



TECHNONICOL



MANUAL

for hot applied hybrid polyurea waterproofing systems

Areas of application – terraces & podiums, metal roofs, balconies, basements & retaining walls, planters, swimming pools & water features, existing polyurethane membranes, existing polyurea membranes etc.

KNOWLEDGE. EXPERIENCE. CRAFTSMANSHIP.

Table of Contents

1. Introduction	3
2. Product portfolio	5
A. Hybrid polyurea waterproofing materials	6
2.1. TECHNONICOL ULTRATHANE SUPER	6
B. Surface repairing materials	7
2.2. TECHNONICOL EPOXY PRIMER 021	7
2.3. TECHNONICOL SBR Latex	8
2.4. TECHNONICOL ULTRACEM REPAIR MC	9
2.5. TECHNONICOL ULTRACEM REPAIR PMC	10
2.6. SUMMARY COMPARISON TABLE	11
2.7. TECHNONICOL TECHNO-MIX WL	12
3. Brief description of TECHNONICOL Ultrathane Super	13
4. Equipment	15
5. Storage conditions	17
6. Surface preparations	19
6.1. Grinding and chipping	20
6.2. Groove cutting	21
6.3. Angle fillet	22
6.4. Metal protrusions	23
6.5. Repair of pinholes and potholes	24
7. Construction joint treatment	27
8. Pipe penetration treatment	29
9. Pre-application testing	33
10. Material mixing procedure	35
10.1. TECHNONICOL EPOXY PRIMER 021	36
10.2. TECHNONICOL ULTRATHANE SUPER	36
10.3. TECHNONICOL SBR LATEX	37
10.4. TECHNONICOL ULTRACEM REPAIR MC	37
10.5. TECHNONICOL ULTRACEM REPAIR PMC	38
10.6. TECHNONICOL TECHNO-MIX WL	38

11. Application process	39
11.1. Moisture check before primer application	40
11.2. Surface temperature check before primer application	40
11.3. Ambient humidity check before primer application	41
11.4. Wind conditions during application	41
11.5. Application of TECHNOMICOL Epoxy Primer 021	42
11.6. Application of TECHNOMICOL Ultrathane Super	43
11.7. Protection of verticals and upstands prior to spray	44
11.8. Termination in polyurethane coating systems	45
11.9. Dry film thickness (DFT) check using elcometer	45
11.10. Dry film thickness (DFT) check using vernier caliper	46
11.11. Application curing	47
12. Final testing & protection	49
12.1. Water post pond test	50
12.2. Separation layer	50
12.3. Protective screed on horizontal surface	51
12.4. Protective plastering on vertical surface	52
12.5. Screed curing	52
12.6. Saw cutting in protection screed	53
13. Conclusion	55

hot applied hybrid polyurea
waterproofing systems

1.

Introduction

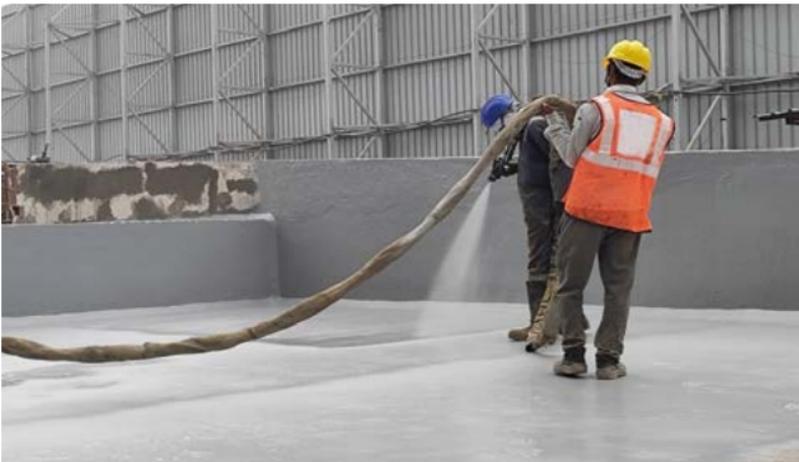
1. Introduction

Hybrid Polyurea Waterproofing System

TECHNONICOL Ultrathane Super Hybrid Polyurea is an advanced, high-performance waterproofing and protective coating system that combines the beneficial properties of both polyurethane (PU) and pure polyurea technologies. Engineered for demanding applications, this system provides exceptional waterproofing performance, fast curing, high elongation, and superior durability across a wide range of substrates and structures.

Key Features – Hybrid polyurea waterproofing

- **Superior substrate bonding:**
Formulated to develop a robust mechanical and chemical bond with a variety of substrates including concrete, metal, and masonry.
- **Fast setting:**
Rapid curing within seconds after application allows for quicker installation and reduced downtime, even in large-scale or time-sensitive projects.
- **Excellent toughness and flexibility:**
Combines high tensile strength with outstanding elongation properties, enabling the membrane to accommodate structural movement and thermal cycling without cracking or delamination.
- **Humidity tolerant:**
Can be applied in environments with high atmospheric humidity without compromising performance or curing quality.
- **Packaging:**
Metal drums of 200 litre each component (400 litre Set).



2.

Product portfolio

2. Product portfolio: Hybrid Polyurea Waterproofing

A. Hybrid polyurea waterproofing materials

2.1. TECHNINICOL ULTRATHANE SUPER

Hybrid polyurea membrane for waterproofing and coating

TECHNINICOL ULTRATHANE SUPER is a two-component spray applied hybrid polyurea polyurethane that forms a continuous, solid, 100% waterproof membrane without joints or overlaps and completely adhered to the base. Suitable for waterproofing, protection and sealing in general.

Due to its liquid application, it is ideal for repair or recoating on top of other PU/polyurea membranes range, once these are already cured.

Area of application:

Roofs, terraces, and balconies, tanks, channels, pipelines, renewing old membranes, parking and sport areas, wet areas, bridge decks, overpasses, and podiums.

