BRIDGE DECK WATERPROOFING SYSTEM BASED ON

HYPERDESMO®-300

ALCHIMICA® BUILDING CHEMICALS

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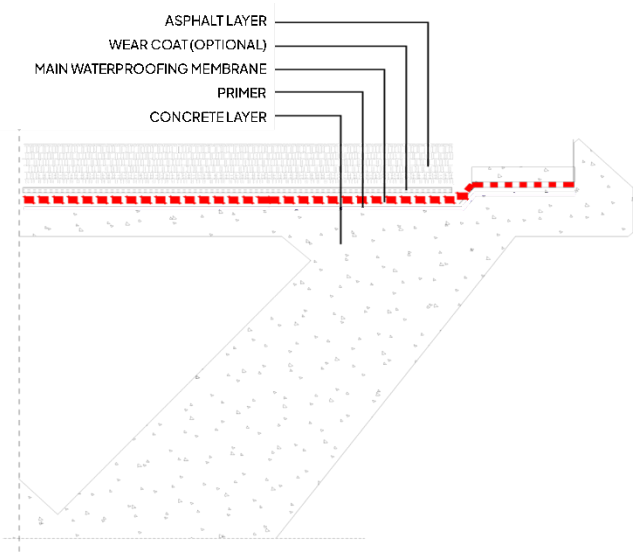
WHY CHOOSE ALCHIMICA IN BRIDGE DECK WATERPROOFING PROJECTS?



Waterproofing bridge decks is a critical aspect of this infrastructure maintenance and longevity. Bridge decks are particularly vulnerable to water damage due to their direct exposure to environmental elements and heavy traffic loads. The critical need to waterproof bridge decks, particularly beneath asphalt overlays, underscores why ALCHIMICA's waterproofing systems are an ideal choice for this application. While bridge components can indeed be made from various materials such as steel, wood, or composite materials, bridge decks are typically constructed from reinforced concrete due to its strength, durability, and ability to be formed into the necessary shapes and spans required for bridge construction.

Waterproofing exposed concrete structures is crucial due to the porous nature of concrete and its susceptibility to water damage. Without proper waterproofing, water infiltration can cause structural deterioration, especially in reinforced concrete structures with steel reinforcement embedded within the concrete matrix. Waterproofing serves as a protective barrier, preventing water from penetrating the concrete and preserving its integrity. It also extends the lifespan of the structure by shielding it from the harmful effects of water, such as corrosion of reinforcing steel and freeze-thaw cycles. Additionally, waterproofing prevents mold and mildew growth, which pose risks and further structural issues. Although the initial investment in waterproofing may seem significant, it is justified when compared to the future costs of repairing water damage. Proactively addressing high quality waterproofing can avoid costly repairs and replacements, making it a cost-effective long-term strategy.

Waterproofing bridge decks is essential for several reasons. The bridge deck, being the surface directly exposed to traffic and environmental elements, is particularly vulnerable to damage. Without effective waterproofing, water can infiltrate the deck, leading to several detrimental effects. Road salts used for de-icing can penetrate the bridge deck and accelerate the corrosion of steel reinforcements. The waterproofing system must prevents chlorides from reaching the steel, thus protecting the structural integrity of the deck. Also, in colder climates, water infiltration can lead to freeze-thaw cycles. Water that enters cracks and pores can freeze and expand, causing significant damage. Waterproofing

prevents water ingress, mitigating the risk of freeze-thaw damage. Additionally, waterproofing protects the bridge deck from water and chemical infiltration, significantly enhancing its durability and extending its lifespan. A well-maintained and correct waterproof bridge deck provides a safer driving surface by preventing the formation of water damage and other structural weaknesses, enhancing the overall safety and performance of the bridge deck for all users.

Asphalt overlays are a cost-effective method to constantly improve the quality and durability of bridge decks without the need for complete reconstruction. These overlays address issues like cracks, potholes, and surface irregularities, extending the road's life and performance. The waterproofing system used under the asphalt overlay must be highly effective and compatible with asphalt. This is crucial for accommodating structural movements and expansion joints. The waterproofing system must provide a strong bond to the substrate and be compatible with both the bridge deck and the asphalt on top. It must withstand the stress and wear of the road traffic. The materials must possess specific characteristics such as water resistance, flexibility, chemical resistance, and durability to withstand weather conditions, traffic wear, and environmental factors. Waterproofing systems need to be user-friendly and easy to apply by professionals, minimizing downtime during application materials and reduces the risk of errors. These are also important considerations.

ALCHIMICA has developed advanced waterproofing systems specifically designed to address the challenges of waterproofing bridge decks, particularly under asphalt overlays. ALCHIMICA's innovative PU-based materials achieve performance levels that are unmatched in the industry. These membranes provide excellent adhesion, flexibility, and durability. They are resistant to water, chemicals, and temperature variations, making them ideal for bridge deck applications. Importantly, ALCHIMICA's systems ensure compatibility with both the bridge deck substrate and the asphalt overlay, and they offer superior chemical resistance to withstand exposure to de-icing salts and other harmful substances. ALCHIMICA's systems are designed for easy and efficient application, reducing downtime, risk of errors and labor costs. The systems form a durable, monolithic, seamless barrier that protects the bridge deck from water damage. Furthermore, ALCHIMICA's waterproofing systems are designed to withstand heavy traffic loads, harsh weather conditions, and chemical exposure, ensuring that the bridge deck remains in optimal condition, providing long-term protection and performance.

ALCHIMICA is a pioneer and a global leader in complete polyurethane waterproofing solutions. With pedigree and expertise in this field, ALCHIMICA overcomes the challenges that others deem impossible. The technological depth and know-how of ALCHIMICA allow the formulation of innovative PU-based materials that can achieve performance levels that are not typically met. ALCHIMICA has been active in the research, development, and production of

building chemicals for 42 years providing solutions for liquid waterproofing, reparations, sealing, flooring, and ETICs. The know-how of ALCHIMICA in Research and Development laboratories in construction, repair, and renovation solutions of buildings and infrastructure meets international industry standards.

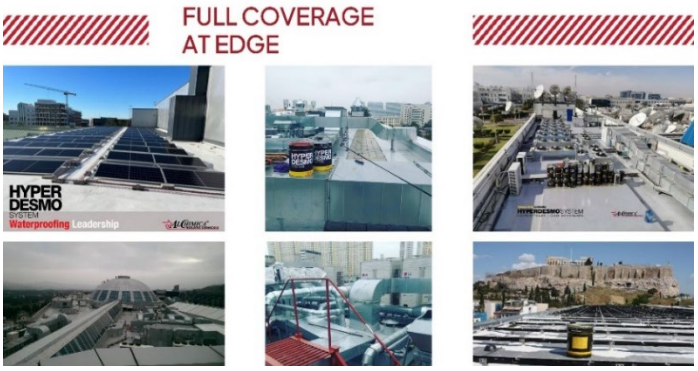
ALCHIMICA'S POLYURETHANE LIQUID MEMBRANES

To ensure effective waterproofing, it is crucial to select PU membranes that meet specific criteria: impermeability, flexibility, durability, breathability, and resistance to environmental factors such as UV radiation, heat, humidity, and chemical exposure.

ALCHIMICA is a leader in the waterproofing industry, pioneering the use of liquid applied polyurethane membranes. With a commitment to high performance and durability, ALCHIMICA's products excel in applications where seamless systems are paramount, whether for structural integrity or aesthetic appeal. These membranes offer decisive advantages, particularly in complex scenarios like geometrically complicated connections with ventilation outlets or upturns.

Throughout its history, ALCHIMICA has continuously expanded its range of polyurethane liquid membranes to provide versatile installation alternatives and long-lasting solutions. From one and two-component polyurethane liquid membranes to bitumen-extended polyurethanes, water-based liquid polyurethane membranes, and advanced technology polyurethane dispersion (PUD) products, each solution is meticulously designed to address a wide array of waterproofing challenges with optimal performance and durability.

