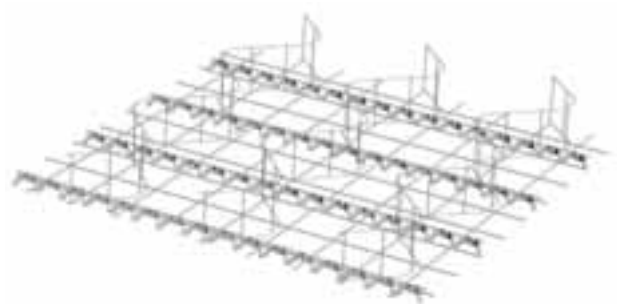
### Cement and Fiber-cement Spacers

Unlike plastic spacers, they are designed **to support particularly heavy reinforcements or bars**. The range of fiber cement products is made with a mix that contains high durability cement and synthetic fibers. Thus they ensure **good resistance in chemically aggressive environments**.

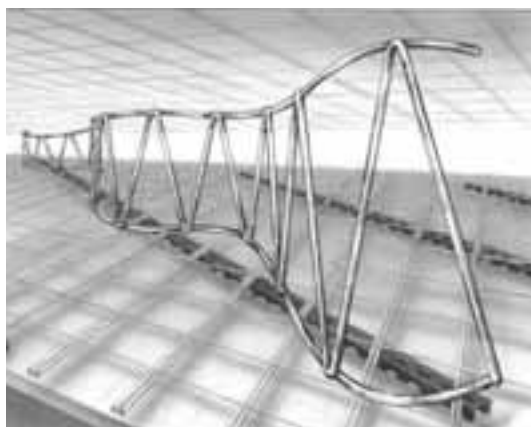


### Metal Spacers for Concrete Flooring

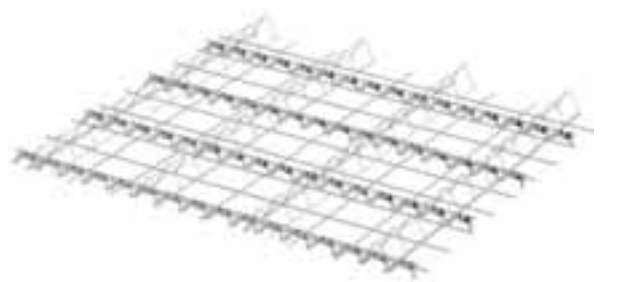
These metal spacers are designed to be used in flooring in place of normal steel trusses and are suitable **to support the weight of nets and personnel employed in the early concrete placement steps**. The DISTA component does not have tips that would damage the PVC sheet used in flooring with "vapor barrier" system.



Laying of Ruredil **Distal**.



Laying of Ruredil **Snake**.



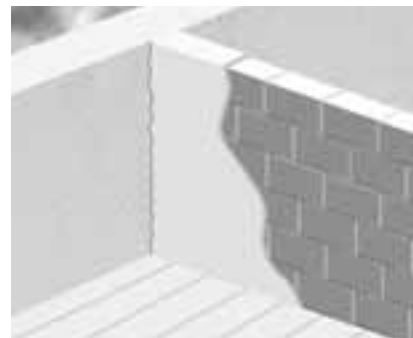
Laying of Ruredil **Basket**.

# Joining parts

## Joining parts for Walls

The connection between concrete and bricks in the composite structures, due to the diversity of mechanical behavior, often leads to cracks and crevices or, in more severe cases, the partial detachment of the wall off the concrete structure. Cracking and cracking are, beyond the aesthetic issues, the entry point of water and form a thermal bridge (with consequent dispersion and condensation).

A special mention is required for infill of large surfaces (e.g. between two pillars of an industrial warehouse) where, in addition to the aesthetic problem, there is also a structural problem, of the building is subjected to lateral loads due to the wind. For the resolution of these problems, non-effective handmade solutions are often proposed, such as laying of a plaster-holding net above the connection point of the two parts, or, in situations where masonry anchoring is also required, placement of steel rods in the concrete before the construction of the wall. In both cases, the remedies tend to redistribute the stresses in an imprecise way, and the operator decides the amount and the mode of application.

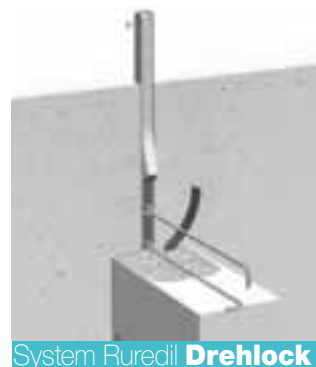


## Connections for new constructions

The **Drehlock** system is appropriate for connections in works that are still under construction. The system consists of a special galvanized steel guide to be fixed to the formwork before concrete placement and two types of connectors, which are placed between bricks when masonry is built. After concrete formwork is removed, Styrofoam insulation is removed and the construction of the first 3 or 4 rows of bricks begins. At approximately 60 cm from the ground, the connector is inserted into the guide, making its free end adhere to the base mortar and repeating this process every 60/80 cm of wall elevation.

The system is available with two types of connectors:

- **"Key" type:** 25 cm long, made with reinforcement rods with improved adhesion, suitable for "robust" connections, i.e. where any lateral movement of the wall may be a problem.
- **"Flat" type:** 12 cm long, made with galvanized steel sheet and fitted with holes to improve the adhesion to the mortar, suitable for "normal" connections, i.e. where it is necessary to counteract the tendency to crack and anchor the wall to the structure.



System Ruredil **Drehlock**

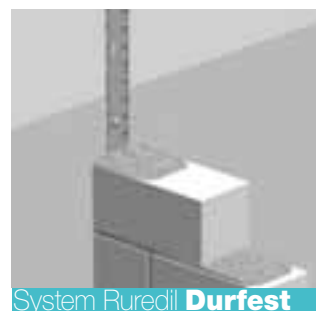
## For Concrete Structures already built

For concrete works already made, or in the case of renovations, the **Durfest** system is appropriate.

The system consists of a special galvanized steel rail, with punched edges, to be fixed to the concrete by means of anchoring plugs, and two types of connectors, which are placed between bricks when masonry is built.

The system includes a complete kit for setting of 5 m Durfest, including anchoring plugs and brackets. The system is available with two types of connectors:

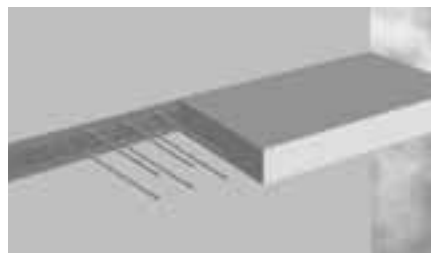
- **"U" type:** it is anchored to the bracket using its punched edges and is placed on the bricks every 40 cm.
- **"Flat" type:** it is made with galvanized steel sheet and fitted with holes to improve the adhesion to the mortar, especially suitable for cladding with thermal insulation inside.



System Ruredil **Durfest**

## BWA joining parts

Prefabricated galvanized steel box with adhesion rods increased by straightening after formwork removal. Rods are drawn and rolled with special steel type BST 500 S lt. DIN 488 and allow being straightened with no decrease of material characteristics because of yield, such that it is no longer compliant with DIN 1045 standard, which regulates anchoring and concrete placement.



## Laying process



- ① Nail the **BWA** junction part to the formwork.



- ② Remove the cover after concrete placement.



- ③ Straightening the rods and continue with concrete placement.



## Special Items on Request

It is possible to request specially made connecting items, by specifying the type of placement in the schedule below and completing all necessary measures according to the diagram:

m						
Steel type (see schedule)						
Rod Ø mm						
Pitch between rods cm						
Bracket width mm (b)						
Total height cm (h)						
Overlap length cm (li)						
Bending length cm (v)						
Box width mm (B)						
Box length cm (L)						

## Additives



Concrete technology and its problems have always been at the center of studies of Ruredil laboratories.

All additives are available in Ruredil products (both with naphthalene sulfonate-based technology and with acrylic base) to increase concrete performance from placement until maturation is complete.

The product range is divided into families with specific performances, such as the improvement of rheology in terms of workability increase, water reduction, maintaining of consistency, decrease or extension of setting time, and possible pumpability even with lightweight aggregates.

Regarding hardened concrete, it is possible to act on monitoring of proper maturation as well as on the development of mechanical strength, on porosity and hence on strength class, the behavior in extreme climates (both with very hot temperatures and in freeze-thaw cycles) and the possible need for watertight or colored concrete.

## Fixings

### Cement fixings

For structural grouting of steel bars or heavy items, such as the bases of structures or machinery or even the pillars to be connected with the plinth base, a specific pre-mixed castable product is available: **Exocem G1** that allows pouring liquid fine-grind mortar that - once hardened - develops compressive strengths greater than 600 Kg/cm<sup>2</sup> and improved adherence to adhesion bars of 32 MPa.

### Chemical fixings

For chemical fixing and anchoring, we recommend the use of resins that are well suited on bricks, concrete and wood, ensuring breakout forces usually suited to regular tilings in construction.

Please remember to choose accurately the chemical matrix of resin in relation to load and conditions of media.

Ruredil proposes polyester-based, vinylester-based or epoxy matrixes certified by ETA.



Resin Type	Polyester	Vinylester	Epoxy
LOAD	low	medium	high
MATERIALS	bricks and concrete	bricks, wood and concrete	bricks, wood and concrete
PRESENCE OF WATER	dry	wet	submerged

# Spacers and Profiles

## PLASTIC SPACERS AND PROFILES



### Dranfix - Plastic P1

Plastic spacer particularly suitable for use on formwork rod crossing points.

Code No.	Item No.	Distance from formwork	No. of pieces in package
0304003001	4702	10 mm	500
0304003002	4703	15 mm	500
0304003003	4704	20 mm	500
0304003004	4705	25 mm	500
0304003005	4706	30 mm	500
0304003010	4707	35 mm	250
0304003006	4708	40 mm	125
0304003011	4709	45 mm	125
0304003007	4710	50 mm	125



### Dor - Plastic P2

The shape of this spacer allows good securing of reinforcement rods; bears concrete placement without moving.

Code No.	Item No.	Type	No. of pieces in package
0304005002	1354	5/20	1,000
0304005005	1394	9/20	1,000
0304005008	1344	14/20	1,000
0304005009	1345	14/25	500
0304005010	1346	14/30	250
0304005011	1348	14/40	250
0304005019	1347	16/35	250
0304005013	1384	28/20	250
0304005015	1386	28/30	250



### Drunter - Plastic P27

Particularly stable plastic spacer for horizontal reinforcements and large diameter rods.

Code No.	Item No.	Distance from formwork	No. of pieces in package
0304001005	1030	30 mm	500
0304001006	1040	40 mm	500
0304001007	1050	50 mm	500



### Dixi - Plastic P28

The shape of this plastic spacer allows perfect securing of reinforcement nets on intersections.

Code No.	Item No.	Type	No. of pieces in package
0304028006	4073	7/15	1,000
0304028010	4074	7/20	1,000
0304028026	4075	7/25	1,000



### TMP - Plastic P29

Tower-shaped spacer. The wide base of this spacer is designed for use on soft surfaces such as polystyrene and insulation materials in general. The recess obtained allows its use with rods up to 20 mm diameter.

Code No.	Item No.	Type	No. of pieces in package
0304071001	TMP 20	15/20	500
0304071002	TMP 30	25/30	400
0304071003	TMP 50	40/50	200
0304071006	TMP 60	50/60	200
0304071005	TMP 80	70/80	200
0304071007	TMP 100	90/100	100





### Drunterring - Plastic P30

Spacer for lower reinforcements, with support on formwork through legs. It consists of 6 separable rings, Ø from 14 to 32 cm.

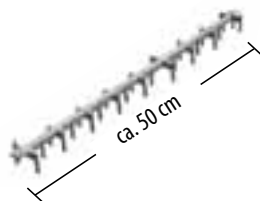
Code No.	Item No.	Type	No. of pieces in package
0304010002	1540	D15	300
0304010003	1541	D20	300
0304010004	1542	D25	300



### Deckeneck - Plastic P31

Spacer for large surfaces, consisting of 4 separable parts, size 205 x 75 mm. A set is enough for about 2 m² reinforcement.

Code No.	Item No.	Distance from formwork	No. of pieces in package
0304023001	1580	15 mm	100
0304023002	1581	20 mm	100
0304023003	1582	25 mm	100
0304023004	1583	30 mm	100
0304023005	1584	35 mm	100



### Drunterstab 50\* - Plastic P32

This spacer is particularly suitable for horizontal reinforcements in length 0,50 m.

Code No.	Item No.	Distance from formwork	No. of pieces in package
0304084010	1621	15 mm	100
0304084011	1622	20 mm	100
0304084012	1623	25 mm	100

\* Available on request in 1.03 m length.



### Drewi - Plastic P33

This three-dimensional spacer can be simply placed on the formwork, as it will always be in the best location. Length: 330 mm.

Code No.	Item No.	Distance from formwork	No. of pieces in package
0304137001	1675	25 mm	500
0304137004	1676	30 mm	500
0304137002	1678	40 mm	250



### Doppelstecker\* - Plastic P34

Spacer for fixing and positioning two reinforcement nets vertical to each other with the highest precision. This spacer is particularly solid and its setting is fast and extremely easy.

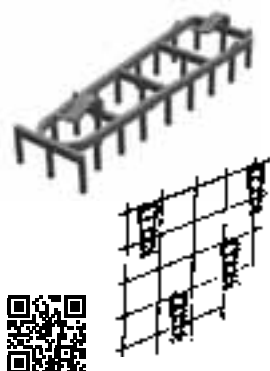
Code No.	Item No.	Distance from formwork	No. of pieces in package
0304038002	3501	80/15	500
0304038004	3502	100/20	1,000
0304038010	3615	150/20	500

\* Product available upon request.



# Spacers and Profiles

## PLASTIC SPACERS AND PROFILES



### Doval with hook - Plastic P35

Plastic vertical spacer provided with two hooks for anchoring on reinforcements.  
Length: 210 mm; width: 50 mm.

Code No.	Item No.	Distance from formwork	No. of pieces in package
0304092002	1573	20 mm	100
0304092003	1574	25 mm	100
0304092004	1575	30 mm	100



### Schal-Stopfen - Plastic P36

Plug for closing holes in the formwork casings. Provided with flaps to close 22 to 25 mm holes.

Code No.	Item No.	Opening Ø	No. of pieces in package
0304174001	5606	22/25 mm	100



### Durch - Plastic P37

Stable plastic material for anchoring of insulating panels to concrete.

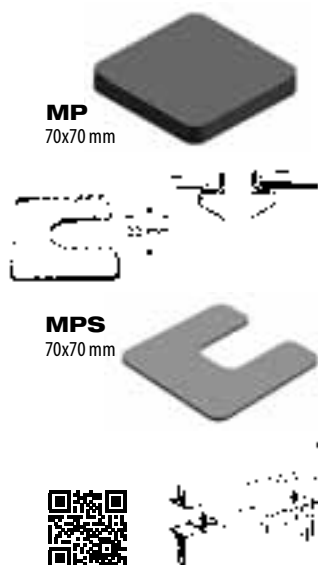
Code No.	Item No.	Type	No. of pieces in package
0304055003	5870	70	1,000
0304055004	5875	75	1,000
0304055005	5890	90	1,000
0304055006	5812	125	250
0304055008	5815	150	250



### Düko S12 - Plastic P38

Bushing for support of panels to make prefabricated walls. It has to be nailed on wooden formworks or placed on steel formworks. The mounting plate prevents grout from entering Düko S12 thread and has to be unscrewed and removed for use.

Code No.	Item No.	No. of pieces in package	No. of pieces in bag
0304170001	5684	500	500



### MP/MPS - Plastic P39/P40

Very stable plastic plate to be used in the assembly of precast concrete panels.  
Dimensions: 70 x 70 mm.

Code No.	Item No.	Product	Thickness mm	No. of pieces in package
0304073001	3402	MP 2	2 mm	250
0304073002	3403	MP 3	3 mm	250
0304073003	3405	MP 5	5 mm	125
0304073004	3407	MP 7	7 mm	125
0304073013	3408	MP 8	8 mm	125
0304073005	3409	MP 9	9 mm	125
0304073014	3410	MP 10	10 mm	125
0304073015	3415	MP 15	15 mm	50
0304073016	3420	MP 20	20 mm	50
0304073006	34021	MPS 2	2 mm	250
0304073007	34031	MPS 3	3 mm	250
0304073008	34051	MPS 5	5 mm	125
0304073009	34071	MPS 7	7 mm	125
0304073010	34091	MPS 9	9 mm	125

### Drunterleiste IV - Plastic F3

Floor spacer in the shape of a profile, perforated on the top and on the sides, so that concrete can perfectly penetrate inside. Length: 2 m.

Code No.	Item No.	Distance from formwork	Mt. per package	Mt. per pallet
0304095008	1607	15 mm	100	5,400
0304095009	1608	20 mm	100	4,800
0304095007	1606	25 mm	100	4,200
0304095006	1609	30 mm	100	4,200
0304095010	1618	35 mm	60	2,880
0304095005	1629	40 mm	60	2,400
0304095xxx	1955	45 mm	60	2,100
0304095004	1627	50 mm	60	1,440
0304095012	1919	60 mm	40	1,600

### Drunterleiste V - Plastic F3 L

Floor spacer in the shape of a profile, perforated on the top and on the sides, so that concrete can perfectly penetrate inside. In the smooth version for concrete placement on polystyrene, bentonite web, or PVC sheet. Length: 2 m.

Code No.	Item No.	Distance from formwork	Mt. per package	Mt. per pallet
0304094003	1595	20 mm	100	4,800
0304094004	-	30 mm	100	4,200
0304094001	1646	40 mm	60	2,400
0304094005	1647	50 mm	60	1,440

### Zick-Zack 200/80 - Plastic F4 200/80

Thanks to an optimal packing, this particularly solid spacer allows reducing costs of transport and, consequently, greater storage at warehouse. Available in 0.80 m or 2.00 m length.

Code No.	Item No.	Distance from formwork	Mt. per package	Mt. per pallet
0304178001	15/200	15 mm	100	5,000
0304178002	20/200	20 mm	100	5,000
0304178003	25/200	25 mm	100	5,000
0304178004	30/200	30 mm	100	5,200
0304178005	35/200	35 mm	80	3,200
0304178006	40/200	40 mm	80	3,200
-	45/200	45 mm	80	3,200
0304178007	50/200	50 mm	80	3,840

Code No.	Item No.	Distance from formwork	Pcs. per package	Pcs. per pallet
0304177001	15/80	15 mm	50	3,500
0304177002	20/80	20 mm	50	3,500
0304177003	25/80	25 mm	50	3,500
0304177004	30/80	30 mm	50	3,500
0304177005	35/80	35 mm	40	1,600
0304177006	40/80	40 mm	40	1,600
0304177008	45/80	45 mm	40	1,600
0304177007	50/80	50 mm	40	1,600

### Druwell - Plastic P5

Serpentine spacer for large surface reinforcements. As a result of its punctiform support, it is invisible after formwork removal. Length: approx. 75 cm

Code No.	Item No.	Distance from formwork	No. of pieces in package
0304168001	2040	25 mm	100
0304168003	2042	30 mm	100
0304168002	2043	35 mm	100
0304168004	2044	40 mm	100

# Spacers and Profiles

## PLASTIC SPACERS AND PROFILES



### Sirion - Plastic C6

The special shape of this spacer allows perfect coupling to any rod diameter. A tangential tooth holds the spacer during concrete placement. Its open structure also allows a good penetration of concrete.

Code No.	Item No.	Distance from formwork	No. of pieces in package
0304020001	3052	5/10	1,000
0304020032	3063	6/15	500
0304020034	3064	6/20	500
0304020008	3065	6/25	250
0304020033	-	6/30	250
0304020027	3083	8/15	500
0304020004	3084	8/20	500
0304020009	3085	8/25	250
0304020013	3086	8/30	250
0304020018	3127	10/35	125
0304020028	3129	10/45	100
0304020002	3123	12/15	500
0304020005	3124	12/20	250
0304020010	3125	12/25	250
0304020014	3126	12/30	125
0304020020	3128	12/40	125
0304020006	3184	18/20	250
0304020011	3185	18/25	250
0304020015	3186	18/30	125
0304020021	3188	18/40	125
0304020024	3180	18/50	50
0304020019	3207	20/35	125
0304020035	3200	20/60	50
0304020016	3266	26/30	125
0304020022	3268	26/40	250
0304020039	20268	45/4-18	250



### Uni-Dinki - Plastic C7

This spacer can be used with multiple rod diameters.

Code No.	Item No.	Distance from formwork	No. of pieces in package
0304142002	2503	15/4-12	1,000
0304142004	2504	20/4-12	500
0304142005	2505	25/4-12	500
0304142003	2498	25/12-20	250
0304142006	2506	30/4-12	250
0304142007	4130	30/6-20	125
0304142051	4135	35/6-20	125
0304142008	2501	40/5-14	125
0304142010	2509	40/6-20	125
0304142012	2502	50/6-20	50
0304142021	2512	0/12-20	50



### PGR - Plastic C8

Plastic low-cost and practical spacer for cages and foundations. It allows making guaranteed concrete cover in formworks intended for the installation of poles, diaphragm walls, etc. Suitable for use on 6 to 20 mm Ø rods.

Code No.	Item No.	Type	No. of pieces in package
0304200001	42950	50/6-20	200
0304200002	42975	75/6-20	100





### Durchlass - Plastic C12

Corrugated tube for insertion of closing systems for large surface formworks. Length: 2 m.

Code No.	Item No.	Tube Ø mm	No. of pieces in package
0305020003	6406	20/24	50/2,450
0305020005	6400	22/26	100/2,500
0305020016	6403	26/30	50/1,500

#### Accessories for Durchlass



### Drin-Kappe - Plastic C16    Drin-Stopfen - Plastic C17

Drin-Kappe (for Ø 22/26 mm rods) is used to increase the base of contrast in formworks for Durchlass tubes. Drin-Stopfen (for Ø 22 mm rods) allows closure with effective aesthetic appearance. To use the system, the tube must be cut 1 cm/side shorter than the wall thickness.

Code No.	Item No.	Rod Ø mm	No. of pieces in package
0304044002	5657	22/26	500
0304043002	5654	22	500



### Dicht-Stopfen - Plastic C15

Flexible plastic cap used to close Durchlass tube hole to obtain good watertight results.

Code No.	Item No.	Ø mm	No. of pieces in package
0304048002	6301	22/26	500



### Decki - Plastic C14

Caps for closing of holes after rod recovery.

Code No.	Item No.	Tube Ø mm	No. of pieces in package
0304049006	5620	20	1,000
0304049007	5622	22	1,000
0304049009	5626	26	500



### Delle - Plastic C13

Plastic cone to be inserted into Durchlass tube. It can be removed off the tube after formwork removal and reused.

Code No.	Item No.	Tube Ø mm	No. of pieces in package
0304042002	5420	20	500
0304042003	5422	22	500
0304042004	5426	26	250



### FSK Tube - Plastic C11

Ø 22 mm tube for passing of binds in industrialized formworks. Available for wall thicknesses from 150 to 400 mm. For other sizes, contact the sales office. The product is supplied with sealing caps.

Code No.	Item No.	Tube Ø mm	No. of pieces in package
0304180002	352150	150	100/8,400
0304180004	352200	200	100/8,100
0304180006	352250	250	100/6,300
0304180007	352300	300	100/4,200
0304180008	352350	350	100/3,600
0304180010	352400	400	100/3,000

# Spacers and Profiles

## PLASTIC SPACERS AND PROFILES



### Tappo SKV - Plastic C9

Yellow protection cap for reinforcement rods protruding outwards.

Code No.	Item No.	Rod Ø mm	No. of pieces in package
0304200002	3276	8/16	250
0304200001	3277	16/30	100



### Tappo Unipro 6/30 - Plastic C10

Red protection cap for reinforcement rods protruding outwards. Particularly solid and versatile, this cap is used on Ø 6 to 30 mm rods. It must be fixed with a hammer.

Code No.	Item No.	Rod Ø mm	No. of pieces in package
0304186001	UNI 30	6/30	200



### Smusso Triangolare AL

With flap. They allow setting perfect bevels in any kind of pillar. They are provided with flap for fixing of formworks. Recoverable and therefore reusable several times. Packages: 100 m (50 bars 2 m long). Also available in a version without flaps (SM series).

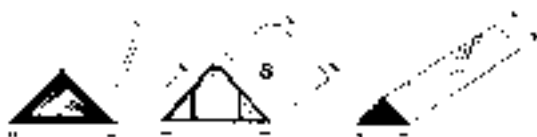
Code No.	Type	Length mt.	Mt. in package
0305014004	AL 17	2	100
0305015004	AL 26	2	100



### Smusso Triangolare SM

Without flap. Same characteristics as the AL series. Packages: 100 m (40 bars 2.5 m long or 50 bars 2 m long).

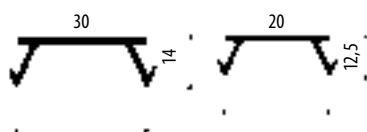
Code No.	Item No.	Dimensions m		Length mt.	Mt. in package
0305021001	6803	15	21	2	100
0305021002	6804	20	28	2	100
0305021005	6805	20	32	2	100
0305021007	6810	29	42	2,5	500



### Sgocciolatoi SG

PVC profiles to make the drip in balconies or attic placements. Not subject to aging or deformation, as they are provided with reinforcing and anchoring tabs to concrete.

Code No.	Type	Color	Length mt.	Mt. in package
0305017004	SG 20	grey	2	200
0305018004	SG 30	grey	2	200





### Distanziatore in cemento - Concrete C17

Suitable for horizontal heavy reinforcements, no binding wire and high compressive strength.

Code No.	Item No.	Distance from formwork	Pcs. per package	Pcs. per pallet
0304070003	7025	25 mm	225	12,750
0304070004	7026	30 mm	250	11,250
0304070005	7027	35 mm	250	10,000
0304070006	7028	40 mm	250	8,750
0304070007	7029	50 mm	120	6,250



### Distanziatore in cemento - Concrete C17F with galvanized wire

Also suitable for vertical reinforcements.

Code No.	Item No.	Distance from formwork	Pcs. per package	Pcs. per pallet
0304070015	8448	20 mm	510	22,950
0304070016	8449	25 mm	510	22,950
0304070017	8450	30 mm	510	12,750
0304070018	8451	35 mm	375	11,250
0304070019	8454	40 mm	250	6,250
0304070020	8455	50 mm	250	6,250



### Drufa-Bock - Concrete C18F with galvanized wire

Fibro-cement saddle spacer, also suitable for vertical reinforcements. Available on request in wireless version.

Code No.	Item No.	Distance from formwork	Pcs. per package	Pcs. per pallet
0304127052	7073	25/20 mm	1,000	40,000
0304127053	7074	30/22 mm	500	20,000
0304127008	7075	35/22 mm	500	20,000
0304127054	7076	40/25 mm	500	20,000
0304127055	7078	50/28 mm	250	10,000
0304127057	7080	60/28 mm	200	8,000



### Drufa-Knochen - Concrete C19

Fibro-cement spacer, whose shape allows obtaining two or three different distances from the formwork. For horizontal reinforcements.

Code No.	Item No.	Distance from formwork	Pcs. per package	Pcs. per pallet
0304129002	6944	20-25-30 mm	500	30,000
0304129003	6945	35-40-50 mm	250	10,000
0304129004	6948	45-55-60 mm	125	5,000



### Drufa-Knochen - Concrete C19F with galvanized wire

Also suitable for vertical reinforcements.

Code No.	Item No.	Distance from formwork	Pcs. per package	Pcs. per pallet
0304129052	6946	20-25-30 mm	500	25,000
0304129053	6947	35-40-50 mm	250	10,000
0304129054	6949	45-55-60 mm	125	5,000

# Spacers and Profiles

## CEMENT AND FIBROCEMENT SPACERS



### Drufa-Schlange with knuckles - Concrete C20

Serpentine-shaped fibro-cement spacer; it is placed on formworks through knuckles, thus allowing a uniform distribution of concrete below the spacer.

Code No.	Item No.	Distance from formwork	No. of pieces in package
0304165001	7145	80/20 mm	2,300
0304165002	7146	80/25 mm	1,400
0304165003	7147	80/30 mm	1,250
0304165004	7148	80/35 mm	1,100
0304165005	7149	80/40 mm	800
0304165006	7151	80/50 mm	600



### Drufa-Dreikant - Concrete C21

Fibro-cement spacer in the shape of a triangular profile. It is able to support very heavy reinforcements thanks to its large support surface. Available in the concave (K) or full version. Length: 1 m.

Code No.	Item No.	Distance from formwork	No. of pieces in package
0304130001	6901	100/20 mm	1,500
0304130002	6902	100/25 mm	1,000
0304130003	6903	100/30 mm	800
0304130004	6905	100/40 mm	500
0304130005	6907	100/50 mm	350
0304130006	6904	100/30 K mm	1,000
0304130009	6909	100/35 K mm	750
0304130007	6906	100/40 K mm	600
0304130013	6908	100/50 K mm	500
0304130010	6910	100/60 K mm	350
0304130011	6900	100/70 K mm	250



### Drufa-Vierkant - Concrete C42

Square section fibro-cement spacer resistant to significant point loads. Particularly suitable for foundation concrete placement. Length: 1 m.

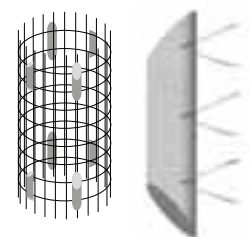
Code No.	Item No.	Distance from formwork	No. of pieces in package
0304171001	7183	30x30	400
0304171005	7184	40x40	300
0304171006	7185	50x50	750



### Drufa-Kurz with two wires - Concrete C43

Triangular concave section fibro-cement spacer, with two wire ties for mounting to engage the vertical reinforcements. Available on request in a version with fastening hook. Length: 33 cm.

Code No.	Item No.	Distance from formwork	Pcs. per package	Pcs. per pallet
0304176008	-	33/30 mm	15	2,700
0304176003	-	33/40 mm	45	1,800
0304176004	-	33/50 mm	40	1,280
0304176006	-	33/60 mm	25	1,000
0304176007	-	33/70 mm	20	800



### Drufa-Rund F - Concrete C44

Fibro-cement spacer for pilings. Provided with 3 galvanized steel wires armor for secure fit to reinforcement. The blunt shape does not block the descent of the cage.

Code No.	Item No.	Type	No. of pieces in package
0304172003	-	40	25
0304172004	-	50	25





### Drufa-Rohr System - Concrete C46

System consisting of: fiber-cement tube for reinforcement of watertight and gastight walls, Drufa-Stopfen fiber-reinforced concrete cap, Dicht-Kleber/Härter T resin, and accessories for placement on formwork.  
Length: 1.25 m; Bore: 22 mm.

Code No.	Item No.	Type	No. of pieces in carton
0304133009	7001	125/22	500

Pre-cut pipes are available on request.

#### Accessories for Drufa-Rohr



### Drufa-Stopfen - Concrete C47

Fiber-reinforced concrete cap to close the Drufa-Rohr tube. It must be glued to the tube with the specific adhesive (Dicht-Kleber/Härter T). Length: 20 and 50 mm.

Code No.	Item No.	Type	No. of pieces in carton
0304135001	6999	22/20	1,000



### Dicht-Kleber/Härter T - Concrete C48

Bi-component epoxy resin glue for sealing of Drufa-Rohr tubes with the appropriate Drufa-Stopfen caps.

Code No.	Item No.	Type	No. of pieces in carton
0304138001	7011	A-Kleber T	0.800 kg
0304138002	7012	B-Härter T	0.400 kg



### Dichtkappe - Plastic C49

Conical head made of soft plastic material which ensures perfect adhesion of the Drufa-Rohr tube to the formwork. Ø 22 mm.

Code No.	Item No.	Type	No. of pieces in carton
0304139001	7010	22	250



### Dichtkuplung - Plastic C50

Plastic fitting for joining sections of Drufa-Rohr tube. Ø 22 mm.

Code No.	Item No.	Opening Ø mm	No. of pieces in bag
0304136001	7009	22	250



### Distanziatore a trapezio - Concrete C41

Trapezoidal spacer made of mould pressed fiber-cement. This item is provided with two holes to pass the steel wire to it secure to the foundation reinforcement cages.

Code No.	Item No.	Distance from formwork	No. of pieces in package
0304192003	-	H 40 mm	650
0304192004	-	H 50 mm	600
0304192005	-	H 60 mm	550
0304192002	-	H 70 mm	500
0304192001	-	H 100 mm	350



### Distanziatore ad anello - Concrete C45

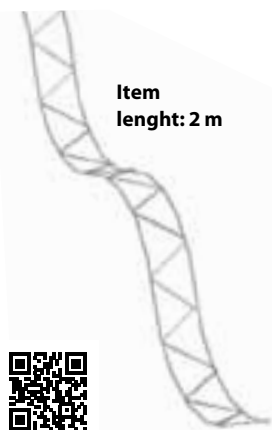
Ring-shaped spacer made of mould pressed fiber-cement. Particularly suitable for use for the construction of foundation reinforcement cages. Ø 120 mm.

Code No.	Item No.	Type	No. of pieces in carton
0304182001	-	50	1,000

# Spacers and Profiles

## METAL SPACERS FOR CONCRETE FLOORING

### Dista - Steel F22



Item  
length: 2 m

Serpentine-shaped metal spacer, compliant with reference DIN standards with bent dividing rods to avoid any damage to waterproofing material layers. Particularly suitable for use in industrial flooring for spacing of overlapped nets.

Code No.	Item No.	Height mm	Package m	Pallet m
0304120001	9123	30	50	4,000
0304120002	9124	40	50	4,000
0304120003	9025	50	50	2,000
0304120004	9026	60	100	2,000
0304120005	9027	70	100	2,000
0304120006	9028	80	100	2,000
0304120007	9029	90	100	2,000
0304120008	9030	100	100	2,000

### Snake - Steel F23

Item  
length: 2 m



Contact the sales  
office for missing  
code numbers

Rational and low-cost metal spacer for flooring with double net. Particularly solid and easy to use.

Code No.	Item No.	Height mm	Package m	Pallet m
0304179001	94003	30	50	4,000
0304179002	94004	40	50	4,000
0304179007	94005	50	50	3,000
0304179003	94006	60	50	3,000
0304179005	94007	70	50	2,000
0304179006	94008	80	50	2,000
0304179004	94009	90	50	2,000
0304179009	94010	100	50	1,800
*	94011	110	50	1,600
0304179010	94012	120	50	1,400
0304179012	94013	130	50	1,200
0304179017	94014	140	50	1,200
0304179011	94015	150	50	1,200
0304179008	94016	160	50	1,000
*	94017	170	50	1,000
0304179015	94018	180	50	1,000
0304179016	94020	200	50	800
0304179014	94022	220	50	800
*	94024	240	50	600
*	94026	260	50	600
0304179028	94028	280	50	600
0304179013	94030	300	50	600

### Basket - Steel F24

Item  
length: 2 m



Trellis-shaped metal spacer for industrial flooring with single or double net. Available in various heights. Stable, solid, low-cost.