Coverage rate: ~ 1.6–1.65 kg/m² (2 coats) for ~1.5 mm DFT.

Technical characteristics:

Properties	Performance
Density at 23°C, g/cm ³ (ISO 1675)	1.10±0.02
Solids content, % (ISO 1768)	100
Tear strength at 23°C, N/mm (ASTM D 624)	50±10
Tensile strength at 23°C, Mpa (ASTM D 412)	15±2
Puncture resistance (ASTM E 154)	>1000
Elongation at break at 23°C, % (ASTM D 412)	450±100
Adherence to concrete, MPa, (ASTM D4541)	≥2
Static crack bridging ability, mm (ASTM C 836)	≥2
Tack free Time at 23°C, 65% R.H., Sec	30~60
Curing time at 23°C, h	12

B. Surface repairing materials

2.2. TECHNINICOL EPOXY PRIMER 021

Two component epoxy primer (base + hardener)

TECHNONICOL EPOXY PRIMER 021 is a two-component (base + hardener) surface preparation primer that improves bonding, waterproofing, and durability before coating.

It is transparent, solvent-free, and rigid after curing.

When the two parts are mixed, they react and form a strong, waterproof layer that sticks firmly to the surface and also provides excellent resistance to chemicals. It can be applied by brush, roller or spatula.

Area of application:

- It can be used on moist concrete (up to 5% moisture)
- It can be used as an inter-coat adhesion between topcoat and intermediate coat
- Exterior RCC surfaces include sloping roofs, masonry walls or facades.
- It is also utilized for waterproofing treatment at pipe penetration areas.

Consumption:

- 200–250 g/m² for standard applications
- Allow 6–8 hours drying time.
- The next layer must be applied within 24 hours after the primer is used.

Technical characteristics:

Properties	Performance
Application Method:	Brush or roller
Pot Life (100 g mix)	25–30 min at 25°C, 15–20 min at 35°C
Overlay Time (Max)	24 hours
Curing Time:	6-8 hours
Application Temperature	5°C to 35°C
Colour	Transparent finish

2.3. TECHNINICOL SBR Latex

Latex based polymer for waterproofing, repair & rendering

TECHNONICOL SBR Latex a single-component liquid chemical (polymer) is a cement additive that improves bonding, waterproofing, and durability. When added in cement, it makes the cement stronger, flexible, waterproof, and long-lasting. It also helps the cement stick better to surfaces and prevents water from passing through. For making high performance polymer-modified mortar, it is usually added in the ratio of 10% of the cement weight.

Key properties:

- Bond coats as a primer for concrete repair
- Mortar modification for repair renders
- Improves adhesion to concrete, masonry, and steel reinforcement
- Enhances flexural and tensile strength, reducing cracking

Area of application:

Waterproofing of terraces, sunken slabs, basements, retaining walls, water tanks, balconies, lift pits, and RCC roofs, etc.

Mixing:

- For bond coat, mix 1:1 TECHNINICOL SBR Latex and cement and apply on a clean surface.
- For polymer-modified mortar, add 10% TECHNINICOL SBR Latex of cement weight.

Technical characteristics:

Properties	Performance
Specific Gravity	1.01 ± 0.02
Chemical Resistance	Resistance to mild, acids, sulphates, alkalis
Bond Strength, N/mm ²	> 3
Flexural strength at 28 days, N/mm ²	> 7

Packaging:

20 Kg, 50 Kg

(SBR) Styrene–Butadiene Rubber

2.4. TECHNONICOL ULTRACEM REPAIR MC

Polymer modified high strength micro concrete

TECHNONICOL ULTRACEM REPAIR MC is a single-component, cement-based, high-strength, polymer-modified mortar used for repairing broken or damaged concrete. It is a ready-to-use material made of cement, fine sand, and special additives. After mixing with water, it becomes a strong, durable, and easy-to-apply mortar.

The material can be applied in thicknesses of up to 100 mm in one layer using a trowel, by hand, or with a pump. For deeper repairs, additional thickness can be achieved by applying it in multiple layers.

Area of application:

- Jacketing of beams/columns
- Filling core pipe penetrations, tie-rod holes, honeycombed concrete
- Structural repair and strengthening of damaged concrete elements
- Suitable for vertical, horizontal, and overhead applications

Mixing:

- Flowable mix: 3.50–4.50 L water per 25 kg
- Plastic mix: 3.00–3.75 L water per 25 kg
- Adjust water as needed for temperature and site conditions; trial batches recommended

Technical characteristics:

Properties	Performance
Compressive Strength, N/mm ² (Typical) at 27 °C, as per IS 4031	Free flowing Mix (W/P= 0.16),
1 day, N/mm ²	> 15
7 days, N/mm ²	> 45
28 days, N/mm ²	> 60
28 days Comp. Strength, Blended with 50% of 10 mm aggregate, N/mm ² (Typical)at 27 °C	> 63

Packaging:

Supplied in 25 kg HDPE bags

(MC) Micro-Concrete

2.5. TECHNICONICOL ULTRACEM REPAIR PMC

Polymer modified cementitious fibre reinforced repair mortar

TECHNICONICOL ULTRACEM REPAIR PMC is a ready-to-use repair mortar made with cement, polymers, and special fibres. These materials make it strong, durable, and resistant to corrosion, shrinkage cracks, and damage from carbonation. It is used for both structural and surface (cosmetic) repairs of concrete.

The mortar can be applied in 10–50 mm thickness on vertical surfaces and 25–30 mm thickness on overhead surfaces, using a trowel by hand or a mortar spray machine.

Area of application:

- Making corner fillets, repair of honeycombed concrete areas.
- Restoration of damaged or deteriorated concrete

Mixing:

For 25 kg powder pack, place about 3.5-4 liters fresh water in the mixer and add the total quantity of powder and mix with mechanical mixer in operation for 1-2 minutes.