ALCHIMICA's liquid membranes offer durability upon application, elasticity to withstand various stresses and traffic, and resistance to chemicals, and ponding water. These properties meet stringent technical specifications, making them suitable for a diverse range of applications. The core objective of ALCHIMICA is to develop waterproofing systems that are competitive, simple to apply, and accessible to all professionals. By prioritizing ease of application and reliability, ALCHIMICA empowers users to achieve effective waterproofing solutions efficiently and effectively. The membranes are seamless, durable, and flexible and provide superior waterproofing performance, waterproof and moisture permeable, preventing water penetration, allowing moisture to escape, and reducing the risk of degradation and failure over time. With mechanical, thermal, and chemical resistance properties and breathability, ALCHIMICA's PU membranes ensure the longevity and efficiency of waterproofing systems.



ALCHIMICA's commitment to innovation and excellence has revolutionized waterproofing technologies globally. With a comprehensive range of polyurethane liquid membranes tailored to meet the demands of modern construction projects, ALCHIMICA remains the premier choice for effective, long-lasting waterproofing solutions.

HYPERDESMO®-300: THE OPTIMAL SOLUTION FOR BRIDGE DECK WATERPROOFING

When it comes to waterproofing bridge decks, the demands on materials are high due to the extreme mechanical forces and temperature variations they must endure. ALCHIMICA's HYPERDESMO®-300 stands out as an ideal solution for bridge deck waterproofing under asphalt overlays. Here's why:

- ✓ **Superior Certification and Compliance**

HYPERDESMO®-300 is not just any waterproofing solution; it is rigorously tested and certified. The product complies with the European Technical Approval Guideline (ETAG 033) for liquid-applied bridge deck waterproofing kits, ensuring it meets the stringent requirements necessary for long-term performance. Additionally, it holds a CE mark, signifying its compliance with European Union safety, health, and environmental protection standards.

- ✓ **Exceptional Performance and Durability**

One of the most critical factors in bridge deck waterproofing is the material's ability to withstand a wide range of temperatures and mechanical stresses. HYPERDESMO®-300 excels in this regard. It displays excellent elongation and crack-bridging properties, maintaining flexibility and integrity even at temperatures as low as -40°C and as high as >80°C. This flexibility ensures that the membrane can accommodate structural movements, temperature fluctuations, and substrate settlements without cracking. Moreover, HYPERDESMO®-300 boasts outstanding mechanical and chemical resistance. It can endure the harsh conditions commonly encountered on bridge decks, including exposure to petrochemicals, salts, and chlorine ions. These properties protect the underlying concrete from corrosive substances and extend the lifespan of the bridge deck.

- ✓ **Ease of Application and Versatility**

The application process of HYPERDESMO®-300 is designed to be straightforward, reducing the risk of errors and ensuring consistent quality. This single-component system is easy to mix and apply using standard tools such as brushes, rollers, or airless spray machines. It eliminates the need for precise measurements and mixing of multiple components, which can be time-consuming and error-prone. The product's thixotropic behavior allows for application on sloped and vertical surfaces without sagging, ensuring comprehensive coverage of irregular concrete surfaces. This characteristic is particularly beneficial for bridge decks, which often have complex geometries and varying slopes.

- ✓ **Tested and Proven Reliability**

HYPERDESMO®-300 has undergone extensive testing to ensure it meets and exceeds performance standards. Tests for bond strength, tensile and tear strength, and resistance to high temperatures and chemical exposure confirm its robustness and reliability. The product maintained high bond strength under various conditions, exceeding the

minimum requirements set by ETAG 033. Additionally, it demonstrated excellent tensile strength (>7 N/mm²) and tear strength, making it suitable for use with heavy asphalt application machinery.

- ✓ **Chemical and Thermal Resistance**

HYPERDESMO®-300 is engineered to withstand severe chemical and thermal conditions, making it ideal for bridge decks exposed to various environmental stresses. It exhibits excellent resistance to a wide array of chemicals, including petrochemicals, salts, and chlorine ions, which are commonly found on roadways and can be highly corrosive to traditional waterproofing materials. In terms of thermal resistance, HYPERDESMO®-300 is designed to perform under extreme temperature variations. It remains flexible and retains its waterproofing integrity at temperatures as low as -40°C and can withstand continuous service temperatures exceeding 80°C. Furthermore, it is designed to resist shock temperatures up to 220°C, ensuring durability even under the application of hot asphalt overlays

- ✓ **Exceptional Adhesion and Compatibility**

HYPERDESMO®-300 is a waterproofing system that offers exceptional adhesion to various substrates, ensuring a strong bond and reducing the risk of delamination. Its compatibility with concrete and asphalt allows for seamless integration with existing bridge deck structures. The product's use of GEODESMO-50 primer enhances adhesion on both porous and non-porous surfaces, making it versatile for various project requirements. The combination of primer and membrane creates a durable, watertight barrier, protecting against water infiltration and chemical attack.

- ✓ **Proven Success Worldwide**

HYPERDESMO®-300 has been successfully used in numerous projects around the globe, demonstrating its reliability and effectiveness in real-world applications. ALCHIMICA's extensive portfolio of completed projects showcases the versatility and success of this material in diverse settings. For references and detailed project examples, you can request information at alchimica@alchimica.com .

- ✓ **Comprehensive Support and Technical Assistance**

For specific project requirements, ALCHIMICA provides detailed technical support and guidelines to ensure the correct application of HYPERDESMO®-300. This support helps construction professionals achieve optimal results and maintain the integrity of their waterproofing systems over time. Comprehensive technical assistance is available to address any project-specific challenges and ensure the successful implementation of the HYPERDESMO®-300 system.

- ✓ **Application Methodology**

Proper application of HYPERDESMO®-300 involves thorough surface preparation and the use of compatible primers such as GEODESMO-50. This primer ensures optimal adhesion to the concrete substrate, which is crucial for the performance of the waterproofing membrane. The membrane is applied in one or two coats, with a total consumption of approximately 2.5 kg/m², achieving a coat thickness of around 2.0 mm. For added safety and durability, different colors can be used for each coat to ensure complete coverage. In cases where the total asphalt overlay thickness is less than 80mm or the bridge deck has steeper slopes, an additional anti-slippery and wear coat can be applied. This involves applying GEODESMO-50 primer, broadcasting quartz sand, and then applying another coat of the primer.

- ✓ **Cost-Effectiveness and Longevity**

HYPERDESMO®-300 not only offers exceptional performance but also proves to be cost-effective over its lifespan. Its long service life reduces the need for frequent reapplications and maintenance, minimizing life cycle costs. Routine inspections and minor repairs are sufficient to maintain its waterproofing integrity, making it a practical choice for long-term infrastructure projects.

HYPERDESMO®-300 is the ideal material for bridge deck waterproofing under asphalt overlays, offering exceptional adhesion, superior mechanical properties, and proven long-term performance. Its combination of superior performance, ease of application, and rigorous certification makes it an optimal choice for construction professionals and engineers. Whether for new bridge constructions or renovation projects, HYPERDESMO®-300 provides the durability and protection needed to withstand the demanding conditions of bridge decks. With comprehensive support from ALCHIMICA, consulting and infrastructure companies, as well as contractors, can confidently implement this membrane, ensuring the success and longevity of their projects.

ETAG 033

ETAG 033 is a European technical guideline for liquid-applied bridge deck waterproofing systems (kits). These kits are designed for concrete bridge decks and consist of in-situ liquids based on polymers. These kits can be poured, spread, or sprayed onto existing surfaces to create a continuous watertight membrane. Available chemistries and technologies, at the moment, include acrylics, epoxies, polyesters, polyurea, polyurethanes, and water-dispersible polymers. Systems based on bitumen and polymer-modified mortars and kits with polymeric overlays are not covered under this ETAG. Once cured, these kits must provide a continuous watertight membrane.

Liquid-applied bridge deck waterproofing kits and systems may include protective layers, reinforcements, and ancillary products. These kits are not intended for direct vehicular traffic and are used beneath overlays of asphalt or concrete, which may have protective or additional waterproofing functions. These overlays are not part of the scope of this guideline but will be considered if they affect the performance of the waterproofing layer. Bridge deck waterproofing kits may remain uncovered when subject to pedestrian or cyclist traffic or in non-trafficked areas. The main goal of this guideline is to approve the suitability of the product as a waterproofing system for bridge decks applied in liquid form – under the asphalt.