Code No.	Item No.	Height mm	Package m	Pallet m
0304181001	94205	50	400	2,000
0304181002	94206	60	400	2,000
0304181003	94207	70	400	2,000
0304181004	94208	80	400	1,600
0304181005	94209	90	400	1,200
0304181006	94210	100	400	1,200
0304181007	94211	110	400	1,200
0304181008	94212	120	400	1,200
0304181010	94213	130	400	800
0304181009	94214	140	400	800
0304181011	94215	150	400	800
0304181012	94216	160	400	800
0304181013	94217	170	400	800
0304181014	94218	180	400	800
0304181015	94219	190	400	800
0304181016	94220	200	400	600
0304181017	94221	210	400	2,000
0304181018	94222	220	400	2,000
0304181019	94223	230	400	2,000
0304181020	94224	240	400	2,000

### Elemento singolo BWA

Junction item with shaped steel box that remains in the concrete, provided with 5-6-8-12  $\varnothing$  8, 10, or 12 mm rods.  
Width: 5.5 cm.

Distance between rods: variable, depending on the number of rods. Length: approx. 125 cm.



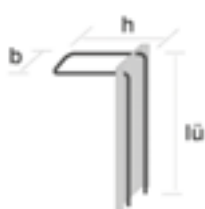
Code No.	Item No.	Rod $\varnothing$ mm	Rod dist. (s) mm	No. of rods / items (F)	Overlap length cm (l <sub>ü</sub> )	Length items** cm (L)	Length bending cm (v)	Width items cm (B)	Height box cm (H)	Height bracket cm (h)	Pallet m
0315003007	BWA 8/15	8	15	8	32	125	7	5.5	3.0	15	250
0315003010	BWA 8/20	8	20	6	32	125	7	5.5	3.0	15	250
0315003012	BWA 8/25	8	25	5	32	125	7	5.5	3.0	15	250
0315003005	BWA 10/10	10	10	12	39	125	7	5.5	3.7	17	200
0315003008	BWA 10/15	10	15	8	39	125	7	5.5	3.7	17	250
0315003011	BWA 10/20	10	20	6	39	125	7	5.5	3.7	17	250
0315003006	BWA 12/10	12	10	12	46	125	9	7.5	4.8	17	150
0315003009	BWA 12/15	12	15	8	46	125	9	7.5	4.8	17	200
0315003013	BWA 12/20	12	20	6	46	125	9	7.5	4.8	17	200

\*\* The length of the item consists of the length of the box (120 cm) and two side polystyrene covers (approx. 1.5 cm each). For this reason, the nominal length is conventionally of 125 cm (80 cm for the short model).

### Elemento a staffa BWA

Junction item with shaped steel box that remains in the concrete, provided with 5-6-8-12  $\varnothing$  8, 10, or 12 mm rods.  
Width: 5.5 cm.

Distance between rods: variable, depending on the number of rods. Length: approx. 125 cm.



Code No.	Item No.	Rod $\varnothing$ mm	Rod dist. (s) mm	No. of rods / items (F)	Overlap length cm (l <sub>ü</sub> )	Length items** cm (L)	Width bracket mm (b)	Width items mm (B)	Height box cm (H)	Height bracket cm (h)
0315004001	BWA 06/08-15	8	150	8	32	125	-	60	24	170
0315004002	BWA 06/08-20	8	200	6	32	125	-	60	24	170
0315004006	BWA 09/08-20	8	200	6	32	125	-	90	24	170
0315004008	BWA 09/10-20	10	200	6	39	125	-	90	30	170
0315004009	BWA 09/12-15	12	150	8	46	125	-	90	36	170
0315011001	BWA 09/12-20	12	200	6	46	125	-	90	36	170
0315004010	BWA 12/08-15	8	150	8	32	125	88	122	24	170
0315004011	BWA 12/08-20	8	200	6	32	125	88	122	24	170
0315004033	BWA 12/08-25	8	250	5	32	125	88	122	24	170
0315004012	BWA 12/10-15	10	150	8	39	125	90	122	30	170
0315004013	BWA 12/10-20	10	200	6	39	125	90	122	30	170
0315004014	BWA 12/12-15	12	150	8	39	125	92	122	36	170
0315011002	BWA 12/12-20	12	200	6	44	125	92	122	36	170
0315004036	BWA 14/08-10	8	100	12	32	125	116	140	24	170
0315004015	BWA 14/08-15	8	150	8	32	125	116	140	24	170
0315004018	BWA 14/10-20	10	200	6	39	125	118	140	30	170
0315004032	BWA 14/12-10	12	100	12	31	125	120	140	36	170
0315004019	BWA 14/12-15	12	150	8	46	125	120	140	36	170
0315011003	BWA 14/12-20	12	200	6	46	125	120	140	36	170
0315004022	BWA 16/10-15	10	150	8	39	125	120	160	30	170
0315004023	BWA 16/10-20	10	200	6	39	125	120	160	30	170
0315004024	BWA 16/12-15	12	150	8	46	125	120	160	36	170
0315011004	BWA 16/12-20	12	200	6	46	125	120	160	36	170
0315004027	BWA 18/10-15	10	150	8	39	125	152	180	30	170
0315004028	BWA 18/10-20	10	200	6	39	125	152	180	30	170
0315004029	BWA 18/12-15	12	150	8	46	125	152	180	36	170
0315004031	BWA 18/12-20	12	200	6	46	125	152	180	36	170
0315004037	BWA 21/10-20	10	200	6	39	125	190	210	30	170
0315004034	BWA 21/12-10	12	100	12	46	125	192	210	36	170
0315004035	BWA 21/12-15	12	150	8	46	125	192	210	36	170
0315012001	BWA 21/12-20	12	200	6	46	125	192	210	36	170

\*\* The length of the item consists of the length of the box (120 cm) and two side polystyrene covers (approx. 1.5 cm each). For this reason, the nominal length is conventionally of 125 cm.



# Spacers and Profiles

## CONCRETE/WALL CONNECTIONS



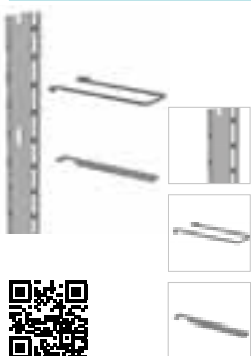
### Drehlock - Steel C25

Joining system for concrete and masonry structures during construction. Guides made with galvanized steel sheet St02, removable Styropor filling.

Galvanized anchoring item available in two types:

**key bracket to solid anchoring;**  
**flat bracket for normal fastening.**

Code No.	Item No.	Description	No. of pieces in package
0315052001	3324	Drehlock rail guide	20
0315052003	3329	Drehlock key bracket	100
0315052002	3327	Drehlock flat bracket	200



### Durfest - Steel C26

Joining system for concrete and masonry structures already built. Guides and rail made with galvanized steel St02. Galvanized anchoring item available in two types:

**"U-shaped" bracket for normal anchoring;**  
**Flat bracket for anchoring in the presence of heat insulators.**

Code No.	Item No.	Description	No. of pieces in package
0315021001	3330	Durfest rail guide	4
0315021003	3350	Durfest Kit* U-shape bracket	one
0315021002	3352	Durfest Kit* flat bracket	one

\* All anchors are sold in a special kit including screws, plugs and fittings of the rail guide.



### Rur Anker

The system includes drip plate accessories to allow, if required, the insertion and fixing of insulating material in the air chamber, while also avoiding dripping of any condensation on the insulating material.

Code No.	Item No.	Length mm	No. of pieces in package
0315073001	1062	210	250
0315073002	1063	250	250
0315073003	1064	275	250
0315073004	1065	300	250
0315073005	-	320	250
0315073006	1222	350	250
0315073007	1224	400	250

#### Accessory for Rur Anker

Code No.	Item No.	Description	No. of pieces in package
0315076001	5010	Drip plate	100



### Anker 300

Stainless steel connection system for walls and masonry blocks against pressure bending. Item length 300 mm.

Code No.	Item No.	Length mm	Width mm	No. of pieces in package
0312007001	8512	300	20	250





### Exocem 22

Premixed shrinkage-compensated and self-leveling binder. With the addition of water, visco-plastic mortar is obtained for safe anchoring without shrinkage, rheoplastic concrete.

#### Composition

Expansive and super-fluidifying hydraulic binder.

#### Yield

Approx. 1,500 –1,600 Kg/m³.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0105110020

- to make **no-shrinkage** concrete
- **injection** grout and mortar
- injections in sheaths of **post-tensioned cables**



### Durasil

Amorphous microsilica to be added to concrete with cement and aggregates to obtain pozzolanic action in high performance concrete. It increases water-resistance, durability and mechanical performance.

#### Dosage

5 ÷ 15 liters per 100 Kg of cement.



Package	Code No.
20 Kg bags on 1,000 Kg pallets	0105431020

- powder additive for **high-performance concrete**



# Release Agents

## EMULSIFIABLE RELEASE AGENTS



### Casseroil

Universal emulsifiable release agent to be diluted with water, which can be used for removal of any formworks in traditional building sites.

#### Composition

Linear alkylating material and non-ionic emulsifiers.

#### Yield

- for wooden formworks: 1 part of release agent and 15 - 20 parts of water, with a yield of 150 - 180 m² per liter;
- for steel formworks: 1 part of release agent and 5 parts of water, with a yield of 30 - 40 m² per liter.



Package	Code No.
5 liter drums	0103010040
10 liter drums	0103010045
25 liter drums	0103010020
210 liter drums	0103010030
1,000 liter tanks	0103010050

- to be emulsified in **water**
- for all **needs**



### Casseroil 30

Emulsifiable release agent to be diluted with water, which forms stable emulsion over time. Designed to meet all the needs of traditional building sites and can be used for any type of formwork.

#### Composition

Linear alkylating material and non-ionic emulsifiers.

#### Yield

- for wooden formworks: 1 part of release agent and 10 - 15 parts of water, with a yield of 120 - 150 m² per liter;
- for steel formworks: 1 part of release agent and 5 parts of water, with a yield of 30 - 40 m² per liter.



Package	Code No.
5 liter drums	0103100040
10 liter drums	0103100045
25 liter drums	0103100020
210 liter drums	0103100030

- to be emulsified in **water**
- universal, for all **formwork types**



# Release Agents

## RELEASE AGENTS READY FOR USE



### Casseroil 70

Chemical release agent with wide application range, ready to use on all formworks (steel, planed and non-planed boards, yellow panels, etc.). Specific for successful "exposed" concrete.

#### Composition

Mix of synthetic denatured alkylbenzenes and alkanol amides of fatty acids.

#### Yield

Approx. 1 liter/40 m<sup>2</sup>.



Package	Code No.
10 liter drums	0103110045
25 liter drums	0103110020
210 liter drums	0103110030
1,000 liter tanks	0103110050



- Ready to use **without emulsions**
- Specific for **exposed cement placements**



### Casseroil 200/AV

Release agent ready for use which allows obtaining good formwork removal on wood or metal formworks. The product has a low environmental impact.

#### Composition

Mix of linear alkylates.

#### Yield

Approx. 1 liter/40 - 50 m<sup>2</sup>.



Package	Code No.
210 liter drums	0103481030
1,000 liter tanks	0103481050
loose	0103481010



- Ready to use **without emulsions**
- Low **environmental impact**



### Casseroil 200/R

Low viscosity chemical release agent, ready for use. Its action occurs by chemical reactions with the cement paste, creating an insulating film. Provided with toxicological evaluation by the Italian Institute of Occupational Medicine - Milan - 20 November 1996.

#### Composition

Mix of synthetic denatured alkylbenzenes and alkanol amides of fatty acids.

#### Yield

- Approx. 1 liter/40 m<sup>2</sup> on wooden formworks;
- Approx. 1 liter/50-60 m<sup>2</sup> on metal formworks.



Package	Code No.
25 liter drums	0103360020
210 liter drums	0103360030
1,000 liter tanks	0103360050
loose	0103360010



- Ready to use **without emulsions**
- With **toxicological certification**



### Casseroil 200/RS

Medium viscosity chemical release agent with corrosion inhibitors, ready to use. Its action occurs by chemical reactions with the cement paste, creating an insulating film. It contains corrosion inhibitors for special protection needs.

#### Composition

Mix of synthetic denatured alkylbenzenes and alkanol amides of fatty acids.

#### Yield

50 - 60 m<sup>2</sup> per liter.



Package	Code No.
210 liter drums	0103080030
1,000 liter tanks	0103080050
loose	0103080010



• Ready to use **without emulsions**



### Casseroil 400/P

Chemical release agent for concrete, ready for use. It consists of a mixture of selected synthetic molecules with linear chain, additives of natural origin, and compounds, whose mechanism of action is able to inhibit rust formation on the formwork surface.

#### Composition

Mixture of denatured synthetic alkylbenzenes, alkanolamides of fatty acids and technological additives.

#### Yield

50 - 60 m<sup>2</sup> per liter.

Package	Code No.
210 liter drums	0103420030
1,000 liter tanks	0103420050
loose	0103420010



### Casseroil 500 R

Chemical release agent ready for use to be sprayed on wooden or metal formworks. Also designed to meet the needs of prefabrication industry.

#### Composition

Mix of synthetic denatured alkylbenzenes and alkanol amides of fatty acids.

#### Yield

- on wooden formwork: 40 m<sup>2</sup> per liter;  
- on steel formwork: 50 - 60 m<sup>2</sup> per liter.

Package	Code No.
210 liter drums	0103486030
1,000 liter tanks	0103486050
loose	0103486010



### Casseroil 800/ES

Biodegradable release agent with stable reverse emulsion. Ready to use for special applications. This product is particularly appropriate for prefabricated high quality "exposed" items.

#### Composition

Aqueous emulsion of vegetable oils.

#### Yield

50 - 60 m<sup>2</sup> per liter.

Package	Code No.
25 liter drums	0103370020
60 liter drums	0103370060
1,000 liter tanks	0103370050



# Release Agents

## RELEASE AGENTS READY FOR USE



### Casseroil 900

Chemical release agent for immediate formwork removal, ready to use. Applied by spray for rapid formwork removal from prefabricated elements. For formwork removal from manholes, tubes, poles, and items in general made of low machinability concrete.

#### Composition

Paraffinic hydrocarbons.

#### Yield

50 - 60 m<sup>2</sup> per liter on metal formworks.

Package	Code No.
210 liter drums	0103390030
1,000 liter tanks	0103390050
loose	0103390010



## ACCESSORIES FOR RELEASE AGENTS



### Pompa C10

Pump with galvanized steel tank, capacity 10 liters, provided with a handle and a shoulder strap for easy transport. The nozzle included allows for perfect atomization of release agent on formwork.

Product	Code No.
<b>C10 pump</b>	0508010001
<b>plunger body</b>	0508090001
<b>branch</b>	0508040001
<b>full handle</b>	0508060018
<b>sprayer</b>	0508030001
<b>nozzle</b>	0508020001

# Additives

## SUPERFLUIDIFYING ADDITIVES



### Ergomix 200

Polycarboxylate-based superfluidifying additive with hybrid side chains, suitable to make ready-mix concrete characterized by low water/cement ratio, workability and excellent mechanical strength at all ages.

#### Composition

Modified non-sulfonated polyacrylates and technological additives in aqueous medium.

#### Dosage

0.6 ÷ 1.3 liters per 100 Kg of cement.



Package	Code No.
210 liter drums	0101681030
1,000 liter tanks	0101681050
loose	0101681010



### Ergomix 202

Polycarboxylate-based superfluidifying additive, suitable to make ready-mix concrete characterized by low water/cement ratio, workability and good mechanical strength at all ages.

#### Composition

Modified non-sulfonated polyacrylates and technological additives in aqueous medium.

#### Dosage

0.6 ÷ 1.5 liters per 100 Kg of cement.



Package	Code No.
210 liter drums	0101682030
1,000 liter tanks	0101682050
loose	0101682010



### Ergomix 206

Polycarboxylate-based superfluidifying additive with high performance, suitable to make ready-mix concrete characterized by low water/cement ratio, workability and good mechanical strength at all ages.

#### Composition

Modified non-sulfonated polyacrylates and technological additives in aqueous medium.

#### Dosage

0.6 ÷ 1.2 liters per 100 Kg of cement.



Package	Code No.
210 liter drums	0101686030
1,000 liter tanks	0101686050
loose	0101686010



### Ergomix 209

Latest generation polycarboxylate ether-based superfluidifying additive for ready-mix concrete with high performance and extended workability. It is able to drastically reduce the performance drawbacks of traditional acrylic additives, which are sometimes affected by the type of cement used.

#### Composition

Modified non-sulfonated polyacrylates and technological additives in aqueous medium.

#### Dosage

0.6 ÷ 1.2 liters per 100 Kg of cement.



Package	Code No.
210 liter drums	0101361030
1,000 liter tanks	0101361050
loose	0101361010



### Ergomix 209 H

Latest generation polycarboxylate ether-based superfluidifying additive for ready-mix concrete with high performance and extended workability.

#### Composition

Modified non-sulfonated polyacrylates and technological additives in aqueous medium.

#### Dosage

0.6 ÷ 1.2 liters per 100 Kg of cement.



Package	Code No.
210 liter drums	0101001030
1,000 liter tanks	0101001050
loose	0101001010



### Ergomix 4000

Superfluidifying additive with wide spectrum of action for prefabrication, suitable for making concrete characterized by low water/cement ratios, excellent mechanical strength at all ages and good maintenance of workability.

#### Composition

Modified polyacrylates and technological additives in aqueous medium.

#### Dosage

0.4 ÷ 1.4 liters per 100 Kg of cement.



Package	Code No.
210 liter drums	0101672030
1,000 liter tanks	0101672050
loose	0101672010



# Additives

## SUPERFLUIDIFYING ADDITIVES



### Ergomix 4005

Polycarboxylate-based superfluidifying additive with high hydration kinetics and rapid development of resistance. Even with very low temperature, it limits the aging cycle to steam, compared with the use of traditional superfluidifying products.

#### Composition

Modified polyacrylates, inorganic salts and technological additives in aqueous medium.

#### Dosage

0.7 ÷ 1.3 liters per 100 Kg of cement.



Package	Code No.
210 liter drums	0101673030
1,000 liter tanks	0101673050
loose	0101673010



### Ergomix 5500

Pure polycarboxylic superfluidifying additive, free from secondary effects (setting delays or accelerations), which allows a great development of mechanical strength.

#### Composition

Modified polyester polymers in aqueous medium.

#### Dosage

0.4 ÷ 1.6 liters per 100 Kg of cement.



Package	Code No.
210 liter drums	0101680030
1,000 liter tanks	0101680050
loose	0101680010



### Ergomix 6000

Superfluidifying additive for preparation of high-performance concrete, characterized by low water/cement ratios, high strength, especially at early ages and good workability.

#### Composition

Modified polyester polymers.

#### Dosage

0.3 ÷ 1.0 liters per 100 Kg of cement.



Package	Code No.
210 liter drums	0101679030
1,000 liter tanks	0101679050
loose	0101679010



### Ergomix 6005

Broad spectrum superfluidifying additive with high workability. For concrete with low water/cement ratios and excellent mechanical strength at all ages.

#### Composition

Modified polyester polymers in aqueous medium and technological additives.

#### Dosage

0.4 ÷ 1.4 liters per 100 Kg of cement.



Package	Code No.
210 liter drums	0101684030
1,000 liter tanks	0101684050
loose	0101684010



### Ergomix 6100

Superfluidifying additive for prefabrication with high efficiency characterized by a high workability.

#### Composition

New generation high performance polycarboxylates.

#### Dosage

0.5 ÷ 1.5 liters per 100 Kg of cement.



Package	Code No.
1,000 liter tanks	0101010050
loose	0101010010



### Fluiment R

Superfluidifying additive that significantly increases the workability of concrete, even with very small water/cement ratio. This product ensures high resistance to hardened concrete at various ages, high durability and good waterproofing.



#### Composition

Di-naphtalene-methane-sulfonate and technological additives in aqueous solution.

Package	Code No.
210 liter drums	0101090035
1,000 liter tanks	0101090050
loose	0101090010

#### Dosage

0.75 ÷ 2 liters per 100 Kg of cement.



### Fluiment 40

Greatly accelerating superfluidifying additive with high concentration that achieves higher workability, with enhancement of the characteristic strength of concrete.



#### Composition

Di-naphtalene-methane-sulfonate and technological additives in aqueous solution.

Package	Code No.
210 liter drums	0101300035
1,000 liter tanks	0101300060
loose	0101300010

#### Dosage

0.7 ÷ 2.5 liters per 100 Kg of cement.



### Fluidal 233

Fluidifying additive for moist earth mix that facilitates processing and improves the consistency of "moist earth" concrete for production of pipes, concrete blocks, tiles, etc.



#### Composition

Modified polysaccharides and synthetic surfactants.

Package	Code No.
loose	0102280010

#### Dosage

0.15 ÷ 0.30 liters per 100 Kg of cement.



### Fluiment 33/M

A mix of melamine resins with different molecular weight, specially designed to increase fluidity, reduce the water/cement ratio, and speed up resistance at early ages making reinforced concrete structures impermeable to aggressive liquids and gases.



#### Composition

A mixture of sulfonated melamine-formaldehyde polymer and technological additives in aqueous medium.

Package	Code No.
210 liter drums	0101440035
1,000 liter tanks	0101440050
loose	0101440010

#### Dosage

1 ÷ 5 liters per 100 Kg of cement.



### Fluiment SAE 25

Superfluidifying additive with electro-steric dispersant action for high performance, strength and durability concrete, for the innovative needs of prefabrication.



#### Composition

Polynaphthalene methanesulfonate sodium.

Package	Code No.
210 liter drums	0101632030
1,000 liter tanks	0101632050
loose	0101632010

#### Dosage

1,0 ÷ 2,0 liters per 100 Kg of cement.



# Additives

## SUPERFLUIDIFYING ADDITIVES



### Concretan 200 L

Liquid additive with mixtures of highly selected synthetic polymers with remarkable superfluidifying properties. The addition of Concretan 200L to concrete allows for greater ease of use in concrete placement, keeping them workable for a long time even in hot climates (25 - 35 °C).

#### Composition

Mixture of calcium salts of sulfonated organic polymers, organic sodium salts and technological additives.

#### Dosage

0.7 ÷ 1.5 liters per 100 Kg of cement.



Package	Code No.
210 liter drums	0101624030
1,000 liter tanks	0101624050
loose	0101624010



- **superfluidifying** additive
- **easy concrete placement during hot months**



### Concretan L/SP

This superfluidifying additive ready-mixed concrete allows for easier concrete placement keeping it workable for a long time even in hot climates (25 - 30 °C).

#### Composition

Di-naphtalene-methane-sulfonate in aqueous solution and technological additives.

#### Dosage

0.8 ÷ 1.5 liters per 100 Kg of cement.



Package	Code No.
210 liter drums	0101250030
1,000 liter tanks	0101250050
loose	0101250010



- **superfluidifying** additive
- **easy concrete placement during hot months**

## FLOORING ADDITIVES



### Concretan Floor

Superfluidifying additive for concrete floorings. It combines the properties of superfluidifying products with a strong increase in initial hydration of cement, allowing to develop higher mechanical strength in the short term.

#### Composition

Modified aqueous mixture of styrene acrylate.

#### Dosage

0.8 ÷ 1.0 liters per 100 Kg of cement.



Package	Code No.
210 liter drums	0101260030
1,000 liter tanks	0101260050
loose	0101260010



- **superfluidifying** additive
- **specific for flooring**



### Concretan Floor H

Superfluidifying additive with modified polyacrylates and technological additives in aqueous medium for floorings, which is the Concretan Floor version for hot climates.

#### Composition

Modified polyacrylate polymers in aqueous medium and technological additives.

#### Dosage

0.8 ÷ 1.3 liters per 100 Kg of cement.



Package	Code No.
210 liter drums	0101675030
1,000 liter tanks	0101675050
loose	0101675010



- **superfluidifying** additive for **flooring**
- **summer** version

## HOMOGENIZING ADDITIVES FOR WASHED CONCRETE



### ISP 3

Homogenizing superfluidifying additive for concrete with exposed gravel that enhances the aesthetic appearance of washed concrete.

#### Yield

1 liter per 100 Kg of cement.

Package	Code No.
220 liter drums	0101627030
1,200 liter tanks	0101627060

## ACCELERATING AND ANTIFREEZE ADDITIVES



### Celeran L

This accelerating additive of the development of mechanical strengths at early ages exerts a strong catalyst action on concrete hardening reactions, without affecting the times of setting beginning and end.

#### Composition

Mixture of inorganic salts and synthetic amino alcohols and technological additives in aqueous medium.

#### Dosage

1 ÷ 4 liters per 100 Kg of cement.



Package	Code No.
25 liter drums	0107040020
1,000 liter tanks	0107040050

- accelerating additive
- antifreeze for the winter season



### Celeran L/CF

This accelerating additive of the development of mechanical strengths **without chlorides** exerts a strong catalyst action on concrete hardening reactions, without affecting the times of setting beginning and end; for good increase in mechanical strength especially at early ages.

#### Composition

Mixture of hydroxylated natural polymers and inorganic salts.

#### Dosage

1 ÷ 4 liters per 100 Kg of cement.



Package	Code No.
10 liter drums	0107100045
25 liter drums	0107100020
210 liter drums	0107100035
1,000 liter tanks	0107100060
loose	0107100010

- accelerating and antifreeze additive
- without chlorides, protects formworks

## RETARDANT ADDITIVES



### Retardite MT

Mortar setting and hardening retardant. Added to cement mixes, this product allows keeping them fluid and workable for a long time.

#### Composition

Sodium salts of polysaccharides and technological additives.

#### Dosage

0.3 ÷ 3 liters per 100 Kg of cement.



Package	Code No.
210 liter drums	0107140035
1,000 liter tanks	0107140050
loose	0107140010

- setting retardant for mortars

## AIR-ENTRAINING ADDITIVES



### Monolit

Liquid additive which, when added during mixing of mortar and concrete, introduces a controlled and well distributed quantity of microscopic air bubbles in the mix.

#### Composition

Aqueous solution of natural resin with high molecular weight and synthetic surfactants.

#### Dosage

0.04 ÷ 0.2 liters per 100 Kg of cement.



Package	Code No.
5 liter drums	0102060040
10 liter drums	0102060045
25 liter drums	0102060020
210 liter drums	0102060030
1,000 liter tanks	0102060050
loose	0102060010

- air-entraining additive for building mortars
- for concrete exposed to freezing and thawing

# Additives

## NO-SHRINKAGE ADDITIVES



### SRA

Liquid additive which, when added to concrete mixtures, dramatically reduces shrinkage in the plastic phase and consequently reduces micro-cracks in concrete mixes.

#### Composition

Aqueous solution of diols.

#### Dosage

3 ÷ 6 liters per 1 m<sup>3</sup> of mix.



Package	Code No.
25 liter drums	0106667020
210 liter drums	0106667030
1,000 liter tanks	0106667050



- **no-shrinkage** additive
- reduces **cracking**
- suitable for **concrete floorings**

## ADDITIVES FOR LIGHT CONCRETE



### Lievocem CP/83 S

Liquid additive for foaming-colloidal action specifically designed for the production of lightweight concrete with polystyrene or lightweight aggregates, such as expanded clay, pumice, lapilli, etc.

#### Composition

Aqueous solution of natural and synthetic resins with high molecular weight.



Package	Code No.
25 liter drums	0102346020
210 liter drums	0102346030
1,000 liter tanks	0102346050

#### Dosage

0.3 ÷ 0.7 liters per 1 m<sup>3</sup> of mix with polystyrene;  
0.8 ÷ 1.2 liters per 1 m<sup>3</sup> of mix with other lightweight aggregates.



### Lievocem CP/83 S2

Liquid additive with foaming-colloidal action specifically designed for production of lightweight concretes with the use of perlite.

#### Composition

Mix of hydroxylated compounds and synthetic anionic surfactant.



Package	Code No.
25 liter drums	0102343020
210 liter drums	0102343030

#### Dosage

0.5 liters per m<sup>3</sup>.



## ADHESION PROMOTERS



### Aderan

Emulsion of synthetic resins to be incorporated in cement mixes to improve their adhesion characteristics. It is suitable for preparation of high elasticity mortars and for the application of plasters on smooth surfaces with elimination of surface cracks. It can be used, if used as it is, for concrete placement additions.

#### Composition

Aqueous dispersion of polymer based on acrylic ester, acrylonitrile.

#### Dosage

Mixing ratio with water: from 1/1 to 1/3 (depending on the type of use).  
Approximately 150 - 350 gr/m<sup>2</sup> if used as it is.



Package	Code No.
1 liter drums	0106110060
5 liter drums	0106110040
10 liter drums	0106110050
25 liter drums	0106110020
210 liter drums	0106110030



- specific for **mortars and plasters**
- improves **adhesion to support**
- added to the mix for **repair mortars**
- used as it is, for **casting additions**





### Saturo C

Liquid additive for preparation of waterproof concrete. It is added to concrete during preparation, to prevent the absorption and capillary rise of water in works such as: tanks, reservoirs, foundations, retaining walls, marine piers, breakwater blocks, etc.

#### Composition

Mixture of synthetic hydroxylated polymers and polycondensated  $\beta$ -naphthalene salts.

#### Dosage

0.5 ÷ 1.5 liters per 100 Kg of cement.



Package	Code No.
10 liter drums	0106100045
25 liter drums	0106100020
210 liter drums	0106100035
1,000 liter tanks	0106100060
loose	0106100010

- mass waterproofing product
- for **highly impermeable** concrete
- specific for **hydraulic works**



### Saturo Block

Mass waterproofing product. Aqueous emulsion with a strong waterproofing power. For the production of concrete blocks, concrete paving blocks, flooring, pipes, and split colored bricks.

#### Composition

Calcium salt of fatty acid  $C_{16} - C_{18}$ .

#### Dosage

0.5 ÷ 1.5 liters per 100 Kg of cement.



Package	Code No.
210 liter drums	0106388030
1,000 liter tanks	0106388050

- mass waterproofing product
- specific for **concrete items**

# Adhesives, fasteners and anchoring products

## TILE ADHESIVES



### Rurecoll

Gray cementitious adhesive for tiles, classified of type C2TE according to the European standard EN 12004 (C = cement-based adhesive; 2 = improved; T = slip resistant; E = extended open time). The product has received CE marking evidenced by Test Reports issued by the notified laboratory No. 0970 ICT-CNR in San Giuliano Milanese (Italy). Also available in white.

#### Composition

Product containing cement, selected sands, synthetic resins and special additives.

#### Dosage

The consumption varies depending on the substrate, the size and structure of the back of the tile:

- spatula n. 4: 2,0 kg/m<sup>2</sup>;
- spatula n. 5: 2,5 - 3,0 kg/m<sup>2</sup>;
- spatula n. 6: 3,0 - 4,0 kg/m<sup>2</sup>.



Package	Code No.
<b>Rurecoll GREY</b> 25 Kg bags on 1,000 Kg pallets	0105031020
<b>Rurecoll WHITE</b> 25 Kg bags on 1,000 Kg pallets	0105038020

- cementitious adhesive for **tiles**
- classified of **C2TE** type
- **high performance**
- in **gray and white**

# Adhesives, fasteners and anchoring products

## CEMENT-BASED GROUTING



### Exocem G1

Castable mortar with compensated shrinkage and self-leveling. Viscoplastic mortar is obtained with the addition of water for safe anchoring and grouting without shrinkage.

#### Composition

Premixed product containing cement and river sand ( $\varnothing$  max 3 mm), with the addition of polycarboxylate-based water reducers.

#### Yield

Approx. 1.9 Kg/dm<sup>3</sup> of mortar.



Package	Code No.
25 kg bags on 1,000 kg pallets	0105180020



- structural **pourable** mortar
- for grouting of **reinforcement bars and bars**



### Exocem G1 Fast

Castable mortar with compensated shrinkage, self-leveling and fast-curing. With the addition of water, viscoplastic mortar is obtained for safe anchoring and no-shrinkage grouting. Specific for winter use.

#### Composition

Premixed product with cement and river sand (max  $\varnothing$  3 mm), with the addition of water reducers with on natural sulfonate polymers.

#### Yield

Approximately 1.86 Kg/dm<sup>3</sup> of fresh mortar.



Package	Code No.
25 kg bags on 1,000 kg pallets	0105037020



- castable structural mortar **for grouting**
- **fast hardening**



## GLUING WITH RESIN



### Rurepox C

Epoxy glue for joints between old and new concrete and, more generally, in all cases in which adhesion of a cementitious mixture on substrates of various kinds is required, creating a structural link.

#### Composition

**Component A:** liquid epoxy resin.

**Component B:** modified aliphatic polyamine.

#### Yield

Approximately 1,5-1,8 m<sup>2</sup> surface with 1 Kg (approximate thickness 500 microns).

Package	Code No.
1.5 Kg packages (A+B)	0108010020
15 Kg packages (A+B)	0108010030



- specific for **casting remaking**
- for structural bonding of **concrete and mortar**
- for **quick** interventions



### Rurepox C/BP

Epoxy binder with high performance. Two-component solvent-free adhesive with the consistency of soft thixotropic paste, for union of precast segments, sealing, various repairs and plated concrete.

#### Composition

**Component A:** liquid epoxy resin.

**Component B:** modified aliphatic polyamine.

#### Yield

Approximately 1.6 Kg/m<sup>2</sup>/mm (according to surface roughness).

Package	Code No.
3 Kg packages (A+B)	0108390020



- for concrete bonding **with concrete or steel**
- **high resistance** structural gluing





### Redi Block

Resin two-component chemical paste with polyester loaded with inert materials for heavy anchoring without expansion exclusively through product pouring. Ideal for anchoring of reinforcement bars or threaded rods.

#### Composition

Polyester resin loaded with inert material.

Package	Code No.
5.1 Kg packages (A+B)	0108200020



- **castable** polyester paste
- heavy-duty **high-strength** structural fasteners
- for fastening of **New Jersey** on bridge edge



### Resinfix 400 CE

Styrene-free vinylester resin in reusable cartridge suitable for fixing without expansions in all types of masonry (concrete, brick, stone, wood, etc.) of bars or chemical anchors.

#### Composition

Vinylester (epoxy acrylic) resin dissolved in acrylic monomers, loaded with inert material, dibenzoyl peroxide. It does not contain styrene.



Package	Code No.
400 ml cartridges in 12 piece boxes (with mixer included)	0108230020



- resin in cartridge for **wall mounting**
- chemical anchors, bar grouting **on all media**



### Resinfix Epoxy 400 CE

Epoxy resin in cartridge reusable for heavy anchoring without tension in concrete, solid masonry and wood. Also suitable on wet surfaces or flooded hole including underwater anchoring.

#### Composition

Epoxy resin and hardener for two-component chemical anchoring material in cartridge (resin-hardener ratio 2/1).



Package	Code No.
400 ml cartridges in 12 piece boxes (with mixer included)	0108002020



- also on **wet** substrates
- ideal for **base** with improved adherence



### Accessories for Resinfix 400 CE and Resinfix Epoxy 400 CE

#### Gun (in two versions)

Gun for use of Resinfix 400 CE cartridge and Resinfix Epoxy 400 CE cartridge. Single package.