Technical characteristics:

Properties	Performance
Appearance	Free-flowing grey powder
Compressive Strength (N/mm ² @ 27°C, W/P = 0.15)	1 day: > 18 3 days: > 35 7 days: > 50 28 days: > 60
Flexural Strength (28 days), N/mm ²	> 10
Tensile Strength (28 days), N/mm ²	> 5
Bond Strength (28 days), N/mm ²	> 15
Pot Life (27°C), minutes	> 30

Packaging:

Supplied in 25 kg HDPE bags

(PMC) Polymer Modified Mortar

2.6. SUMMARY COMPARISON TABLE

ULTRACEM Repair MC / ULTRACEM Repair PMC

Feature	Ultracem Repair MC (Microconcrete)	Ultracem Repair PMC (Polymer Modified Mortar)
Form	Flowable, pourable micro-concrete	Thixotropic, trowel-applied mortar
Placement	Poured/pumped into formwork, voids	Applied directly on surface (no formwork needed)
Application thickness	20–100 mm per pour (extendable with aggregate)	10–50 mm vertical, 25–30 mm overhead per layer
Best for	Structural jacketing, void filling, honeycombs	Surface patch repairs, spalled concrete
Consistency	Free flowing/self-levelling	Non-sagging, workable mortar
Key advantage	Excellent for large, inaccessible areas	Excellent adhesion, crack resistance, durability



2.7. TECHNICAL TECHNO-MIX WL

Integral waterproofing compound for concrete and plaster

TECHNONICOL TECHNO-MIX WL is a special liquid integral compound added to concrete or plaster to make them waterproof. It is chloride-free and comes as a brown liquid.

When mixed with cement, it reacts inside the concrete to form a water-repelling layer. This layer blocks water from entering through small pores and capillaries, reducing water absorption and leakage.

Area of application:

- Basements, roofs, water tanks, and other structure where protection from water is important.
- Excellent for internal and external plaster of buildings etc.

Mixing:

100 g per 50 kg of cement (max. 0.2% by weight of cement).

Technical characteristics:

Properties	Performance
Appearance:	Brown liquid
Specific Gravity (25°C)	1.06 ± 0.02 g/ml
pH Value	≥ 7
Chloride Content (BS 5075 Part 1)	Nil
Recommended Dosage	100 g per 50 kg of cement (max. 0.2% by weight of cement)

Packaging:

Available in 200 ml, 1 L, 5 L, 10 L, 20 L, and 100 L containers.

3.

**Brief description
of TECHNOMICOL
Ultrathane Super**

3. Brief description of TECHNINICOL ultrathane super

Material Composition and Mixing

Hybrid Polyurea is a two-component, spray-applied system composed of the following:

- Component A: Aminated Polyols
- Component B: Isocyanate

These two components are supplied in separate, pre-packed drums and are designed to be mixed in a 1:1 ratio by volume using a plural-component spray machine.

During application, both components are heated and pumped under high pressure through a spray gun, where they instantly mix and react to form a fast-setting, seamless, and elastomeric membrane.

Important Notes:

- Proper heating and pressure settings must be maintained as per manufacturer guidelines to ensure optimal mixing and performance.
- The spray system must be operated by trained applicators to achieve consistent film thickness and avoid defects such as pinholes or poor adhesion.
- Equipment must be cleaned thoroughly after use to prevent clogging and curing within the system.



4.

Equipment

4. Standard equipments used in hybrid polyurea waterproofing

1. Plural component spray machine

- Used for mixing and spraying the two components (Isocyanate + aminated polyols).
- Example: Graco reactor E-XP2, etc.

2. Spray gun

- Mounted at the end of the hose for on-site application.
- Example: Graco fusion gun, AP Gun

3. Heated spray hoses

- High-pressure, temperature-controlled hoses that maintain material viscosity during application.

4. Compressor

- Supplies compressed air to power spray machines and operate pneumatic systems.

5. Generator

- Provides consistent power supply in remote or under-construction sites.

6. Anemometer

- Handheld device used to measure wind velocity before spraying.

7. Elcometer

- Used to measure the dry film thickness (DFT) of the applied membrane.

8. Surface grinder

- Used for mechanical surface preparation before primer application.

9. Primer applicator (roller or brush)

- For manual application of primer before polyurea spray.

10. Quartz sand & sand sprinkling tools

- For broadcasting dry sand over wet primer for mechanical bonding.

11. Protective polythene sheets

- For masking verticals and upstands before spraying.

12. Personal protective equipment (PPE)

- Includes full-body suit, respirator, gloves, safety goggles, and boots.

5.

Storage conditions

4. Material storage conditions

(For TECHNINICOL Ultrathane super - hybrid polyurea)

■ Storage temperature:

Store between +10°C and +30°C. Avoid freezing temperatures and prolonged exposure to temperatures above +35°C, which can degrade the chemical stability of the components.

■ Humidity control:

Keep in a dry, moisture-free environment. Both Part A (Isocyanate) and Part B (Resin/Polyol blend) are sensitive to moisture, which can lead to foaming, gelling, or pressure build-up inside the drum.

■ Drum handling & position:

Store drums vertically on wooden or plastic pallets to prevent contact with ground moisture. Ensure the drum lids remain tightly sealed when not in use to avoid air or moisture ingress. Do not stack more than one drum over another unless packaging is certified for vertical stacking.

■ Ventilation and fire safety:

Store in a well-ventilated, flame-proof area. Keep away from open flames, welding activities, and sources of ignition. Isocyanates are flammable and can emit vapors under high heat.

■ Shelf Life:

The typical shelf life is 12 months from the date of manufacture, when stored in original, unopened containers under recommended conditions. Once opened, use the contents as soon as possible; exposure to air can compromise performance, especially for isocyanate.