A suitable system for bridge deck waterproofing must meet several key parameters, including product approval, material composition, membrane thickness, adhesion and bond strength, flexibility, crack bridging, permeability and water tightness, chemical resistance, temperature tolerance, curing time and conditions, compatibility with other bridge components, quality control and testing, maintenance requirements, service life expectations, regulatory compliance, and safety considerations are all crucial factors in ensuring its performance. The membrane thickness determines the minimum and maximum thickness of the waterproofing membrane, while adhesion and bond strength verify its strong adhesion to the bridge deck substrate. Quality control and testing ensure the system meets specified standards during installation and testing.

Bond strength is crucial for ensuring sufficient adhesion to the concrete support, preventing chloride ion penetration, dynamic actions, heat impact, perforation, shear forces, and water tightness. It must also resist chloride ion penetration, dynamic actions during overlay application and use, and heat impact resulting from hot-applied overlays. Perforation resistance is essential for resisting perforation both before and during overlay application and when exposed during use. The shear resistance is necessary for resisting shear forces between the system and support due to traffic or thermal movement. Watertightness is essential for protecting the concrete bridge deck by preventing water passage. Compatibility of materials in contact is also crucial for system performance.

By following ETAG 033 parameters and choosing the correct BRIDGE DECK WATERPROOFING SYSTEM, engineers and project managers can select and install liquid-applied bridge deck waterproofing systems that meet required standards and provide long-term protection against water penetration, extending the bridge's service life.

PREPARATION

For successful and safe waterproofing applications specific tools and equipment are required. Each application might have different requirements.

Minimum application equipment includes protective clothing, a 1KW slow-speed drill, and a brush, roller, or airless spray machine for mixing and application. Before installing the system, the weather working conditions should be considered in order to ensure the correct and safe application of the system. Overall, avoid extreme cold or hot surface conditions. In case of high heat, contractors may apply the products either in the morning or afternoon. The application temperature range is 5°C to 35°C, with no dew point conditions, a maximum 95% relative humidity, and substrate temperature above 3°C. Store materials cool, tools dry, and avoid application during hot hours.

Substrate: To ensure successful application, substrate preparation is crucial. New concrete should be at least 28 days old, clean, dry, and free of substances that could reduce adhesion. Dust removal is recommended, and Alchimica's primer application can be done over damp concrete.

In case of doubtful conditions, please contact ALCHIMICA's technical assistance for instructions.

REPAIR AND LEVELING MORTARS

REPAIRING

In case any spots on the concrete surface require repairs, filling, and/or smoothing such as large cracks, cavities, or surface levelling, ALCHIMICA's HYGROSMART® range of cementitious mortars may be used:

1**. HYGROSMART®-FIX&FINISH** (Single component, rapid-setting shrinkage-compensated, thixotropic, fiber-reinforced, cementitious mortar applied in a single layer from 3 to 40 mm thick, for repairing and smoothing concrete, certified according to EN1504-03, Type R4 CLASS III), or

2. **HYGROSMART®-BUILDING-45-THIXO** (Single-component, shrinkage-compensated, thixotropic, fiber-reinforced cementitious repair mortar, certified according to EN1504-03, Type R4 CLASS III), or

3. **HYGROSMART®-BUILDING-F** (Single-component, reinforced, quick-setting, cementitious repair mortar with excellent adhesion and mechanical properties, easy application in horizontal/vertical substrates. Long pot life allows the application of thick coats without cracking. CE Certified as Class R3 class III repair mortar according to EN 1504-03.

4. **HYGROSMART®-MAK-FLOW** (Single-component, highly flowable and shrinkage compensated mortar for structural repairs and anchoring, certified according to EN 1504-6: 2006 (Anchoring cementitious mortar for strengthening concrete by installing reinforcing steel) and EN 1504-3: 2005, Class R4(Hydraulic mortar (R4-CC) for structural repair of concrete in building and civil engineering works).

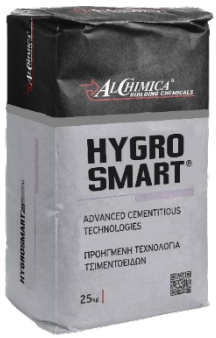
HYGRO SMART® SYSTEM Advanced Cementitious Technologies

LEVELING

In cases where the concrete needs to be levelled or slopes need to be created prior to the installation of the waterproofing membrane, the following products from the HYGROSMART® range can be used, depending on the requirements and desired outcome.

1. **HYGROSMART®-MAK FLOW** (as described above)

2. **HYGROSMART® -DUR CEM 3K** (Three-component, epoxy modified mortar, waterborne, solvent-free, low viscosity, self-levelling, quick curing, zero VOC. Primer for flooring and waterproofing applications, floor-levelling compound. Will effectively seal the substrate as a solution to the problems arising in waterproofing applications on porous and/or humid concrete. The material is available as SELF LEVELLING (**HYGROSMART®-DUR CEM 3K SL**) or THIXOTROPIC (**HYGROSMART®-DUR CEM 3K THIXO**).



PRIMER SELECTION

After checking the weather conditions and having completed the substrate preparation along with any repairs that might be needed, you can start the waterproofing system's build-up with the selection of a suitable primer. ALCHIMICA's primer range provides unique properties for different substrates.

SUBSTRATE AND CONDITIONS	CONCRETE	HUMID CONCRETE	GYPSUM	METAL STEEL	POROUS CERAMIC TILES	GLASS / GLAZY TILES	PVC MEMBRANES	TPO MEMBRANES	BITUMEN MEMBRANES	LOW TEMPERATURE APPLICATION	VAPOR BARRIER	NEGATIVE PRESSURE / RISING HUMIDITY (≤4m/s)
PU PRIMERS												
PRIMER-PU	X	-	-	X	-	-	-	-	-	-	-	-
MICROPRIMER-PU	X	-	-	X	X	-	-	-	-	-	-	-
MICROSEALER-PU	X	X	X	X	X	-	-	-	-	-	-	-
MICROSEALER-50	X	X	X	X	X	-	-	-	-	-	-	-
GEODESMO 50	X	X	-	X	-	-	-	-	-	X	-	-
UNIVERSAL PRIMER-2K 4060	X	X	-	-	-	-	-	-	X	X	-	-
PRIMER T	-	-	-	-	-	X	-	-	-	-	-	-
PRIMER W	-	-	-	-	-	X	-	-	-	-	-	-
PRIMER TPO/FPO	-	-	-	-	-	-	-	X	-	-	-	-
PRIMER PVC	-	-	-	-	-	-	X	-	-	-	-	-
WATER-BASED PRIMERS												
AQUADUR	X	X	X	-	-	-	-	-	-	-	X	X
AQUASMART-DUR	X	X	X	-	-	-	-	-	-	-	X	X
AQUASMART-PRIMER PU-2K	X	X	-	-	-	-	-	-	-	X	-	-

ALCHIMICA's primers are designed to secure your waterproofing application in every substrate by strengthening the substrate, stabilizing, and sealing it, offering remarkable adhesion with their respective main membranes and sealants.

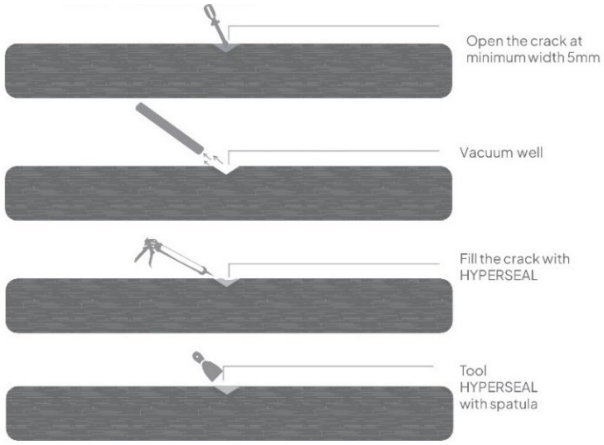
SEALING SOLUTIONS

The HYPERSEAL® range of polyurethane (PU) sealants is an excellent choice for sealing bridge deck joints due to its outstanding performance characteristics. These sealants offer superior adhesion and elasticity, ensuring a durable and long-lasting seal that can accommodate the dynamic movements and heavy traffic loads typical of bridge structures. HYPERSEAL® is designed to perform in various environmental conditions, from extreme heat to freezing temperatures, ensuring the bridge deck joints remain effectively sealed under all weather conditions. Additionally, these sealants are formulated to meet crucial industry standards, providing confidence in their ability to protect the bridge structure over time. The robust formulation of HYPERSEAL® also offers excellent resistance to weathering further enhancing its durability and longevity. By selecting HYPERSEAL® for bridge deck joints, engineers and construction professionals can ensure optimal performance and protection, maintaining the integrity of the bridge for years to come.