#### Static mixer (in two versions)

Nozzle to be mounted on Resinfix 400 CE or Resinfix Epoxy 400 CE cartridge which ensures mixing of resin while flowing out. Single package.

#### Wired bush 13/85 (for both)

Required for anchoring on hollow supports (walls, blocks, etc.). 100 piece package. Other sizes on request.

Package	Code No.
<b>Resinfix 400 CE Gun</b>	0108300030
<b>Resinfix 400 CE Mixer</b>	0108321020
<b>Resinfix Epoxy 400 CE Gun</b>	0108290020
<b>Resinfix Epoxy 400 CE Mixer</b>	0108321020
<b>Wired bush 13/85</b>	0108310010



# REPAIR AND RESTORE



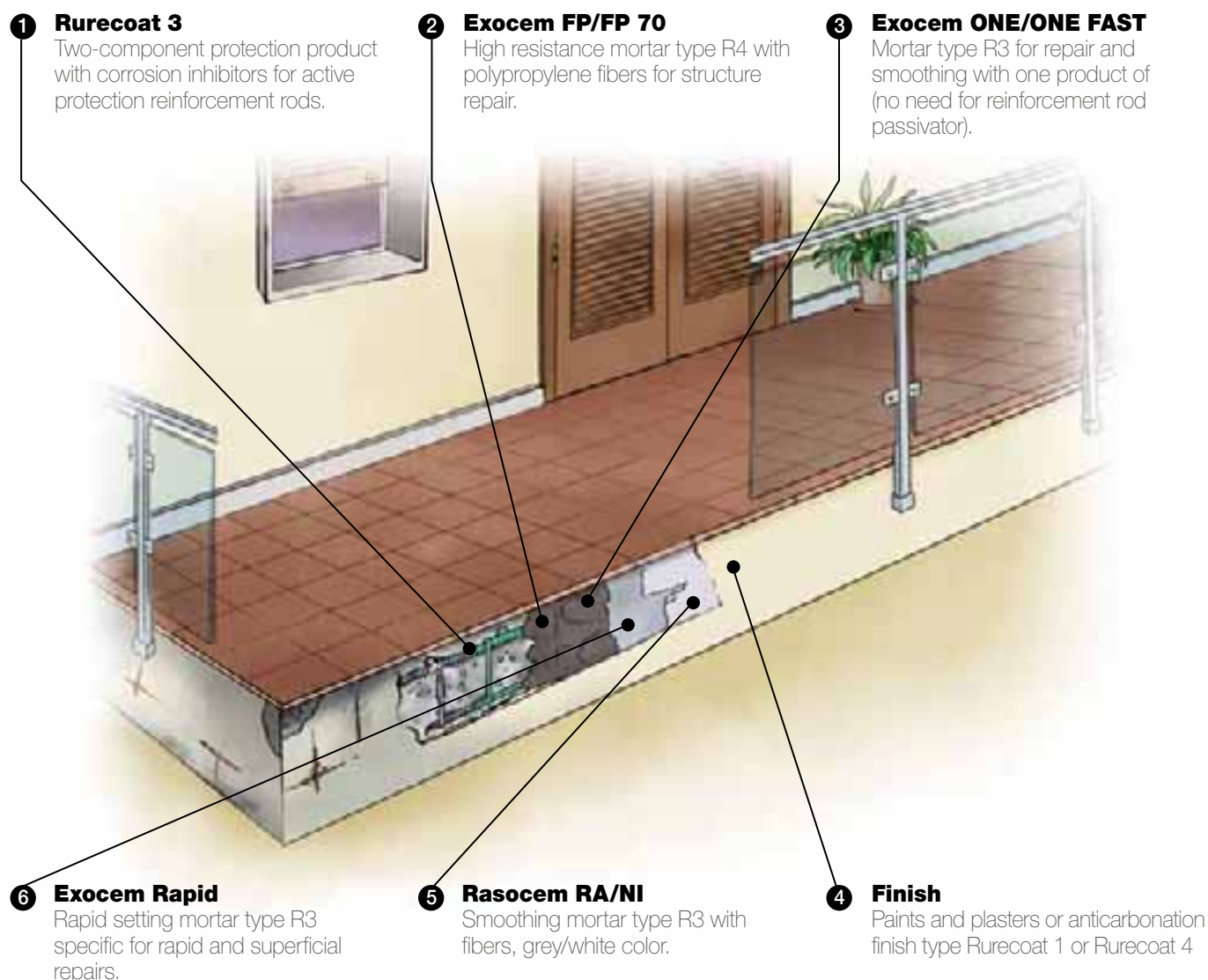
**Castle of S. Valentino** S. Valentino (Reggio Emilia)



**The Town of Music** Marghera (Venice)

# Repair of concrete profiles

## APPLICATION DIAGRAM: thick repairs



## Summary table

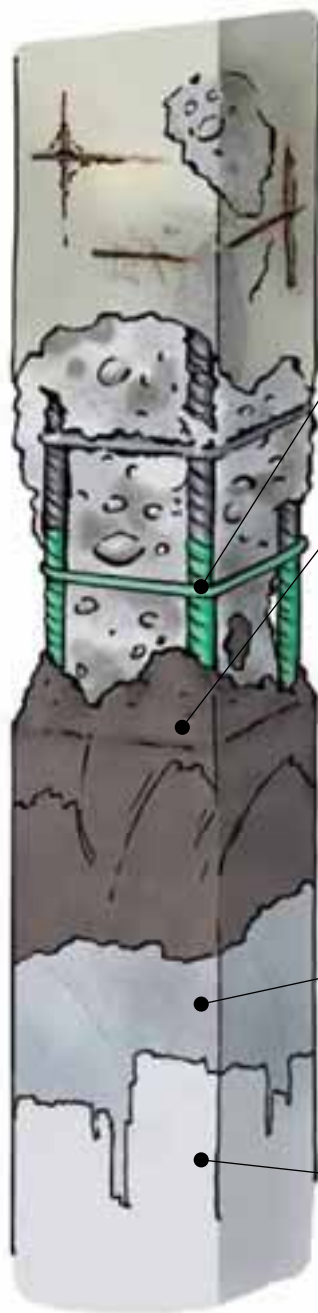
Product	Exocem ONE	Exocem ONE FAST	Exocem FP/FP 70	Exocem PVA TX	EXOCEM RAPID	Exocem G2	Exocem G3 PVA	Rasocem RA/NI
Thixotropic	yes	yes	yes	yes	yes	no	no	yes
Pouring	no	no	no	no	no	yes	yes	no
Thickness achievable per product layer	1-4 cm	1-4 cm	1-2 cm	1-2 cm	1-2 cm	3-8 cm	3-8 cm	1-3 mm
Setting time	~ 55 min	~ 15 min	~ 3 h 15 min	~ 3 h 30 min	~ 20 min	~ 2 h 15 min	~ 45 min	~ 30 min
Surface appearance	.....	.....	..	.	...	....	....	.....
Mechanical behavior	ooo	ooo	oooo	oooo	ooo	oooo	oooo	ooo
Class (EN 1504 - 3)	R3	R3	R4	R4	R3	-	R4	R3



# Concrete repair cycle

The restoration of reinforced concrete structures is necessary when their degradation has caused irreversible damage, affecting from the aesthetics to static quality of the various components. The main causes certainly include the use of inappropriate quality concrete (due to any defect in the mix design or the quality of raw materials) for the project exposure class that caused, especially if combined with inadequate concrete covers, the vulnerability of reinforcements to corrosion attack. These intrinsic causes should be added to external events such as earthquakes or fires that can damage the structures and require the restoration of the static and aesthetic functionality of reinforced concrete structures.

## APPLICATION DIAGRAM: thick repairs - reconstruction of the concrete cover



- ❶ Preparation of the support for the reconstruction cycle by beating, removal of damaged parts, careful brushing of reinforcing bars, washing and wetting of existing concrete.

- ❷ Passivator for reinforcement bars

### **Rurecoat 3**

Two-component protection product with corrosion inhibitors for active protection of reinforcement rods.

- ❷ **Thixotropic mortar for structural repairs**

for reconstruction of the original reinforced concrete structure.

### **Exocem FP - Exocem FP 70**

High-strength R4 type mortar with polypropylene fibers.

### **Exocem ONE - Exocem ONE FAST**

R3 type mortar for passivation, recovery, and smoothing with a single product (no need for Rurecoat 3).

### **Exocem Rapid**

Quick-setting R3 type mortar specific for quick and superficial repairs.

### **Exocem PVA/TX**

High-strength R4 type mortar with polyvinyl alcohol fibers (PVA) which can replace the secondary reinforcement

- ❸ Smoothing layer

### **Rasocem RA**

R3 type smoothing mortar with fibers, grey color.

### **Rasocem NI**

R3 type smoothing mortar with fibers, white color.

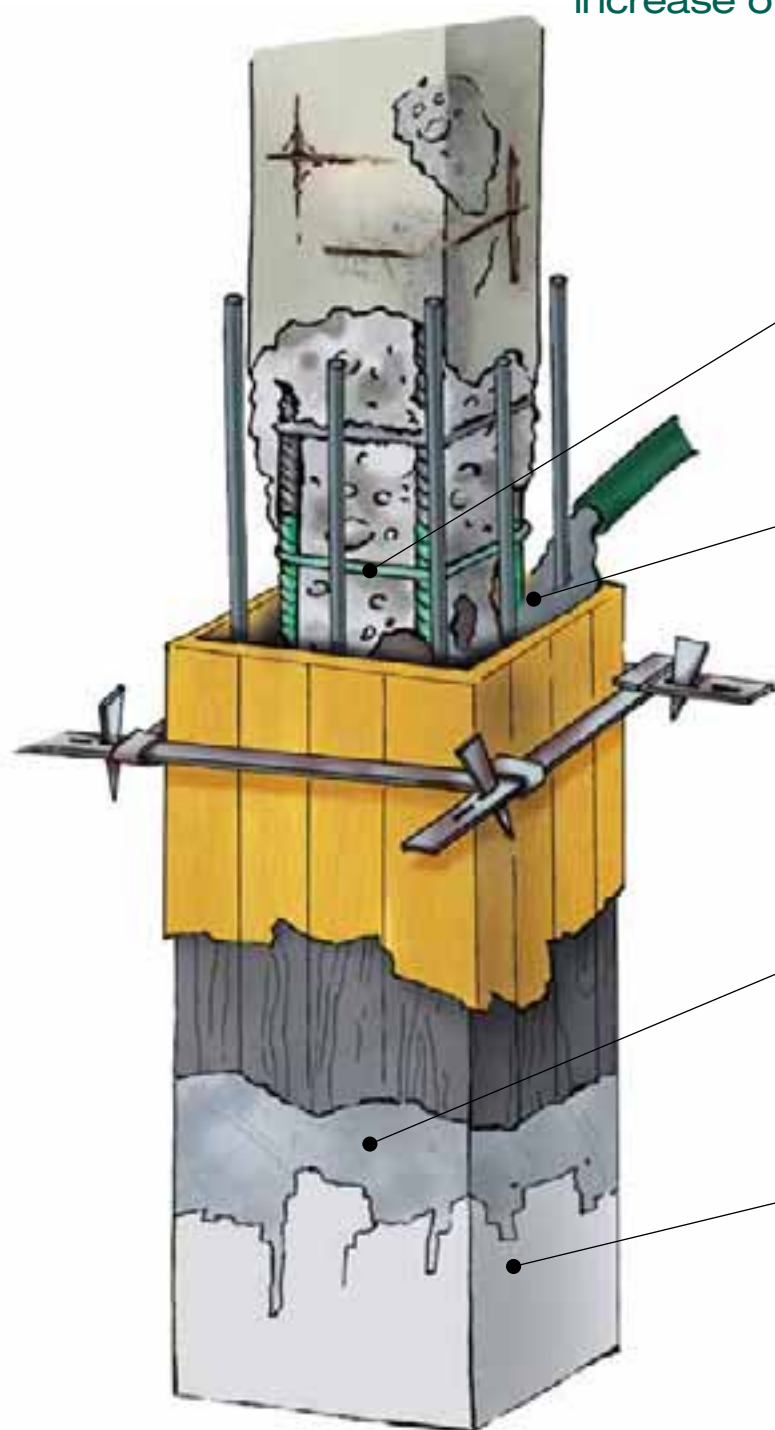
- ❹ Protection and finishing

### **Rurecoat 1/Rurecoat 4**

Surface protection treatment and anticarbonation.

EN 1504 - 3	R4 Type Mortar	R3 Type Mortar	R2 Type Mortar	R1 Type Mortar
For structural use	yes	yes	no	no
Compression resistance	$\geq 45$ MPa	$\geq 25$ MPa	$\geq 15$ MPa	$\geq 10$ MPa
Elastic Modulus (E)	$\geq 20$ GPa	$\geq 15$ MPa	-	-

## APPLICATION DIAGRAM: repairs by pouring increase of structure section



- ① Preparation of the support for the reconstruction cycle by beating, removal of damaged parts, careful brushing of the reinforcing bars, washing and wetting of existing concrete. Preparation of adequate formwork with new reinforcement inside.

- ① Passivator for reinforcing bars

### **Rurecoat 3**

Two-component protection product with corrosion inhibitors for active protection of reinforcement rods.

- ② **Castable mortar for structural restoration**

to increase the reinforced concrete structure section.

### **Exocem G2**

High strength pourable grout for structural interventions with increase of resistant section.

### **Exocem G3 PVA**

High strength pourable grout with polyvinyl alcohol fibers (PVA) for structural interventions with increase of resistant section. Thickness can be reduced by approximately 30% compared to traditional repair mortars due to the presence of PVA structural fibers.

- ③ Smoothing layer

### **Rasocem RA**

R3 type smoothing mortar with fibers, grey color.

### **Rasocem NI**

R3 type smoothing mortar with fibers, white color.

- ④ Protection and finishing

### **Rurecoat 1/Rurecoat 4**

Surface protection treatment and anticarbonation.

# Repair of concrete pavements

## Rapid reconstruction of joints

### Paving Fast Repair

The pavement can be used to walk/drive on within a few hours after repair. The work involves the opening of the joint with a cutting wheel, pouring of Paving Fast Repair, and application of an anti-evaporation/protection product like Curing Eco or Paving Protect. The joint must be recreated by cutting. This simple and rapid work allows restoring the pavement functionality.



## Repair of potholes and surface cracking

### Paving Total

For repair of deteriorated industrial or road concrete pavements. After the addition of water, strongly adhesive mortar is produced, which is suitable for quick repairs between 5 mm and 60 mm. The mortar remains workable for about 60 minutes at a temperature of +20 °C and it is possible to walk on 24 hours and drive on 48 hours after its application. Paving Total is applied after the use of Paving Total Primer.



## Restoration of surface appearance

### Paving Level

Millimetric layer resistant to wear and freeze/thaw cycles suitable to homogenize the pavement color. Suitable for protection of step steady surfaces, even with micro-cracks and subjected to frequent washing actions, but also to standardize the appearance of repairs made with Paving Total or Fast Repair. The ease of application with water sweepers allows treating large areas in a short time.



## Repair of sloping surfaces

### Paving Slope

Millimetric coating with high durability and high resistance to wear and freeze/thaw cycles of sloping concrete pavements (ramps, water flowing, etc...). Suitable for protection of step steady surfaces, even with micro-cracks and subjected to frequent washing actions, but also to standardize the appearance of repairs made with Paving Total or Fast Repair.



## Anti-evaporation, hardening and dust-proof treatment

### Paving Protect

Product for chemically reactive treatment of surface consolidation of existing cement conglomerates. It acts as an anti-evaporation and penetration-consolidating agent for new concrete pavements.



# Masonry dehumidification cycle

The main causes of masonry deterioration can be divided into “intrinsic causes” due to the site, design or construction defects, construction materials and technologies, and “extrinsic causes” such as moisture, climate and weather conditions, environmental pollution, and chemical-biological attack. The reference standard in the field of plaster mortars for wall restoration is UNI EN 998: “Specifications for masonry mortars”. This cycle covers plaster mortars produced by the factory for walls, ceilings, columns and partitions for both external and internal use.

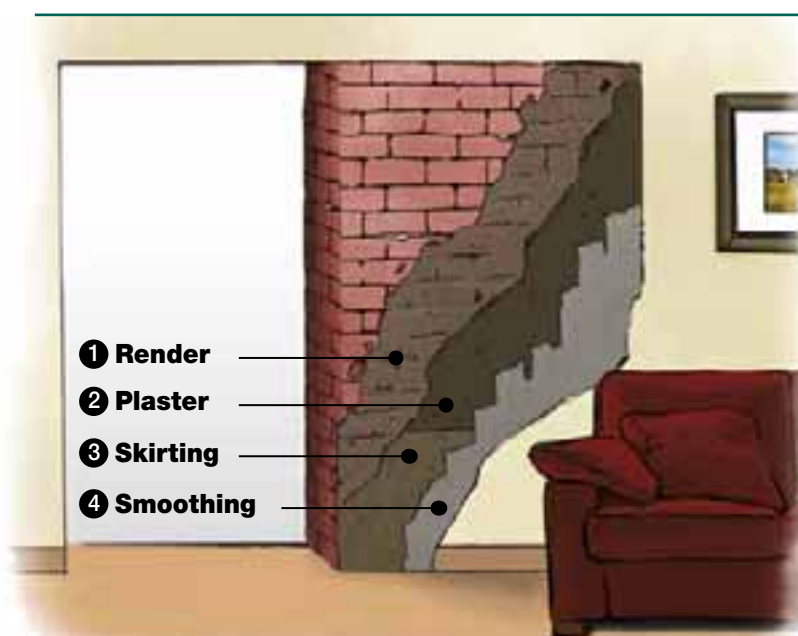
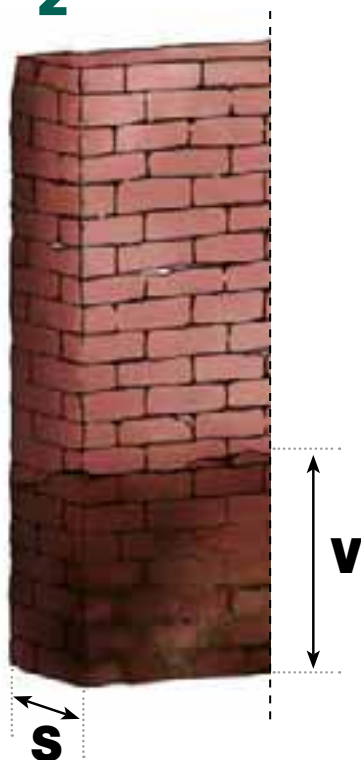
## FORMULA for indicative calculation of the useful height of dehumidifying plaster laying

$$H_z = V + 3S$$

$H_z$  = Skirting minimum height

$V$  = Visually detectable humidity level

$S$  = Wall thickness



### NOTE

Normally, the layering of wall lining provides for overlapping laying of three successive layers that obviously must have restorative properties that do not impede the dehumidifying process.

## Breathability of restorative plaster

The resistance coefficient to the passage of steam “ $\mu$ ” referred to a specific material indicates how many times the material is less breathable than a layer of air of equal thickness (in the same thermal conditions). Therefore, a dehumidifying plaster with  $\mu = 10$  and a traditional cement plaster with  $\mu = 25$  will have a transpiration power 10 and 25 times lower, respectively, than an equivalent thickness of stationary air (assumed equal to 1). Therefore, no paints, plasters, or coatings with vapor diffusion coefficient higher than the dehumidifying plaster shall be applied on dehumidifying plaster to prevent the separation of the finish due to steam pressure.

## Values of resistance coefficient to water vapor diffusion $\mu$

Rurewall R/Z	$\leq 15$	Reinforced concrete	70/150
Rurewall Z	$\leq 15$	Polystyrene foam	80/300
Rurewall I	$\leq 15$	Bituminised cardboard	2,000/3,000
Traditional cement plaster	$> 25$	PVC sheets	$> 20,000$



# Rurewall Line: Special pozzolanic binder for masonry dehumidification

Wall consolidation and restoration requires the action of specific binders that can combine the necessary contribution of mechanical strength with an absolute compatibility with salts and organic deposits that may be present in the masonry. The Rurewall line is entirely made with a specific pozzolanic hydraulic binder that allows obtaining significant strength levels ensuring full compatibility with every type of media..



## DEHUMIDIFYING CYCLE BASED ON SPECIAL POZZOLANIC BINDER

- 1 Rurewall R/Z**  
 Proceed with laying of a rendering coat (thickness about 0.5 cm) for preparation of the base.
- 2 Rurewall Z**  
 Apply the dehumidifying skirting (thickness at least 1 – 1.5 cm) to a minimum height of approximately V+3S.
- 3 Rurewall I**  
 Complete the wall with laying of dehumidifying plaster.
- 4 Rurewall F**  
 Make the fine smoothing layer of suitable thickness.



# Barrier against humidity rise

## Consumption of Rurewall Dry cartridges\*

\*Consumption may increase in case of highly absorbing media

Wall thickness	23 cm	34 cm	45 cm	50 cm	60 cm
WALL LENGTH 10 M	3 cartridges	5 cartridges	7 cartridges	8 cartridges	9 cartridges
WALL LENGTH 20 M	6 cartridges	10 cartridges	14 cartridges	15 cartridges	18 cartridges
WALL LENGTH 30 M	9 cartridges	15 cartridges	21 cartridges	23 cartridges	27 cartridges
WALL LENGTH 40 M	12 cartridges	20 cartridges	28 cartridges	31 cartridges	36 cartridges



❶ Drilling of holes to be injected with distance and length shown in the table (see below).



❷ Cutting of package and transfer to the dispenser.



❸ Injection of waterproofing gel.

## Diameter, depth and arrangement of holes\*

\*For greater thicknesses, the depth of the hole should be 4 cm less than the wall thickness

Wall thickness	23 cm	34 cm	45 cm	50 cm	60 cm*
HOLE DIAMETER	12 mm	12 mm	12 mm	12 mm	12 mm
HOLE DEPTH	20 cm	31 cm	42 cm	46 cm	56 cm
DISTANCE BETWEEN HOLES	12 cm	12 cm	12 cm	12 cm	12 cm
HEIGHT FROM THE GROUND	15 cm	15 cm	15 cm	15 cm	15 cm

## External wall insulation

The most widely used thermal insulation in the building sector in Europe during the last 30 years is certainly the so-called "overcoat", because - rather than indoor or within the wall - the insulating material is placed on the external vertical surface of the buildings, thus creating a sort of insulating envelope, which increases temperature comfort and reduces the costs of air conditioning and heating.



- ❶ Outer wall.
- ❷ **Thermocoat Mono** used as adhesive mortar.
- ❸ Insulating panel.
- ❹ **Thermocoat Mono** used as a leveling mortar (first layer).
- ❺ Glass grid **Rureglass 160**.
- ❻ **Thermocoat Mono** used as a leveling mortar (second layer).
- ❼ Paint, plaster, or final coating.

# Concrete repair cycle

## PASSIVATION OF REINFORCEMENT RODS



### Rurecoat 3

Protection against corrosion of steel reinforcement bars. Green two-component product containing corrosion inhibitors, to be applied with a brush for active protection of reinforcing rods (old and new).

#### Composition

**Part A:** mix of cement, selected sand and inorganic oxides.

**Part B:** aqueous emulsion of acrylic polymers.



Package	Code No.
5 Kg package (A+B)	0106290020

#### Yield

Approximately 100 - 140 g/m of linear rod according to its diameter.

- **Corrosion** protection
- this is not **rust-proofing**

## THICKNESS REPAIRS



### Exocem FP

Thixotropic mortar with compensated shrinkage and addition of polypropylene fibers strongly adhering on any support, for repairs and high strength structural coatings, with no shrinkage or cracks. Specific for restoration of reinforced and damaged concrete structures (such as faceplates, string courses, balconies, pillars, or beams) even in thickness (several coats).

#### Composition

Premix containing cement, sand, polypropylene fibers, and technological additives.

#### Yield

Approximately 16.5 - 17.4 Kg/m<sup>2</sup> for 1 cm thickness.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0105250020

- **R4** structural thixotropic mortar
- for reconstruction of **pillars and beams**
- with non-shrink **polypropylene** fibers



### Exocem FP 70

High strength thixotropic mortar with compensated shrinkage and addition of polypropylene fibers for repairs and structural coatings exposed to high stress. Specific for restoration of reinforced and damaged concrete structures (such as pillars or beams) even in thickness.

#### Composition

Premix containing cement, sand, polypropylene fibers, and technological additives.

#### Yield

Approximately 18.5 - 19.2 Kg/m<sup>2</sup> for 1 cm thickness.

**new**



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0105035020

- **R4** structural thixotropic mortar
- for **high-strength** works
- for jacketing of **columns and beams**
- with non-shrink **polypropylene** fibers



### Exocem Rapid

Fast setting thixotropic cementitious mortar. Ideal for applications where a strong acceleration of hardening after laying is needed. Specially suitable for fixing of metallic elements, repair of corners, beams, etc

#### Composition

Premixed product with cement, aluminum oxides, silica fume, selected aggregates and additive with natural sulfonated polymers.

#### Yield

Approximately 16 - 17 Kg/m<sup>2</sup> for 1 cm thickness.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0105941020

- **fast curing**
- for maintenance work **with aerial platform**
- for **fronts and string courses**



### Exocem One

Thixotropic cementitious mortar for concrete repair (front panels, string courses, pillars and items in general) with no need for passivation of reinforcement bars and no need for the final smoothing layer.

**Exocem One Fast is also available for rapid hardening (setting time approx. 15 min.).**

#### Composition

Premix containing cement, sand, polypropylene fibers, filler, and technological additives.

#### Yield

Approximately 14,2 - 14,9 Kg/m<sup>2</sup> for 1 cm thickness.



Package	Code No.
<b>Exocem One</b>	0105020020
<b>Exocem One Fast</b>	0105740020
25 Kg bags on 1,000 Kg pallets	

- **R3 structural** thixotropic mortar
- **high strength and no-shrinkage**
- a single product for **passivation, restoration and smoothing**
- fast setting in **40 minutes**
- super fast setting in **15 minutes**
- Exocem One Fast**



### Exocem PVA TX

Thixotropic cementitious mortar with polyvinyl alcohol fibers for concrete repair. Specific for expansion of reinforced section of pillars or partitions in concrete where the presence of PVA (polyvinyl alcohol) fibers can replace the secondary reinforcement and/or reduce the section of the new concrete placement.

#### Composition

Premixed product with cement, silicon oxides, inert materials, and sulfonated natural polymers and polyvinyl alcohol fibers.

#### Yield

Approximately 15.5 - 16.2 Kg/m<sup>2</sup> for 1 cm thickness.



Package	Code No.
<b>Exocem PVA TX</b>	0105964020
25 Kg bags on 1,000 Kg pallets	

- **R4 structural** thixotropic mortar
- **polyvinyl alcohol (PVA) structural** fibers
- replaces the **secondary reinforcement**
- high resistance with **reduced thickness**



## SMOOTHING LAYERS



### Rasocem RA

Cementitious mortar with fibers for grey color smoothing, resistant to chemical attacks of the environment (acid rain, carbonation, chlorides, etc.). To be applied in thin layers (1-5 mm) for grouting of precast items or regularization of exposed concrete placements (smoothing of balconies, façades, canopies, etc.), façades with plastic coating.

#### Composition

Premixed product with cement, selected sands, vinyl polymers and water retainers of natural origin.

#### Yield

Approximately 1.4 - 1.55 Kg/m<sup>2</sup> for 1 mm thickness.



Package	Code No.
<b>Rasocem RA</b>	0105080020
25 Kg bags on 1,000 Kg pallets	

- **grey color smoothing for concrete media**
- no shrinkage because it is **fiber-reinforced**



### Rasocem NI

Cementitious mortar with fibers for white color smoothing, resistant to chemical attacks of the environment (acid rain, carbonation, chlorides, etc.). To be applied in thin layers (1-5 mm) for grouting of precast items or regularization of exposed concrete placements (smoothing of balconies, façades, canopies, etc.).

#### Composition

Premixed product with cement, selected sands, vinyl polymers and water retainers of natural origin.

#### Yield

Approximately 1.4 - 1.5 Kg/m<sup>2</sup> for 1 mm thickness.



Package	Code No.
<b>Rasocem NI</b>	0105090020
25 Kg bags on 1,000 Kg pallets	

- **white smoothing for concrete media**
- no shrinkage **fiber-reinforced**



# Concrete repair cycle

## REPAIRS BY POURING



### Exocem G2

Pourable grout with compensated shrinkage. With the addition of water, an ideal viscoplastic mortar is obtained for structural increase of resistant section of columns and beams.

#### Composition

Premixed cement and river sand (Ø max 8 mm), with the addition of polycarboxylate polymer-based water reducers.

#### Yield

Approximately 20 - 21 Kg/m<sup>2</sup> for 1 cm thickness.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0105150020



- pourable grout for structural castings
- suitable for section increase
- consolidation of beams and columns



### Exocem G3 PVA

Pourable grout, strongly adhering to any type of substrate (concrete and steel), high toughness and durability for massive concrete placements counteracting the phenomenon of cracks due to hydration heat. It is suitable for repair and high strength structural coating, especially in restoration work by increasing the section of pillars or main structures.

Through its ability to absorb energy after cracking stress, it is suitable to restore structures subject to impact loads or dynamic loads in general.

#### Composition

Premixed with cement with low heat of hydration, selected aggregates, fluidifying additives and high modulus polyvinyl alcohol fibers.

#### Yield

Approximately 20 – 20.7 Kg/m<sup>2</sup> for 1 cm thickness.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0105030020



- R4 structural castable mortar
- polyvinyl alcohol (PVA) structural fibers
- replaces the secondary reinforcement
- high resistance with reduced thickness
- specific for section increase
- reinforced slabs and structural hoods

## REPAIR OF CONCRETE PAVEMENTS



### Paving Total

Self-leveling no-shrinkage nano-modified cement mortar for restoration of industrial floors or deteriorated road pavement concrete (thickness from 4 to 60 mm). Workable for about 60 minutes at the temperature of +20 °C. It is possible to walk and drive on 24 and 48 hours after its application. Apply after the use of Primer for Paving Total.

#### Composition

Product with cement, selected aggregates, anti-shrinkage additives and fibers.

#### Yield

Approximately 17.5 Kg/m<sup>2</sup> for 1 cm thickness.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0105011020



- self-leveling repair mortar
- R4 structural castable mortar
- thickness from 4 to 60 mm



### Primer per Paving Total

Adhesion promoter to improve adhesion of pavement repair mortar Paving Total, to be diluted in a 1:1 ratio with water. Apply at least two coats.

#### Composition

Aqueous dispersion of polymer with acrylic ester and acrylonitrile.

Package	Code No.
5 liter drums	0106022040
25 liter drums	0106022020

#### Yield

0.15 – 0.2 Kg/m<sup>2</sup> per coat to be applied in 2 coats.





### Paving Level

Self-leveling nano-modified cement mortar to obtain a millimeter layer resistant to wear and freeze/thaw cycles for restoration of industrial flooring or road vehicular pavements even with damaged concrete. To be applied in a thickness from 1 to 3 mm on surfaces even with micro-cracks and exposed to frequent washing actions. Suitable for regularization or restoration of civil engineering foundations and slabs.

#### Composition

Product with cement and river sand admixed with water reducers and acrylate-based polymers.

#### Yield

Approximately 1,625 - 1,680 Kg/m<sup>2</sup> for 1 mm thickness.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0106120020



- **self-leveling** castable mortar
- **thickness from 1 to 3 mm**
- for **surface** restoration



### Paving Slope

Fluid nano-modified cement mortar for millimeter restoration of industrial flooring. Also in pavements which require good wear resistance. It is resistant to freeze-thaw cycles. Specific for sloping applications.

#### Composition

Special light color hydraulic binder with selected sands and vinyl acetate polymers.

#### Yield

Approximately 1,576 - 1,645 Kg/m<sup>2</sup>/mm.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0105151020



- **fluid** castable mortar
- for **sloping** applications



### Paving Fast Repair

Fast setting nano-modified cement mortar for the repair of structural joints or major cracks on industrial flooring. Free from shrinkage and free from chlorides, remains workable for about 30 minutes at a temperature of +20 °C; it is possible to drive on with wheeled vehicles after 4 hours and to walk on 2 hours after its application.

#### Composition

Product with cement, aluminum oxides, silica fume, and selected aggregates.

#### Yield

Approximately 19 Kg/m<sup>2</sup> for 1 cm thickness.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0105019020



- **R4 structural** castable mortar
- **fast-setting** and possible to **drive on within 4 hours**



### Paving Protect

Consolidating, chemically reactive, protection liquid product for restoration of existing pavements. Also suitable as an anti-evaporation treatment through impregnation to promote the maturation of new concrete pavements.

#### Composition

Aqueous solution with lithium silicate.

#### Yield

Approximately 180 - 200 g/m<sup>2</sup> of treated surface.



- surface treatment for **consolidation**
- anti-evaporation product for **impregnation**

# Wall repair cycle

## DEHUMIDIFYING PLASTER



### Rurewall R/Z

Eco-compatible rendering mortar for brittle walls that allows rendering of degraded walls with excellent adhesion to the substrate, high permeability to water vapor and resistance to aggressive substances.

#### Composition

Premixed product with special pozzolanic binder, sand and selected quartz.

#### Yield

Approx. 17 - 18 Kg/m<sup>2</sup> for 1 cm thickness.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0105956020



- rendering with **special pozzolanic binder**
- adhesion bridge **when applied "with grout"**
- to reduce subsequent **shrinkage**
- ensures **adherence to the wall**



### Rurewall Z

Eco-compatible skirting mortar for wall restoration. To obtain dehumidifying, highly breathable and compatible layers with all building materials. To be applied at the bottom of the walls subjected to dehumidifying cycle.

#### Composition

Premixed product with special pozzolanic binder, sand, no-shrink additives and polypropylene fibers.

#### Yield

Approximately 11.9 - 12.6 kg/m<sup>2</sup> for 1 cm thickness.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0106975020



- skirting with **special pozzolanic binder**
- with high **breathability**
- breathable for **dehumidifying cycles**



### Rurewall I

Eco-compatible plaster mortar for wall restoration. The plaster has low soluble salts content, is highly breathable and compatible with all building materials and allows making dehumidifying plaster.

#### Composition

Premixed product with special pozzolanic binder, sand, no-shrink additives and polypropylene fibers.

#### Yield

Approximately 14.7 - 15.4 kg/m<sup>2</sup> for 1 cm thickness.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0106974020



- plaster with **special pozzolanic binder**
- **no-shrink** with fibers
- breathing for **dehumidifying cycles**

**new**



### Rurewall F

White eco-compatible finish mortar with excellent adhesion on all types of media for final smoothing of the dehumidification cycles. Medium particle size allows complete breathability.

#### Composition

White premixed product with special pozzolanic binder, sand, no-shrink additives.