■ Labeling & rotation:

Ensure all drums are clearly labeled with product name, batch number, and expiry date. Follow FIFO (First-In, First-Out) principle during consumption to avoid expiry or deterioration. (Use the oldest stock first—the materials that were received or manufactured first should be used first, before newer stock.)

■ Transport conditions:

During transport, protect drums from direct sunlight, rain, and physical damage. Use covered trucks or containers for long-distance movement.

■ Spill containment & emergency handling:

Store with proper spill containment trays or bunds to prevent leaks from spreading. Maintain access to Material Safety Data Sheets (MSDS) and ensure trained personnel handle any spill or fire hazard situations.

6.

Surface preparations

6. Surface preparation guidelines

Proper substrate preparation is critical to the success of any waterproofing system.

6.1. Grinding and chipping

Remove laitance and loose particles.

■ Grinding:

A mechanical surface preparation method using rotary grinders to remove laitance, smooth surface irregularities, and expose sound concrete.

■ Chipping:

A manual or mechanical process using chisels or chipping hammers to break and remove loose, damaged, or weak concrete.



Both processes are essential for achieving a clean and profiled substrate before waterproofing.

Ensures the surface is free from oils, grease, curing compounds, and any flaky concrete.

Enhances surface roughness for better adhesion of waterproofing systems.

Provides a mechanical key for bonding between substrate and waterproofing layer.



Proper surface preparation increases durability and service life of the waterproofing system.

The final prepared surface must be structurally sound, completely dry, and free from any loosely adhered particles or contaminants.

6.2. Groove cutting

Crack treatment using polymer modified mortar

- Groove cutting is the process of creating a controlled cut (usually 10 mm wide × 10 mm deep) along visible cracks in concrete or plastered surfaces. Typically done using a mechanical cutter or angle grinder with a diamond blade. Purpose is to expose the full depth of the crack and provide space for proper filling with repair material.
- Grooves are cut in 'V' or 'U' shape depending on the repair requirements.
- Helps in achieving better mechanical anchorage and bonding for the crack filler.
- Surface inside the groove must be cleaned thoroughly using air or brush to remove dust, laitance, and debris.
- The cleaned groove is filled with PMM, which offers enhanced flexibility, adhesion, and waterproofing properties.
- PMM helps accommodate minor future movements and prevents water ingress through treated cracks.
- Proper curing of the filled groove is essential before applying the final waterproofing layer.
- Groove cutting is a standard practice in surface preparation to ensure long-term waterproofing performance over cracked areas.



- Open all visible cracks by cutting a groove 10 mm wide and 10 mm deep using a hand-held angle grinder equipped with a diamond blade.



- Apply TECHNONICOL SBR Latex bond coat prepared by mixing 1-part TECHNONICOL SBR Latex and 1 part cement (by weight) inside the cleaned grooves using a brush to ensure proper adhesion of the subsequent PMM.



- Fill the grooves completely with PMM prepared by mixing 1-part cement, 3 parts sand, and 10% TECHNONICOL SBR Latex bonding agent (by weight of cement). Finish the surface smoothly, ensuring proper compaction and strong bonding with the substrate.

- After 15-20 minutes of repair, apply one coat of TECHNONICOL SBR Latex over the patched area to enhance bonding with the upcoming waterproofing layer.

6.3. Angle fillet

(50 × 50 mm) at floor-wall junction with PPM

What is an angle fillet?

- An angle fillet is a triangular or curved coving made at the junction between horizontal (floor) and vertical (wall) surfaces.
- It eliminates the sharp 90° angle at the junction, allowing seamless transition for waterproofing membranes or coatings.
- Usually constructed using a mortar mix or PMM.

Why is angle fillet important in waterproofing?

- Removes sharp internal corners where waterproofing membranes often fail due to stress concentration.
- Improves membrane adhesion by allowing smooth turns without wrinkling or bridging.
- Reduces risk of leakage at vulnerable floor-wall junctions.
- Provides structural support to waterproofing materials, preventing cracks and edge lifting.
- Ensures continuity and uniform thickness of waterproofing layers.



- Apply a bond coat made of 1-part TECHNONICOL SBR Latex and 1 part cement (by weight) at the floor-wall junction before placing the PPM for angle fillet formation. This ensures enhanced adhesion between the substrate and the fillet mortar.



- Form a 50 mm × 50 mm angle fillet at the floor-wall junction using PMM prepared with 1 part cement, 3 parts sand, and 10% TECHNONICOL SBR Latex (by weight of cement). Shape the fillet with a trowel and ensure smooth finishing, proper compaction, and full contact with the bond coat.



- Apply a bond coat consisting of 1-part TECHNONICOL SBR Latex and 1 part cement (by weight) above the cured angle fillet using a brush. This enhances adhesion between the fillet and the subsequent waterproofing layer.

6.4. Metal protrusions

Sealing around embedded items

Metal protrusions include embedded elements like pipes, anchors, rods, bolts, conduits, sleeves, etc., that pass through or emerge from concrete surfaces. These are critical penetration points that are highly prone to leakage and must be treated carefully during waterproofing.

Purpose and benefits

- Provides watertight sealing around high-risk penetration points.
- Prevents water ingress through shrinkage cracks, gaps, or poor bonding at metal-concrete interfaces.
- Enhances durability and bond strength using TECHNONICOL SBR Latex-modified mortar.
- Ensures compatibility and continuity with the waterproofing system applied over it.



Treatment method

- Clean the surface around the embedded metal item thoroughly to remove dust, rust, oil, or laitance.
- Apply a bond coat of 1 part TECHNONICOL SBR Latex + 1 part cement (by weight) around the base of the protrusion.



- Prepare PMM using: 1 part cement, 3 parts well-graded sand and 10% TECHNINICOL SBR Latex (by weight of cement).
- Pack and seal the area around the metal item with the PMM, ensuring full coverage and tight compaction.