HYPERSEAL®-EXPERT-150

HYPERSEAL®-EXPERT-150 is a low-modulus expansion and construction joints PU sealant designed to ensure a bubble-free cure even in high temperature and humidity conditions. It exhibits excellent thixotropy, making it suitable for large expansion joints. The ratio width to depth should be 2:1 subject to a minimum depth of 10mm. It cures by reacting with atmospheric humidity, producing a joint sealant with a 50% joint movement accommodation factor, elongation >700% (ASTM D412 / EN-ISO-527-3), and excellent adhesion to a variety of substrates (Adhesion to concrete >20 kg/cm^2 (>2 N/mm^2) ASTM D4541) with or without the use of special primers. The sealant's extrusion rate and tooling remain consistent across various temperature and humidity conditions.

HYPERSEAL®-EXPERT-150 is CE certified according to EN 15651-1:2012 (Sealants for Facades) and 15651-4:2012 (Sealants for Floor Joints with Foot traffic). HYPERSEAL®-EXPERT-150 is a highly flexible PU sealant, with elastic recovery of >70% (EN ISO 7389) allowing for the movement and expansion of structure components, preventing cracks, and ensuring a lasting seal. It adheres to various substrates, making it durable and able to withstand harsh environmental conditions and heavy traffic loads. As a PU sealant, it is also chemically resistant, protecting the structure from corrosion. Because of its excellent chemical and hydrolysis resistance, it is widely used for sealing joints in swimming pools and chemically treated water environments. HYPERSEAL®-EXPERT-150 provides excellent waterproofing, preventing moisture ingress, and has high elasticity, allowing for flexibility and elasticity. It does not shrink as it cures, ensuring no gaps or openings in the sealed joint. Its excellent heat resistance makes it suitable for application where exposure to temperatures >60°C takes place and its resistance to cold allows the sealant to remain elastic even down to -40°C (service temperature range -40 to +80°C). It has tack free time (@ 77°F (25°C) & 55% RH) of 2.5-3.5 hours and a cure rate of 2-3 mm/day, low VOC content, and remains resistant and unaffected by microorganisms, fungi, and algae growth, making it the most versatile PU sealant, usable in a variety of applications.



HYPERSEAL®-2K-F

HYPERSEAL®-2K-F is a two-component, high performance horizontal grade polyurethane sealant ideal for large construction joints. Upon curing, it produces a high-performance pourable sealant that offers significant waterproofing and excellent resistance to various climatic and temperature conditions. This sealant excels in

chemical resistance and can endure severe exposures, making it suitable for a wide range of demanding applications.

HYPERSEAL®-2K-F is designed to provide excellent resistance and remain unaffected to aging, microorganisms, fungi, and several chemicals. It is paintable and remains elastic even at temperatures as low as -40°C. The sealant's mechanical properties are robust, offering good resistance to accidental contact with petroleum derivatives as per specification SS-S-200E. Special primers are available to ensure adhesion to almost any substrate. The sealant is particularly recommended for sealing large expansion construction joints, joints in bridge decks and car parks, heavy duty flooring projects, irrigation channels, and airport runways etc. Its excellent waterproofing capabilities prevent moisture ingress, maintaining the integrity of the sealed joint. HYPERSEAL®-2K-F's high elasticity and mechanical resistance ensure a durable and flexible seal that can accommodate the movement and expansion of structural components, preventing cracks and ensuring a lasting seal.

The sealant is designed to perform consistently across various temperature and humidity conditions. It cures with a tack-free time of 1-3 hours at 25°C and 55% RH and has a low VOC content. HYPERSEAL®-2K-F does not shrink as it cures, ensuring no gaps or openings in the sealed joint. HYPERSEAL®-2K-F also boasts excellent heat resistance, suitable for applications exposed to temperatures up to 90°C, while maintaining elasticity down to -40°C (service temperature range -40 to +90°C). Its chemical resistance includes hydrocarbons, acids, and bases, ensuring protection against corrosion and chemical degradation.

HYPERSEAL®-2K-F is a highly durable, flexible, and reliable polyurethane sealant designed for the most challenging construction joint sealing applications. Its performance in harsh environmental conditions, coupled with excellent chemical and mechanical properties, makes it an ideal choice for professionals seeking long-lasting and effective sealing solutions.

METHOD STATEMENT

BRIDGE DECK WATERPROOFING SYSTEM BASED ON THE HYPERDESMO®-300

Bridge decks are the most demanding waterproofing application, as protecting the structure from salts and water ingress is essential for their safe use. HYPERDESMO®-300 is the only cold-applied, single component polyurethane waterproofing membrane certified for the waterproofing of bridge decks according to the European standard ETAG-033.

GENERAL SYSTEM CONDITIONS

EQUIPMENT

For successful and safe applications specific tools and equipment are required. Each application might have different requirements in terms of application and protection equipment.

The following application equipment is at minimum required:

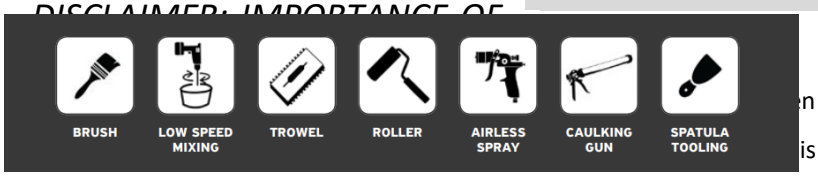
- Protective clothing: Protective overalls, masks, and gloves.
- Mixing equipment: 1KW slow speed drill, 400 or 500 rpm, and suitably sized mixing vessel.
- When stirring (or pigmenting) take care not to introduce air into the fluid, which may result in bubbling on the cured membrane. Stirring can either be done manually or with a low speed (300 rpm) mixer.
- Application equipment: Brush, roller, notched trowel, squeegee, rubber spatula, caulking gun, spatula. Specific airless spray machines can also be used. Caulking guns.
- Extra equipment: Digital scale or other measuring equipment.

Products can be applied with a variety of equipment. Please choose the desired equipment and method of application according to your preferences and experience after consulting the proposed method of application on TDS of the Product.

APPLICATION WITH AIRLESS SPRAY MACHINE.

For the application of ALCHIMICA's liquid applied PU systems we recommend the following minimum performance for the equipment to be used. This however it is not exclusive, as applicators should use our products with the equipment that is more suitable according to their application method, prior experience, and expertise:

- Minimum pressure: around 200-250 bar
- Minimum capacity: 5.1 lt/minute
- Minimum nozzle diameter: 0.83mm (0.033 inches)
- Examples of such minimum-spec equipment:
  - ✓ *Wagner Heavycoat HC 940 E-SSP Spraypack*
  - ✓ *Graco Mark-X*
  - ✓ *Larius Thor*



Use clean equipment when switching from different products, to prevent contamination between different products.

DISCLAIMER: IMPORTANCE OF

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thoroughly cleaned prior to use. Residual chemicals on containers, mixers,

or other tools can initiate unintended chemical reactions or cause contamination **when switching between different products**. Such occurrences may lead to product degradation, and project failure. Adherence to rigorous cleaning protocols is essential to prevent these risks. All users must strictly follow the equipment cleaning guidelines specified herein to ensure product performance and project success.

WORKING WEATHER CONDITIONS

- Application temperature range: 5°C to 35°C.
- Avoid dew point conditions during application.
- Relative humidity must be a maximum of 95% and substrate temperature must be at least 3°C above measured dew point temperatures.
- Do not apply under rain or snow.
- If temperature is above 35°C, the following guidelines are recommended:
    - Store materials in a cool environment, avoiding exposure to direct sunlight.
    - Keep application tools cool and dry.
    - Try to avoid application during the hottest hours of the day.