#### Yield

Approximately 1.45 - 1.52 kg/m<sup>2</sup> for 1 mm thickness.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0105036020



- smoothing with **special pozzolanic binder**
- high **breathability**

**new**



## GROUT INJECTIONS



### Rurewall B1

Special pozzolanic binder for eco-compatible injection grouts for consolidation of double-layer walls of historical and artistic value. The special composition excludes the possibility of chemical reaction with the salts present in the walls of ancient buildings and provides the structures with appropriate mechanical strength.

#### Composition

Special pozzolanic binder with low salt content.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0105918020

#### Yield

Approximately 1.35 – 1.45 kg/m<sup>3</sup>.



- for **masonry consolidation**
- for pozzolanic grouts **through injection**

## REINFORCED SLABS AND STRUCTURAL SCREEDS



### Rurewall T

Eco-compatible mortar for structural wall restoration. Easy and quick use, free from shrinkage cracks, it has high mechanical strength, resistance to attack by chemicals and freeze-thaw cycles. For reinforced slabs and jacketing of columns, vaults, and other structural masonry items.

#### Composition

Premixed product with special pozzolanic binder, silicon oxides, polypropylene fibers, selected aggregates and natural sulfonated polymers.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0105937020

#### Yield

Approximately 17.8 – 18.5 Kg/m<sup>2</sup> for 1 cm thickness.



- for consolidations with **reinforced slabs**
- for jacketing of **masonry structures**
- **no-shrinkage** fiber-reinforced



### Rurewall PVA TX

Eco-compatible thixotropic mortar for wall restoration, with polyvinyl alcohol fibers. It is especially used in the restoration of structures subjected to impact loads or dynamic loads in general. Specific for expansion of reinforced sections of masonry items in which PVA (polyvinyl alcohol) fibers can replace the secondary reinforcement.

#### Composition

Premixed product with special pozzolanic binder, silicon oxides, polyvinyl alcohol fibers, selected aggregates and natural sulfonated polymers.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0105984020

#### Yield

Approximately 15.5 – 16.2 Kg/m<sup>2</sup> for 1 cm thickness.



- with structural **polyvinyl alcohol (PVA)** fibers
- for reinforced slabs and **structural screeds**

## BARRIER AGAINST HUMIDITY



### Rurewall Dry

Injection moisture barrier ready for use which forms a shield against rising damp in walls.

#### Composition

Creamy silane siloxane emulsion with water-repellent effect for damp walls.

#### Yield

Variable according to the wall parameters to be treated.

Package	Code No.
600 ml cartridges (in 10 piece boxes)	0106908111



- physical barrier to **rising damp**
- gel cartridges **ready for use**

### Accessories for Rurewall Dry

**Complete tube gun** for extrusion of Rurewall Dry cartridge.

**Spare stainless steel** nozzle to be mounted on the gun for proper dosage of Rurewall Dry.

Package	Code No.
<b>Complete gun</b>	0106906111
<b>Spare nozzle</b>	0106907111

# Plaster-holding meshes

## PLASTER-HOLDING FIBERGLASS MESHES



### Rureglass 120

Alkali-resistant fiberglass mesh for smoothing and surface finishes. Ideal with products Rasocem RA and NI and Rurewall F.

#### Composition

Alkali-resistant sized fiberglass mesh. Weight approximately 120 g/m<sup>2</sup> with mesh size 10x10 mm.

Package	Code No.
50 m <sup>2</sup> rolls (length 50 m, height 1 m)	0312006001



- for smoothing and **surface finishes**
- for **reinforced smoothing**



### Rureglass 160

Alkali-resistant fiberglass mesh for reinforcing cement-based waterproofing and surface finishes and to make "overcoat" heat insulation system of new and old buildings with Thermocoat Mono.

#### Composition

Alkali-resistant sized fiberglass mesh. Weight approximately 160 g/m<sup>2</sup> with mesh size 4.5x4.5 mm.

Package	Code No.
50 m <sup>2</sup> rolls (length 50 m, height 1 m)	0312004001



- for reinforcing of **overcoat** insulations
- to make **elastic and waterproof cementitious coatings**



### Rureglass 220 AR

Alkali-resistant fiberglass mesh for wall consolidation with the "reinforced slab" system, when combined with Rurewall T. Suitable for reinforcement of concrete consolidations made with Exocem line products (FP or Rapid).

#### Composition

Fiberglass mesh to counteract cracking phenomena. Weight approximately 240 g/m<sup>2</sup> with mesh size 25x25 mm.

Package	Code No.
50 m <sup>2</sup> rolls (length 50 m, height 1 m)	0312006003



- for consolidations in **reinforced slab**
- to strengthen the reconstruction with **structural mortar**

## Heat insulation

### "OVERCOAT" INSULATION SYSTEM



### Thermocoat Mono

Gray strongly adhesive single-component cementitious mortar that allows gluing insulation panels and performing final smoothing in the construction of "overcoat" wall coverings.

#### Composition

Premixed product with cement, aggregates and selected quartz, vinyl polymers and water retainers of natural origin.

#### Yield

Approximately 1.20 – 1.26 Kg/m<sup>2</sup> for 1 cm thickness.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0105005020



- mortar and adhesive for **"overcoat" insulation**
- certified with the **main insulating materials**
- only one product **to glue and smoothen**
- highest versatility **in layering**

## PROTECTION LAYERS



### Rurecoat 1

Anti-carbonation protection product. Single component paint in grey aqueous dispersion for protection of reinforced concrete from the harmful effects of carbonation and other harmful gases; for precast items and road works (bridges, viaducts, tunnels, etc.).

#### Composition

Acrylic resin in emulsion loaded with inorganic pigments.



Package	Code No.
15 Kg drums	0106260020

#### Yield

Approximately 0.2 – 0.5 Kg/m<sup>2</sup> surface to be treated.



- anticarbonation protective paint
- available on request in other colors



### Rurecoat 4

Colorless water-repellent protective product with high impregnating and waterproofing power for vertical surfaces.

Non-filming high penetration paint to make any surfaces not exposed to pressurized water waterproof and water-repellent (concrete and masonry). Surface appearance remains unchanged. To be mixed with water, 1:7 ratio.

#### Composition

Alkyl silicone resin with alkoxy groups.

#### Package

Package	Code No.
1 liter drums	0106310040
5 liter drums	0106310050

#### Yield

From 30 to 60 m<sup>2</sup> surface can be treated with 1 kg of emulsified product.



- suitable for **concrete and masonry**
- leaves the **original appearance** unchanged



### Rurewall Coat 30

Transparent and breathable liquid waterproofing product for masonry. It penetrates deep into the material to treat, without changing its external appearance, forming a barrier against water penetration. For any kind of support and injections in the walls to prevent rising damp.

#### Composition

**Part A:** aqueous solution

**Part B:** trimethoxy propyl silane (catalyst).



Package	Code No.
25 Kg drums (A+B)	0106385020

#### Yield

300 - 400 g/m<sup>2</sup> surface to be treated.



- fully waterproofs **masonry**
- rising barrier **through injections**

## ANTI-EVAPORATING PRODUCT



### Curing Eco

Protective against water for concrete curing. It can be used on both vertical and flat surfaces.

#### Composition

Aqueous solution of sodium silicate (ratio/mol 3.3 – 3.5).

#### Dosage

180 - 200 g/m<sup>2</sup> surface to be treated.



Package	Code No.
25 liter drums	0106419020
210 liter drums	0106419030



- **anti-evaporation** water-based protective product
- protects **air drying of concrete**

## WATER-OIL REPELLENT



### Rureconcrete

Active nanotechnological ingredient able to ensure water and oil repellency to concrete, lime, marble, brick and natural stone surfaces. It does not affect breathability and does not hide the underlying structure as it does not form a surface film.

#### Composition

Aqueous dispersion of nanotechnology fluorinated silicon.

#### Yield

Airless: approx. 30 - 50 g/m<sup>2</sup> ca., Brush - roll: approx. 50 - 80 g/m<sup>2</sup>.

#### Package

Package	Code No.
1 liter drums	0106973041
5 liter drums	0106973040
25 liter drums	0106973021



- **water-oil repellent** treatment
- does not film as it is **nanotechnological**



# REINFORCE THE STRUCTURES



**Capo Sandalo lighthouse** Carloforte (CI)



**G.I.L. House/Gym** Sora (FR)



**Castello Chimney** Santimento (PC)

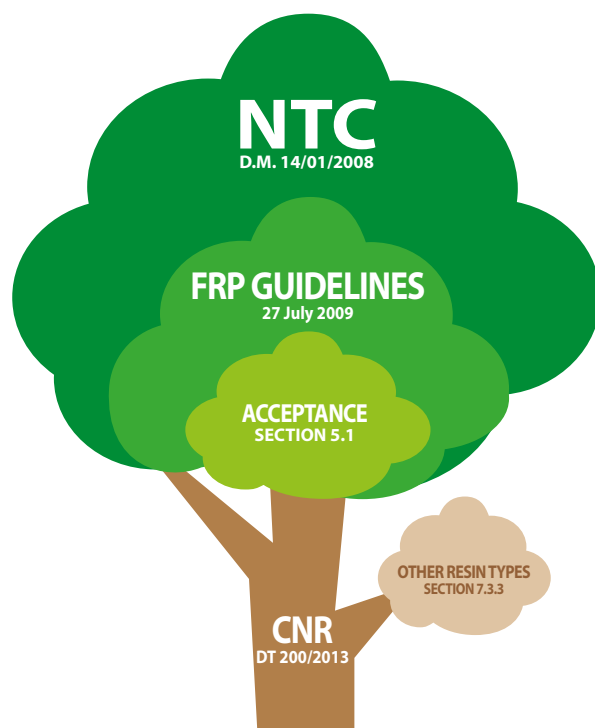
# The rules for the use of FRCM systems



The legislative instrument currently in force for building design is that of **Technical Building Standards (Italian Decree Law 14 January 2008)**. In 2009, with the approval of the Italian Superior Council of Public Works, the **Guidelines for Planning, Performance and Testing of reinforced concrete, pre-stressed reinforced concrete and masonry Structure Strengthening Actions using FRP** have become an integral part of the legislation. In section 5.1 relating to the "General rules and regulations" of fiber-reinforced materials for structural reinforcement, this document **provides for the possibility of using "non-traditional materials"**, provided that it is in compliance with regulations and valid documents, including [...] the document **CNR-DT 200 R1/2013 - Instructions for Design, Performance, and Control of Consolidation Static Operations through the use of fiber-reinforced compounds**". This important distinction allows, in this case, the use of cement matrices, such as those of FRCM systems developed by Ruredil. The latter document in section 7.3.3 "Other types of resins" specifies the following:

**"Finally, inorganic matrixes (cement, metal, ceramic, etc.) should also be mentioned, whose use for the production of fiber-reinforced composites in civil engineering - especially cement fibers - is gradually spreading. Although they are not discussed in this document, their use is considered as possible, provided that it is to be supported by technical documentation and an adequate experimental campaign, proving efficacy at least equal to that of the organic matrixes discussed herein.**

In particular, **Ruredil FRCM systems have been certified** through an appropriate experimental campaign by an external body (the University of Venice) **showing equal, and in some cases higher, effectiveness compared to FRP systems**. Also, in the spirit of the CNR-DT 200 R1/2013, for the evaluation of reinforcement effectiveness, it is necessary to take into account both the mechanical aspects and the aspects of durability in relation to operating temperature, the temperature of glass transition, and humidity.



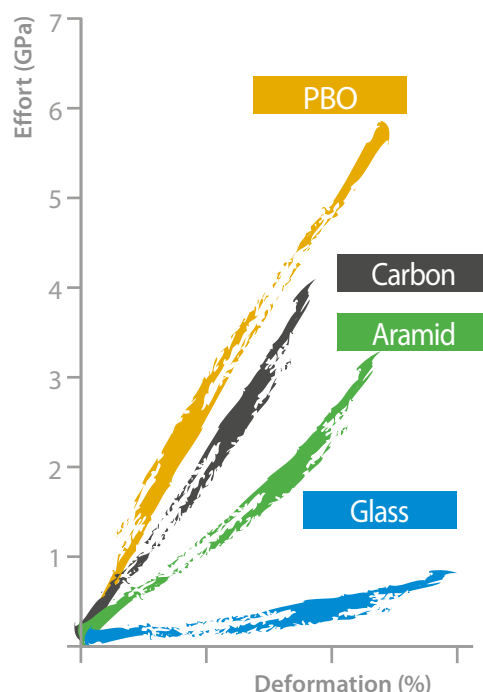
In 2013, Ruredil obtained **product certification of composite material FRCM Ruredil X Mesh Gold**, containing PBO fibers, and **Ruredil X Mesh C10**, containing carbon fibers as per AC 434:

"Acceptance Criteria For Masonry and Concrete Strengthening Using Fiber-Reinforced Cementitious Matrix (FRCM) Composite Systems". The certification was performed **at the official laboratory of the University of Miami and released by U.S. ICC-ES**.

The International Code Council Evaluation Service (ICC-ES) is the U.S. organization entitled to issue product technical approval and the relevant certifications ([www.icc-es.org](http://www.icc-es.org)).

Since it is a product certification done in an official laboratory, has a technical value of its own, in the sense that the described performance can be used anywhere structural reinforcements are designed with Ruredil FRCM products.

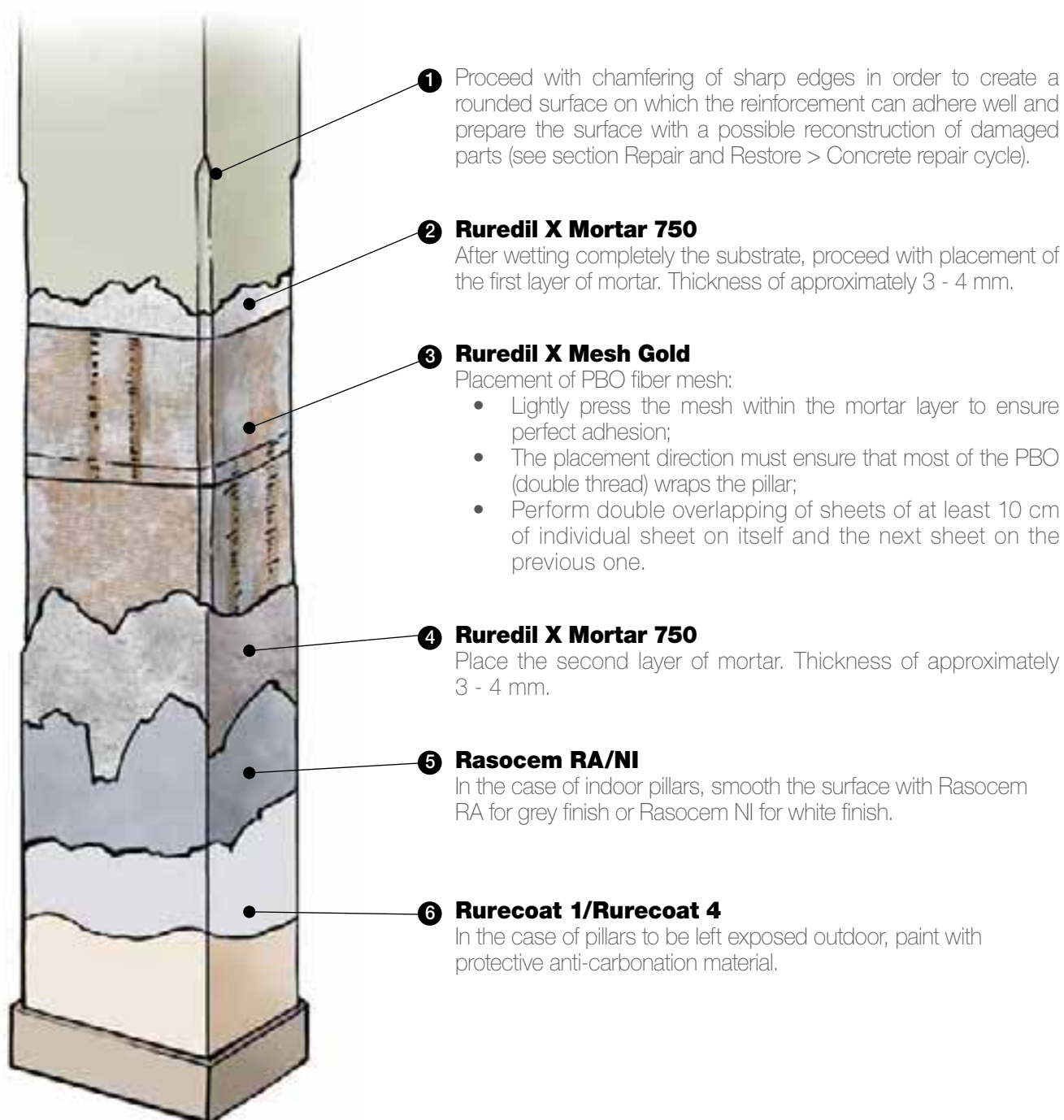
In **Ruregold®** and **Ruredil X Mesh** reinforcement systems, two different **types of fibers** are used: **PBO** (poly-para-phenylene-benzobisoxazole) and **carbon**. Both are synthetic materials having **high performance mechanical properties capable of absorbing the forces generated by overloads and exceptional events, such as earthquakes**. PBO fibers, compared to carbon fibers, have a tensile strength above 40% and elastic modulus greater than 15%.



# FRCM reinforcement of concrete structures with PBO fibers

Structural reinforcement system consisting of PBO (poly-para-phenylene-benzobisoxazole) fiber mesh and stabilized inorganic matrix specially formulated for use on reinforced concrete media. This patented system, consisting of a composite material called FRCM (Fiber Reinforced Cementitious Matrix), does not use epoxy resins and equals the performance of traditional FRPs with carbon fiber and epoxy binder.

## Application diagram: confinement of a pillar



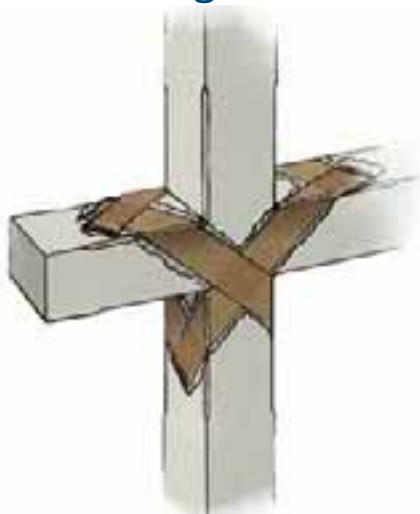


## The advantages of the system

- PBO fiber mesh **for FRCM structural reinforcements**
- no need to use **epoxy resin**
- resistant **to high temperatures**
- reinforcement of **low thickness** structures
- breathable **and non-combustible**
- compliant with **DT 200 R1/2013, NTC 2008**



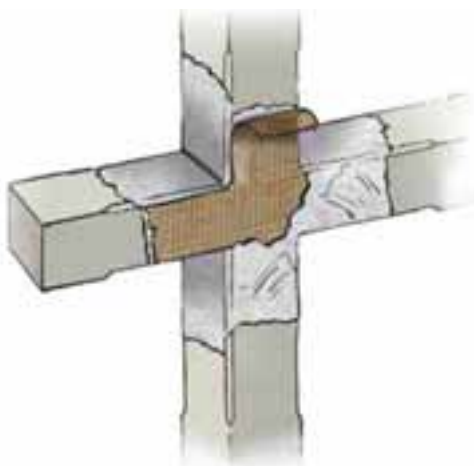
### Application diagram: reinforcement of beam-pillar unit



- ➊ After proper preparation of the substrate, placement of the first layer of mortar **Ruredil X Mortar 750** and PBO mesh **Ruredil X Mesh Gold**.



- ➋ Covering the mesh and placement of "squares" **Ruredil X Mesh Gold**.



- ➌ Frontal coating of the node with **Ruredil X Mesh Gold**.

- ➍ Smoothing with **Rasocem RA/NI** or **Rurewall F**.



- ➎ Confinement of grafts in the node with **Ruredil X Mesh Gold**.

- ➏ Possible finish with paint.

Support  
to FRCM project

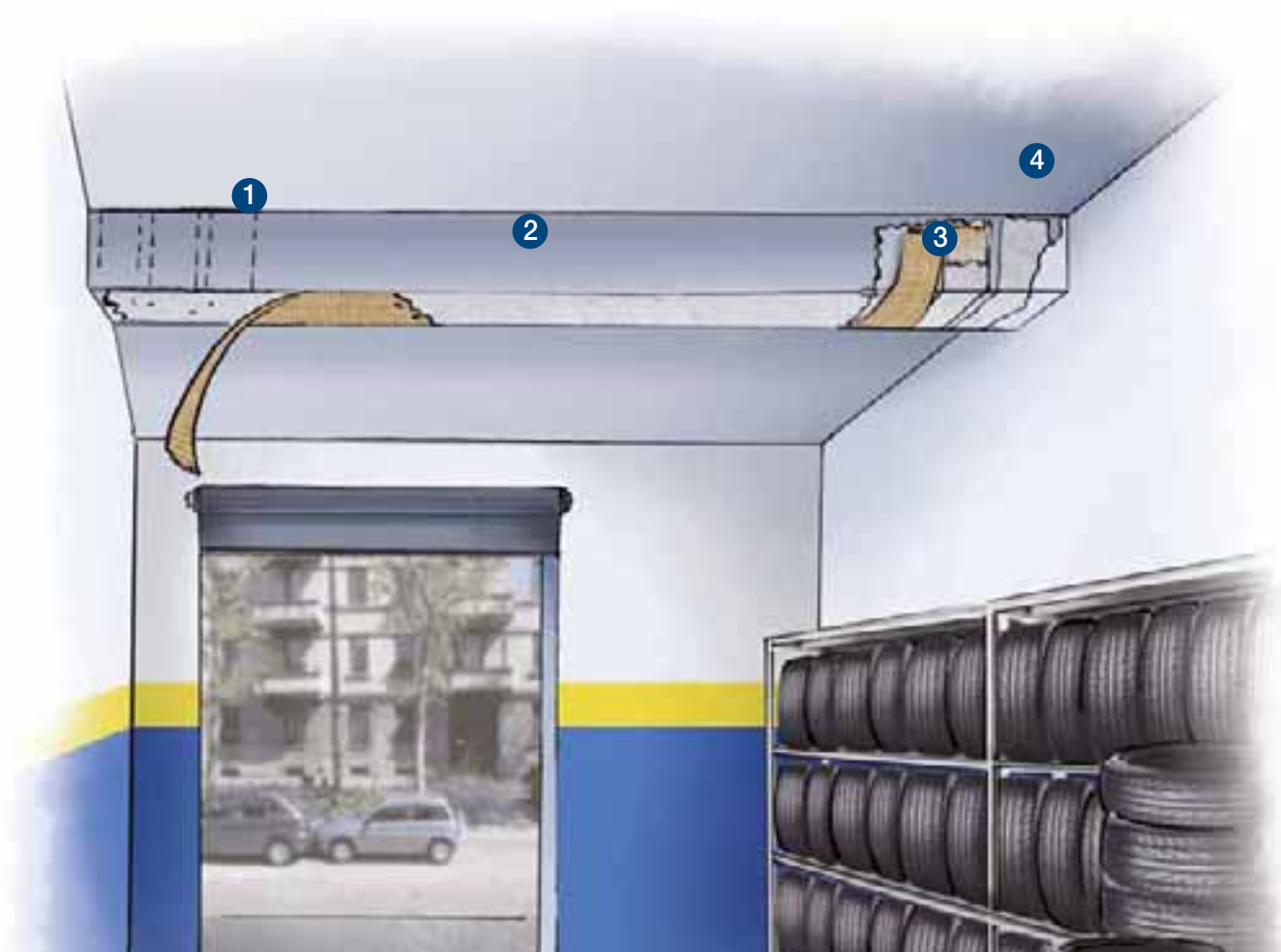
[www.rinforzistrutturali.it](http://www.rinforzistrutturali.it)

Ruredil provides a design support service to planning of structural reinforcement actions with FRCM systems consisting of calculation examples, design manuals, specific software or talks and meetings with trained technicians.

# FRCM reinforcement of concrete structures with PBO fibers

APPLICATION DIAGRAM: cutting reinforcement and bending of a beam

- ❶ After appropriate cleaning and preparation of support, placement of the first layer of mortar **Ruregold MX Calcestruzzo** and PBO mesh **Ruregold XT Calcestruzzo** along the direction of rods reinforcing the beam.
- ❷ Covering the mesh with specific mortar **Ruregold MX Calcestruzzo**.
- ❸ Construction of cut reinforcements with **Ruregold XT Calcestruzzo** between two layers of mortar **Ruregold MX Calcestruzzo** perpendicularly to the beam reinforcing rods.
- ❹ Covering the mesh with specific mortar **Ruregold MX Calcestruzzo**.
- ❺ Smoothing with **Rasocem RA/NI** or **Rurewall F**.
- ❻ Possible finish with paint.



The characteristics of PBO fiber:

<b>Tensile Strength</b>	5,8 GPa
<b>Elastic Modulus</b>	270 GPa
<b>Fiber Density</b>	1,56 g/cm <sup>3</sup>
<b>Elongation to break</b>	2,15 %

## APPLICATION DIAGRAM: reinforcement of brick and cement floor joists and protection to avoid ceiling collapse

- ❶ Before floor structural reinforcement to remove paint, plaster and any other residual layer. In the case of joists covered with brick material, also remove the back layer to allow direct adhesion to the concrete. If necessary, rebuild any damaged building blocks with **Rurewall** structural mortars.
- ❶ Placement on the joists of the first layer of mortar **Ruregold MX Calcestruzzo** and the first PBO mesh **Ruregold XS Calcestruzzo**.
- ❷ Coating of the mesh and placement of the second layer of mortar and the second mesh **Ruregold XS Calcestruzzo**.
- ❸ Coating of the second mesh with the third layer of mortar **Ruregold MX Calcestruzzo** and placement of the first layer of mortar **Ruregold MX Muratura** on the entire floor surface.
- ❹ Placement of the mesh **Ruregold XA Muratura** with "fall-proof" function and coating with mortar **Ruregold MX Muratura**.
- ❺ Smoothing with **Rasocem RA/NI** or **Rurewall F**.
- ❻ Possible finish with paint.



The reinforcement of brick and cement floor slabs requires some important measures during design and placement. As concrete joists are very slender structures, if the structure is significantly damaged or undersized, it is often necessary to apply more than one layer of PBO mesh **Ruregold XS Calcestruzzo**.

As regards the placement stage, it is crucial, before starting the application, to remove any brick back layer to ensure perfect adhesion of the reinforcement to the joist concrete

Any plasters or interposed layers must always be removed. After finishing the static reinforcement of joists, it is often useful to place a layer of **Ruregold XA Muratura** on the whole floor surface with ceiling collapse prevention function, i.e. active protection with respect to the dangerous possibility of detachment of brick blocks (especially on very spoiled floors).

# FRCM reinforcement of concrete with PBO fibers

## STRUCTURAL REINFORCEMENT OF PILLARS



### Ruredil X Mesh Gold

Unbalanced bidirectional mesh made of specific PBO fiber for reinforcement of reinforced concrete structures such as confinement of pillars, reinforcement of beam-column units.



Package	Code No.
15 m <sup>2</sup> rolls (length 15 m and height 1 m)	0109133020



- PBO fiber mesh **for reinforcement of pillars**
- **asymmetric** bidirectional mesh

## MORTAR FOR REINFORCEMENT OF CONCRETE STRUCTURES WITH PBO FIBERS



### Ruredil X Mortar 750

Eco-compatible single-component stabilized inorganic matrix with a specific formulation to ensure adhesion and stress transfer to the mesh **Ruredil X Mesh Gold**.

#### Yield

Approximately 1.4 Kg/m<sup>2</sup> for a thickness of 1 mm (apply 2 coats of approximately 3 - 4 mm each).



Package	Code No.
25 Kg bags on 1,000 Kg pallets	01005032020



- inorganic matrix **for placement of PBO meshes for concrete**
- **high mechanical strength**
- **high performance** cementitious binder
- resistant to **high temperatures**

## STRUCTURAL STRENGTHENING OF BEAMS



### Ruregold® XT Calcestruzzo

Unidirectional fabric made of PBO fibers specific for reinforcement of reinforced concrete structures such as exposed or thickness beams.



Package	Code No.
3,75 m <sup>2</sup> rolls (length 15 m and height 25 cm)	0109452020



- PBO fiber fabric **for reinforcement of beams**
- **for flexural and shear** reinforcement
- pre-cut **to size**

## STRUCTURAL REINFORCEMENT OF FLOORS AND CEILINGS



### Ruregold® XS Calcestruzzo

Unidirectional tape made of PBO fibers specific for reinforcement of reinforced beams in brick and cement floor slabs (beams and hollow blocks).



Package	Code No.
3 m <sup>2</sup> rolls (length 30 cm and height 10 cm)	0109451020



- PBO fiber tape **for reinforcement of floors and ceilings**
- fast and easy **use**
- unidirectional tape **ready for use**



# FRCM reinforcement of concrete with PBO fibers

## MORTAR FOR REINFORCEMENT

### OF CONCRETE STRUCTURES WITH PBO FIBERS



## Ruregold® MX Calcestruzzo

Eco-compatible single-component stabilized inorganic matrix with a specific formulation to ensure adhesion and stress transfer to meshes of line **Ruregold® Calcestruzzo**.

### Yield

Approximately 1.4 Kg/m<sup>2</sup> for a thickness of 1 mm (apply 2 coats of approximately 3 - 4 mm each).

Package	Code No.
25 Kg bags on 1,000 Kg pallets	0109453020



- inorganic matrix **for the use of PBO meshes for concrete**
- with high **mechanical strength**
- **high performance** cementitious binder
- resistant to **high temperatures**

# FRCM reinforcement of masonry with PBO fibers

## STRUCTURAL REINFORCEMENT OF VAULTS AND MAIN WALLS



## Ruregold® XR Muratura

Bidirectional balanced mesh made of PBO fibers specific for reinforcement of masonry works like pillars, masonry walls, vaults, and structural elements in general.

Package	Code No.
15 m <sup>2</sup> rolls (length 15 m and height 1 m)	0109405020



- PBO fiber mesh **for masonry reinforcement**
- with high **resistance and stiffness**
- **breathable and incombustible**

## STRUCTURAL REINFORCEMENT

### FOR PROTECTION AGAINST FLOOR AND CEILING TILTING/COLLAPSING



## Ruregold® XA Muratura

Balanced two-direction mesh made of PBO fibers specific for reinforcement of non-load bearing masonry structures such as partitions for protection against tilting and collapsing of floors and ceilings.

Package	Code No.
7,5 m <sup>2</sup> rolls (length 15 m height 0.5 m)	0109402020



- PBO fiber mesh **for reinforcements against tilting and collapsing of floors and ceilings**
- specific for **ceilings and walls**
- **quick and easy to put in place**

## MORTAR FOR REINFORCEMENT

### OF MASONRY STRUCTURES WITH PBO FIBERS



## Ruregold® MX Muratura

Eco-compatible single-component stabilized inorganic matrix with a specific formulation to ensure adhesion and stress transfer to meshes of line **Ruregold® Muratura**.

### Yield

Approximately 1.3 Kg/m<sup>2</sup> for a thickness of 1 mm (apply 2 coats of approximately 3 - 4 mm each).

Package	Code No.
25 Kg bags on 1,000 Kg pallets	0109404020



- inorganic matrix **for the use of PBO meshes for masonry**
- high **breathability**
- **high compatibility** pozzolanic binder
- resistant to **high temperatures**

## ACCESSORIES FOR CUTTING OF PBO FIBERS

## Ruregold® Forbici

Special scissors to cut PBO mesh.

Package	Code No.
single	0109134020





# FRCM connectors with PBO fibers

## CONNECTION SYSTEMS OF STRUCTURAL PBO REINFORCEMENTS



### Ruregold® JX Joint

PBO fiber connector with a diameter of 3 mm or 6 mm consisting of a bundle of unidirectional long fibers held by a special mesh. To be carried out at the work, it is ideal for connecting coupling between the existing structures and structural reinforcement systems **Ruregold®**.



Package	Code No.
10 m Ø 3 mm dispenser	0109401020
10 m Ø 6 mm dispenser	0109401030

! • PBO fiber joint for FRCM structural reinforcements



### Ruregold® MJ Joint

Eco-compatible single-component inorganic matrix suitable for impregnation and anchoring of Ruregold JX connector for applications on both concrete and masonry. To be applied with **Ruregold® Pistola**.

#### Yield

8/10 Kg per 10 m connector.



Package	Code No.
5 Kg buckets	0109454020

! • inorganic matrix for JX Joints for both concrete and masonry

## ACCESSORIES FOR RUREGOLD® JOINT



### Ruregold® Pistola

Professional manual gun to insert the **Ruregold® MJ Joint** matrix in the holes, made with nylon tube and provided with nozzle with rigid extension and flexible fitting to facilitate its use even in the most difficult positions.

Package	Code No.
single	0109441001

# FRCM connectors made of carbon fibers

## CONNECTION SYSTEMS OF CARBON STRUCTURAL REINFORCEMENTS



### Ruredil X Joint

Carbon fiber connector with a diameter of 6, 10, 12 mm consisting of a bundle of unidirectional long fibers held by a special mesh. To be carried out at the work, it is ideal for connecting existing structures and structural reinforcement systems **Ruredil X Mesh**, **Ruredil X Wrap**, **Ruredil X Quadriwrap**.



Package	Code No.
10 m Ø 6 mm dispenser	0109124020
10 m Ø 10 mm dispenser	0109124030
10 m Ø 12 mm dispenser	0109124040

! • carbon fiber coupling for FRCM structural reinforcements



### Ruredil X Joint Inject

Eco-compatible single-component inorganic matrix suitable for impregnation and anchoring of **Ruredil X Joint** connector specific for applications on both concrete and masonry.

#### Yield

Approximately 8/10 Kg per 10 m connector.

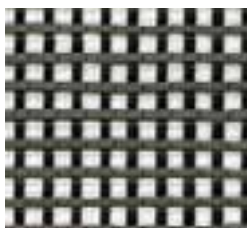


Package	Code No.
5 Kg buckets	0109455020

! • inorganic matrix for X Joint joints for both concrete and masonry

# FRCM reinforcement with carbon fibers

## SYSTEM FOR FRCM REINFORCEMENT WITH CARBON FIBERS



### Ruredil X Mesh C10

Bidirectional carbon fiber mesh specific for reinforcement of masonry structures such as pillars, main walls, vaults, and structural elements in general.



Package	Code No.
15 m <sup>2</sup> rolls (length 15 m and height 1 m)	0109113020



- **bi-directional** carbon fiber mesh, **balanced for FRCM reinforcements**



### Ruredil X Mortar 25

Stabilized inorganic matrix, consisting of special pozzolanic binder, selected aggregates and special additives. Specific to ensure adhesion and stress transfer to **Ruredil X Mesh C10**.

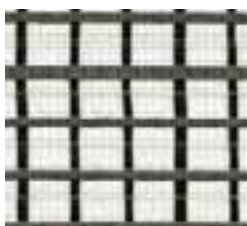
#### Yield

Approximately 1.16 - 1.22 Kg/m<sup>2</sup> for 1 mm thickness (apply 2 layers of approximately 3 - 4 mm each).  
8/10 kg/m<sup>2</sup> Ruredil X Mesh C10.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0105033020

- **specific pozzolanic matrix** for masonry per **carbon fiber FRCM reinforcements X Mesh C10**



### Ruredil X Mesh TC30

Bi-directional carbon fiber mesh specific for reinforcement of non-load bearing masonry structures, such as partitions and non-load bearing items in general.