- Finish the surface smoothly with a trowel and ensure no voids or gaps remain.
- Allow curing as per site conditions before proceeding with the final waterproofing layer.

6.5. Repair of pinholes and potholes

Using polymer modified mortar

During surface preparation, if pinholes, honeycombs, or potholes are observed in concrete substrates, they must be repaired before waterproofing application.

Pinholes

- Tiny, shallow surface voids usually caused by trapped air during concrete placement or poor surface finishing.
- Typically, less than 5 mm in diameter.
- Often found in polyurethane coatings, screeds, or surface mortars.

Potholes

- Larger, deeper surface voids or cavities resulting from poor compaction, honeycombing, or degradation.
- Can range from 10 mm to several centimetres in diameter and depth.
- Often occur due to improper concrete placement, segregation, or rebar corrosion.

Importance of repair

- Ensures a uniform and sound substrate for waterproofing.
- Eliminates potential leakage points.
- Enhances adhesion and performance of waterproofing membranes.
- Prevents long-term deterioration due to moisture ingress.

Repair procedure

- Inspect and identify all pinholes and potholes on the concrete surface before waterproofing.
- Clean the defective area thoroughly to remove dust, laitance, loose material, and contaminants.

- Pre-wet the area with clean water to reach saturated surface dry (SSD) condition.
- Apply a bond coat using a mix of 1 part TECHNOMICOL SBR Latex and 1 part cement (by weight).
- Prepare PMM using: 1 part cement, 3 parts well-graded sand and 10% TECHNOMICOL SBR Latex (by weight of cement). Fill the defects completely using PMM
- For pinholes: use a putty knife or brush.
- For potholes: use a trowel and ensure proper compaction to avoid air entrapment.
- Finish the surface smoothly, flush with the surrounding area.
- Allow to cure adequately before applying any waterproofing membrane or coating.





7.

Construction joint treatment

7. Construction joint treatment

Construction joint is a planned discontinuity or break in a concrete structure that occurs when a portion of the concrete is poured at one time, and the remaining portion is poured later. It is intentionally created to allow for the continuation of work without compromising the structural integrity of the element.

Where construction joints are found:

- Slab-to-slab joints (horizontal)
- Wall-to-wall or wall-to-slab interfaces (vertical/horizontal)
- Lift pits, water tanks, basements, podiums, and retaining walls

1. Chasing of joints

Chase and open all construction joints in a "V"-shaped groove with dimensions 25 mm (width) x 25 mm (depth) using appropriate mechanical tools.

2. Surface cleaning

Thoroughly clean the grooves to remove all dust, loose particles, and laitance using a wire brush and compressed air or vacuum.

3. Filling of grooves

Fill the prepared grooves with a polymer-modified mortar consisting of:

- 1 part cement
- 3 parts clean, well-graded sand
- 10% TECHNOMICOL SBR Latex (by weight of cement) as a bonding agent.

Chase and open all Construction joints in a "V"- Shaped groove with dimensions of 25mm (width) x 25mm (depth) using mechanical tools and same shall be filled with Polymer Modified mortar



Typical section - construction joint groove opening

8.

Pipe penetration
treatment

8. Pipe penetration treatment

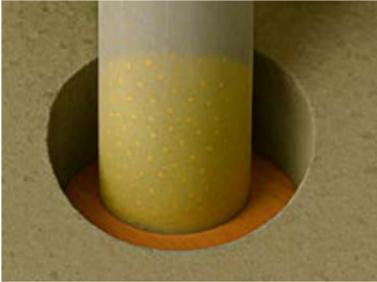
Special attention is given to pipe entries, a common leakage point.

Step-by-step treatment



■ STEP 1

Pre-concreting: Plywood shuttering is typically installed from the underside before concrete filling to provide support and shape to the concrete structure, ensuring a smooth finish and accurate dimensions.



■ STEP 2

Pre-concreting: Apply TECHNOMICOL Epoxy Primer 021 on the PVC pipe, immediately sprinkle coarse sand, and cure for 24 hours.



■ STEP 3

TECHNOMICOL Ultracem Repair MC Filling: After the TECHNOMICOL Epoxy Primer 021 has fully cured, fill the core area with TECHNOMICOL Ultracem Repair MC around the annular space of pipes.



■ STEP 4

During final finishing of micro-concrete, leave a 10 mm deep groove along the repair edge.



■ STEP 5

Groove Sealing: After 24 hours of air curing, fill the groove with TECHNONICOL PU sealant or Epoxy mortar for sealing to ensure long-term watertightness and durability.



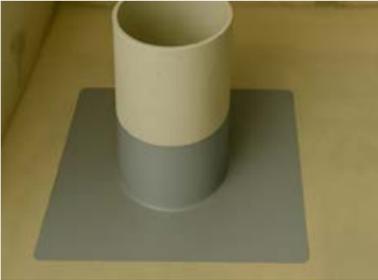
■ STEP 6

After 24 hours of TECHNONICOL micro-concrete filling, de-shutter the cores from the underside and repair the annular spaces around pipes with micro-concrete or TECHNONICOL SBR Latex polymer modified mortar.



■ STEP 7

Fabric Fixation: Clean the surface around pipe penetrations and fix 45 GSM Fabric with a 50-100mm width extension around the pipes, as per the reference picture.



■ STEP 8

Coating & Flashing: Apply TECHNONICOL Ultrathane / Ultrathane ECO coating in minimum 2 layers around the pipes, ensuring the fabric is properly embedded, at the required consumption rate.



9.

Pre-application testing

9. Pre-application testing

Conduct a pre-ponding test to identify any visible or hidden cracks and potential leakage zones especially around pipe penetrations, slab joints, and floor-wall junctions.

This process is crucial for two main reasons:

- It helps detect and address substrate defects before waterproofing begins.
- It verifies the structural integrity of the surface and confirms the readiness of the slab for further treatment.