SURFACE PREPARATION

THE FOLLOWING FACTORS PRIOR TO APPLICATION SHOULD BE CHECKED:

✓ Substrate type and condition.

✓ Previous substrate mechanical preparations (sanding, polishing, shot blasting, or milling)

✓ Porosity of the surface

✓ Existing cracks or damaged areas.

In existing dilatation joints, remove old material and clean it.

✓ Existing membranes or coatings.

✓ The substrates must be both durable and cohesive. Check the substrate for contamination (oil, grease, etc.).

CONCRETE SUBSTRATES

Concrete substrates are used in the construction of roofs and foundations in modern architectural designs. However, because concrete is a porous surface exposed to different climatic conditions, it can absorb water which can then cause damage. Waterproofing is a basic need at almost all stages of construction work, in order to protect structures from the adverse effects of moisture and water ingress. In the case of exposed concrete roofs, it is vital to avoid any water leak in order to prevent any wear and corrosion of reinforcing steel in the concrete structure.

ALCHIMICA's high-quality concrete roof waterproofing and protection systems consist of quality products that hold excellent workability, durability, elasticity, and resistance to weather, chemical, mechanical, and thermal effects, as well as to UV radiation on either flat or sloping roofs.

Standard concrete substrate conditions

- Strength: C20/25.
- Humidity: W < 5%.
- Temperature: 5-35 °C.
- Relative humidity: < 85%

PREPARATION

Proper preparation of the concrete substrate is essential for complete adhesion and successful application.

- New concrete or other cementitious substrates should be at least 28 days old.
- The substrate should be clean and free of loose particles, oil, and grease.
- The substrate should be free of any irregularities. If needed, it should be ground with the appropriate mechanical equipment in order to achieve a flat and sound surface.
- The substrate should be free of dust. Vacuum treatment or/ and high-pressure washing is recommended to remove dust.
- Primer application can be done over damp concrete too. But any ponding water should be removed before primer application.
- Metal details should be free of rust, oils, and old paints.
- The surface of PVC pipes should be treated with sandpaper in order to become rough.
- Surface irregularities can be filled with the appropriate HYGROSMART® products.
- For concrete levelling or sloping the appropriate HYGROSMART® products must be used.
- For more information about surface preparation please contact our technical assistance team.

MANDATORY DISCLAIMER BEFORE APPLICATION:

Testing the products to be used in this build-up application on the specific substrate and conducting mock-up tests are essential steps to ensure good adhesion. Mock-up tests replicate real-world conditions and provide a practical way to evaluate the performance of the products in situ. Pull-out tests conducted on these mock-ups help assess the bond strength between the products and the substrate, giving valuable insights into their adhesion capabilities.

By testing the products on the specific substrate and conducting mock-up tests, any potential issues or concerns regarding adhesion can be identified and addressed before full-scale implementation. This proactive approach helps mitigate risks associated with poor adhesion, ensuring the long-term durability and effectiveness of the build-up system.

ALCHIMICA advises the thorough testing of the system to be performed prior to proceeding with full surface application in order to determine the suitability of the system based on project requirements.

SYSTEM PRODUCTS BUILD-UP

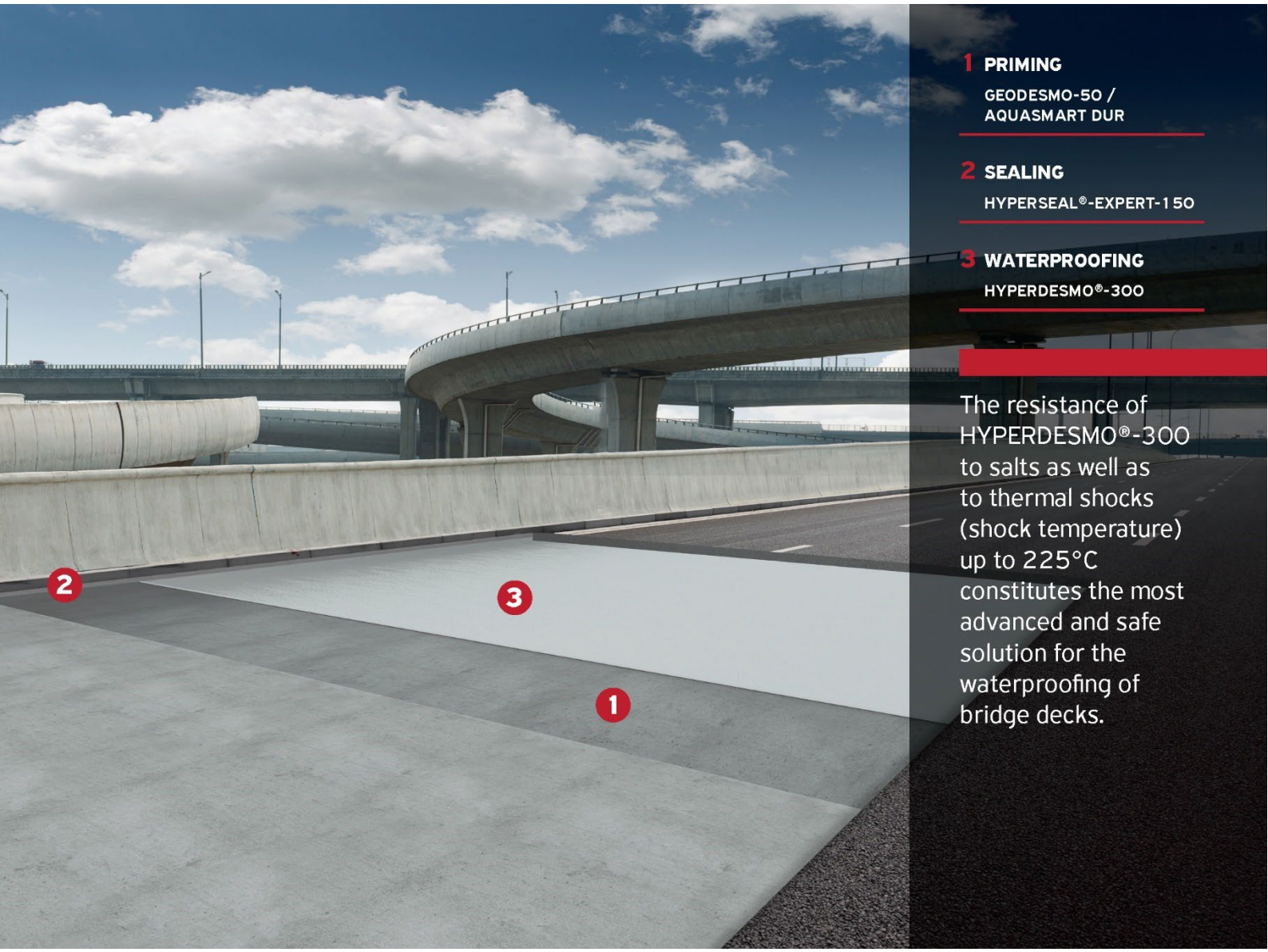
	PRODUCT	CONSUMPTION
1. PRIMER	AQUASMART-DUR/AQUADUR GEODESMO-50	200-400 gr/m² Subject to porosity
2. DETAILS TREATMENT	HYPERSEAL®-EXPERT-150 HYPERSEAL®-2K-F	Subject to project needs
3. MAIN MEMBRANE	HYPERDESMO®-300	Total consumption: 2-2,5 kg/m²
4. WEAR COAT (OPTIONAL)	GEODESMO-50& SILICA SAND	200g/m² Sand Consumption +/-1 kg/m²

CERTIFIED PRODUCTS

HIGH ELASTICITY

PONDING WATER RESISTANCE

TOTAL ADHESION



1 PRIMING
GEODESMO-50 / AQUASMART DUR

2 SEALING
HYPERSEAL®-EXPERT-150

3 WATERPROOFING
HYPERDESMO®-300

The resistance of HYPERDESMO®-300 to salts as well as to thermal shocks (shock temperature) up to 225°C constitutes the most advanced and safe solution for the waterproofing of bridge decks.