Package	Code No.
15 m <sup>2</sup> rolls (length 15 m and height 1 m)	0109080020



- **carbon fiber mesh for reinforcements against tilting and collapsing of floors and ceilings**
- **specific for lightweight reinforcements**



### Ruredil X Mesh M30

Stabilized inorganic matrix, consisting of special pozzolanic binder, selected aggregates and special additives. Specific to ensure adhesion and stress transfer to **Ruredil X Mesh TC30**.

#### Yield

Approximately 1.16 - 1.22 Kg/m<sup>2</sup> for 1 mm thickness (apply 2 coats of approximately 3 - 4 mm each).  
8/10 kg/m<sup>2</sup> Ruredil X Mesh TC30.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0109136020

- **specific pozzolanic matrix** for masonry for **FRCM reinforcements made of carbon fiber X Mesh TC30**

# FRCM reinforcement with carbon fibers

## SYSTEM FOR FRCM REINFORCEMENT WITH CARBON FIBERS



### Ruredil X Bar

Carbon fiber pultruded bar, 6 - 7.5 - 9 - 10 mm diameter, with improved adherence (by sandblasting) to be inserted and anchored with suitable hydraulic binder for connection of items to be reinforced.

#### Composition

3 m bars (Ø 6 mm, Ø 7.5 mm, Ø 9 mm, Ø 10 mm).



Package	Code No.
Ø 6 mm	0109126020
Ø 7.5 mm	0109012020
Ø 9 mm	0109126030
Ø 10 mm	0109013020



### Ruredil X Bar Inject

Special single-component hydraulic adhesive for anchoring of the carbon fiber pultruded bar Ruredil X Bar; particularly suitable for connections on masonry structures (FRCM).

#### Composition

Pozzolanic hydraulic binder.

#### Yield

Depending on the application.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0109130020



• inorganic matrix for X Bars  
for both concrete and masonry

# FRP reinforcement of structures

## SYSTEMS FOR STRUCTURAL REINFORCEMENT WITH ORGANIC MATRIX



### Ruredil X Lam

Structural reinforcement system consisting of pultruded carbon sheets and specially formulated epoxy resin organic matrix (FRP - Fiber Reinforced Polymer).



• carbon fiber sheets for FRP structural  
reinforcements



Confezione	Codice
<b>XLam 50S</b> (50 x 1.4 mm) 25 m rolls	0109122020
<b>XLam 50H</b> (50 x 1.4 mm) 50 m rolls	0109128020
<b>XLam 100S</b> (100 x 1.4 mm) 25 m rolls	0109122030
<b>XLam 100H</b> (100 x 1.4 mm) 25 m rolls	0109128025
<b>XLam 120S</b> (120 x 1.4 mm) 50 m rolls	0109138020
<b>XLam 120H</b> (120 x 1.4 mm) 50 m rolls	0109128030



### Ruredil X Lam RS100

Bi-component epoxy adhesive (A + B) with high adhesive power for application to structures to be reinforced with pultruded carbon sheets **Ruredil X Lam**.

#### Yield

Approximately 0.35 Kg/m for X Lam 50,  
0.80 Kg/m for X Lam 100,  
1.00 Kg/m for X Lam 120.



Package	Code No.
4+1 Kg packages (A+B)	0109100020



• organic matrix  
with epoxy resin



### Ruredil X Wrap 310

Unidirectional carbon fiber tape (weight  $310 \pm 10$  g/m<sup>2</sup>) for FRP structural reinforcement of concrete and masonry structures. Available on request in other weights and high modulus version.

Package	Code No.
6.5 m <sup>2</sup> rolls (length 26 m and height 0.25 m)	0109119020



• carbon fiber fabric for **FRP structural reinforcements**



### Ruredil X Quadriwrap 380

Quadriaxial carbon fiber fabric (0°/90°+45°) for FRP structural strengthening of concrete and masonry structures. Ideal in cases of multidirectional distribution of stress.

Package	Code No.
15 m <sup>2</sup> rolls (length 50 m and height 0.3 m)	0109011020
24,25 m <sup>2</sup> rolls (length 50 m and height 0,485 m)	0109011040



• carbon fiber fabric for **FRP structural reinforcements**



### Ruredil X Wrap Primer

Bi-component epoxy primer (A+B) with high impregnating power for preparation of supports to be reinforced with **Ruredil X Wrap 310** or **Ruredil X Quadriwrap 380**.

#### Yield

Approximately 0.25 Kg/m<sup>2</sup>.

Package	Code No.
4+2 Kg packages (A+B)	0109117020



• epoxy primer with **high impregnating power**



### Ruredil X Wrap Resin

Bi-component epoxy resin (A+B) with high adhesive power for application on structures to be reinforced with **Ruredil X Wrap 310** or **Ruredil X Quadriwrap 380**.

#### Yield

First layer 0.5 Kg/m<sup>2</sup>, second and following layers 0.3 Kg/m<sup>2</sup>.

Package	Code No.
4+2 Kg packages (A+B)	0109118020



• organic matrix with **epoxy resin**



### Ruredil X Joint RS Resin

Bi-component epoxy resin (A+B) with high adhesive power for impregnation and anchoring of **Ruredil X Joint** connector.

#### Yield

Approximately 1.5 Kg/liter vacuum to fill, also considering impregnation of the connector.

Package	Code No.
4+2 Kg packages (A+B)	0109125020



• organic matrix with **epoxy resin**





# REINFORCE CONCRETE WITH FIBERS



**Arsenale** Venice



# Synthetic fibers for flooring: a durable, safe and low-cost solution

In the building sector, fibers can be structural and non-structural, in relation of their intended use. With Ruredil structural synthetic fibers it is possible to make cementitious mixtures that do not require any secondary reinforcement, as the fibers are homogeneously distributed in the concrete placement and form a true three-dimensional reinforcement. The material, size, and shape of the fibers are certified for application in concrete with structural function intended for the construction of pavements or artifacts.

## Comparison between fibers

Short structural synthetic fibers have solved all the problems identified in recent years in concrete reinforced with metal fibers, i.e. corrosion, poor uniformity of distribution, surfacing and high doses. Ruredil XFiber is provided "in bundles - twisted", an **exclusive patent** that prevents the fibers to clump together in the mix, ensuring a homogeneous distribution in the concrete.

## Considerable saving

Ruredil synthetic fibers replace the use of reinforcement grids and are dosed in relation to the type of application (from approx. 1 - 1.5 kg up to 3 - 4 Kg per m3 mix) and not emerge in concrete placement, thus allowing smoothing by hand or machine without any additional operations. The management of the work site with fiber concrete therefore allows saving time and costs compared to any work with the traditional metal grid.

## For designers

Software is available free of charge for sizing of pavements to define dosing of fiber and thickness of concrete placement called Ruredil XFloor Design. **The projects provided by Ruredil Engineering are covered by an insurance policy.**



## The advantages

- **Cost-effective** reinforcement meshes are not required, so their purchase and installation costs are avoided
- **Easy** the addition of fibers does not change the recipe of concrete and improves its performance
- **Practical** reinforcement meshes are not required, so concrete placement preparation steps are simplified
- **Durable** the synthetic fiber does not corrode and reduces cracking that promote degradation
- **Safe** in case of fire, fibers sublimate with no volume increase or release of harmful gases
- **Aesthetic** in the absence of stress and corrosion, there is no risk of rust stains on the surface



**Ruredil X Floor Design** calculation software available free of charge.

# Synthetic structural fibers

## CONCRETE PLACEMENTS FOR FLOORING FOOTINGS AND OTHER ITEMS



### Ruredil X Fiber 54

Hybrid structural Synthetic fibers, provided in "twisted" bundles, for high performance concrete mixes. Particularly suitable for flooring, precast, shotcrete, thin structures, etc.

#### Composition

Polyolefin and polypropylene polymer fibers.

#### Minimum dosage

Approx. 1.5 Kg/m<sup>3</sup> to be evaluated according to the application. Ruredil X Floor Design calculation software is available.



Package	Code No.
boxes with 16 bags of 1 Kg on 192 Kg pallets	0109110020
boxes with 8 bags of 2 Kg on 192 Kg pallets	0109110040



- hybrid fiber for **structural applications**
- replaces **wire mesh in the floors**
- **exclusive Ruredil "twisted" fibers**
- design covered by an **insurance policy**
- significant savings in **installation time**



### Ruredil X Fiber 54S

Structural synthetic fiber designed for reinforcement of shotcrete. Particularly suitable for final coating of durable and fire resistant tunnels, to make prefabricated sections for lining of tunnels.

#### Composition

Polyolefin and polypropylene polymer fibers.

#### Minimum dosage

1.5 kg/m<sup>3</sup> to be checked based on the application.



Package	Code No.
boxes with 8 bags of 2 Kg on 192 Kg pallets	0109135030



- specific for **shotcrete**
- **exclusive Ruredil "twisted" fibers**



### Ruredil X Fiber 19

Structural synthetic fibers for footings, sub-bases and precast items, manufactured through placement of concrete with a moist texture or extruded.

#### Composition

Polyolefin fibers and polypropylene.

#### Minimum dosage

0.5 – 2.0 kg/m<sup>3</sup> to be evaluated according to the application.



Package	Code No.
boxes with 12 bags of 1 Kg on 144 Kg pallets	0109111020



- simple fiber for **structural applications**
- specific for **civil engineering footings**
- ideal also for **small structural concrete placements**
- does not change the **mix design**
- safer **against cracks**
- durability guaranteed **without metal fibers**

# Synthetic structural fibers

## CONCRETE PLACEMENTS FOR FLOORINGS FOOTINGS AND OTHER ITEMS

### Ruredil X Fiber 20

Structural synthetic fibers for footings, sub-bases and precast items, manufactured through placement of concrete with a moist texture or extruded.



**new**



#### Composition

Modified polypropylene.

#### Dosage

0.5 – 2.0 kg/m<sup>3</sup> to be evaluated according to the application.



Package	Code No.
6 Kg boxes on 324 Kg pallets	0109145020



- fiber for **structural applications**
- specific for **civil engineering footings**
- ideal also for **small items**
- convenient and safe on **building site**
- low-cost and easy **to transport**
- great savings **without metal meshes**





# WATERPROOF



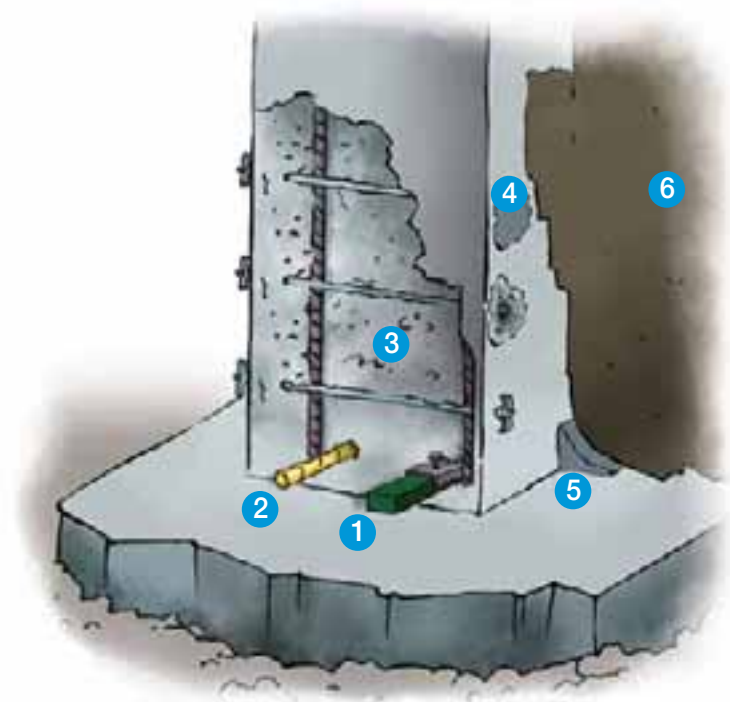
**Ravedis Dam** Montereale Valcellina (Italy)



**Carlo Riva Marina** Rapallo (Italy)

# Waterproofing of joints and concrete placement joints

APPLICATION DIAGRAM: active and passive protection of joints



- 1 Placement of the bentonite joint **Bentorur Joint** for active protection with or without steel cage **Bentorur Fix**.
- 2 Placement of the passive protection system **Rurestop Kit** with possibility of adding hydroactive resin for restoration works afterwards.
- 3 Casting of concrete inside the formwork.
- 4 Removal of connection metal parts heads of the formworks and their sealing with **Exocem FP** or **Exocem One**.
- 5 Construction of a connecting part to the foot of the vertical items with **Exocem FP** or **Exocem One**.
- 6 Waterproofing with **Rasocem Flex** or **Rasocem Flex Mono** of all structures exposed to positive water pressure.

## Placement Detail

To ensure the effectiveness of waterproofing of joints and concrete placement joints with bentonite materials, it is essential that the installation is performed in a workmanlike manner. In particular, the bentonite joint should be perfectly bonded to the substrate on which it

is attached to prevent water infiltrations below. To avoid this happening in the presence of uneven substrates, it is suggested to use **Bentorur Stucco**. For vertical applications, the use of galvanized steel cage **Bentorur Fix** is required.

## Be careful during placement

Among Ruredil solutions for waterproofing of joints, **Ruregum Mastice** is of particular interest. It is a joint extrudable very easily from a "silicone type" cartridge. In all construction site situations, this product allows extruding a waterproofing joint which is well suited to any surface and in any condition with an expansion

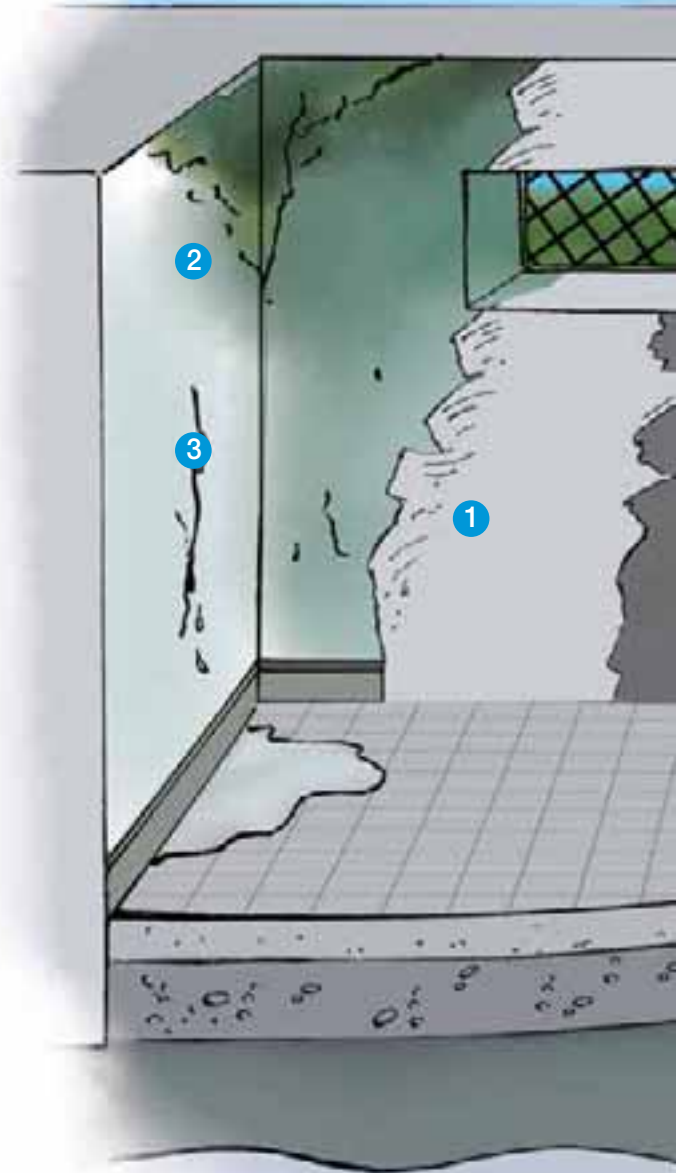
factor 5 (equal to approximately 5 times the initial volume). This product is the most efficient in the market and is also compatible in the presence of drinking water. It is also available for underwater applications in the version **Ruregum Mastice WA** (expansion factor 3).

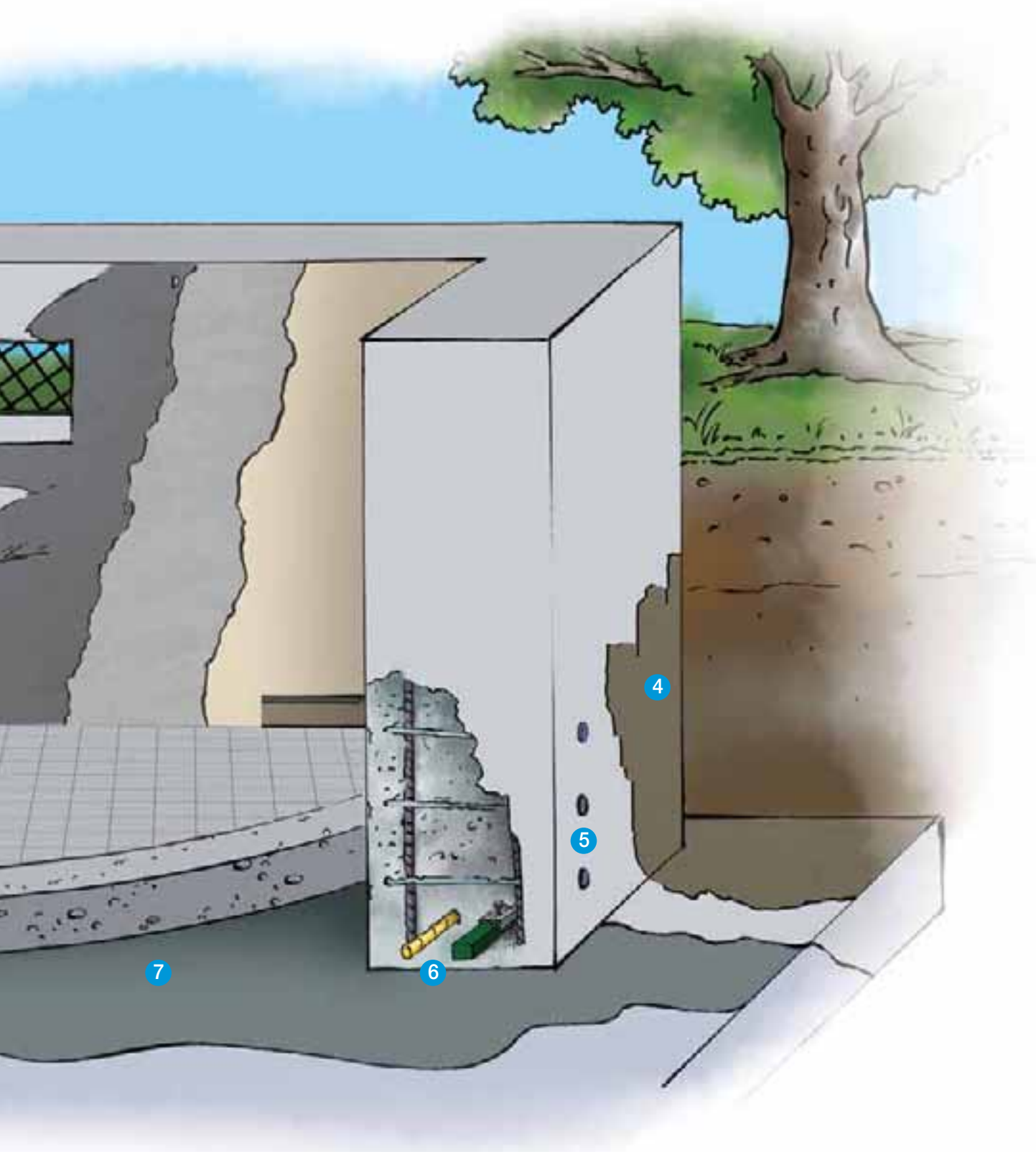


# The problems related to waterproofing of buildings

## APPLICATION DIAGRAM: Ruredil products and solutions

- ❶ Osmotic waterproofing treatment against micro-infiltrations with **Osmo Rasocem**.
- ❷ Waterproofing for underground retaining walls in negative push condition with Osmo Rasocem Plus. **Osmo Rasocem Plus**.
- ❸ Water infiltration stop system with **Ruregum Mastice WA** or **Rasocem Plug Fast**.
- ❹ Waterproofing of underground retaining walls and positive push foundations with **Rasocem Flex** or **Rasocem Flex Mono**.
- ❺ Sealing of formwork closing holes with hydrophilic **Ruregum Plug** or with **Ruregum Mastice WA**.
- ❻ Active (**Bentorur**) and passive (**Rurestop Kit**) protection of concrete placement joints and construction joints.
- ❼ Waterproofing of terraces and balconies with **Rasocem Flex** or **Rasocem Flex Mono**.






# Waterproofing of existing structures

During the renovation of buildings, it is often essential to make new waterproofing of balconies and terraces where water tightness is not appropriate (due to the decay of performance of the original building materials) and causes the detachment of finish, plaster and, sometimes, the expulsion of concrete parts as a result of corrosion of reinforcing rods.

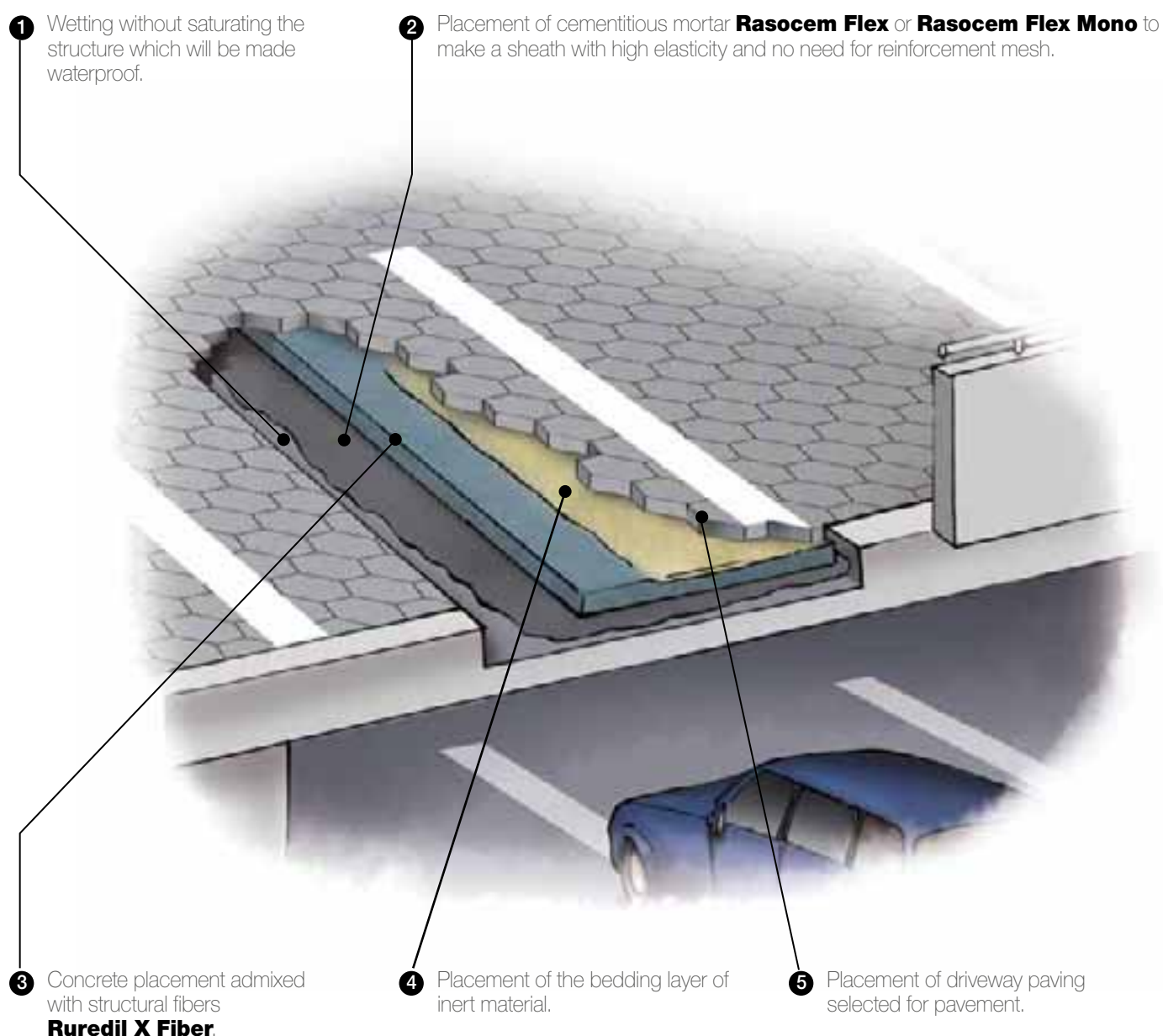
## APPLICATION DIAGRAM: waterproofing of balconies

- 
- ❶ Removal of the existing flooring and preparation of the substrate.
  - ❷ After having moistened the support without saturating it, placement with spatula of the first coat of **Rasocem Flex** or **Rasocem Flex Mono** in millimeter thickness with no use of mesh.
  - ❸ Placement of **Levoband** for reinforcement in the waterproofing corner.
  - ❹ Placement of second coat in millimeter thickness of **Rasocem Flex** or **Rasocem Flex Mono**.
  - ❺ Final application of ceramic flooring with **Rurecoll**.

# Waterproofing of new structures

During construction, it is possible to apply cement mortar as a waterproofing layer with specific water tightness, elasticity and flexibility properties to ensure the functionality of the work for a long time and also on structures characterized by high deformation rates due to temperature and humidity.

## APPLICATION DIAGRAM: waterproof cover for driveway paving surfaces



# Waterproofing of shower

## APPLICATION DIAGRAM

- 1 Preparation through humidification, without saturation of the existing substrate.

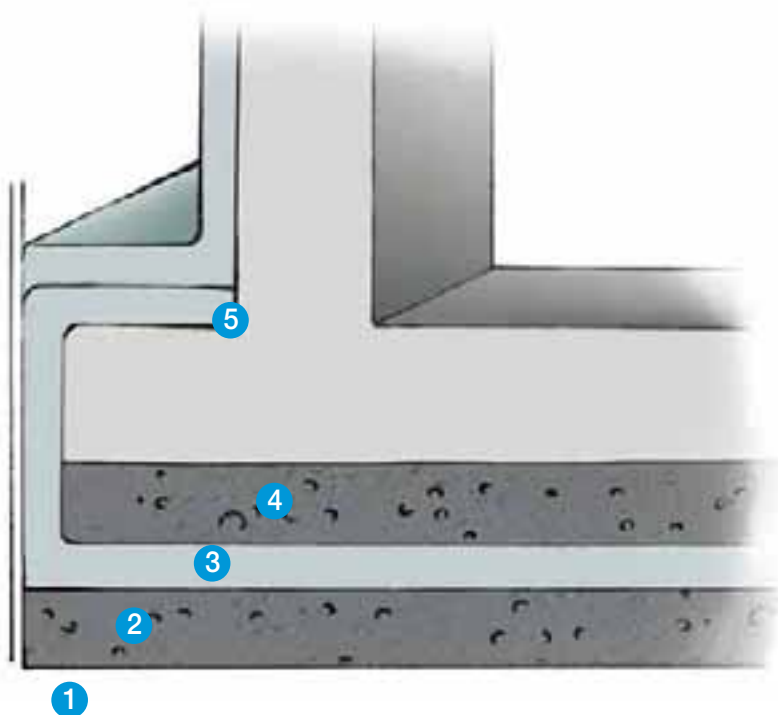


- 2 In the case double waterproofing is required, place millimeter thick layers of **Rasocem Flex** or **Rasocem Flex Mono** with a spatula under the footing.



# Waterproofing of underground structures below aquifer

## APPLICATION DIAGRAM



- 1 Rolling and compacting of the bottom of the excavation in preparation for the next steps.
  - 2 Placement in 5/7 cm thickness of a well-compacted lean concrete called "cleaning concrete".
  - 3 Placement of natural sodium bentonite fabric **Bentorur Telo** with no need to solder the overlaps because the fabric is self-sealing. It is essential to make a lapel of the fabric along the vertical walls of the excavation.
  - 4 After placement of the fabric, place 8/10 cm well-compacted lean concrete called "protection concrete".
  - 5 Place the bentonite fabric **Bentorur Telo** also on the vertical walls of the concrete structure, taking care that there is perfect adhesion at the contact point with the excavation also covered with the fabric (see detail in figure).
- ! NOTICE: It is recommended to protect the bentonite fabric with protection lean concrete to protect it from rain and preserve its expansion capacity, hence protecting its waterproofing performance.

## Placement detail

If the sheets are laid on the ground, the placement surface must have been compacted to a density equal to 90% according to modified Proctor test or as indicated in the project specifications. The placement surface must be stable with no abrupt level changes, hollow spaces, cracks, ice, or stagnating water and should be free from vegetation, bumps, rocks, shrubs, debris, or other materials that could damage the fabric. Rolling is then performed with a smooth roller compactor to remove any trace of wheel, track or discontinuity of the ground. After laying the cloth, transit of vehicles is not allowed on the surface, as this could cause damage.

The fabric **Bentorur Telo** must be positioned in such a way that the joints are parallel to the line of maximum slope with the sheets lying on the placement surface with no "wrinkles" or "waves", particularly in the corners and at the junction points.

The portion placed within a working day should be preferably covered with backfill, geomembrane, or a temporary waterproof sheet during the same day. If hydration takes place in the absence of the right confining pressure, it may be necessary to remove and replace that sheet portion.



# Waterproofing of joints and concrete placement joints

## BENTONITE JOINTS



### Bentorur Joint 10/20

Bentonite coupling with delayed expansion for sealing of concrete, bentonite and butyl rubber construction joints. Retarding fillers included in the mix allow delayed expansion with no need to use protective films and avoids the loss of material during the various deformation cycles.

#### Composition

Sodium bentonite and synthetic rubber.

#### Consumption

In relation to the length of joints to be waterproofed.

Package	Code No.
30 m boxes (6 pieces of 5 m) on 24 box pallet, total 720 m	
<b>Bentoru Joint 10</b> with Bentorur Fix	0201002001
<b>Bentoru Joint 10</b> without Bentorur Fix	0201002002
<b>Bentoru Joint 20</b> with Bentorur Fix	0201001001
<b>Bentoru Joint 20</b> without Bentorur Fix	0201001002



- bentonite joint **against infiltrations**
- specific for **joints and cold joints**



### Bentorur Joint S\*

Bentonite joint for sealing of concrete construction joints in contact with salt or brackish water made of bentonite and butyl rubber. Retarding fillers included in the mix allow delayed expansion with no need to use protective films and avoids the loss of material during the various deformation cycles.

#### Composition

Sodium bentonite and synthetic rubber.

#### Consumption

In relation to the length of joints to be waterproofed.

Package	Code No.
30 m boxes (6 pieces of 5 m) on 24 box pallet, total 720 m	0201003001

\* Product available with advance notice of 15 working days.



- bentonite joint **against infiltrations**
- specific for structures **in saltwater**



### Bentorur Joint Dry

Bentonite joint for sealing of concrete construction joints in dry conditions made of bentonite and butyl rubber.

#### Composition

Sodium bentonite and synthetic rubber.

#### Consumption

In relation to the length of joints to be waterproofed.

Package	Code No.
30 m boxes (6 pieces of 5 m) on 24 box pallet, total 720 m	
<b>Bentoru Joint Dry</b> with Bentorur Fix	0201004001
<b>Bentoru Joint Dry</b> without Bentorur Fix	0201004002



- bentonite joint **against infiltrations**
- specific in **dry conditions**



## ACCESSORIES FOR BENTORUR JOINT



### Bentorur Fix

Galvanized steel mesh to support the placement of Bentorur Joints to be used always in the installation of joints vertically. Functional for all types of Bentorur joints.

Package	Code No.
180 m boxes (6 pieces of 30 m)	0201005001



### Bentorur Stucco

Hydrophilic leveling filler for the installation of Bentorur Joints.

#### Composition

Quantity in relation to the joint length.

Package	Code No.
5 Kg buckets	0201025001



### Chiodi e Rondelle / Nails and Washers

Accessory for Bentorur Joint and Ruregum Joint 3V e 8V.

Package	Code No.
boxes of 100 nails + 100 washers	0201006001

The information provided herein is for indication only. For further information, please contact technical support. Before using this product, refer to the datasheet which can be downloaded from our website or through QR code.

# Waterproofing of joints and concrete placement joints

## POLYURETHANE AND RUBBER JOINTS



### Ruregum Mastice

Single-component polyurethane hydro-active sealant, specific for repair and removal of water infiltrations. A hydroexpansive gel is extruded from the cartridge. Once hardened, the gel produces an anti-infiltration joint. Expansion factor equal to 5 times. Available in 310 cc and 600 cc cartridges.

#### Composition

One-component polyurethane.

#### Consumption

In relation to the length of the joints to be waterproofed.



Package	Code No.
310 cc cartridges (in 12 piece boxes)	0201007001
600* cc cartridges (in 12 piece boxes)	0201007002

\* Product available with advance notice of 15 working days.



- **extrudable hydroexpansive joint in cartridge**
- **convenient and versatile for every situation**



### Ruregum Mastice WA

Single-component polyurethane hydro-active sealant, specific for repair and removal of water infiltrations in humid environments or in water. A hydroexpansive gel is extruded from the cartridge to make an infiltration-proof joint. Available in 310 cc and 600 cc cartridges.

#### Composition

One-component polyurethane.

#### Consumption

In relation to the length of the joints to be waterproofed.



Package	Code No.
310* cc cartridges (in 12 piece boxes)	0201008001
600* cc cartridges (in 12 piece boxes)	0201008002

\* Product available with advance notice of 15 working days.



- **extrudable hydroexpansive joint in cartridge**
- **specific for humid environments or in water**



### Ruregum Joint 3V/8V

Rubber hydroexpansive joint for sealing of joints between precast parts, vertical construction joints and joints between concrete and metal structures. Particularly suitable for application on perfectly flat structures and with reduced surface roughness. The Ruregum 3V version (black color) has a power of expansion of about 3 times the initial volume, while the 8V version (green color) has a power of expansion of about 8 times the initial volume. It is recommended to choose the higher power of expansion in relation to the water column and the aggressiveness of the substances that may be dissolved in water.

#### Composition

Hydrophilic resin and elastomer.

#### Consumption

In relation to the length of the joints to be waterproofed.



#### RUREGUM JOINT 3V\*

Package	Code No.
75 m boxes (joint section 20 mm x 5 mm)	0201009001
50 m boxes (joint section 20 mm x 10 mm)	0201010001

#### RUREGUM JOINT 8V\*

Package	Code No.
75 m boxes (joint section 20 mm x 5 mm)	0201011001
50 m boxes (joint section 20 mm x 10 mm)	0201012001

\* Product available with advance notice of 15 working days.