Important Note: After the test, ensure that the surface is completely dry before proceeding with epoxy primer application, as residual moisture can negatively affect bonding and long-term performance of the polyurethane system.

10.

**Material mixing
procedure**

10. Material mixing procedure

10.1. TECHNINICOL EPOXY PRIMER 021

Step-by-Step mixing instructions



- Measure the components accurately in the ratio of 3 parts Base : 2 parts Hardener by weight.
 - Pour both components into a clean mixing container.
 - Mix thoroughly using a slow-speed mechanical stirrer (avoid high-speed mixing to prevent air entrainment) until the blend is completely uniform in colour and consistency.
-
- Prepare only the quantity of material that can be applied within the specified pot life:
 - 25-30 minutes at 25°C
 - 15-20 minutes at 35°C

10.2. TECHNINICOL ULTRATHANE SUPER

These two components are supplied in separate, pre-packed 200 kg drums and are designed to be mixed in a 1:1 ratio by volume using a plural-component spray machine.



- During application, both components are heated and pumped under high pressure through a spray gun, where they instantly mix and react to form a fast-setting, seamless, and elastomeric membrane.

10.3. TECHNICAL SBR LATEX

Recommended uses & mixing guidelines

1. Bond Coat:

- Take 1-part TECHNICAL SBR Latex and 1 part cement in (1:1 ratio).
- Manually mix with a trowel or use a mechanical stirrer until smooth and lump-free.
- Apply immediately on a clean, roughened surface.
- Apply the next layer while the coat is still tacky.

2. Polymer-modified mortar:

- Take cement and sand in (1:3 ratio) 1 part cement, 3 part sand.
- Add TECHNICAL SBR Latex equal to 10% of cement weight.
- Mix manually until a creamy, workable mortar is formed.
- Use immediately for plastering or repairs.

10.4. TECHNICAL ULTRACEM REPAIR MC

Recommended uses & mixing guidelines

- Flowable mix: 3.50-4.50 L water per 25 kg
- Plastic mix: 3.00-3.75 L water per 25 kg
- Use a slow-speed (250 - 350 rpm) mechanical stirrer for best results.
- Add the TECHNICAL Ultracem MC slowly into the recommended volume of clean water while mixing.
- Mix for about 5 minutes until homogeneous; hand mixing is not recommended.



10.5. TECHNONICOL ULTRACEM REPAIR PMC

Recommended uses & mixing guidelines

- For a 25 kg bag, add 3.5 - 4 litres of fresh water to a mixing vessel
- Slowly add the powder while mixing mechanical stirrer for 1-2 minutes until uniform
- Slight water adjustments may be made based on ambient temperature and desired consistency

10.6. TECHNONICOL TECHNO-MIX WL

Recommended uses & mixing guidelines

Dosage:

- 100 g of additive per 50 kg of cement
(max. 0.2% by weight of cement).

Method:

- Take the required amount of cement.
- Add the Techno-Mix WL integral compound (100 g per 50 kg cement).
- Mix thoroughly with water and aggregates as per the mix design until a uniform, lump-free mixture is achieved.
- Use the mix immediately for casting or plastering.



11.

Application process

11. Application process of hybrid polyurea waterproofing

11.1. Moisture check before primer application



- Excess moisture can inhibit primer adhesion, cause blistering or delamination, and compromise the long-term performance of the waterproofing system.
- Always check the moisture content of the substrate before starting primer or coating application.
- Use a moisture meter to ensure the surface is dry and suitable for coating.

- Moisture content must be less than 5% before proceeding, to ensure proper adhesion and performance of the system.

11.2. Surface temperature check before primer application

It is essential to check the surface temperature before applying TECHNOMICOL Epoxy Primer 021, as temperature directly affects the curing time, adhesion, and performance of the primer.



- Check surface temperature before applying TECHNOMICOL Epoxy Primer.
- The recommended application temperature is between 5°C and 35°C.
- Avoid application outside this range to ensure proper curing and adhesion.

11.3. Ambient humidity check before primer application



Before applying TECHNICONOL Epoxy Primer, it is crucial to measure the relative humidity of the ambient air, as it directly influences curing behavior and adhesion.

- Measure the relative humidity of the ambient air before starting primer application.
- Ensure humidity is below 85%, as higher levels may affect adhesion and curing of the coating.

11.4. Wind conditions during application

To ensure effective and efficient application of the hybrid polyurea system, environmental conditions - especially wind speed - must be carefully monitored.

Avoid spraying in high wind conditions:

- Spraying should not be carried out when wind velocity exceeds 20 km/hour, as excessive wind can lead to material overspray, uneven film build-up, and significant product wastage.
- Use of anemometer: a handheld anemometer must be used to measure wind speed at the job site prior to the start of application. Spraying should only commence if wind speed is within acceptable limits.

Recommended practice:



In case of high wind conditions:

- Erect temporary wind barriers if spraying must proceed.
 - Reschedule the application to a calmer time of day.
 - Use spray shields or curtains in open or elevated areas.
- Maintaining proper environmental conditions during application is critical for achieving the desired coating performance, uniform thickness, and long-term durability.

11.5. Application of TECHNINICOL Epoxy Primer 021

TECHNONICOL Epoxy primer 021 is a two-component resin-based coating used as the first layer in waterproofing, flooring, and protective coating systems. It plays a crucial role in surface preparation by ensuring strong adhesion between the substrate (like concrete) and the next layer of the system, such as polyurethane or epoxy coatings.

- Apply the primer to the prepared surface using a roller only.
- Ensure even coverage at a rate of 200-250 g/m² or 4–5 m²/kg per coat.
- Allow the primer to dry fully before proceeding with the next layer.
- Metal coins shall be fixed above primer at specified intervals to check the DFT of applied polyurea coating with elcometer by non-destructive method

Sprinkling of quartz sand on wet primer:

Broadcasting dry quartz sand onto freshly applied primer is optional and can enhance mechanical interlocking and adhesion of subsequent waterproofing layers. The next layer of polyurethane coat must be applied within 24 hours to ensure optimal bonding and performance.