SUBSTRATE PRIMING

PRIMER	AQUASMART-DUR / AQUADUR	GEODESMO-50
CONSUMPTION	- 150-200 gr/m^2 - water/humidity barrier – three coats with total cons. of 500-600 gr/m^2	- 150-200 gr/m^2 per coat - 100-500 gr/m^2, subject to substrate porosity.
COMPOSITION	WATER BASED EPOXY	SOLVENT-BASED PU
APPLICATIONS METHODS	brush, roller	brush, roller
TACK FREE TIME, @ 77 °F (25°C) & 55% RH	3-5 Hours	1-3 Hours
RECOAT TIME OF PRODUCT WHEN NEEDED	When the material has hardened to the degree where it can no longer be punctured by fingernail 6-24 Hours	1-3 Hours
NEXT COAT TIME (HYPERDESMO® MEMBRANE)	Once the colour on the current coat goes from milky white to transparent 6-24 Hours	2-24 Hours
RECOMMENDED DILUTION	10% WATER	X
ADDITIVES	X	X
COLORS	TRANSPARENT	TRANSPARENT
POT LIFE	1 Hour	X
COMPONENTS	TWO COMPONENTS	SINGLE COMPONENT

Choose a suitable primer for your project needs and requirements:

■ GEODESMO-50 is a low viscosity, fast curing, polyurethane based primer. Its fast-curing profile makes it suitable for colder climates and unpredictable rain. It is a single component with excellent wetting, impregnation, and paint-over time properties. It is used for sealing and stabilizing substrates, ensuring good adhesion of the main coat. GEODESMO-50 is the faster curing version of MICROSEALER-50 and is ideal for extreme porosity in concrete surfaces where multiple coats of primer may be required. It can be used on both dry and wet concrete, even green concrete, as a primer and low-cost sealing solution, increasing substrate durability and adhesion strength. It can be used successfully on both porous and non-porous substrates.

GEODESMO-50 is dry to touch on cement after 1-2 hours. This dry-to-touch time allows the application of HYPERDESMO®-300 after 2-24 hours, depending on conditions. The material also has good adhesion “memory”, allowing for application up to 48 hours after application.

Mixing: Mix the product well manually or using a low speed (300 rpm) mixer.

Application: You choose this primer if the concrete surface is extremely porous. GEODESMO-50 has a very fast curing profile (same-day primer), which allows it to be used more successfully in colder climates and when rain is not very predictable because 2-3 hours after this primer application, you can apply the main membrane. Although

the material has such a fast-curing profile, it has a good memory also. Application over it, is possible even the next day and up to 48 hours.

■ AQUASMART-DUR is a medium viscosity epoxy-based primer. It is a water-based epoxy primer and humidity barrier, suitable for application in closed spaces too. It is a two-component product with a 1:1 mixing ratio by volume with zero VOC, low odor, and non-flammability. It has a long pot life while being fast curing, easy to clean, and suitable for concrete and humid concrete too.

Mixing: Mix the two components well manually or using a low speed (300 rpm) mixer.

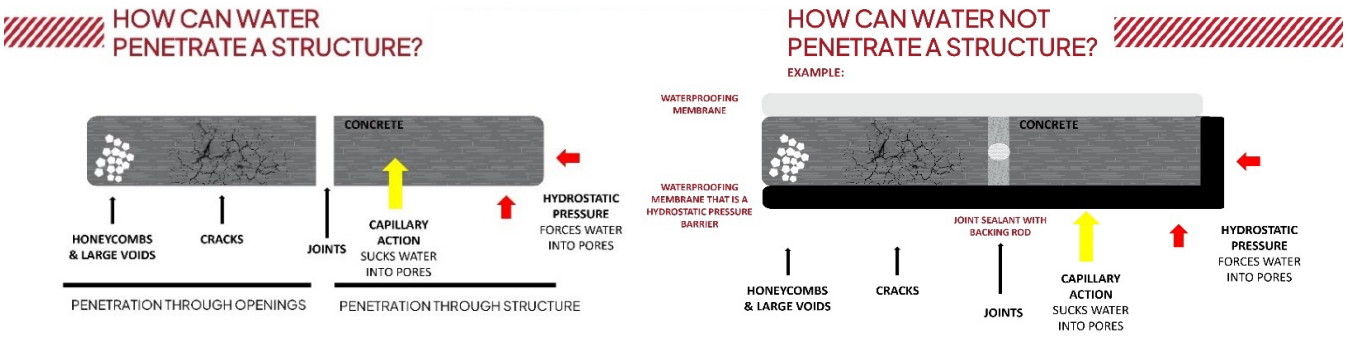
Application: You choose to apply this primer over a sound concrete surface. AQUASMART-DUR primer will create a slight film sealing the concrete and increasing the adhesion. After the AQUASMART-DUR application, you should wait at least 12 hours to apply the main membrane. The main membrane application has to be done within 48 hours after the AQUASMART-DUR application. AQUASMART-DUR is a completely solvent-free and low VOC primer. If a negative pressure humidity barrier is required, increase total consumption of AQUASMART-DUR at a minimum of 500 gr/m^2 in 3 successive layers (150-200gr/m^2 per coat)

Notes:

1. If it rains after the primer and before the main coat application, you may need to apply one coat of primer again.
2. More primers are available for special cases, surfaces, and weather conditions.
3. For more information about surface preparation please contact our technical assistance team.

DILATATION JOINTS, INNER ANGLES & SMALL CRACKS

Concrete expansion joints are small gaps in structures designed to prevent cracks, absorb stresses, and allow soil movement. They allow independent movement and thermal expansion without inducing stress. Concrete is susceptible to cracks due to its non-elastic nature, so joints are strategically placed to prevent failure. However, structures with expansion joints are susceptible to water leaks, so waterproofing and applying a durable sealant are essential to maintain flexibility and allow the joint to function properly. All dilatation joints, inner angles, wall-floor connections, cracks, drainage details, pipes, and other elements of equipment mechanically installed (air conditioning, antennas, photovoltaic systems, etc.) must be treated.



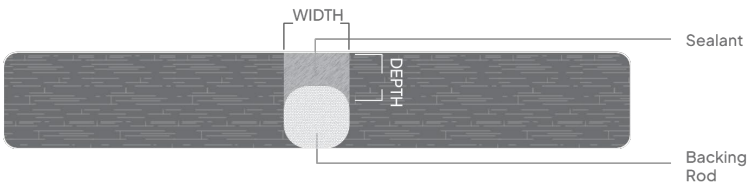
Dilatation joints and inner angles should be treated with HYPERSEAL®-EXPERT-150 and/or HYPERSEAL®-2K-F polyurethane-based sealants. HYPERSEAL®-2K-F is recommended for sealing large expansion construction joints, water tanks, irrigation channels, and airport runways. On the other hand, HYPERSEAL®-EXPERT-150 is Suitable for sealing joints in concrete, precast panels, brickwork, water tanks, metal frames etc. These two products have distinct properties and are designed for slightly different applications, with HYPERSEAL®-2K-F being more suitable for heavy-duty, large-scale constructions and HYPERSEAL®-EXPERT-150 geared towards applications requiring excellent adaptability to environmental conditions and substrate types.

Clean joints thoroughly, and ensure that no dust, oil, grease, wax contaminants, or silicone remains are present. For many applications, primer is not obligatory. However, in case of application on porous or/and wet substrate the primer is required, as there is a possibility of air bubbles blown into the uncured sealant if the substrate temperature rises.

After the primer is cured, apply in dilatation joints the right backing material (where needed) – an open cell polyurethane or a closed cell polyethylene backing rod. Be sure that when applying a closed cell polyethylene backing rod, its outer skin is not punctured, as rising temperature may cause bubbles. Backing rod application is important as it ensures the correct width-to-depth ratio and provides a firm backing against which the sealant can be tooled off. Apply the sealant HYPERSEAL®-EXPERT-150on or HYPERSEAL®-2K-F.

■ HYPERSEAL®-EXPERT-150 is a low modulus sealant, formulated to ensure bubble free cure even at very high temperatures and humidity climatic conditions. The product displays excellent thixotropy allowing its use even in very large expansion joints. It cures by reaction with atmospheric humidity to produce a joint sealant with a 50% joint movement accommodation factor and excellent adhesion on many types of substrates (concrete, fibrous cement, mosaic, cement roof tiles, wood, also glass, aluminum, steel, polycarbonate, etc.). The extrusion rate and tooling of the sealant remain the same throughout a very wide range of temperature and humidity conditions.