## ACCESSORIES FOR RUREGUM JOINT



### Ruregum Fix

One-component adhesive for gluing of Ruregum Joint 3V and 8V on dry concrete.

#### Composition

Polychloroprene- based adhesive.

#### Yield

In relation to surface roughness.



Package	Code No.
5 liter drum	0201013001

# Waterproofing of joints and concrete placement joints

## INJECTION JOINTS



### Rurestop Kit

Combination of a system composed of an injection tube with suitable injectors and fittings for sealing of construction joints and concrete placement joints. The passive protection system allows injecting waterproofing resin which saturates the openings and creates a barrier to stop water. The covering gauze prevents tube clogging during the casting stage, but it allows the leakage of resin during injection. Rurestop Kit can be used for prevention (first concrete placement) or during repair (through a break in the partition and insertion after construction has been completed).

#### Consumption

Quantity depending on the length of the joint.

Package	Code No.
Kit consisting of: 30 m (5 x 6 m) "yellow tube" Rurestop, 2.5 m PVC tube for injection points, 10 plastic "L-shaped" joints with 10 closing plugs, 100 metal U-bolts for tube anchoring	0201018001



- full **waterproofing** kit
- passive joint for **injecting hydroexpansive resin**



### Rurestop Tubo

Rurestop tube 100 m roll.

Package	Code No.
100 m roll	0201019001



## ACCESSORIES FOR RURESTOP



### Rurestop Brass Injector

Accessory for Rurestop Kit system.

Package	Code No.
10 piece box	0201020001



### Rurestop L Joints

Accessory for Rurestop Kit system.

Package	Code No.
50 piece box	0201021001

## Waterproofers

### CEMENTITIOUS WATERPROOFERS



### Rasocem Grip

Two-component cementitious mortar with low elastic modulus and high adhesive power that allows creating direct and indirect water pressure resistant waterproofing. Effective against moisture and capillary rising (basements, tanks, swimming pools, retaining walls, drains, etc.).

#### Composition

**Part A:** premixed product with cement, selected sands, and additives.

**Part B:** dispersion of styrene/butadiene polymerized in water.



Package	Code No.
30.75 Kg boxes (A+B) on 1,230 Kg pallets	0106330020
Part B – 5.75 Kg buckets	0106320060

#### Yield

Approximately 1.95 Kg/m<sup>2</sup> for 1 mm thickness.



- ideal also in **counterthrusting**
- high adhesion to **all substrates**







### Rasocem Flex

Two-component cementitious mortar with low elastic modulus and high adhesive power that allows creating a waterproof cementitious sheath with high elasticity and flexibility.

Suitable for waterproofing of surfaces where high adhesion to the substrate and elastic deformation capacity comparable to a bituminous or rubber membrane are required.

#### Composition

**Part A:** premixed product with cement, selected sands, and additives.

**Part B:** aqueous dispersion of polymer with acrylic ester acrylonitrile.



Package	Code No.
33.55 Kg (A+B) on 1,342 Kg pallets	0106494020
Part B – 8.55 Kg buckets	0106495040

#### Yield

Approximately 1.5 Kg/m<sup>2</sup> for 1 mm thickness.



- ideal also in **counterthrusting**
- suitable for **drinking water**
- does not require any **reinforcement mesh**
- high **resistance to UV rays**



### Rasocem Flex Mono

One-component fiber-reinforced mortar with variable fluidity to make flexible waterproofing.

Also suitable for waterproofing of surfaces with micro-cracks.

#### Composition

Premixed product with concrete, sand and acrylic - styrene copolymers.

#### Yield

Application by trowel: approximately 1.26 – 1.30 kg/m<sup>2</sup> for 1 mm thickness.

Roller application: approximately 1.20 – 1.28 kg/m<sup>2</sup> for 1 mm thickness.



Package	Code No.
25 kg bags on 1,000 Kg pallets	0105034020



- convenient because it is **one-component**
- ideal also in **counterthrusting**
- does not require any **reinforcement mesh**
- high **resistance to UV rays**

## ACCESSORIES FOR CEMENTITIOUS WATERPROOFERS



### Levoband 120 mm

Band for reinforcement of cementitious waterproofing like Rasocem Flex or Rasocem Grip.

#### Composition

Thermoplastic elastomeric tape.

Package	Code No.
20 m rolls	0207001020



- strengthens **waterproofing in corners/edges**
- **alkali-resistant**



### Levoband 90°

Pre-shaped 90° corner for easier application.

Package	Code No.
25 piece boxes	0207002020



### Levoband 270°

Pre-shaped 270° corners.

Package	Code No.
25 piece boxes	0207003020

# Waterproofers

## OSMOTIC WATERPROOFERS



### Osmo Rasocem

One-component cementitious brushable waterproofing mortar which waterproofs the substrate, when applied in thin layers, through the open crack system that allows an osmotic absorption process. Suitable for interior or exterior restoration of old structures or waterproofing of new structures under positive thrust.

#### Composition

Premixed cementitious non-shrink product containing sand, quartz and organic and inorganic chemical additives.

#### Yield

Approx. 2 Kg/m<sup>2</sup>/mm in relation to the application thickness.



Package	Code No.
25 Kg bags on 1,000 Kg pallets	0106280020



- waterproofing by **osmosis**
- specific for **walls, foundations and sewers**



### Osmo Rasocem Plus

Waterproofing mortar with capillary penetration for concrete surfaces even with counterthrusting water.

#### Composition

Premixed product with Portland cement, selected silica and chemical additives.

#### Yield

Approximately 1.50 Kg/m<sup>2</sup> in relation to substrate roughness.



Package	Code No.
25 Kg bags in metal drum	0106033020



- suitable for contact with **drinking water**
- can also be used in **counter-thrust**
- for **swimming pools or fish basins**



## BENTONITE WATERPROOFERS



### Bentorur Telo

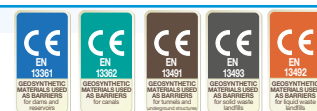
Reinforced bentonite geocomposite for needling for waterproofing of underground structures.

#### Composition

Natural bentonite and polypropylene geotextiles.

#### Consumption

Depending on the surface to be waterproofed, considering an increase of at least 10% from overlaps.



Package	Code No.
5.5 m <sup>2</sup> rolls (length 5 m and height 1.1 m)	0206006020
62.5 m <sup>2</sup> rolls (length 25 m and height 2.5 m)	0206006030

\* 50 m<sup>2</sup> roll available on request.



- for waterproofing of **underground and below-aquifer** structures
- **self-sealant** of flap bonding after overlapping



### Bentocell P

Sodium bentonite powder to be used as a reinforcement of sealing of bentonite geosynthetic liners overlaps.

#### Composition

Sodium bentonite powder.

Package	Code No.
25 Kg bags	0206004020

#### Consumption

Variable depending on the type of use.



### Washers

Perforated plastic washer for fixing Bentorur Telo.

Package	Code No.
500 piece bags	0206005030



### Ruregum Plug

Hydrophilic rubber hydroexpansive plug for waterproofing of formwork closing holes, compatible with an internal diameter up to 22 mm.

#### Composition

Hydrophilic rubber.

Package	Code No.
320 piece boxes (5 blisters with 64 pieces)	0201015001

#### Consumption

1 to 2 units per spacer hole.



### Rureplug Kit

Single-component polyurethane resin-based kit, polyester fibers and gloves to stop water leaks in pipes.

#### Composition

Polyurethane resin.

#### Dosage

One pack is sufficient to stop leakage on a tube of 10 cm diameter and 70 cm length.

Package	Code No.
boxes with 5 kits	0201024001



- kit for **sealing of through-pipes**
- with hemp to be **impregnated with hydroactive resin**



## WATERPROOFING PAINT



### Aquacoat

Two-component epoxy, solvent-free and completely non-toxic paint, suitable for waterproofing of concrete surfaces in contact with drinkable water. After complete drying, it forms an ivory color smooth, homogeneous and waterproof film. The application must be preceded by coating with Aquacoat Primer.

#### Composition

**Part A:** non-toxic waterproofing paint for drinkable water containers.

**Part B:** catalyst for non-toxic waterproofing paint for drinkable water containers.

Package	Code No.
5.4 Kg packs (A+B)	0106210020

#### Yield

0.3 to 0.5 Kg/m<sup>2</sup> in relation to surface porosity per coat of product and 250 µ thickness.



- for waterproofing of **tanks and reservoirs**
- compatible with **drinkable water**



### Aquacoat Primer

Two-component epoxy transparent paint, primer for Aquacoat system.

#### Composition

**Part A:** liquid epoxy resin.

**Part B:** polyamide catalyst.

Package	Code No.
1.2 Kg packs (A+B)	0106220040

#### Yield

Approximately 8/10 m<sup>2</sup> per Kg of diluted product (with 100 - 300% water, depending on the absorption of the substrate).



### Aquacoat Bit

Bituminous water-based waterproofing paint.

#### Composition

Emulsion of bitumen in water with addition of bentonite.

#### Yield

Approximately 0.3 Kg/m<sup>2</sup> depending on the absorbency of the substrate.

Package	Code No.
20 Kg drums	0106190025

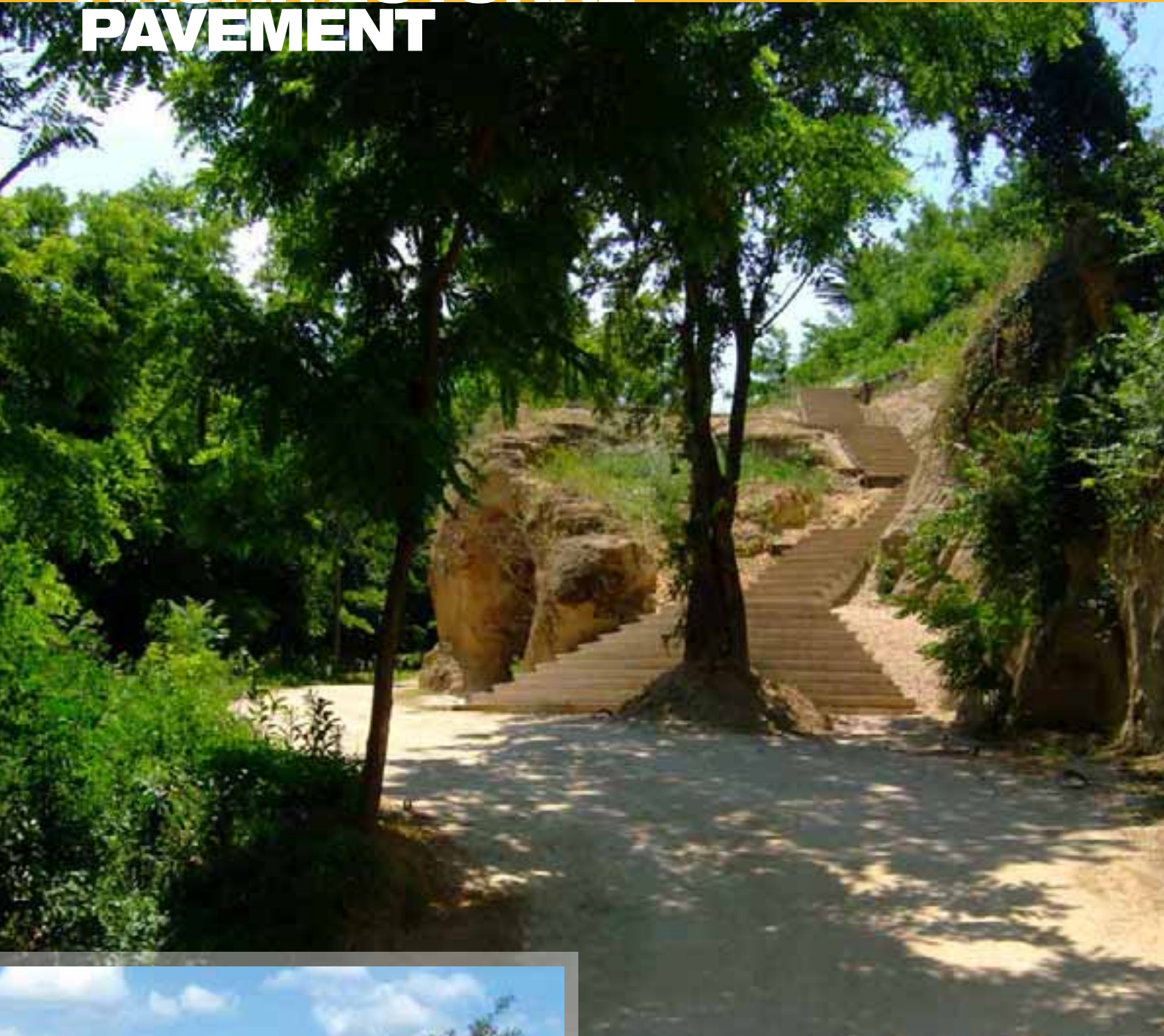


- **bituminous** waterproofing paint
- **aqueous-based emulsion**





# ARCHITECTURAL PAVEMENT



**Garden of the Fugitives, Via di Castriccio**

Archaeological Excavations of Pompeii - Special Superintendence  
for Archaeological Heritage of Naples and Pompeii



**Villa Adele** Anzio (Rome)



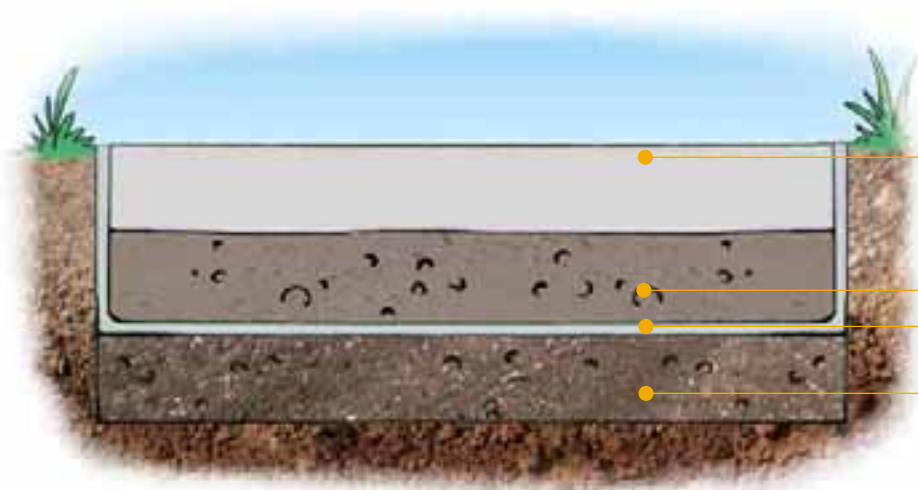


## Levostab 99

**Levostab 99** is a ground stabilizing and consolidating product which is worth being considered by constructors of pedestrian and bike tracks, dirt roads, nature trails within protected areas, with a special focus on the future.

**Levostab 99** uses soil moisture, primarily responsible for the loss of the mechanical characteristics of a transit area, due to the hydration of the oxides of which it is composed. The ensuing reaction generates insoluble hydrates, which are distributed in the micropores of the ground, reducing its porosity, limit ground swelling and increase its firmness. Through this system, ground plasticity decreases, the mechanical properties improve, with a considerable increase of the bearing capacity (CBR), and durability to wear increases, as well as the resistance to frost/thaw cycles.

- ▶ **Low-cost:** Levostab 99 allows restoring and enhancing poor quality materials available in the construction site which would otherwise not meet the technical specification requirements.
- ▶ **Environmentally friendly:** Levostab 99 greatly reduces transport of material from borrow pits to landfills, for the smallest environmental impact.
- ▶ **Eco-compatible:** the composition of Levostab 99 is very similar to the physical-chemical properties of the soil on which it acts, incomparably better than traditional consolidation with the use of concrete or asphalt.



Ecological pavement Levostab 99  
(recommended average thickness 10 cm).

Sub-base made of granular mixture  
(thickness to be sized according the final  
destination of the work and the type of  
substrate available).

Non-woven fabric (recommended).

Natural soil rolled on site.

### Levostab 99: the most advanced and advantageous stabilizing solution

- cycle paths
- dirt roads
- rural roads
- nature trails
- roads in protected areas



## The advantages of the system

- Improves the physical and mechanical characteristics **of the ground, from cohesion to internal friction angle, from carrying capacity to resistance to freeze/thaw cycles**
- Stabilizes the characteristics of **the mix through time, upon variation of humidity and the most diverse environmental conditions**
- Reduces swelling **caused by water content changes**
- Increases workability **of silt-clay soils, by graduating hardening reactions**
- Increases **durability during use**

## Application steps

### Work with milling

The following operations are carried out after preparation of the substrate:

- 1 Milling of the soil on site (if required) or spreading of transported soil.
- 2 Spreading of stabilizer **Levostab 99**.
- 3 Dry soil milling + **Levostab 99**.
- 4 Addition of water needed (as per laboratory tests).
- 5 Milling to properly distribute the water in the layer to be stabilized.
- 6 Shaping and final rolling and wetting after compaction.

### Work with paver

- 1 Material mixing.
- 2 Material spreading.
- 3 Wetting/milling.
- 4 Rolling/finishing.



### Levostab 99

product **Levocell** 



Natural soil stabilizer suitable for the construction of pavements with high ecological integration in the environment, for bike trails, rural roads, and roads in protected areas.

#### Composition

Premixed product with selected inorganic oxides and inert polymeric fibers.

#### Yield

Approximately 100 Kg per 1 m<sup>3</sup> of soil.

Package	Code No.
25 kg bags on 1,000 kg pallets	0105004020
750 kg big-bag*	0105004030

\* Product available with advance notice of 15 working days.



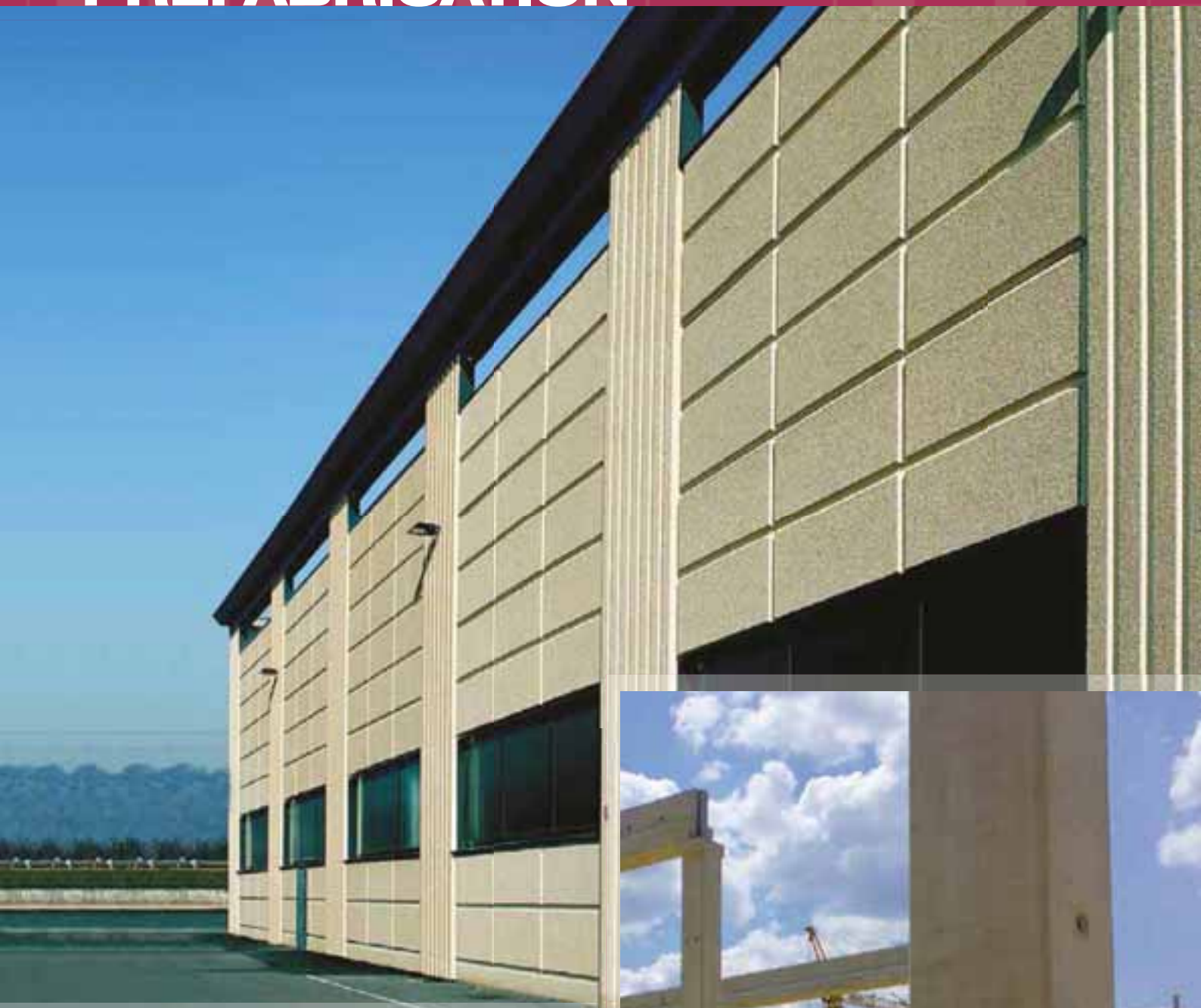
- improves **soil physical and mechanical characteristics**
- **low-cost, ecological, eco-compatible**



**La Rocca** Solferino



# PREFABRICATION





## Lifting Systems

### R-System

Lifting system with spherical head

### System with Bushing

Lifting system with threaded bush

## System for panels with thermal cutting

### Konnektor

Patented system that uses support and connection devices between two freely distensible reinforced concrete layers to create concrete panels with thermal and structural cutting.

## Cantilever Systems

### Girella & Tirella “S”

Ruredil proposal for the support of prefabricated horizontal panels, with the elimination of cantilever brackets and corrections during assembly, with two types of patented brackets.

## Structural anchoring and connections

### Fisis

Earthquake - resistant anchors for infill panels, patented and available in two capacity ranges: 15 and 30kN.

### Kaptor

Mechanical overlapping connection.

### Boccola Rur

Fixing system with self-supporting threaded bushing.

## Safety System

### Rurefast3

Fall arrest system with quick connecting system, developed and patented by Ruredil, in compliance with UNI EN 795/02 standard.

## Overpressure Safety Device

### Jet

Safety vent in case of fire for lightened precast items.

# Lifting Systems

## R-System: lifting system with spherical head

This lifting system has been tested and certified in accordance with the **Machinery Directive No. 2006/42/EC**.

It guarantees maximum safety, speed, efficiency and functionality at every stage, from design to assembly on site.

The lifting system R-System is the result of Ruredil's fifty years of experience in special technologies for the building sector and has a **wide range of capacities, ranging from 13 to 320 kN**.

Ruredil has totally changed the original German system with spherical head and introduced - on the whole production - a kind of steel the mechanical properties of which are significantly higher than all of the standards currently on the market.



Compliance Certificate **CE**



The types of anchoring materials of the **R-System** are:

- Projection anchor (DH)
- Plate anchor (DP)
- Turnover anchor (RS)
- Anchor with hole (DF)

A special steel type is used for all anchors, which are available raw or galvanized. The special steel is designed in a way as to obtain high strength, ductility and toughness (with no strength reduction at low temperatures).

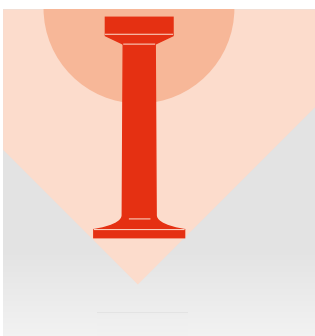
The **main characteristics** of this material ensure:

- High characteristic breaking stress, which is inspected and certified for all production batches
- High ductility
- High guaranteed resilience KV > 27 J (-20°C)
- Safety factor ≥ 3.75



# Composition of the system

## ANCHORS



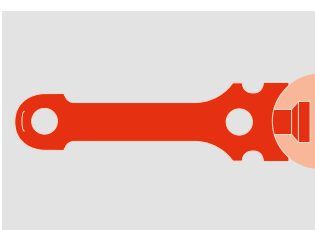
### Projection anchors (DH)

Anchoring in concrete is obtained through a projection at the base, which creates a diffusion cone. Available capacities range from 13 to 320 kN.



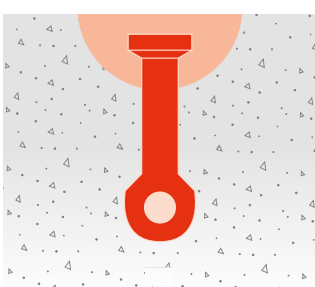
### Plate anchors (DP)

They consist of a bar with ball head with a plate welded on its base. The carrying capacity is obtained by means of reinforcement rods properly placed on the plate. The available carrying capacities range from 25 to 100 kN.



### Turnover anchors (RS)

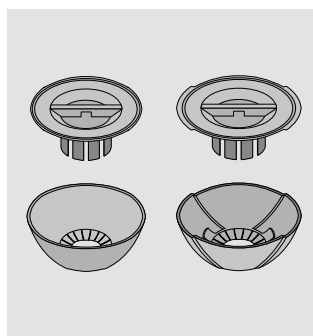
Their special shape allows lifting of panels placed horizontally and flipped directly in the formwork. The available carrying capacities range from 25 to 100 kN.



### Anchors with hole (DF)

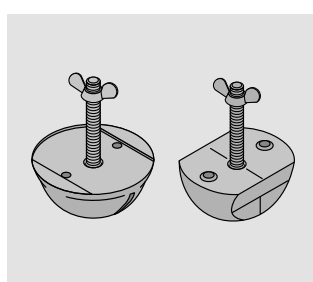
They are shaped at the base in a way as to allow inserting the reinforcement through-bar, which is the anchor to which the load is transferred. The available carrying capacities range from 13 to 200 kN.

## ACCESSORIES FOR ANCHORS



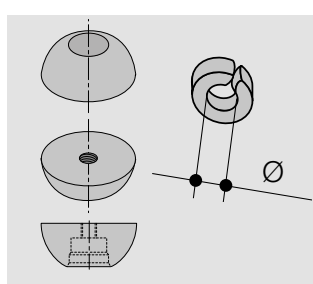
### PTL sunken sheaths

To refine the system, a special sunken sheath was developed, which perfectly binds the anchor in the concrete placement. Moreover, anchor protection is ensured through a sealing cover on the anchor head, also during storage. These sheaths are available in two versions: normal or RS for turnover anchors.



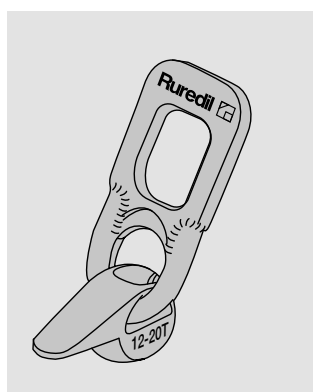
### Rubber sheaths and bodies

They are used to place the anchors in the concrete creating a hollow, from which the anchor part sticks out to ensure sufficient anchoring. These sheaths are available in two versions: normal or shaped, which are useful in cases of small section items. These items can be reused several times.



### Circular steel sheaths

This is a reusable sheath for positioning of anchors and is particularly suitable for castings with a fixed position of the anchors, such as the reinforced concrete tubes. The anchors are locked in place by a neoprene reducer.



### Universal spherical heads RS (according to Machinery Directive No. 2006/42/EC)

The rated capacity is guaranteed with a safety factor of 5. The use of the universal spherical head is simple and allows the attachment of the anchor in any position, thanks to the joint placed at the end. They are available for units having a carrying capacity from 13 to 320 kN.



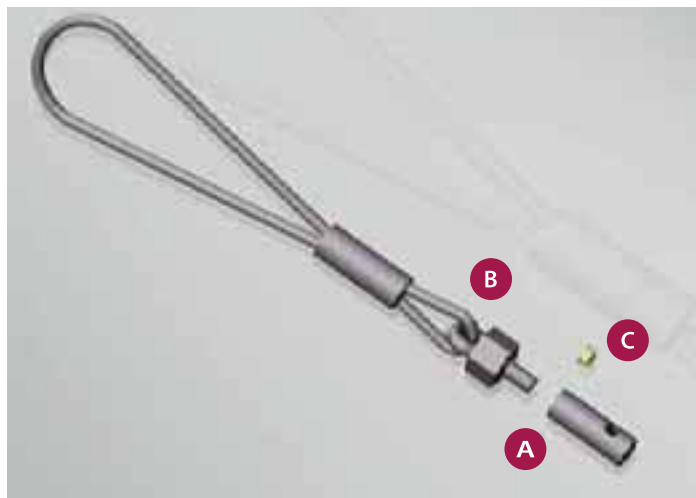
# Lifting Systems

## System with bushing: lifting system with threaded bushing

The threaded bushing system provides a practical and rational solution to the problem of lifting, transportation and erection of precast reinforced concrete items and artifacts in general. It is made from a combination of sunken parts (bushings) with recoverable items (lifting screws with flexible ropes). The rated capacity specified in the first table refers to the axial pull.

### Applications such as:

- walls
- plasterboard partitions
- special items.



### A BUSHING

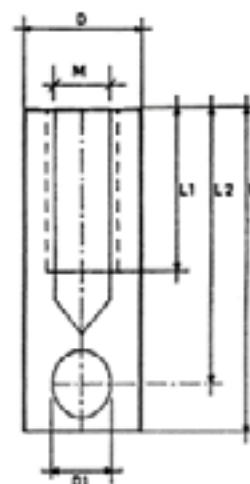
It consists of a steel bar, machined with internal metric thread and provided electrolytically galvanized with thickness  $\geq 7 \mu$ .

A through-hole is drilled at the closed end for the insertion of a bar with improved bonding, which is used for anchoring the bushing to the concrete.

The break safety factor is  $\geq 3$ .

Bushing	Bars Feb 44 K(*) Ø (mm)	Additional L (mm)	Capacity (kN)	D (mm) + 0/- 0.2	D1 (mm) ± 0.2	L (mm) + 0.5/- 1	L1 (mm) ± 1	L2 (mm) ± 0.5/- 1
M10	6	600	5	14	8	50	20	40
M12	8	800	10	20	11	60	30	43
M16	10	1000	20	25	13	70	30	52
M20	12	1200	30	30	15	80	35	58
M24	14	1400	40	35	19	95	40	65
M30	16	1600	50	42	21	105	40	71

(\*) For concrete with  $R_{ck} \geq 20 \text{ N/mm}^2$  - Material: 11 S Mn Pb 37/S355J243



### B FLEXIBLE CABLE SCREW

The cable is made of harmonic steel wires, forming the rope in a loop shape, with tensile strength not less than  $1600 \text{ N/mm}^2$ . The safety factor, given the repeated use, is assumed  $\geq 5$  compared to breakage.

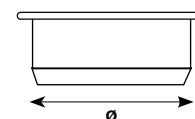
Cable	Capacity kN	Cable Ø (mm) + 4%/- 1%	A (mm) approx.	B (mm) approx.
M10	5	8	380	140
M12	10	10	400	140
M16	20	10	400	140
M20	30	12	470	155
M24	40	14	520	180
M30	50	16	570	200



### C BUSHING PLUGS

Sealing plugs which are inserted into the bore of the bushing threaded part and prevent foreign matter from clogging the screwing part. They should be prepared before casting.

Item description	Ø (mm) + 0,5
Bushing plugs M10	8.5
Bushing plugs M12	10.5
Bushing plugs M16	14
Bushing plugs M20	17.5
Bushing plugs M24	21
Bushing plugs M30	27





# System for thermal cutting panels

## Konnektor®

**Konnektor®** is a patented system using support and connection devices between two freely distensible layers to make concrete panels with thermal and structural cutting.

The connecting devices between the two layers are designed to allow the **construction of panels with no size limit.**

Konnektor® allows the production of panels with thermal cutting of various kinds: lightened, aerated and ventilated (Isocore®).

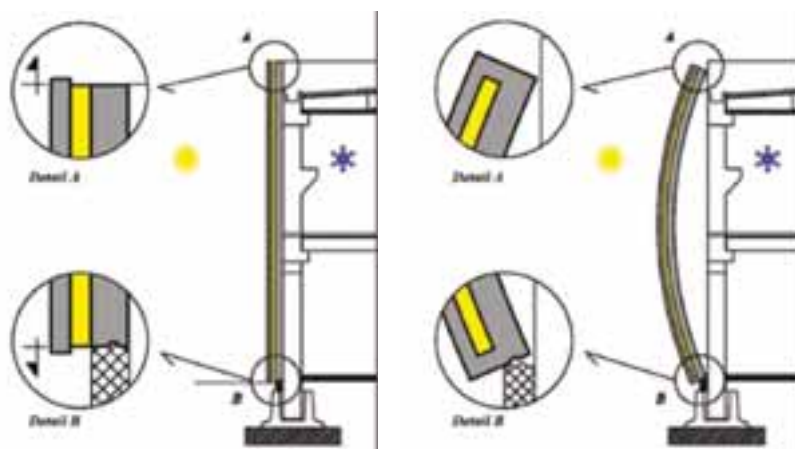
## Support Devices

The supports, bound to the carrier layer, hold the weight of the supported layer in an isostatic manner, without impeding the thermal expansion/contraction of the hanging layer. They are made with a galvanized steel  $\varnothing 40$  mm pin, which is still in the supporting layer and supports the load of the hanging layer.

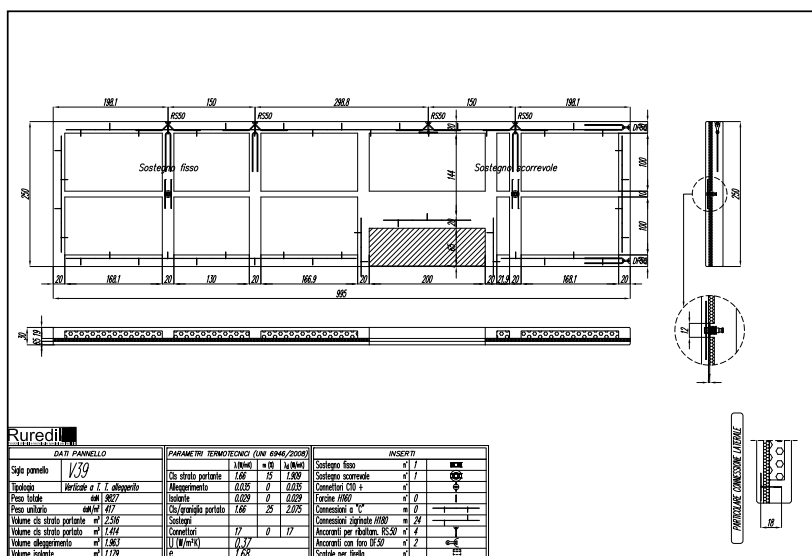
## Connecting Devices

It is expected to give a kind of perimeter connections that is put in place after the installation of the insulation (**C10 and Forcina**) e and a second type, which is alternative to the previous one and is put in place before casting of the hanging layer simultaneously with the support devices (**continuous connections**).