Dry film thickness (DFT) check using elcometer:

Verify that the applied TECHNINICOL Ultrathane Super polyurea coating meets the specified DFT. Place metal coins at selected test locations on the primed substrate, apply the polyurea coating over the coins, allow it to fully cure, and then measure the DFT using an elcometer. Take readings at multiple points to confirm compliance with the minimum required thickness.



11.6. Application of TECHNINICOL Ultrathane Super

TECHNINICOL ULTRATHANE SUPER is a high-performance, two-component, hot-applied, spray-applied, 100% solids hybrid polyurea waterproofing membrane. It is designed for rapid application and instant setting, forming a seamless, elastomeric, and durable waterproof barrier.

The system is applied in two perpendicular coats to achieve a minimum total dry film thickness of 1.5 mm, with a typical material consumption of 1.6–1.65 kg/m² for the complete system.

Application method:

The two components - Part A (aminated polyols) and Part B (isocyanate) — are mixed and sprayed using a plural-component, high-pressure, heated spray machine in a 1:1 volume ratio. The product is hot-applied, and both components should be pre-heated to 70–80°C before spraying to ensure proper mixing and reaction.

Recommended equipment parameters:

- Spray Machine Type: High-pressure plural-component spray machine (e.g., GRACO Reactor E-XP2 or equivalent)
- Working Pressure: Minimum 150–180 bar (approximately 2100–2600 psi) at the spray gun
- Heating Temperature: 70–80°C (for both components A & B)
- Output Performance: Approx. 6–8 liters/minute, depending on machine model and hose length
- Hose Temperature: Maintain at 70°C ±5°C during spraying

Application Details:

- Apply directly onto the properly primed substrate using a continuous, uniform spray technique.
- The initial setting time is typically 30–60 seconds, allowing rapid film formation.



- Full curing is achieved within 12–24 hours, depending on ambient conditions.
 - Maintain a minimum overlap of 100 mm over adjacent membrane joints to ensure continuity.
 - Complete coating of the designated area should be carried out in a single continuous operation from one machine start-up to prevent cold joints or interface defects.
- Apply the second coat perpendicular to the first layer to ensure uniform coverage and eliminate pinholes.

11.7. Protection of verticals and upstands prior to spray

Protection of verticals and upstands prior to spray

To prevent unintended overspray and ensure a clean, professional finish, all adjacent areas not intended to be coated must be adequately masked before application begins.

Polythene Sheet Masking

- Prior to the commencement of spray application, cover all vertical surfaces, upstands, pipes, conduits, and any exposed elements with polythene sheets or other suitable protective coverings.
- Secure the polythene sheets tightly using tape, clamps, or adhesive sprays to ensure they remain fixed during spraying.
- Ensure the protective sheets extend adequately beyond the expected spray zone to contain any potential overspray or rebound.

Purpose and Benefits

- Prevents contamination or staining of non-target surfaces.
- Maintains site cleanliness and reduces post-application cleaning efforts.
- Ensures a professional and defined finish at termination points and edges.

Proper masking is a simple yet essential step that enhances application quality and site safety.



11.8. Termination in polyurethane coating systems

Why is termination necessary?

Termination is done to secure the edge of the waterproofing membrane and protect it from failure due to environmental or structural factors.



- Always terminate TECHNOMICOL Ultrathane Super at a minimum height of 300 mm on vertical surfaces (or as per project specifications).
- The coating must be terminated into a 10 mm × 10 mm groove (chase cut) at the termination line.
- This groove ensures mechanical anchoring of the membrane and prevents edge lifting or peeling over time.
- After the coating application, the groove should be sealed using PMM, PU sealant, or epoxy putty to ensure a watertight finish.
- Use masking tape during application to achieve a neat, clean termination line.



11.9. Dry film thickness (DFT) check using elcometer

To ensure the performance and durability of the TECHNOMICOL Ultrathane Super waterproofing system, it is essential to verify that the applied coating achieves the specified dry film thickness (DFT).

- DFT Measurement Procedure Using Elcometer:
- Prior to spray application, place metal coins on the substrate surface at selected test locations.
- These serve as a reference point, allowing accurate measurement without damaging the membrane.
- Spray apply the polyurea system as per the standard procedure, ensuring full coverage over the embedded coins.
- After the coating has fully cured, place the probe of the elcometer directly above the coin.

- The device will record the thickness of the coating in millimetres.
- Record the readings at multiple locations and compare them with the specified minimum required thickness (e.g., 1.5 mm).
- If thickness is found to be insufficient, recoat the area as per standard guidelines.



Purpose:

- Ensures compliance with design specifications.
- Verifies uniformity of application.

Note: Always follow the manufacturer's calibration and handling procedures when using the Elcometer or equivalent thickness gauges.

11.10. Dry film thickness (DFT) check using vernier caliper



- After completing both coats of TECHNOMICOL Ultrathane Super, perform a DFT test to verify the final film thickness.
- Use a vernier calliper (on test patches) or electronic DFT gauge suitable for polyurethane coatings.
- Ensure the achieved DFT meets the specified system requirement for durability and performance.

Take readings at multiple points to confirm uniform application.

11.11. Application curing

Curing is the process that allows the TECHNONICOL Ultrathane Super polyurea coating to fully react and harden, forming a durable, waterproof, and chemical-resistant membrane.



- After application, allow the TECHNONICOL Ultrathane Super coating to self-cure for a minimum of 12-hours.
- Ensure the surface is protected from water, dust, and mechanical damage during the curing period.
- Do not cover, flood, or overlay the coating until full curing is achieved.



12.

**Final testing
& protection**

12. Final testing & protection

12.1. Water post pond test

Why is a water pond test done?