■ HYPERSEAL®-2K-F is a two-component, pourable grade polyurethane sealant designed for robust applications in large construction joints. It rapidly cures upon application to form a high-performance, resilient sealant with a ±50% joint movement accommodation capacity. This sealant offers outstanding waterproofing benefits and superior resistance to varying climatic conditions, including temperature extremes. With excellent chemical resistance and durability against severe exposures, HYPERSEAL®-2K-F is ideal for sealing joints in diverse infrastructures such as bridge decks, heavy traffic floors, car parks, tanks, irrigation channels, and airport runways. Its formulation ensures consistent performance, even in demanding environments, making it a dependable choice for horizontal applications.



CONSUMPTION					
WIDTH / DEPTH	5mm	10mm	15mm	20mm	25mm
5mm	24	12			
10mm			4	3	2,4
15mm					1,6

- Width # depth ratio 2/1
- Minimum width size 5mm

Slide the sealant HYPERSEAL®-EXPERT-150 into the sealant dispensing gun, cut off the very end of the sealant packaging, and fit the gun with the nozzle. The nozzle should be cut to deliver the right bead size. Extrude the sealant into the joint ensuring that no air is trapped in the joint. Tooling is recommended immediately after the application of sealant. The ratio width to depth should be 2:1 subject to a maximum depth of 25mm.

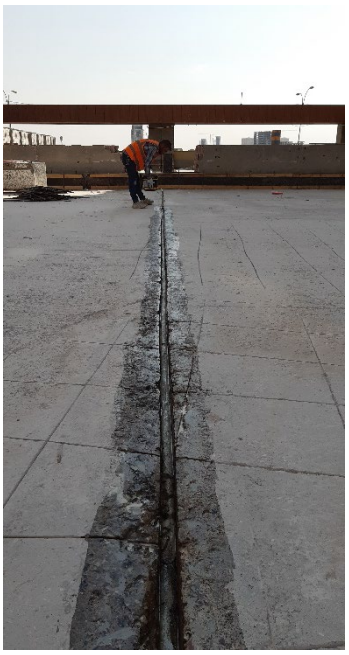
POLYETHYLENE BACKER ROD

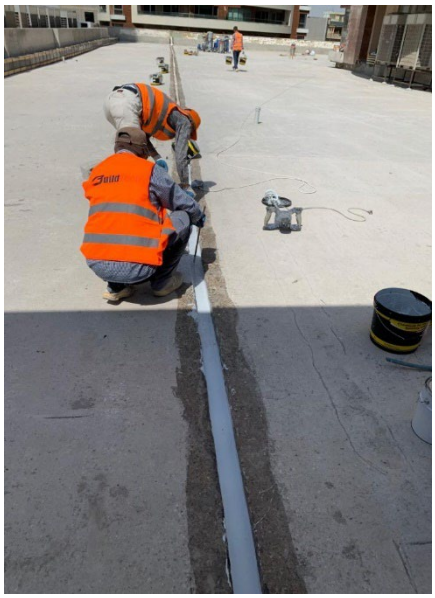
Special backer rod made of extruded polyethylene for joints where HYPERSEAL® sealants will be used.

SIZE	PACKAGING
F6	1500m
F10	680m
F15	250m
F20	180m
F25	100m
F30	100m
F40	100TEM
F50	65TEM

NOTE:

- Tool the sealant with a spatula.
- Do not use any solvent, alcohol, or soap to smooth the material.





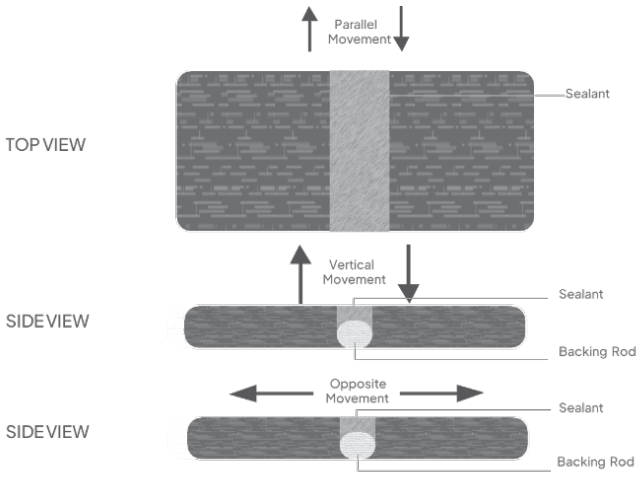
HYPERSEAL®-2KF is a two-component, pourable liquid-applied polyurethane sealant, highly recommended for extensive horizontal construction joints and specialized applications like airport runways. It is engineered to withstand harsh conditions, including direct exposure to jet fuel, highlighting its robust industrial-grade quality. The sealant guarantees exceptional waterproofing and is highly resistant to a wide array of chemicals, climatic, and temperature fluctuations. To use, components A & B are mixed thoroughly and can either be slowly poured or applied with a spatula into the primed joint, ensuring versatility in application methods. It performs optimally when applied within a temperature range of +5°C to +35°C, though it should be noted that higher temperatures may reduce the material's pot life. For effective application, the joint area must be clean, dry and primed, and for joints with an open bottom, a polyethylene or polystyrene backing rod should be used to adjust the depth to about half of the joint's width. Depending on the substrate and environmental conditions, the use of a suitable primer enhances the adhesion and efficacy of the sealant.

CONSUMPTION			
WIDTH / DEPTH	2cm	4cm	8cm
1cm	0.280Kg/m	0.560Kg/m	1.12Kg/m
2cm	0.560Kg/m	1.12Kg/m	2.24Kg/m

TREATMENT OF DETAILS

All connections, cracks, drainage details, pipes, and other elements of equipment mechanically installed (air conditioning, antennas, photovoltaic systems, etc.) should be treated. Select the preferable treatment using sealants HYPERSEAL®-EXPERT-150, HYPERSEAL®-2K-F.

Clean details and cracks thoroughly, and ensure that no dust, oil, grease, wax contaminants, or silicone remains are present. For many applications, primer is not obligatory. However, in case of application on porous or/and wet substrate, the primer is required, as there is a possibility of air bubbles blown into the uncured sealant if the substrate temperature rises. Select a suitable primer according to the substrate type and needs.



Dilatation joints, inner angles, and small cracks should be treated with HYPERSEAL®-EXPERT- 150 polyurethane-based sealant or any other suitable HYPERSEAL® sealant as described above.

MAIN WATERPROOFING

HYPERDESMO®-300 is a high-performance, single-component, liquid-applied polyurethane waterproofing membrane developed by ALCHIMICA. This product is the first of its kind, certified according to ETAG 033 and bearing a CE Mark, specifically designed to meet the rigorous demands of bridge deck waterproofing.

HYPERDESMO® 300	
CONSUMPTION	2-2.5kg/m²
APPLICATIONS METHODS	brush, roller, airless spraying
TACK FREE TIME, @ 77 °F (25°C) & 55% RH	4-6 Hours
APPLICATION OVER PREVIOUS COAT (PRIMER)	Depending on the primer curing time
RECOAT TIME OF PRODUCT	6-24 Hours
NEXT COAT TIME (TOPCOAT)	24 Hours
COLORS	WHITE, GREY, TEJA
COMPONENTS	SINGLE COMPONENT

HYPERDESMO®-300 is engineered to withstand the intense mechanical stresses from heavy traffic loads, demonstrating high tensile strength (>70 Kg/cm²) and exceptional elongation (>250%). These properties enable it to maintain integrity under significant structural movements, making it ideal for both new constructions and renovations.

This membrane offers robust resistance against a range of aggressive chemicals such as road salts, vehicle emissions, petrochemicals, and chlorine, which are common in harsh environmental conditions. It is capable of sustaining its elastic properties across extreme temperatures, from -40°C to over 80°C and can endure a shock temperature of 220°C without softening.

HYPERDESMO®-300 simplifies the application process as a single-component system. It can be easily mixed with a 1KW slow-speed drill inside the pail and applied using standard tools such as brushes, rollers, or airless spray

machines. The low solvent content makes it non-flammable, enhancing safety during transport and application while aligning with environmental standards to reduce VOC emissions.