The choice is made depending on the production method and the setting time of the concrete. All types of perimeter connections are stainless steel and prevent the carrier layer to separate from the carried layer, leaving them at the same time free and independent to expand or contract.



The lightweight panel without structural cutting follows a daily cycle of curvatures which is often not acceptable, while the panel with structural cutting is not exposed to these issues.



Screen of calculation software with "Ruredil Konnektor".

To determine the number and type of connections, in the design phase reference is made to a calculation program with ICMQ certification, which is provided free of charge and enables the verification of transmittance as a function of the current regulations.

## Bracket systems

**The bracket Girella S** includes an insert in the pillar and an insert in the panel with no need to insert or attach anything upon erection. The insert in the pillar (or in another supporting item such as a vertical panel, a ceiling, a beam, etc.) consists of a bracket placed inside a box along the concrete structure surface, where it is kept during transportation and mounting of the item. Upon assembly of the panel, after removing the safety cover, the bracket is extracted by rotation and, with no further assembly of metal parts, it is automatically positioned, so as to provide the support for the hidden horizontal panel.

For these reasons, Girella S is the first hidden bracket, ready for the support of prefabricated panels.

**The bracket Tirella S** has been designed to solve design and/or production problems, for which a small size, even in height, is essential. Tirella S includes three distinct elements: an insert in the pillar (or any other carrier part), a bracket, and an insert in the panel, which is identical to that used for the bracket Girella S. Tirella S is different from Girella S in that the bracket must be inserted, during assembly, in the housing obtained by removing the safety cover from the insert which had previously been placed in the carrier.



**Girella S**

*available in capacities of 60 and 120 kN*



**Tirella S**

*available in capacities of 60 and 120 kN*

### The advantages of the system

- ease of positioning in the formwork
- safe load balancing with no additional reinforcement
- minimum space between vertical reinforcements
- large adjustment capacity to mounting



# Anchors and structural connections

## Fisis® 15/30: earthquake - resistant anchors for closing panels

**Innovative earthquake-resistant anchors**, for retention of reinforced concrete prefabricated panels, which allow the structure to respond to seismic stress without deterioration of the stiffness and mass of partitions.

All anchors have a **resistance to seismic action which is perpendicular** to the wall surface of 15 kN or 30 kN ULS and allow relative movement between the structure and panels up to  $\pm 10$  cm (FISIS 15) and  $\pm 20$  cm (FISIS 30).

FISIS meets the anchoring requirements in a seismic area according to NTC 2008 and new European legislation EC8.



Example of anchoring between the horizontal panels and pillar.



Example of anchoring between the vertical panels and flat roof beam.



Provided with specific emergency guide rails, the system can also be used for safety measures on existing buildings.



Preparation of guide rail after concrete placement.



Preparation of guide rail before concrete placement.





# Anchors and structural connections

## Kaptor: mechanical connection by overlapping

It is a mechanical connection system per for prefabricated reinforced concrete structures that allows creating connections of type A, B and C (see Section 7.4.5.2.1 NTC 2008).

**Kaptor** is the first system designed to move the connection outside the critical area, allowing the seismic calculation of the structure with coefficient  $q > 1$ .

The Kaptor system can also be used for pillar centering and plumbing operations only, in combination with projecting bars and corrugated pipes.

At the end of mechanical fastening operations, the node is sealed with Exocem G1, a special castable mortar with compensated shrinkage, which quickly reaches high compressive strength levels.



## classification of connections

### A. CONNECTIONS WITH PLATES AND SCREWS

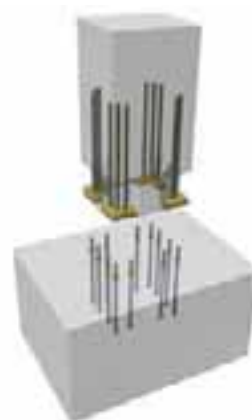
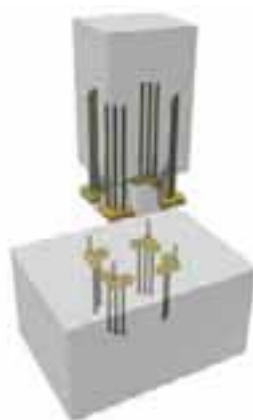
**KPP** Pillar-Pillar connection

**KPF** Pillar-Foundation connection

### B. CONNECTIONS WITH PLATES AND BOLTS

**KPP-T** Pillar-Pillar connection

**KPF-T** Pillar-Foundation connection



## The advantages of the system

- Possibility to create **shallow foundations** and **connecting beams** between footings **in the thickness of the floor**;
- **No contraindication** for use in a critical area;
- Fast and precise **pillar plumbing**;
- **Dry fixing**, with no need to shore up the pillars.

**WITH PLATES AND SCREWS:** possible use for future expansions and lack of projecting parts from the foundation plane or pillar heads.



# Anchors and structural connections

## RUR bushing: system with self-supporting threaded bushing

Steel bushing with ridge; inserted in the concrete, it allows coupling with threaded rods. High breaking loads allow its use also for the construction of seismic joints.

### Applications such as:

- Beam-pillar connection.
- Seismic beam-pillar connection.
- Pillar-pillar connection.
- Beam-pillar connection in foundation.
- Concrete placement joints.
- Anchoring in general.

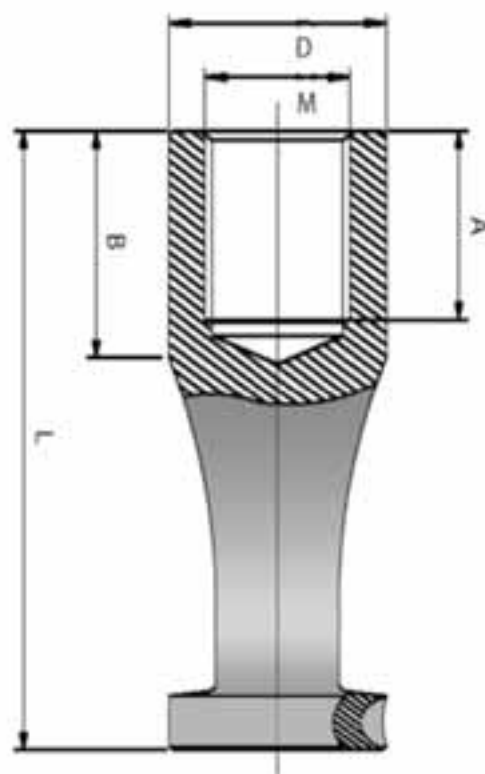
### Requirements for concrete

- $R_{ck} \geq 40 \text{ N/mm}^2$  with additional reinforcements ( $A_f^*$ ).

### Material

- Steel 11 S Mn Pb 37 (UNI EN 10087).
- S355J2G3 (EN 10025).

Bushing RUR (M)	Pull load (kN)	Shear break (kN)	L $\pm 1$ (mm)	A $\pm 0.5-1$ (mm)	B $\pm 0.5-1$ (mm)	$\phi D$ $\pm 0.2$ (mm)	Minimum distance from edge (mm)	$A_f^*$ (cm <sup>2</sup> )
M12	30	20	75	26	32	20	75	1.44
M16	60	40	90	30	36	25	90	1.44
M20	90	60	115	35	42	30	115	2.30
M24	120	90	130	40	49	35	130	2.30
M30	150	100	150	40	58	42	150	2.30



PREPARATION OF RUR BUSHING IN FORMWORK.



TYPICAL APPLICATION IN BEAM-PILLAR JOINT.



## Safety systems

## Rurefast3: fall prevention system with quick connection

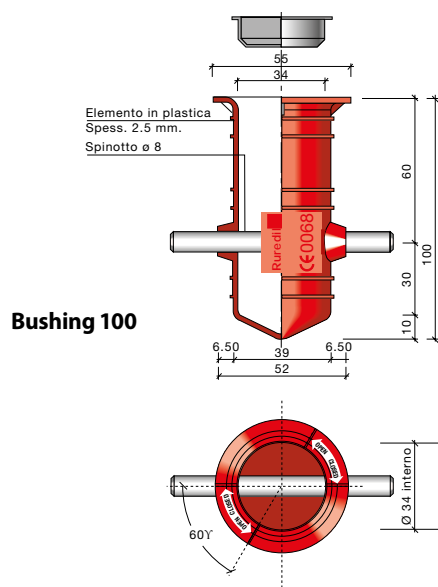
**Rurefast** is the system developed and patented by Ruredil in compliance with the UNI EN 795/02 standard. Rurefast consists of simple, effective and practical plastic inserts to be embedded in the concrete, which are the support of the circuit breaker line to be installed easily and safely at the time of structure assembly.

The Rurefast system obtained the **CE** marking in 1996 (No. I/Ist. Masini/073/96) which was later integrated with other improvements accessories (Rurefast 2), **CE** certified in 1999 (n° 0068/ETI-DPI/033-99).

At present, with Rurefast3, **CE** certified in July 2005, the system becomes easier and more convenient thanks to the synthetic rope and strut.

is the most effective and widespread in Italy safety system to prevent falls from elevation during the assembly of prefabricated structures.

Rurefast3 consists of a part to be sunk in concrete setting (Bushing100) and recoverable to be assembled upon erection. The flexible horizontal line is done by connecting the rods with struts and manually holding the special synthetic cord.

Compliance certificate  Rurefast3.

**FREE SOFTWARE DOWNLOAD FOR CALCULATION OF RUREFAST3**

Register in the Ruredillab section of the website to access the software area and download the free application that will allow you to obtain the proper configuration Rurefast3 for your project.



# Anti-bust device

## Jet: safety vent in case of fire

The use of polystyrene to lighten the floors and ceilings with prestressed floor support slabs and partition panels is daily practice for prefabricators.

A polystyrene lightening block is mainly composed by air and a small fraction of plastic material (10-12 kg/m<sup>3</sup>). In case of fire, the temperature of lightening material quickly reaches **the melting point**; as a result, a closed chamber of constant volume V containing air remains within the artifact. Based on the known gas law ( $PV = nRT$ ), being "nR" a constant value, the pressure "P" increases proportionally to the temperature "T", thereby causing the explosion of the concrete slab of the floor/ceiling or panel.

Assuming an initial temperature of the polystyrene block of 20 °C, when the block temperature reaches 100 °C, the pressure increase reaches about 27%.

A pressure is then exerted on the prefabricated slab from the inside outwards equal to 27 kN/m<sup>2</sup>, i.e. an unsustainable value that involves the explosion of the slab. To avoid the formation of this overpressure, air must be allowed to escape (as clearly required by the UNI 9502/2001 standard art. 7.2.2.), **and Ruredil Jet devices are patented and perform this function safely and reliably.**



### JET H

Wingless version to be inserted manually in the polystyrene block before concrete placement.



### JET HS

Allows a stable support during placement of the polystyrene block.



The **Ruredil Jet** device, which is shown schematically in the figure, is made of plastic material with a predetermined melting point and consists of a **cylindrical body (A)**, 25 mm diameter and 1 mm thickness, cut on the top at 45° to facilitate the inclusion in the lightening block.

Its **lower end (B)**, which is cross-shaped, is placed in direct contact with the formwork during the production of the artifact. **The wings (C) of the HS version** allow a stable support of the vent during laying of the polystyrene block. It is also available in **H version, wingless**, to be inserted manually in the polystyrene block before concrete placement.

**The disc (D)** ensures proper insertion in the lightening block when it enters in contact with its outer surface, thus avoiding excessive penetration. In correspondence with the top, there are **four triangular rostra (E)**, which give the venting the capacity to anchor the polystyrene block to the concrete.

Jet H



Jet HS





# Lifting systems

## R-SYSTEM BLACK ANCHORS



### Ancoranti a risalto

Steel rod, on the upper end of which a spherical cap is forged which allows the attachment. The bottom end is forged with a circular cantilevered plate, which guarantees perfect anchoring to the concrete. Longer versions are available for each capacity.

Code No.	Item No.	Capacity kN	Ø mm	L mm	Package
0301001010	6000-1.3-65	13	10	65	300 pieces
0301001011	6000-1.3-85	13	10	85	200 pieces
0301001012	6000-1.3-120	13	10	120	200 pieces
0301001014	6000-1.3-240	13	10	240	100 pieces
0301001022	6000-2.5-85	25	14	85	100 pieces
0301001023	6000-2.5-120	25	14	120	50 pieces
0301001024	6000-2.5-170	25	14	170	50 pieces
0301001025	6000-2.5-280	25	14	280	40 pieces
0301001028	6000-4-100	40	18	100	50 pieces
0301001030	6000-4-170	40	18	170	40 pieces
0301001031	6000-4-210	40	18	210	25 pieces
0301001032	6000-4-240	40	18	240	25 pieces
0301001033	6000-4-340	40	18	340	20 pieces
0301001037	6000-5-120	50	20	120	40 pieces
0301001038	6000-5-180	50	20	180	25 pieces
0301001039	6000-5-240	50	20	240	25 pieces
0301001040	6000-5-340	50	20	340	15 pieces
0301001044	6000-7.5-165	75	25	165	20 pieces
0301001045	6000-7.5-200	75	25	200	10 pieces
0301001046	6000-7.5-300	75	25	300	10 pieces
0301001047	6000-7.5-540	75	25	540	5 pieces
0301001051	6000-10-170	100	28	170	10 pieces
0301001052	6000-10-250	100	28	250	15 pieces
0301001054	6000-10-340	100	28	340	10 pieces
0301001056	6000-10-680	100	28	680	single
0301001058	6000-15-210	150	34	210	single
0301001059	6000-15-300	150	34	300	single
0301001060	6000-15-400	150	34	400	single
0301001066	6000-20-340	200	39	340	single
0301001067	6000-20-500	200	39	500	single



### Ancoranti con foro

Conformed to the base so as to allow the insertion of a reinforcing through-rod, which is the anchor to which the load is transferred.

Code No.	Item No.	Capacity kN	Ø mm	L mm	Package
0301005001	6001-1.3	13	10	65	250 pieces
0301005002	6001-2.5	25	14	90	100 pieces
0301005003	6001-5	50	20	120	50 pieces
0301005004	6001-10	100	28	180	20 pieces
0301005005	6001-20	200	39	250	single



### Ancoranti AS ad aderenza\*

Steel bar consisting of a spherical cap at the upper end for connection. The rod, which is inserted in the concrete, works through adhesion and has grip pads which ensure better anchoring to concrete.

Code No.	Item No.	Capacity kN	Ø mm	L mm	Package
0301048002	6050-2.5-600	25	14	600	25 pieces
0301048006	6050-4-750	40	18	750	25 pieces
0301048014	6050-5-850	50	20	850	25 pieces

\* Available while stocks last.



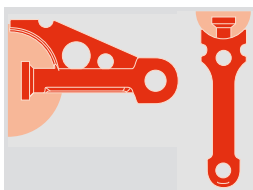


### Ancoranti a piastra

Consisting of a ball bar with a plate welded at its base.  
The capacity is ensured by means of reinforcement rods properly placed on the plate.  
Plate Size mm: 70x70x6 - 90x90x8 - 90x90x10.



Code No.	Item No.	Capacity kN	Ø mm	L mm	Package
0301006001	6010-2.5-55	25	14	55	50 pieces
0301006002	6010-2.5-120	25	14	120	25 pieces
0301006003	6010-5-55	50	20	55	25 pieces
0301006004	6010-5-65	50	20	65	25 pieces
0301006005	6010-5-110	50	20	110	20 pieces
0301006008	6010-5-160	50	20	160	20 pieces
0301086001	6010-7.5-160	75	25	160	10 pieces
0301006007	6010-10-115	100	28	115	10 pieces



### Ancoranti speciali per il ribaltamento

The special shape allows lifting of panels placed horizontally in the concrete and overturned directly to the formwork.



Code No.	Item No.	Capacity kN	Ø mm	L mm	Package
0301050004	6002-10-215	100	28	215	10 pieces
0301083001	6003-2.5 RS	25	14	200	25 pieces
0301083002	6003-5 RS	50	20	200	15 pieces

## R-SYSTEM GALVANIZED ANCHORS



### Ancoranti zincati a risalto hot dip galvanization $\geq 70 \mu\text{m}$

Steel rod, the upper end of which is forged with spherical cap and allows the attachment. The bottom end is forged with circular plate, which is cantilevered and guarantees perfect anchoring to the concrete. Four length versions are available for each capacity.



Code No.	Item No.	Capacity kN	Ø mm	L mm	Package
0301002003	6000-1.3-65	13	10	65	300 pieces
0301002004	6000-1.3-85	13	10	85	200 pieces
0301002005	6000-1.3-120	13	10	120	200 pieces
0301002006	6000-1.3-240	13	10	240	100 pieces
0301002011	6000-2.5-85	25	14	85	100 pieces
0301002012	6000-2.5-120	25	14	120	50 pieces
0301002013	6000-2.5-170	25	14	170	50 pieces
0301002014	6000-2.5-280	25	14	280	40 pieces
0301002025	6000-4-100	40	18	100	50 pieces
0301002027	6000-4-170	40	18	170	40 pieces
0301002028	6000-4-210	40	18	210	25 pieces
0301002029	6000-4-240	40	18	240	25 pieces
0301002030	6000-4-340	40	18	340	20 pieces
0301002045	6000-5-120	50	20	120	40 pieces
0301002046	6000-5-180	50	20	180	25 pieces
0301002047	6000-5-240	50	20	240	25 pieces
0301002048	6000-5-340	50	20	340	15 pieces
0301002069	6000-7.5-165	75	25	165	20 pieces
0301002067	6000-7.5-200	75	25	200	10 pieces
0301002068	6000-7.5-300	75	25	300	10 pieces
0301002070	6000-7.5-540	75	25	540	5 pieces
0301002084	6000-10-170	100	28	170	10 pieces
0301002085	6000-10-250	100	28	250	15 pieces
0301002086	6000-10-340	100	28	340	10 pieces
0301002090	6000-10-680	100	28	680	single
0301002092	6000-15-210	150	34	210	single
0301002093	6000-15-300	150	34	300	single
0301002094	6000-15-400	150	34	400	single
0301002104	6000-20-340	200	39	340	single
0301002105	6000-20-500	200	39	500	single

# Lifting systems

## R-SYSTEM GALVANIZED ANCHORS



### Ancoranti zincati con foro hot dip galvanization $\geq 70 \mu\text{m}$

Conformed to the base so as to allow the insertion of a reinforcing through-rod, which is the anchor to which the load is transferred.

Code No.	Item No.	Capacity kN	$\varnothing$ mm	L mm	Package
0301054001	6001-1.3	13	10	65	250 pieces
0301054002	6001-2.5	25	14	90	100 pieces
0301054003	6001-5	50	20	120	50 pieces
0301054004	6001-10	100	28	180	20 pieces
0301054005	6001-20	200	39	250	single



### Ancoranti zincati AS ad adherenza\* hot dip galvanization $\geq 70 \mu\text{m}$

Steel rod, the upper end of which is forged with spherical cap and allows the attachment. The rod, inserted in the concrete, works through adhesion and has grip pads which ensure better anchoring to concrete.

Code No.	Item No.	Capacity kN	$\varnothing$ mm	L mm	Package
0301053001	6050-2.5-600	25	14	600	25 pieces
0301053005	6050-4-750	40	18	750	25 pieces
0301053010	6050-5-850	50	20	850	25 pieces

\* Available while stocks last.

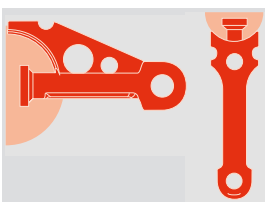


### Ancoranti zincati a piastra electrolytic galvanization $\geq 12 \mu\text{m}$

Consisting of a ball bar with a plate welded at its base. The carrying capacity is achieved by means of reinforcement rods properly placed on the plate.

Plate size: 70x70x6 - 90x90x8 - 90x90x10

Code No.	Item No.	Capacity kN	$\varnothing$ mm	L mm	Package
0301055001	6010- 2.5- 55	25	14	55	50 pieces
0301055002	6010- 2.5-120	25	14	120	25 pieces
0301055003	6010- 5.0- 55	50	20	55	25 pieces
0301055004	6010- 5.0- 65	50	20	65	25 pieces
0301055005	6010- 5.0-110	50	20	110	20 pieces
0301055008	6010-7.5-160	75	25	160	10 pieces
0301055006	6010-10.0-115	100	28	115	10 pieces



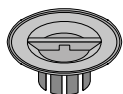
### Ancoranti zincati speciali per il ribaltamento

The special shape allows lifting of panels placed horizontally in the concrete and overturned directly to the formwork.

Code No.	Item No.	Capacity kN	$\varnothing$ mm	L mm	Package
0301052004	6002-10-215	100	28	215	10 pieces
0301082002	6003-5.0 RS	25	14	200	15 pieces
0301082001	6003-2.5 RS	50	20	200	25 pieces

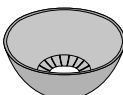


## ACCESSORIES FOR R-SYSTEM



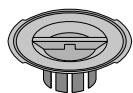
### Patented Guaina a perdere in PTL

Special sunken sheath that binds perfectly the anchor in the concrete. Adaptable to all types of anchors.



Code No.	Item No.	Capacity kN	$\rightarrow$ A mm ( $\pm 1$ )	Color	Package
0301085001	6101-1.5/2.5	15/25	79	grey	200 pieces
0301085002	6101-3/5	30/50	99	grey	150 pieces
0301085003	6101-7.5	75	119	red	100 pieces
0301085004	6101-10	100	119	grey	100 pieces

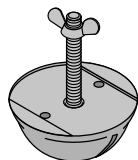




### Patented Guaina a perdere R-System

Special sunken sheath that binds perfectly the anchor in the concrete.

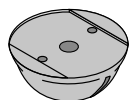
Code No.	Item No.	Capacity kN	R mm (±1)	R1 mm (±1)	Package
0301084001	6100-1.5/2.5 RS	15/25	37	40	200 pieces
0301084002	6100-3/5 RS	30/50	47	50	150 pieces



### Guaina gomma circolare completa

It is used to create a groove in placed concrete, from which the anchoring part used for connection sticks out. It is provided with a screw and butterfly knob for fastening.

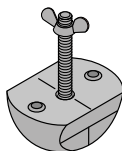
Code No.	Item No.	Capacity kN	Groove mm	Package
0301010001	6140-1/1.3	10/13	60	single
0301010002	6140-1.5/2.5	15/25	74	single
0301010003	6140-3/5	30/50	94	single
0301010005	6140-8/10	80/100	118	single
0301010007	6140-16/20	160/200	160	single



### Guaina gomma circolare

It is used to create a groove in placed concrete, from which the anchoring part used for connection sticks out.

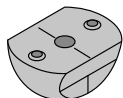
Code No.	Item No.	Capacity kN	Groove mm	Package
0301014001	6139-1/1,3	10/13	60	single
0301014002	6139-1,5/2,5	15/25	74	single
0301014003	6139-3/5	30/50	94	single
0301014005	6139-8/10	80/100	118	single
0301014007	6139-16/20	160/200	160	single



### Guaina gomma sagomata completa

It is used to create a groove in placed concrete, from which the anchoring part used for connection sticks out. It is provided with a screw and butterfly knob for fastening.

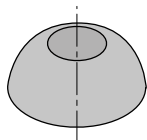
Code No.	Item No.	Capacity kN	L mm	Width mm	Package
0301012001	6138-1/1.3	10/13	60	42	single
0301012002	6138-1.5/2.5	15/25	74	52	single
0301012003	6138-3/5	30/50	94	69	single
0301012005	6138-8/10	80/100	118	85	single
0301012007	6138-16/20	160/200	160	124	single



### Guaina gomma sagomata

It is used to create a groove in placed concrete, from which the anchoring part used for connection sticks out.

Code No.	Item No.	Capacity kN	L mm	Width mm	Package
0301013001	6137-1/1.3	10/13	60	42	single
0301013002	6137-1.5/2.5	15/25	74	52	single
0301013003	6137-3/5	30/50	94	69	single
0301013005	6137-8/10	80/100	118	85	single
0301013007	6137-16/20	160/200	160	124	single



### Guaina in acciaio

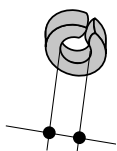
It is used when a prefabricated element must be overturned after mold removal.

Code No.	Item No.	Capacity kN	Package
0301019001	6150-1/1.3	10/13	single
0301019002	6150-2.5	25	single
0301019003	6150-3/5	30/50	single



# Lifting systems

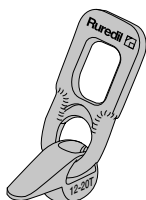
## ACCESSORIES FOR R-SYSTEM



### Riduttore in neoprene for steel sheath

It is used to lock the anchor in the steel sheath.

Code No.	Item No.	Capacity kN	Package
0301003001	6151-1/1.3	10/13	single
0301003002	6151-2.5	25	single
0301003003	6151-5	30/50	single

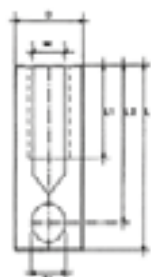


### Testa sferica universale

Easy to use, it allows fastening the anchor in any position through the joint placed on the end.

Code No.	Item No.	Capacity kN	Package
0301004012	6102-1/1.3	10/13	single
0301004013	6102-1.5/2.5	15/25	single
0301004010	6102-3/5	30/50	single
0301004014	6102-6/10	60/100	single
0301004015	6102-12/20	120/200	single

## LIFTING SYSTEM WITH THREADED BUSHING



### Boccola zincata

Steel bar, machined with internal metric thread, electrolytically galvanized, thickness  $\geq 7 \mu$ . Through-hole for insertion of a bar with improved adhesion to anchor the bushing to the concrete.

Code No.	Item No.	Capacity kN	$\phi$ mm	L mm	Package
0317011001	M10	5	50	8	300 pieces
0317011002	M12	10	60	9	100 pieces
0317011003	M16	20	70	13	100 pieces
0317011004	M20	30	80	16	50 pieces
0317011005	M24	40	95	19	50 pieces
0317011006	M30	50	105	21	25 pieces



### Vite a fune flessibile

Rope consisting of harmonic steel wires, forming a loop rope, with tensile strength not less than  $1,600 \text{ N/mm}^2$ .

Code No.	Item No.	Capacity kN	Package
0317030010	M10	5	single
0317030020	M12	10	single
0317030030	M16	20	single
0317030040	M20	30	single
0317030050	M24	40	single
0317030060	M30	50	single



### Tappo per boccola

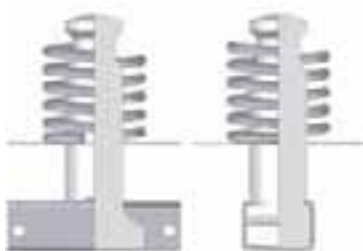
PTL tight plugs that are inserted into the hole of the threaded portion of the sleeve to prevent foreign matter from clogging the screwing part. They should be prepared before concrete placement.

Code No.	Item No.	Package
0317020010	M10	100 pieces
0317020020	M12	100 pieces
0317020030	M16	100 pieces
0317020040	M20	100 pieces
0317020050	M24	100 pieces
0317020060	M30	100 pieces



# System for panels with thermal cutting

## KONNEKTOR® THERMAL CUTTING FOR PANELS



### Sostegno fisso

Carrier of the Konnektor® system.

Product	Package
0318002001	6 pieces

### Sostegno scorrevole

Carrier of the Konnektor® system filled with synthetic sponge to allow free thermal expansion.

Product	Package
0318003001	6 pieces



### Forcina

Stainless steel Bracket for the connection of layers on the perimeter.

#### Forcina H160

Product	Package
0318004001	500 pieces

#### Forcina H200

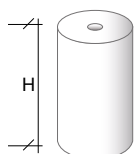
Product	Package
0318004002	500 pieces



### Connettore C10

Part consisting of wire AISI 316; plastic-nylon tube reinforced with 30% fiberglass, which allows the connection of concrete layers

Product	Package
0318052001	500 pieces



### Distanziatore H20-H40-H60

Polystyrene foam density > 25 kg/m<sup>3</sup> to be matched with the connector C10.

Product	Item No.	Package
0318051003	H20	500 pieces
0318051001	H40	500 pieces
0318051002	H60	500 pieces



### Connessione a C

Stainless steel 4 perimeter connection for connection of layers

Product	Package
0318055001	40 m

### Connessione zigrinata H200

Stainless steel 4 universal connection for the connection of layers.  
For insulation thicknesses up to 10 cm.

Product	Package
0318054002	40 m



# Cantilever Systems

## GIRELLA AND TIRELLA



### Girella S

Hidden bracket without assembly during erection for suspension of prefabricated panels. It includes an insert in the pillar and an insert in the panel with no need to enter or attach anything on site.



Code No.	Type	Package
0310601001	60 kN	4 pieces
0310601002	120 kN	4 pieces



### Tirella S

Bracket for suspension of prefabricated panels designed to solve design and/or production problems in which a small size, also in height, is indispensable. It allows applications even in the presence of very thick reinforcements.

#### Mensola Tirella S 60 kN

Codice	Tipo	Confezione
0310401001	60 kN	4 pieces

#### Mensola Tirella S 120 kN

Code No.	Type	Package
0310401002	120 kN	4 pieces



#### Scatola Tirella S 60 kN

Code No.	Type	Package
0310406001	60 kN	4 pieces

#### Scatola Tirella S 120 kN

Code No.	Type	Package
0310406002	120 kN	4 pieces



## ACCESSORIES FOR GIRELLA & TIRELLA

Product	Code No.	Type	Package
Emergency bracket S 60 kN	0310402001	60 kN	single
Emergency bracket S 120 kN	0310402002	120 kN	single
Panel plate S	0310403001	-	single
Small panel plate S	0310403002	-	single
Magnetic box S	0310404001	-	single
Plasterboard partition magnetic box S	0310404002	-	single
Small magnetic box S	0310404003	-	single
Small open magnetic box S	0310404004	-	single
Polystyrene box S	0310405001	-	40 pieces
Plasterboard partition polystyrene box S	0310405002	-	40 pieces
Small open polystyrene box S	0310405003	-	80 pieces
Anchor for bracket (Anchor class 8.8 M16 L= 155 mm)	0310041001	60 kN	10 pieces
Anchor for bracket (Anchor class 8.8 M16 L= 180 mm)	0310041002	120 kN	10 pieces
Shim plate	0310004001	0,5/60 kN	200 pieces
Shim plate	0310004002	0,5/120 kN	200 pieces
Shim plate	0310004006	1/60 kN	100 pieces
Shim plate	0310004007	1/120 kN	100 pieces
"L - shaped" shim plate	0310004011	60 kN	200 pieces
"L - shaped" shim plate	0310004012	120 kN	200 pieces



### Guida di scorrimento ± 3 cm

#### Materials

- S355 (filling with polyurethane sponge);
- Electrolytic galvanization  $\geq 12 \mu\text{m}$ .

Code No.	Package
0302101001	40 pieces

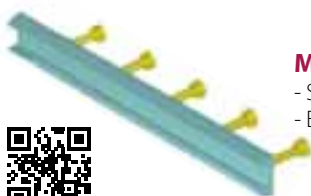


### Guida di scorrimento ± 10 cm

#### Materials

- S355 (filling with polyurethane sponge);
- Electrolytic galvanization  $\geq 12 \mu\text{m}$ .

Code No.	Package
0302101002	20 pieces



### Guida di scorrimento ± 20 cm

#### Materials

- S355 (filling with polyurethane sponge);
- Electrolytic galvanization  $\geq 12 \mu\text{m}$ .

Code No.	Package
0302101003	12 pieces



### Fissaggio pannelli verticali

#### Materials

- S355;
- Electrolytic galvanization  $\geq 12 \mu\text{m}$ .

Code No.	Package
0302104001	single



### Attacco pannelli verticali

#### Materials

- S355 (nut type S6);
- Electrolytic galvanization  $\geq 12 \mu\text{m}$ .

Code No.	Package
0302107001	24 pieces



### Attacco filettato corto teflonato M16

#### Materials

- S355 (nut type S6);
- Electrolytic galvanization  $\geq 12 \mu\text{m}$ .

Code No.	Package
0302110001	40 pieces

# Anchors and structural connections

**FISIS<sup>®</sup> 30**

## EARTHQUAKE - RESISTANT ANCHORS FOR PANELS

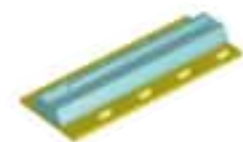
### Attacco pannelli orizzontali L=170



#### Materials

- S355;
- Electrolytic galvanization  $\geq 12 \mu\text{m}$ .

Code No.	Package
0302108002	40 pieces



### Guida di emergenza $\pm 10 \text{ cm}$

#### Materials

- Electrolytic galvanization  $\geq 12 \mu\text{m}$ .

Code No.	Package
0302106001	single

### Guida di emergenza $\pm 20 \text{ cm}$

#### Materials

- Electrolytic galvanization  $\geq 12 \mu\text{m}$ .

Code No.	Package
0302106002	single

### Blocco verticale



#### Materials

- S355;
- Electrolytic galvanization  $\geq 12 \mu\text{m}$ .

Code No.	Package
0302105101	80 pieces

### Contropiastra FVCP



#### Materials

- S355;
- Electrolytic galvanization  $\geq 12 \mu\text{m}$ ;
- 2 plugs per PTL bushing.

Code No.	Package
0302013001	24 pieces

## FISIS 15 SEISMIC ANCHORS FOR PANELS

### Guida di scorrimento $\pm 10 \text{ cm}$



#### Materials

- S235JRG2,
- Electrolytic galvanization  $\geq 7 \mu\text{m}$ .

Code No.	Package
0302201001	30 pieces



# Anchors and structural connections

## Kaptor

### MECHANICAL CONNECTION FOR PREFABRICATED STRUCTURES

Connection KPF - KPP for reinforcement rods 26-25-24



**K3A 26-25-24**

Code No.	Package
0307002001	single



**K3B 26-25-24**

Code No.	Package
0307003001	single



**Vite M24x140**

Code No.	Package
0307010001	single



**Barra KT - M24**  
L=62 cm

Including: 2 washers, 1 low nut and 1 normal nut.

Code No.	Package
0307014002	single



**Vite di regolazione M24 x 180**

Including: 2 nuts and 2 washers.

Code No.	Package
0307012001	single



**Scatola polistirolo**  
K3 26-25-24

Code No.	Package
0307031001	30 pieces



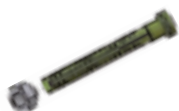
**Barra KØ 24**  
L=270 cm

Code No.	Package
0307006002	single



**Barra KØ 26**  
L=280 cm

Code No.	Package
0307006004	single



**Barra KFØ 24**  
L=55 cm

Code No.	Package
0307005002	single



**Barra KFØ 26**  
L=65 cm

Code No.	Package
0307005004	single



**Rondella**  
44x25x4

Code No.	Package
0307008001	single

# Anchors and structural connections

**Kaptor**

## MECHANICAL CONNECTION FOR PREFABRICATED STRUCTURES

Connection KPF - KPP for reinforcement rods 26-25-24



**KSA 26-25-24**

Code No.	Package
0307001002	single



**KSB 26-25-24**

Code No.	Package
0307004002	single



**Vite M33 x 140**

Code No.	Package
0307010005	single



**Barra KT - M33**  
L=83,5 cm

Including: 2 washers, 1 low nut and 1 normal nut.

