THORO®
Waterproofing Systems
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Welcome to the World of Thoro®

In 1912, construction engineer Edward H. Canon had no idea his Thoro product line would help to generate a major player in the global specialty construction product market. His company, Standard Dry Wall Crafts, had a simple goal: to solve problems for the construction industry by providing the best products for the job.

Standard Dry Wall Crafts was renamed into Thoro System Products, a company that obtained a global reputation for quality and reliability where it counts – jobsite after jobsite.

With almost 100 years of experience in concrete repair and waterproofing, Thoro has the know-how to provide the right solution, whatever the problem. The goal of Thoro has never changed – offer innovative and job specific solutions for the construction industry. Its unrivalled track record is backed by a product range renowned for quality and durability.

Thoro products are universally approved by internationally recognized test institutes in countries like Germany, UK, Norway, Finland, Spain, Belgium, USA, Italy and many others.

All Thoro products are produced according the most strict procedures and norms, while being backed by research & development facilities.

The Thoro production unit in Ham, Belgium is certified under EN ISO9001 and EN ISO14001.

Thoro opens European headquarters and production facility in Mol, Belgium 1976
First polymer modified repair mortar was launched 1986
Launch of flexible, crack bridging cementitious waterproofing slurry 1990
Acquisition of Thoro by SKW.MBT nowadays BASF Construction Chemicals 1999
Launch of a new range of waterproofing and repair products 2009

Thorosel WR
Thoro Waterpack
Thoro Swell
Thoro Structurite Level
Waterproofing

The Thoroseal product range offers waterproofing solutions for most below and above ground structures, in positive as well as in negative water pressure situations.

Thoro products are used to waterproof basements, water retaining structures, water treatments plants, concrete roofs, service tunnels and much more. Elastomeric coatings are used where dynamic movement causes waterproofing problems. Active leaks are easily, quickly and permanently blocked using Waterplug.

Perforations trough concrete elements are elastically sealed using Thoro Waterpack. Day or cold joints are treated against water passage using Thoro Swell, the hydroswelling systems from Thoro.

Thoro offers a complete and comprehensive waterproofing range, using original and unique products.

The European standard EN 1504 entitled: Products and systems for the repair and protection of structures which is fully implemented since January 1st, 2009 is organized in 10 parts.

EN 1504, Part 2 deals with product requirements for concrete protection and EN 1504, part 8 describes the quality control and evaluation of conformity. The tasks to comply with the norm require initial type testing, continuous factory production, control and certification by an independent institute, the so called “notified body”.

Thoro waterproofing membranes have demonstrated their properties in external testing and fulfill the requirements stipulated in EN 1504, part 2 for products in accordance with repair principle 1 (protection against ingress) and principle 2 (moisture control). Not only the Thoro waterproofing products are used to protect concrete, but are also applicable to other mineral substrates as masonry, renders or block work.
Thoroseal®

Thoroseal is a cement-based waterproofing coating for concrete and masonry, which resists positive and negative water pressure. When mixed with water or a mixture of water and Thoro Acryl 60, it forms a slurry which can easily be brush or spray applied in two layers in a total thickness of 2 mm.

**Product benefits:**
- Can be applied in case of both positive and negative water pressure
- Above and below ground level
- Water vapour permeable
- High bond strength – becomes an integral part of the substrate
- Approved for contact with drinking water
- Reduced consumption

**Technical data:**
- Resists up to \( \geq 4 \) bar negative water pressure
- Compressive strength: \( \geq 45 \) MPa after 28 days
- Adhesion strength: \( \geq 3 \) MPa
- Adhesion strength after freeze-thaw: \( \geq 3 \) MPa
Thoroseal® FC

Thoroseal FC is a non decorative cement-based waterproofing coating, specially used on the outside face of below grade structures to protect them against water penetration. It can be applied on concrete and masonry walls.

Although waterproof, Thoroseal FC is highly water vapour permeable. It can be applied using a Thoro brush or a spraying equipment in a thickness of approx. 2 mm in two coats.

**Product benefits:**
- For application on below ground structures
- Water vapour permeable
- High bond strength – becomes an integral part of the substrate
- Reduced consumption
- Resistant to mechanical damages, during soil filling operations

**Technical data:**
- Pot-Life: ≥ 45 minutes at 20 °C
- Compressive strength: ≥ 40 MPa after 28 days
- Adhesion strength: ≥ 2.5 MPa
- Resistance to positive water pressure: ≥ 4 bar

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**Thoro® Acryl 60**

Thoro Acryl 60, a 100% acrylic polymer, is a bonding or modifying agent for sand/cement mixes, but specially designed for use with other Thoro products like Thoroseal or Thoro Tect CR.

Maximum dilution: 1/3

Approved for contact with drinking water
Thoroseal® WR

Thoroseal WR is a waterproofing render to be applied on concrete and masonry walls. Typical applications involve tanking of basements, water reservoirs, tunnels, swimming pools, lift shafts, etc. and waterproofing walls of showers, bathrooms and toilets before fixing tiles.