Designed for versatility, HYPERDESMO®-300 is suitable not only for bridge decks but also for other critical applications including parking garages, roofs, and balconies, especially when used with an additional top coat. Its durability, low maintenance, and ability to extend the lifespan of infrastructure assets make it a cost-effective solution for various waterproofing projects. HYPERDESMO®-300 offers an innovative, reliable, and efficient approach to waterproofing, setting new standards in durability, safety, and performance for bridge decks and other infrastructure projects.

Mixing: Mix the two components well manually or using a low speed (300 rpm) mixer.
Application: The system's liquid form and ease of application allow for the use of various methods, such as spraying, rolling, or brushing while allowing it to conform to irregular surfaces and intricate details, ensuring thorough coverage. The product has thixotropic rheology allowing it to be applied on sloped but also on vertical substrates without any sagging offering ease of detailing and can cope with the uneven surfaces usually encountered on bridge decks. For the main waterproofing membrane on bridges, you apply HYPERDESMO®-300 in two successive coats with total consumption +/- 2.5 kg/m² (total coat thickness +/- 2.0 mm). In the case of two coats, it is recommended for 2 different colors to be chosen for each coat, for consumption control purposes.

WEAR COAT

The anti-slippery and wear coat is optional for less than 80mm main asphalt concrete thickness or steeper bridge deck slopes. It can be achieved by applying above the final coat of HYPERDESMO®-300, and GEODESMO-50 primer at a consumption of 200g/m². When the primer is still wet and tacky, quartz sand should be broadcasted on the final coat. After curing, loose quartz particles should be removed, and a second coat of GEODESMO-50 applied at 200g/m². The quartz sand should be of good quality, dry, with a mean diameter of +/- 0.5-1mm, consumption +/-1 kg/m².

TYPES OF APPLICATIONS

APPLICATION BY COATS	- First coat: 1-1.2 kg/m². - Second coat: 1-1.5 kg/m². Apply more coats depending on traffic requirements and system build-up. - Minimum total consumption: 2 kg/m².
APPLICATION WITH AIRLESS (200- 250 bar) SPRAY MACHINE.	1. Open the pail and stir it up to homogenize. 2. If necessary, add 5~10% SOLVENT-01 into the pail and mix it with medium-speed mechanical equipment. 3. Apply thin layers using an airless spray machine. 4. Wait for the recoat time. 5. Repeat this process until the desired or recommended thickness.

CLEANING

Clean tools and equipment first with paper towels. Tools and equipment should be cleaned immediately using SOLVENT-01 (or water for water-based materials). Rollers will not be re-usable.

REPAIR AND OVERLAPS PROCESSES

USE, MAINTENANCE AND REPAIR OF THE WORKS

In bridges with deteriorated areas of the waterproofing layers, the repairs must be done by removing all the deteriorated layers. Afterwards, the new product will be assembled following the installation instructions and the new coats must overlap, at least 3 cm, on the non-deteriorated coat.

LOCAL REPAIRS

One of the benefits of ALCHIMICA's liquid applied waterproofing systems is the ease of reparations to be carried out when spot problems occur. Nevertheless, it is always recommended to protect the membrane by ensuring that there are no foreign objects, sharp and heavy ones mostly, that they could fall and damage the membrane, to the best possible extent.

In cases where the membrane repair is caused by an accident or assembly procedures that are not covered by the installation, the following procedures must be followed:

- Grind the affected areas or remove the affected area and/or damaged surface by cutting.
- Sanding this area for overlapping, extending it about 20-30 cm around the perimeter.
- Clean the surface around the slit at a perimeter of 20-30cm depending on the repair length. Clean up thoroughly and remove all contaminants from the elements, such as dust or chippings, by mopping and/or vacuuming.
- If necessary, solvent wipe the area with a SOLVENT-01. Allow it to dry completely. The surface must be completely dry before the next steps.
- Apply a thin layer of primer MICROSEALER-50 at a consumption of 50-60gr/m^2 by overlapping the membrane at the prementioned perimeter.
- If necessary fill the area by using HYPERSEAL®-EXPERT- 150, tool it to form a smooth patch, and the next day apply the same coat and topcoat that was applied to the rest of the membrane waterproofing system (if one was used) in order to ensure long term UV protection of the patch.
- In severe situations, the coating may have to be totally removed prior to system re-application.

OVERLAPS

In cases where the recoat time (24-48 hours) has been exceeded, the waiting time between jobs has been extended, or unexpected weather conditions (rain) have stopped the application, proceed as follows:

The HYPERDESMO® SURFACE should be clean and free of loose particles and dust. If it rains after the first main coat application, you may need to solvent wipe the area and apply one thin coat of primer again.

Clean the area and apply primer MICROSEALER-50 at the consumption of 50-80gr/m^2 in order to secure adhesion. After 6-12h you can apply the next coat of HYPERDESMO®.

REFERENCES

ALCHIMICA throughout the years, has a collection of completed projects from around the world. On our website, you can find where we have provided a variety of solutions and expert know-how, in case studies ranging from the smallest roof to the largest project.

www.alchimica.com

https://alchimicaprojects.com/

ALL OVER THE WORLD

HEALTH AND SAFETY

The system proposal contains volatile flammable solvents. Apply in well-ventilated, no-smoking areas, away from naked flames. In closed spaces use ventilators and carbon-active masks. Keep in mind that solvents are heavier than air, so they float near the floor. The MSDS (Material Safety Data Sheet) of the products are available on request.

This handling safety advice is required for the implementation procedure as well as in the pre- and post-exposure to the loading machinery.

- Protect your lungs by using an air-purifying respirator when handling or spraying.
- Use rubber gloves to protect your skin and remove them promptly after contamination. Wear clean undergarments. After work and before eating, drinking, or smoking, thoroughly wash your hands with soap and water.
- Wear safety goggles to protect your eyes and face from splashes and airborne particles.
- Waste generation should be avoided or reduced.
- Incinerate under well-controlled conditions in line with local and national rules and regulations.
- Re-occupancy of the work site without respiratory equipment is limited to 24 hours if proper ventilation for the sprayed area is provided.
- Contractors and applicators must follow all applicable and necessary storage and safety regulations.
- In any case, review the system's material and safety data sheets.

PRECAUTIONS AND VARIATIONS.

The purchaser must determine the suitability of the products for the intended use and assume all related liabilities and risks. This information, recommendations, and any additional technical advice are given in good faith and are based on ALCHIMICA's present knowledge and experience of the products when properly stored, handled, and applied under normal conditions according to ALCHIMICA's recommendations.

However, ALCHIMICA assumes no liability for providing such information and advice including the extent to which such information and advice may relate to existing third-party intellectual property rights, especially patent rights, nor shall any legal relationship be created by or arise from the provision of such information and advice. ALCHIMICA reserves the right to change at any time the properties of its products. The purchaser of the product(s) must test the product(s) suitability for the intended application and purpose before proceeding with a full application of the product(s).

The performance of the products build up described herein should be verified by testing and carried out by qualified experts.

NOTE: This method statement is offered by ALCHIMICA as a 'summary proposal' for **BRIDGE DECK WATERPROOFING SYSTEM BASED ON HYPERDESMO®-300**. For projects' particularities and more precise technical support, please contact ALCHIMICA at: alchimica@alchimica.com

Please consult the above-referred products' technical data sheets (TDS) and safety data sheets (SDS). Under any circumstances, ALCHIMICA does not assume any responsibility for the performance of the waterproofing system given the conceptual flaws of the existing build-up. Imperative for the performance of the system is the correct cleaning, inspection, and maintenance of the waterproofing system. For projects' particularities and more precise technical support, please contact ALCHIMICA at: alchimica@alchimica.com

Where alternative systems are to be used, these must be submitted to ALCHIMICA for approval. ALCHIMICA will not accept responsibility or liability for variations to the above under any other condition.

LEGAL NOTES AND CITATION

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- No liability or warranty of product performance is created by this document.
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- Appropriate Technical Documentation and/or Specific Technical Documentation: The performance of the products identified in the DoP files conform with the set of declared performances. This declaration of performance is issued in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer.
- It is recommended to check the TDS and MSDS of all the materials before use and application.

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- Proper application is the responsibility of the Buyer and/or Contractor.

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