Code No.	Package
0307014004	single



**Vite di regolazione**  
**M33 x 200**

Including: 2 nuts and 2 washers.

Code No.	Package
0307012002	single



**Scatola polistirolo**  
**KPF 26-25-24**

Code No.	Package
0307035002	80 pieces



**Rondella 60x34x5**

Code No.	Package
0307009004	single



**Chiave per KT M24**

Code No.	Package
0307014102	single



**Chiave per KT M33**

Code No.	Package
0307014104	single



**Manicotto per KT M24**

Code No.	Package
0307014202	single



**Manicotto per KT M33**

Code No.	Package
0307014204	single

# Anchors and structural connections

## Kaptor

### MECHANICAL CONNECTION FOR PREFABRICATED STRUCTURES

Connection KPF - KPP for reinforcement rods 20-18-16



**K3A 20-18-16**

Code No.	Package
0307002002	single



**K3B 20-18-16**

Code No.	Package
0307003002	single



**Vite M20 x 120**

Code No.	Package
0307010003	single



**Barra KT - M20**  
L=50,5 cm

Including: 2 washers, 1 low nut and 1 normal nut.

Code No.	Package
0307014001	single



**Vite di regolazione**  
M20 x 180

Including: 2 nuts and 2 washers.

Code No.	Package
0307012003	single



**Scatola polistirolo K3**  
20-18-16

Code No.	Package
0307031002	30 pieces



**Barra KØ 20**  
L=250 cm

Code No.	Package
0307006001	single



**Barra KØ 18**  
L=240 cm

Code No.	Package
0307006005	80 pieces



**Barra KFØ 16**  
L=230 cm

Code No.	Package
0307006003	single



**Barra KFØ 20**  
L=50 cm

Code No.	Package
0307005001	single

# Anchors and structural connections

## Kaptor

### MECHANICAL CONNECTION FOR PREFABRICATED STRUCTURES

Connection KPF - KPP for reinforcement rods 20-18-16



**Rondella  
37x21x3**

Code No.	Package
0307009001	single



**KSA 20-18-16**

Code No.	Package
0307001003	single



**KSB 20-18-16**

Code No.	Package
0308004003	single



**Vite M27 x 120**

Code No.	Package
0307001004	single



**Barra KT - M27  
L=66,5 cm**

Including: 2 washers, 1 low nut and 1 normal nut.

Code No.	Package
0307014003	single



**Vite di regolazione  
M27 x 180**

Including: 2 nuts and 2 washers.

Code No.	Package
0307012004	single



**Scatola polistirolo KPF  
20-18-16**

Code No.	Package
0307035001	80 pieces



**Rondella  
50x28x4**

Code No.	Package
0307009002	single



**Chiave per KT M20**

Code No.	Package
0307014101	single



**Chiave per KT M27**

Code No.	Package
0307014103	single



# Anchors and structural connections

**Kaptor**

**MECHANICAL CONNECTION FOR PREFABRICATED STRUCTURES**  
Connection KPF - KPP for reinforcement rods 20-18-16

PREFABRICATION



## Manicotto per KT M20

Code No.	Package
0307014201	single



## Manicotto per KT M27

Code No.	Package
0307014203	single

## CONNECTION FOR THREADED BARS



## Boccola RUR

Cantilevered steel bushing; inserted into the concrete, it allows coupling with threaded rods. Its high tensile strength values allow its use also for the construction of seismic joints. Particularly suitable for beam-pillar connections, seismic beam-pillar connection, pillar-pillar connection, concrete structure joints and anchoring in general.

### Application

- beam-pillar connection;
- seismic beam-pillar connection;
- pillar-pillar connection;
- concrete structure joints;
- anchoring in general.

Code No.	Thread	Break kN	Length L mm	ø D mm	Package
0317050001	M 12	30	75	20	100 pieces
0317050002	M 16	60	90	25	100 pieces
0317050003	M 20	90	115	30	50 pieces
0317050004	M 24	120	130	35	30 pieces
0317050005	M 30	150	150	42	20 pieces



## Explosion-proof devices

**JET** EXPLOSION-PROOF DEVICE



## Jet H

Explosion-proof devices for precast polystyrene-lightened items in wingless version for manually insertion in the polystyrene block before casting

Code No.	Concrete thick H (mm)	Package
0311001001	40	500 pieces
0311001002	50	500 pieces
0311001003	60	500 pieces



## Jet HS

Explosion-proof devices for precast polystyrene-lightened items in the version with wings for stable vent support during laying of the blocks.

### Materials

Special PTL, grey color, with controlled melting point.

Code No.	Concrete thick H (mm)	Package
0311002001	40	250 pieces
0311002002	50	250 pieces
0311002003	60	250 pieces



# Safety systems

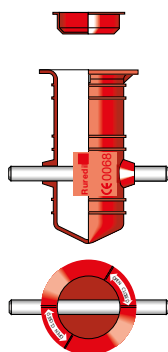
## RUREFAST 3 FALL-PREVENTION SYSTEM WITH QUICK CONNECT

Sunken parts

### Boccola 100

Special high density polyethylene (HDPE) insert to be placed in the casting of precast concrete. Rurefast Boccola 100 is provided with a plug which protects it from the intrusion of cement grout or other foreign bodies.

Code No.	Package
0303501002	100 pieces

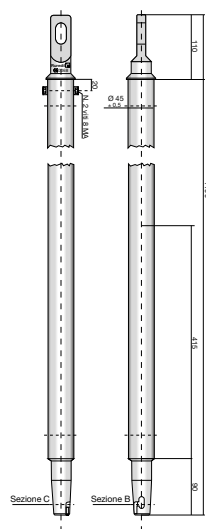


### Recoverable items

### Asta

Rod with cleat for securing the horizontal line (synthetic rope). The part is made of special steel and ensures the best safety level in use and is supplied galvanized. The "bayonet" fitting effectively avoids extraction and allows – through simple rotation – safe anchoring to Bushing 100.

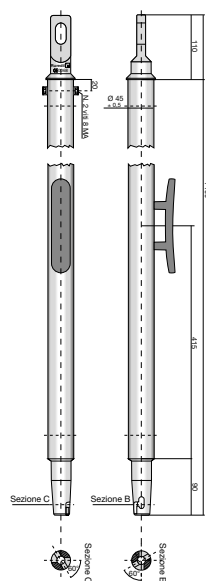
Code No.	Package
0303502001	3 pieces



### Asta omnidirezionale

Lightened and turning rope-passing rod. Compared to the normal version, the new rod is extremely easy to handle and, through the technical solutions implemented, lightened by more than 40%. The upper end can rotate by 360° and allows recovering the right alignment even when bushings have been misplaced. The "bayonet" fitting effectively avoids extraction and allows – through simple rotation – safe anchoring to Bushing 100.

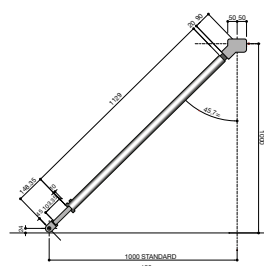
Code No.	Package
0303502002	3 pieces



### Asta terminale

Rope-passing rod which is inserted very easily in the bushing, effectively avoiding extraction through its "bayonet" fitting. As a result of its small size and very low weight, the rod is handy and effective. The part made of special steel ensures the best safety conditions in use and is supplied galvanized.

Code No.	Package
0303801001	3 pieces



### Puntone

45° connecting part between Terminal Rod and Contrast. Made with tubular steel and an adjustment screw, it is connected via a bolt to the contrast mounted on the ground.

Code No.	Package
0303802001	2 pieces



### Contrasto

Terminal contrast item made of special steel, which is placed 1 m back from the foot of terminal rods and reduces and easily withstands the high loads transmitted to the terminal rods.

Code No.	Package
0303504001	6 pieces



### Fune sintetica

It is a high strength synthetic fiber rope with high elastic modulus, Ø 8 mm, available in three standard sizes (15, 25 and 35 m); other sizes are available on request. Tensile strength  $\geq 25.5$  kN.

Code No.	Package
0303803001	single L=15m
0303803002	single L=25m
0303803003	single L=35m

# PRODUCTS ON REQUEST



**Sanctuary of Montegrisa** Trieste (Italy)



**Dirigible hangar** Augusta (Italy)





**Mignano dam** Piacenza (Italy)



**Carlo Riva Marina** Rapallo (Italy)



**Statue of Pope Paul VI**  
Pescara (Italy)

# Special waterproofing

## WATERPROOFING PRODUCTS FOR HOLES AND WATER DRAINS



### Rasocem Plug/Plug Fast\*

Ultra-rapid mortar to block water infiltrations.

#### Composition

Cement, selected silica and rheological modifying agents.

#### Yield

± 1.45 Kg powder per dm<sup>3</sup>.

#### Rasocem Plug

Package	Code No.
10 Kg bucket	0106031040

#### Rasocem Plug Fast

Package	Code No.
10 Kg bucket	0106032040

\* This product is available through previous notice of 15 working days.



## INJECTION JOINTS

### Bentorur Tubo\*



Combination of a hygroexpansive hydrophilic band of bentonite and an injection tube in a single system for sealing of construction joints and concrete placement joints. If the expansion phase of the outer bentonite coating is not enough to stop the water ingress, the passive safety system allows the injection of waterproofing resin which saturates the openings and creates a waterproofing barrier.

#### Composition

Butyl rubber and sodium bentonite.

#### Consumption

In relation to the length of the joints to be waterproofed.

Package	Code No.
KIT consisting of: 40 m tube (8 sections of 5 m), 4 m PVC reinforced tube, 16 closing caps, 16 "L-shaped" plastic joints, 16 U-shaped anchors	0201016001

\* This product is available through previous notice of 15 working days.



### Bentorur Tubo S\*



Combination of a hygroexpansive hydrophilic band of bentonite and an injection tube in a single system for sealing of construction joints and concrete placement joints. If the expansion phase of the outer bentonite coating is not enough to stop the water ingress, the active safety system allows the injection of waterproofing resin which saturates the openings and creates a waterproofing barrier. Specific for use in contact with salt water.

#### Composition

Butyl rubber and sodium bentonite.

#### Consumption

In relation to the length of the joints to be waterproofed.

Package	Code No.
KIT consisting of: 40 m tube (8 sections of 5 m), 4 m PVC reinforced tube, 16 closing caps, "L-shaped" plastic joints, 16 U-shaped anchors	0201017001

\* This product is available through previous notice of 15 working days.





### Rureband Neo\*

NBR rubber band for sealing cracks and joints subject to extensive expansion.  
To be glued to the substrate with Rureband Fix Wet.

#### Composition

NBR rubber band.

Package	Code No.
10 cm wide and 1.2 mm thick tapes in 20 meter boxers	0207006020
20 cm wide and 1.2 mm thick tapes in 20 meter boxers	0207007020

\* This product is available through previous notice of 15 working days.



### Rureband Fix Wet\*

Universal two-component epoxy mastic for moist supports.

#### Composition

Epoxy mastic.

#### Yield

Approximately 1.8 Kg/m<sup>2</sup> for 1 mm thickness.

Package	Code No.
5 Kg drums (A+B)	0207009020

\* This product is available through previous notice of 15 working days.



### Rureband Fix MS\*

One-component adhesive with elastic MS polymer to glue the leading ends of Rureband Neo tape.

#### Composition

MS polymer.

#### Yield

Approximately 650 - 750 g/m<sup>2</sup>/mm according to surface roughness.

Package	Code No.
400 cc cartridges in 20 piece boxes	0207010020

\* This product is available through previous notice of 15 working days.

## INJECTION RESIN



### Rurecut Mono H\*

Hydroactive polyurethane resin for injection with rapid and strong expansion, rigid with closed cells.

#### Composition

Phthalate-free polyurethane resin.

#### Consumption

Determined by the designer.

Package	Code No.
25 kg drums	0208007020

\* This product is available through previous notice of 15 working days.



### Rurecut Mono SH\*

Hydroactive polyurethane resin for injection with rapid and strong expansion, semi-rigid with closed cells.

#### Composition

Phthalate-free polyurethane resin.

#### Consumption

Determined by designer.

Package	Code No.
25 kg drums	0208007021

\* This product is available through previous notice of 15 working days.

# Special waterproofing

## INJECTION RESINS



### Rurecut Speed 60\*

Accelerator for resin Rurecut Mono H, Mono SH available in the standard, rapid, or ultra-rapid version.

#### Composition

Catalyst for phthalate-free polyurethane resins.

#### DOSAGE

10% mix ratio.

Package	Code No.
2.5 liter bottles	0208008020

\* This product is available through previous notice of 15 working days.



### Rureflex Mono LV\*

Hydroactive polyurethane resin for injection with low viscosity, elastic with closed cells.

#### Composition

Phthalate-free polyurethane resin.

#### Consumption

Determined by the designer.

Package	Code No.
5 kg drums	0208014040
25 Kg drums	0208014020

\* This product is available through previous notice of 15 working days.



### Rureflex Speed\*

Accelerator for Rureflex Mono LV resins.

#### Composition

Accelerator containing 2-((2-(dimethylamino)ethyl)methylamine) ethanol for polyurethane resins.

#### Consumption

Determined by the designer.

Package	Code No.
0.25 liter bottles	0208012040
1 liter bottles	0208012020

\* This product is available through previous notice of 15 working days.



### Rurefoam

Polyurethane resin for injection. Possible injections as single-component system in the presence of water or two-component with 1:1 ration with water in dry situations.

#### Composition

Phthalate-free polyurethane resin.

#### Consumption

Determined by the designer.

Package	Code No.
25 Kg drums	0208013020



### Epoxyrur inject

Epoxy resin for structural injections in both wet and dry environments.

#### Composition

Epoxy system consisting of resin and catalyst.

#### Consumption

Determined by the designer.

Package	Code No.
kit of 3 Kg buckets	0204003020





### Pompa EK100

Manual single-piston pump for resin injections.

Package	Code No.
single	0208051001



### Iniettori 17x150

Injectors for injection of acrylic, polyurethane and epoxy resins.

Package	Code No.
20 piece packs	0208052001



### Testina di collegamento

Connection head.

Package	Code No.
5 piece packs	0208053001



### Guarnizione per testina di collegamento

Seal for connection head.

Package	Code No.
50 piece packs	0208054001



## Protective products for concrete and masonry

### ANTI-EVAPORATION PRODUCTS

### Curing S

Protective anti-evaporation product recommended for the FRCM line, for use in harsh environmental conditions (strong ventilation or exposure to the sun). Ready to use product to be applied fresh on fresh on FRCM reinforcement.

Package	Code No.
18 liter drums	0106090020
180 liter drums	0106090030

#### Composition

Mix of resins and solvents of petroleum origin.

#### Yield

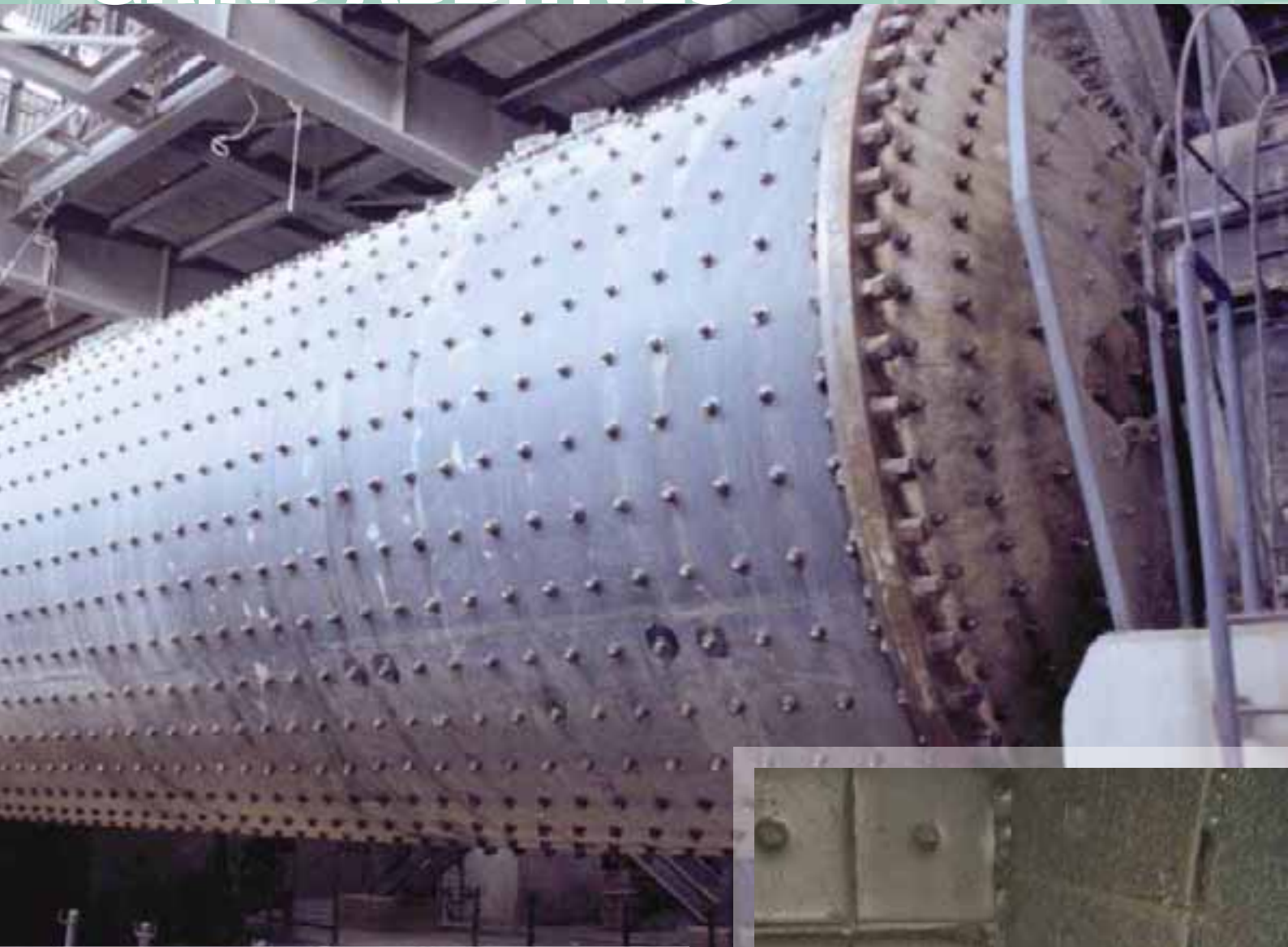
100-200 g/m<sup>2</sup> depending on the roughness of the surface.



- protective anti-evaporation product for **curing in the air of FRCM reinforcements**
- ready for use **without emulsions**
- for **warm and ventilated** environments



# GRIND ADDITIVES



Full cycle cement factory



Inside of cement mill

# RGA process additives for cements and hydraulic binders

## GENERAL CHARACTERISTICS OF THE PRODUCTS

For the industry of production of hydraulic binders and in particular of the cement, Ruredil proposes its range of (RGA Ruredil Grinding Admixtures) process additives:

RGA Series K, S, P, M, R, L.

These are weakly basic aqueous solutions to be added during grinding of binders, with dosages in weight which may vary between 0.3 and 3.0 Kg/t, depending on the products.

The following description refers to the basic products: normally it is preferred to balance and calibrate from time to time both the final form and the dosage of the additive, in relation to specific operational situations studied on site and in the laboratory.

## CHEMICAL-PHYSICAL ACTIONS OF PRODUCTS AND ADVANTAGES

### a. Dispersing action

It is essentially a dry fluidification and is present in both pure grinding aids (grinding admixtures) and in resistance increasers (quality improvers). It increases the grinding efficiency of the cement (or binder) mill, neutralizing the surface electrostatic charges, thus eliminating the packing problem. The result is increased dry fluidity in silos, ducts, etc. and - with the same finesse - the mill production rate increases by about 10-20%.

A more homogeneous and compact granulometry is also obtained, since the granulometry between 3 and 30 microns increases in percentage, and this fraction causes 90% of concrete resistance to normal curing.

### b. Complexing action

It optimizes the hydration reaction of the silicates through the formation of a coordination compound (chemical complex), which subsequently evolves in the final reaction products.

### c. Catalyst action

It increases the reaction rate of the cement hydration process; it is followed by an increase in resistance to all curing process usually. However, this increase has a maximum point (around 30-35%) that varies from additive to additive, according to the needs.

### d. Plasticizing action

It allows to obtain, in equal water/cement ratio, an increase of approximately 30% of spreading, which is particularly necessary in some pozzolanic and blast furnace cement products. It is expressed by the formation of a multi-molecular film which coats, by absorption, the hydrated cement particles, changing the electric potential.

Consequently, there is an increase in the repulsion between particles, which leads to a reduction of agglomeration, facilitating dispersion. With normal cements with  $C_3A$  content, absorption occurs preferentially where  $C_3A$  is located.

### e. Aerating action

It increases the level of air entrained in eminently hydraulic plastic limes, bringing it to about 18% with a fundamental increase in the plasticity and water retention. There are many resulting advantages (e.g. easier use, better resistance to frost-thaw cycles, and inhibition of efflorescence).

## Choice

## of the additive mixing system

The choice of the additive mixing method must be made on a case by case basis, depending on the type of infrastructure in the grinding circuit, the parameters and conditions of the grinding circuit.

In any case, there are two main possibilities for mixing:

### ① Directly on raw material feeding conveyors, through drainers.

This is by far the most widely used additive mixing system. Normally the additive is dropped on the clinker feeding or corrective material (e.g. pozzolanic material or slag) conveyor belt, if the amount is significant. For better distribution of the additive, drainers of various types are used, which drop the additive over the entire width of the tape.

### ② Directly in 1<sup>st</sup> or 2<sup>nd</sup> mill chamber, through a spray gun.

The release of the additive can be made through the cooling water spray gun, if it is available in the system, or through a special second additive spraying nozzle.

# Process additives for cement

## GRINDING AIDS AND STRENGTH ENHANCERS



### RGA/K

#### Grinding aids.

The additives RGA/K exert a dry dispersing action, allowing, with the same grinding fineness, an increase of mill production with a consequent reduction in specific energy consumption.

A more compact granulometry is also obtained, which allows the development of higher mechanical strength. They improve dry fluidity in silos, transport ducts, etc.

Dosage	Package
0.3-0.8 Kg/t	220 Kg drum
	1,000 Kg tank
	loose



### RGA/S

#### Enhancers of cement mechanical strength.

The RGA/D additives improve the mechanical strength especially in short curing periods, with a complementary grinding aid function, as provided by the additives of the RGA/K series.

These additives exert a catalyzing function on cement hydration.

They are recommended for cements with added pozzolanic material, granulated blast furnace slag, and fly ash.

Dosage	Package
1.5-3.0 Kg/t	220 Kg drum
	1,000 Kg tank
	loose



### RGA/P

#### Cement flow enhancers.

The multifunctional RGA/P additives increase the flow or spreading of concrete, with complementary resistance increase - especially with short curing periods - and grinding aid functions, as provided by the additives of the RGA/K and RGA/S series. They are also specific to avoid any possible syngenite phenomena.

Dosage	Package
0.5-3.0 Kg/t	220 Kg drum
	1,000 Kg tank
	loose



### RGA/M

#### Lime air-entraining products.

The RGA/M additives exert an air-entraining or air-entraining-dispersing action, substantially improving the lime characteristics, i.e. workability, entrained air, water retention, spreadability, adhesion, waterproofing, weather resistance, etc.

Dosage	Package
0.7-1.5 Kg/t	200 Kg drum
	1,000 Kg tank
	loose





### RGA/R

#### Grinding aids of cement flour.

Grinding aids of cement flour. The RGA/R additives allow increased production of the raw material grinding mills, where required by specific production needs. Moreover, in the semi-dry process (granulator plates), RGA/R additives improve the homogenization of cement flour and decrease water demand.

Dosage	Package
0.5-1.0 Kg/t	220 Kg drum
	1,000 Kg tank
	loose



### RGA/L

#### Grinding aids for calcium carbonate.

The RGA/L additives are specific grinding aids for calcium carbonate (limestone) and other types of minerals.

They exert a dry dispersing action, allowing an increase in mill production and greater dry fluidity.

The range includes products which do not alter the dielectric constant of calcium carbonate, for applications such as electrical cables.

Dosage	Package
0.8-1.2 Kg/t	200 Kg drum
	1,000 Kg tank
	loose

## ANALYTICAL ALPHABETICAL INDEX

### A

ADERAN	28
ANCORANTI NERI A PIASTRA	95
ANCORANTI NERI A RISALTO	94
ANCORANTI NERI AS AD ADERENZA	94
ANCORANTI NERI CON FORO	94
ANCORANTI NERI SPECIALI PER IL RIBALTAMENTO	95
ANCORANTI ZINCATI A PIASTRA	96
ANCORANTI ZINCATI A RISALTO	95
ANCORANTI ZINCATI AS AD ADERENZA	96
ANCORANTI ZINCATI CON FORO	96
ANCORANTI ZINCATI SPECIALI PER IL RIBALTAMENTO	96
ANKER 300	18
AQUACOAT	77
AQUACOAT BIT	77
AQUACOAT PRIMER	77

### B

BASKET	16
BENTOCCELL P	76
BENTORUR FIX	72
BENTORUR JOINT 10/20	72
BENTORUR JOINT DRY	72
BENTORUR JOINT S	72
BENTORUR STUCCO	72
BENTORUR TELO	76
BENTORUR TUBO	112
BENTORUR TUBO S	112
BOCCOLA RUR	107
BOCCOLA ZINCATI	98

### C

CASSEROIL	19
CASSEROIL 30	19
CASSEROIL 70	20
CASSEROIL 200/AV	20
CASSEROIL 200/R	20
CASSEROIL 200/RS	21

CASSEROIL 400/P	21
CASSEROIL 500 R	21
CASSEROIL 800/ES	21
CASSEROIL 900	22
CELERAN L	27
CELERAN L/CF	27
CONCRETAN 200 L	26
CONCRETAN FLOOR	26
CONCRETAN FLOOR H	26
CONCRETAN L/SP	26
CURING ECO	47
CURING S	115

### D

DECKENECK	7
DECKI	11
DELLE	11
DICHT-STOPFEN	11
DICHTKAPPE	15
DICHTKLEBER/HARTER	15
DICHTKUPPLUNG	15
DISTA	16
DISTANZIATORE A TRAPEZIO	15
DISTANZIATORE AD ANELLO	15
DISTANZIATORE IN CEMENTO	13
DIXI	6
DOPPELSTECKER	7
DOR	6
DOVAL	8
DRANFIX	6
DREHLOCK	18
DREWI	7
DRIN-KAPPE	11
DRIN-STOPFEN	11
DRUFA-DREIKANT	14
DRUFA-KURZ	14
DRUFA-RUND F	14
DRUFA-SCHLANGE	14
DRUFA-STOPFEN	15

DRUFA-BOCK	13
DRUFA-KNOCHEN	13
DRUFA-ROHR	15
DRUFA-VIERKANT	14
DRUNTER	6
DRUNTERLEISTE IV/ DRUNTERLEISTE V	9
DRUNTERRING	7
DRUNTERSTAB 50	7
DRUWELL	9
DUKO	8
DURASIL	19
DURCH	8
DURCHLASS	11
DURFEST	18

### E

ELEMENTO SINGOLO BWA	17
ELEMENTO A STAFFA BWA	17
EPOXYRUR INJECT	114
ERGOMIX 200	22
ERGOMIX 202	22
ERGOMIX 206	23
ERGOMIX 209	23
ERGOMIX 209 H	23
ERGOMIX 4000	23
ERGOMIX 4005	24
ERGOMIX 5500	24
ERGOMIX 6000	24
ERGOMIX 6005	24
ERGOMIX 6100	24
EXOCER 22	19
EXOCER FP	40
EXOCER FP 70	40
EXOCER G1/G1 FAST	30
EXOCER G2	42
EXOCER G3 PVA	42
EXOCER ONE/ONE FAST	41
EXOCER PVA TX	41
EXOCER RAPID	40

F		O		RURECOAT 1	
FISIS® 15	102	OSMO RASOCEM	76	RURECOAT 3	40
FISIS® 30	101	OSMO RASOCEM PLUS	76	RURECOAT 4	47
FLUIDAL 233	25			RURECOLL	29
FLUIMENT 33/M	25			RURCONCRETE	47
FLUIMENT 40	25			RURECUT MONO H/ MONO SH	113
FLUIMENT R	25			RURECUT SPEED 60	114
FLUIMENT SAE 25	25			RUREDIL X BAR	58
FSK TUBO	11			RUREDIL X BAR INJECT	58
H-I-J		P		RUREDIL X FIBER 19	62
ISP 3	27	PAVING FAST REPAIR	43	RUREDIL X FIBER 20	63
JET H	107	PAVING LEVEL	43	RUREDIL X FIBER 54	62
JET HS	107	PAVING PROTECT	43	RUREDIL X FIBER 54 S	62
		PAVING SLOPE	43	RUREDIL X JOINT	56
		PAVING TOTAL	42	RUREDIL X JOINT INJECT	56
		PGR	10	RUREDIL X JOINT RS RESIN	59
		PIASTRA PANNELLO S	100	RUREDIL X LAM	58
		PIASTRINA SPESSORAMENTO	100	RUREDIL X LAM RS100	58
		POMPA C10	22	RUREDIL X MESH C10	57
		POMPA C10	115	RUREDIL X MESH GOLD	54
		PRIMER PER PAVING TOTAL	42	RUREDIL X MESH M30	57
				RUREDIL X MESH TC30	57
				RUREDIL X MORTAR 25	57
				RUREDIL X MORTAR 750	54
				RUREDIL X QUADRIWRAP 380	59
				RUREDIL X WRAP 310	59
				RUREDIL X WRAP PRIMER	59
				RUREDIL X WRAP RESIN	59
				RUREFAST 3 - ASTA	108
				RUREFAST 3 - BOCCOLA 100	108
				RUREFAST 3 - CONTRASTO	109
				RUREFAST 3 - FUNE SINTETICA	109
				RUREFAST 3 - PUNTONE	109
				RUREFLEX MONO LV	114
				RUREFLEX SPEED	114
				RUREFOAM	114
				RUREGLASS 120	46
				RUREGLASS 160	46
				RUREGLASS 220 AR	46
K		R			
KAPTOR®	103	RGA	118		
KONNEKTOR® CONNESSIONE A "C"	99	RASOCEM FLEX	75		
KONNEKTOR® CONNESSIONE ZIGRINATA	99	RASOCEM FLEX MONO	75		
KONNEKTOR® CONNETTORE C 10	99	RASOCEM GRIP	74		
KONNEKTOR® DISTANZIATORE	99	RASOCEM NI	41		
KONNEKTOR® FORCINA	99	RASOCEM PLUG/PLUG FAST	112		
KONNEKTOR® SOSTEGNO FISSO	99	RASOCEM RA	41		
KONNEKTOR® SOSTEGNO SCORREVOLE	99	REDI BLOCK	31		
		RESINFIX 400 CE	31		
		RESINFIX EPOXY 400 CE	31		
		RETARDITE MT	27		
		R-SYSTEM GUAINA A PERDERE	96		
		R-SYSTEM GUAINA GOMMA CIRCOLARE	97		
		R-SYSTEM GUAINA IN ACCIAIO	97		
		R-SYSTEM GUAINA GOMMA SAGOMATA	97		
		R-SYSTEM RIDUTTORE IN NEOPRENE	98		
		R-SYSTEM TESTA SFERICA UNIVERSALE	98		
		RUR ANKER	18		
		RUREBAND FIX MS	113		
		RUREBAND FIX WET	113		
		RUREBAND NEO	113		
L					
LEVOBAND	75				
LEVOSTAB 99	81				
LIEVOCEM CP/83 S	28				
LIEVOCEM CP/83 S2	28				
M					
MENSOLA DI EMERGENZA S	100				
MENSOLA GIRELLA S	100				
MENSOLA TIRELLA S	100				
MONOLIT	27				
MP/MP5	8				

## ANALYTICAL ALPHABETICAL INDEX

RUREGOLD JX JOINT	56	SNAKE	16
RUREGOLD MJ JOINT	56	SRA	28
RUREGOLD MX CALCESTRUZZO	55		
RUREGOLD MX MURATURA	55	<b>T</b>	
RUREGOLD XA MURATURA	55	TAPPO PER BOCCOLA	98
RUREGOLD XR MURATURA	55	TAPPO SKV	12
RUREGOLD XS CALCESTRUZZO	54	TAPPO UNIPRO	12
RUREGOLD XT CALCESTRUZZO	54	TASSELLO MENSOLA	100
RUREGUM FIX	73	THERMOCOAT MONO	46
RUREGUM JOINT 3V/8V	73	TMP	6
RUREGUM MASTICE	73		
RUREGUM MASTICE WA	73	<b>U-V</b>	
RUREGUM PLUG	77	UNI - DINKI	10
RUREPLUG KIT	77	VITE A FUNE FLESSIBILE	98
RUREPOX C	30		
RUREPOX C/BP	30	<b>Z</b>	
RURESTOP KIT	74	ZICK ZACK	9
RURESTOP TUBO	74		
RUREWALL B1	45		
RUREWALL COAT 30	47		
RUREWALL DRY	45		
RUREWALL F	44		
RUREWALL I	44		
RUREWALL PVA TX	45		
RUREWALL R/Z	44		
RUREWALL T	45		
RUREWALL Z	44		

<b>S</b>	
SATUROL BLOCK	29
SATUROL C	29
SCATOLA MAGNETICA S	100
SCATOLA PER TIRELLA S	100
SCATOLA POLISTIROLO S	100
SCHAL-STOPFEN	8
SGOCCIOLATOI SG	12
SIRION	10
SMUSSO TRIANGOLARE AL	12
SMUSSO TRIANGOLARE SM	12

To obtain the latest version of technical sheets and safety sheets of the entire Ruredil product range, visit the company's website **[www.ruredil.it](http://www.ruredil.it)**



QR Code



## LEGEND OF PICTOGRAMS

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APPLICABLE BY BRUSH



CAN BE SPRAYED  
WITH PLASTER SPRAYER



APPLICABLE WITH ROLLER



PUMPABLE



APPLICABLE WITH TROWEL



MIX WITH MIXER



APPLICABLE WITH SPATULA



WET EARTH  
CAN ALSO BE PREPARED



APPLICABLE WITH  
SPONGE FLOAT



MIXABLE IN CONCRETE MIXER



SPRAY WITH  
PUMP C10



DO NOT MIX IN CONCRETE MIXER

---

## WARNINGS

The user shall be responsible for confirming whether the product is suitable for its intended use, taking all responsibility from the use of the product. To test the discount class applicable to this price list, it is advisable to contact your Ruredil sales reference. Ruredil reserves the right to change product formats and packaging with no previous notice.

In any case, the relevant technical data sheet available on [www.ruredil.it](http://www.ruredil.it) shall be read before use.

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