**Product benefits:**
- Can be applied up to 15 mm in one layer
- Can be trowel and spray applied
- Withstands up to 15 m of water pressure at 10 mm thickness
- Permeable to water vapour
- Sulphate resistant for waterproofing in marine environments
- Can be applied above and below ground level

**Technical data:**
- Pot-Life: ≥ 30 minutes at 20 °C
- Resists water pressure up to 1.5 bar
- Compressive strength: ≥ 55 MPa after 28 days
- Adhesion strength: ≥ 2.5 MPa
Thoroseal® FX100

Thoroseal FX100 is an elastomeric, crack-bridging cement-based waterproofing coating for concrete and masonry. It can be used above and below ground level. It is specially suited for protection of concrete that is in contact with aggressive waters.

This two-component product resists positive as well as negative water pressure. When mixed, it forms a slurry which can easily be brush or spray applied in an application thickness of approx. 2 mm in 2 layers.

Product benefits:
- Crack bridging capacity up to 1.2 mm
- High elasticity, even after permanent immersion
- Protects concrete against carbonation
- Water vapour permeable
- Approved for contact with drinking water
- Resist the oxidizing action of ozone or active carbon, which allows the material to be used in water purification installations
- High chemical resistance. Resists the action of acidic solutions with a pH as low as 2
- Resistant to soft water and high alkaline solutions

Technical data:
- Resists negative water pressure up to 1 bar
- Resists positive water pressure up to 1.5 bar
- Pot-Life: ≥ 60 minutes at 20 °C
- Permeability to CO₂: μ > 75000
- Adhesion strength: ≥ 0.8 MPa
- Adhesion strength after freeze-thaw: ≥ 1 MPa
- Static crack bridging properties: Class A4 (> 1.25 mm)
- Dynamic crack bridging properties Class B 3.1 (0.30 mm)

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adhesion strength by pull-off test</td>
<td>≥ 0.8 MPa</td>
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<tr>
<td>Installation resistance</td>
<td>50°C ± 5 m</td>
</tr>
<tr>
<td>Water vapour permeability</td>
<td>μ &gt; 75000</td>
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<tr>
<td>Adhesion strength</td>
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<tr>
<td>Adhesion strength after freeze-thaw</td>
<td>≥ 1 MPa</td>
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<tr>
<td>Static crack bridging properties</td>
<td>Class A4 (&gt; 1.25 mm)</td>
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<tr>
<td>Dynamic crack bridging properties</td>
<td>Class B 3.1 (0.30 mm)</td>
</tr>
<tr>
<td>Abrasion resistance</td>
<td>Pass</td>
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<tr>
<td>Trafficability</td>
<td>Class C1</td>
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<tr>
<td>Adhesion to thermal compatibility</td>
<td>A 4 (+2°C)</td>
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<td>- Freeze/Thaw with salt</td>
<td>A 2 (-30°C)</td>
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<tr>
<td>- Dynamic</td>
<td>B 3.1 (-23°C)</td>
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<tr>
<td>- Static</td>
<td>B 2 (-30°C)</td>
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<tr>
<td>Fire resistance</td>
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<td>Resistance to severe chemical attack</td>
<td>Class C3</td>
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<tr>
<td>Fire resistance</td>
<td>Pass</td>
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<tr>
<td>Corrosion resistance</td>
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</table>

EN 1504-2 Flexible cementitious waterproofing and protective coating
Thoroseal® FX110

Thoroseal FX110 is an elastomeric, cement-based waterproof coating for concrete and masonry. It can be applied using a Thoro brush or traditional spraying equipment in a thickness of approx. 2 mm in two coats. It is typically used for waterproofing water-retaining structures and as a part of the Thoro basement-waterproofing system, in areas or structures sensitive to movement, vibrations and slight settlement.

Thoroseal FX110 can also be used to protect concrete structures from the aggressive actions of water penetration and freeze-thaw.

Product benefits:
- High crack bridging capacity
- Good elasticity, even after permanent immersion
- Water vapour permeable
- Reduced consumption

Technical data:
- Resists negative water pressure up to 1.0 bar
- Resists positive water pressure up to 1.5 bar
- Pot-Life: ≥ 60 minutes at 20 °C
- Adhesion strength: ≥ 1.0 MPa
- Adhesion strength after freeze-thaw: ≥ 1.0 MPa
- Static crack bridging properties: Class A2
- Dynamic crack bridging properties: Class B1
Thoroseal® FX 1K

Thoroseal FX 1K is a one component elastic, lightweight waterproof and protective coating for concrete and masonry. Suitable for the protection of concrete against water, carbonation, freeze thaw damage and de-icing salts.

Due to his light weight properties, Thoroseal FX 1K has a high yield and low consumption rate.