Because it's the most reliable way to confirm that the waterproofing system is 100% watertight before covering it.

- Conduct a water pond test to verify the effectiveness and integrity of the applied polyurethane waterproofing system.
- Fill the treated area with clean water up to 50 mm height above the finished coating level.
- Maintain the ponding condition for a minimum duration of 48-72 hours without interruption.
- The test should be carried out after 7 days of final coat application, depending on ambient temperature and curing conditions.
- Ensure there is no leakage, dampness, or seepage observed during or after the test.
- Record and document test results before proceeding with any protective layers or tile fixing.

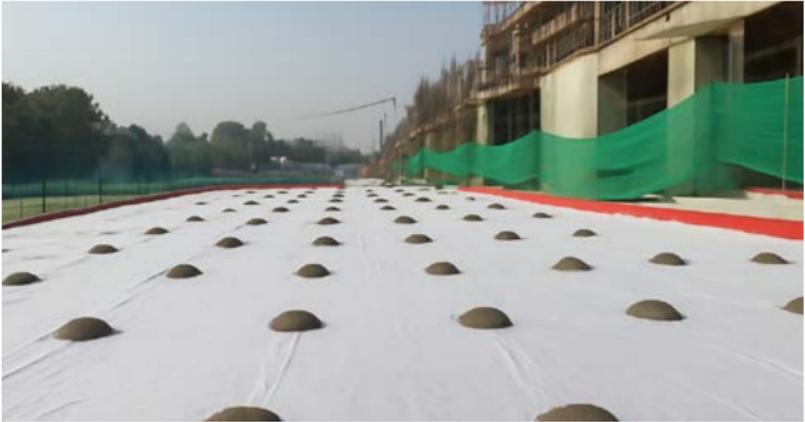


12.2. Separation layer

Why is a separation layer used?

The non-woven geotextile separation layer is placed over the cured TECHNOMICOL Ultrathane Super waterproofing membrane to serve as a protective and functional buffer between the membrane and the overlying cement-sand screed.

- Place 100-300 GSM non-woven geotextile fabric over the fully cured waterproofing layer to act as a separation and protection barrier.
- Ensure the geotextile covers the entire area without wrinkles or folds, with proper overlaps at joints (typically 50–100 mm).
- Over the geotextile, apply a protective cement-sand screed (usually 50–75 mm thick), with: proper slope (typically 1:100) for effective drainage.
- Levelling pads or reference points to maintain uniform screed thickness.
- Cure the screed as required before allowing foot traffic or tiling.



12.3. Protective screed on horizontal surface

Laying of protective and slope making concrete screed of average 75 mm thick. Concrete screed shall be laid in slope of 1:100 as indicated on drawing or as approved, maintaining the thickness of minimum 50 mm at pipe outlets / drainage points and shall be well compacted, levelled, finished and cured for min 7 days by ponding with water.



12.4. Protective plastering on vertical surface

- Apply a 10–12 mm thick protective plaster over vertical surfaces treated with waterproofing.
- Prepare a cement–sand mortar in the ratio of 1:4 (1 part cement: 4 parts sand) and add TECHNOMICOL Techno-Mix WL waterproofing integral compound at a dosage of 100 gram per 50 kg bag of cement. The mix should be uniform, with good workability and excellent adhesion. Ensure the surface is evenly finished, free from cracks or voids.
- Apply TECHNOMICOL Epoxy Primer 021 on the cured polyurea surface at a consumption rate of 75 g/m², immediately broadcast coarse sand to form a mechanical key, and allow 24 hours curing to ensure proper adhesion with the plaster.
- The plaster acts as a protective barrier against mechanical damage, UV exposure, and weathering.
- Cure the plaster adequately to achieve the desired strength and durability.



12.5. Screed curing

Curing is essential to allow the cement-sand screed to gain its full strength and durability. Without proper curing, the screed can become weak, brittle, or cracked.

- Cure the screed by ponding with clean water for a minimum of 7 days to achieve proper strength and durability.
- Ensure continuous water coverage during the curing period to prevent surface cracks and shrinkage.
- Protect the area from foot traffic or load during curing.



12.6. Saw cutting in protection screed

Saw cutting is performed to control cracking in the screed due to thermal expansion, shrinkage, and structural movement.

- Perform saw cutting of the protection screed within 48 hours of concreting, once the initial setting has occurred but before full curing. This forms control joints that help prevent random shrinkage cracks during hardening. Cutting within this period ensures the concrete is strong enough to avoid edge breakage, yet soft enough for clean, precise cuts. After groove cutting, the concrete should undergo minimum 7 days of proper ponding with clean water to achieve optimal strength and durability.
- Cut grooves of 5 mm (wide) × 20 mm (deep) in a straight line, forming panels of approximately 3.0 × 4.0 meters to control thermal and shrinkage cracks.
- After 28 days of complete curing, clean the grooves thoroughly and fill with PU sealant using a sealant gun and spatula to ensure flexible joint sealing.





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Mumbai, India



Adler Railway Station
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13.

Conclusion

13. Conclusion

TECHNONICOL Ultrathane Super hybrid polyurea is a next-generation, high-performance material known for its exceptional durability, flexibility, and chemical resistance. Its fast-curing nature, seamless finish, and ability to withstand extreme environmental conditions make it a preferred choice for long-term waterproofing and protective coatings across industrial, commercial, and infrastructure projects.

Engineered to perform under demanding conditions, polyurea offers superior resistance to abrasion, impact, and moisture ingress compared to conventional coatings. Its excellent adhesion to a wide range of substrates—including concrete, metal, and insulation—makes it highly versatile in both new construction and renovation projects.

When stored, handled, and mixed correctly, polyurea delivers predictable, consistent results, minimizing failure risks and maximizing lifecycle performance. It is not just a coating—it is a structural protective solution designed to enhance durability and reduce long-term maintenance costs.

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