**Product benefits:**
- Crack bridging capacities up to 2 mm
- Elastic even at low temperatures
- Water vapour permeable
- Protects concrete against carbonation
- Rapid curing, allows early serviceability
- Freeze Thaw resistant
- Waterproof, resists negative and positive water pressure
- UV resistant, can be used as final coating
- Reduced transport and storage cost as well as packaging waste

**Technical data:**
- Resist negative water pressure up to 1 bar
- Resist positive water pressure up to 5 bar
- Pot life: ±45 minutes at 20°C
- Adhesion strength: 2,0 N/mm²
- Adhesion strength after freeze-thaw: 1,7 N/mm²
- Permeability to CO₂, Sd value: 104 m
- Static crack bridging properties: Class A4
- Dynamic crack bridging properties: class B 3.1
Thoro® Swell

Thoro Swell is a hydroswelling system composed by two products; the paste (Thoro Swell Paste) and a preformed strip (Thoro Swell Strip), that when used in day or cold joints between concrete elements, absorbs by osmotic phenomena water that passes through the joint and expands sealing the hollow spaces in the concrete and thus prevent water penetration.

Detailing is critical in waterproofing. Joints and cracks have to be carefully treated to ensure proper waterproofing of the structures.

**Product benefits:**
- Permanent hydroswelling capacities even after dry-wet cycles
- Remains permanently flexible
- Adjusts to movements of joints and structures
- Simple installation ensures success and increases speed of application
- No welding required

**Technical data:**
- Swelling capacity Thoro Swell Paste: minimum 320% of its original volume
- Swelling capacity Thoro Swell Strip: minimum 400% of its original volume

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*Graph showing swelling capacity over time for Thoro Swell Paste and Thoro Swell Strip.*

*Diagram showing Thoro Swell Paste and Thoro Swell Strip in a joint.*
Thoro® Flexi-Joint

Thoro Flexi-Joint, is an elastomeric cement-based mortar for sealing joints or cracks in concrete and masonry.

Resists positive and negative water pressure. The product is a two component system that when mixed, forms a mortar that can applied by pointing gun or trowel.

The material allows for movements accommodation of the joint up to 15% of its width.

**Product benefits:**
- Long term elastic behaviour, even after constant water immersion
- Can be applied on damp substrates
- Approved for contact with drinking water
- Long term durable adhesion to damp substrates
- Can be overcoated with Thoroseal FX100 or Thoroseal FX110 after 3 days

**Technical data:**
- Elongation at break: approx. 60%
- Movement accommodation approx. 15%
- Tensile strength: 0.45 N/mm²
- Shore A hardness: 35

**Detailing for effective joint sealing**

- Recommended design: \( w \geq 2 \cdot d \)
Active leaks, cracks, anchors etc. are points where water can penetrate with high pressure. Therefore, these points require specific attention and products that can seal water penetrations instantaneously in a durable and safe way. Waterplug is a very fast setting plugging mortar to stop active leaks in concrete and masonry. It stops active running water under pressure through joints, cracks and holes, where a normal mortar would be washed away and resin would not bond.

It can also be used to waterproof the weakest point in your basement or reservoir – the kicker joint (the joint between the floor slab and the wall).

Product benefits:
- The material slightly expands during hardening, ensuring a permanent seal
- Chloride-free, will not promote corrosion of reinforcement
- Approved for contact with drinking water
- Mechanical characteristics similar to concrete
- Ultra-rapid setting for instant leak plugging
- Effectively blocks water, no injection procedures required
- Can be overcoated after just 20 minutes with consequent waterproofing slurry

Technical data:
- Final setting time 2 – 3 minutes
- Compressive strength:
  - $\geq 10$ MPa after 20 minutes
  - $\geq 50$ MPa after 28 days

Detailing for an effective and permanent water seal
Thoro® Waterpack

Thoro Waterpack is a visco-elastic compound suited to prevent water leakages through wall, pipe and cables inlets in basements. It prevents penetration of standing and running ground water by expanding, and maintains its elasticity to allow slight movements.

Product benefits:
- Resists water pressure
- Remains permanently flexible
- Self-healing capacity for small damages
- Adjusts to movements of cables and pipes
- Immediate sealing, no curing time needed

Technical data:
- Density: 1.2 – 1.5 g/cm³
- Resists up to 3 m water pressure
- Application thickness, minimum 100 mm
Thoro® specification guide

Selecting the right product for each application…

With this specification guide you can easily find which product to be used for your needs. Contact your nearest BASF Construction Chemical technical office or your nearest Thoro distributor for further or detailed advice.

<table>
<thead>
<tr>
<th>Product</th>
<th>Positive</th>
<th>Negative</th>
<th>Above</th>
<th>Below</th>
<th>Active leakage</th>
<th>Moving cracks/joints</th>
<th>Surface</th>
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<td>Thoro Waterpack</td>
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Thoro® offers:

- Thoroseal® – cementitious waterproofing products
- Waterplug® – fast setting cementitious waterstop
- Thoro® Swell – hydroswelling gaskets
- Thoro® Acryl 60 – acrylic bonding agent
- Thoro® Structurite – concrete repair mortars
- Thoro® Crete – horizontal concrete repair mortars
- Thoro® Lastic – elastomeric protective coatings
- Thoro® Enviroseal – water repellents
- Thoro® Grout – cementitious precision grouts