PODIUMS & SLABS WATERPROOFING SYSTEM

BASED ON HYPERDESMO®-PB SYSTEM

AlChimica® BUILDING CHEMICALS

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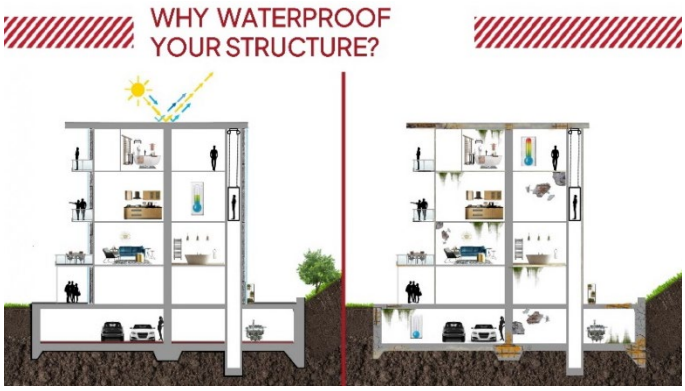
WHY CHOOSE ALCHIMICA FOR PODIUMS & SLABS GROUND WATERPROOFING PROJECTS?

Waterproofing podiums and slabs is a critical initial step in any construction project to prevent water ingress, which can cause significant structural damage over time. Proper waterproofing tackles various threats, including water ingress, aggressive chemicals, gas penetration, external mechanical pressures, and temperature variations from the beginning. Today, more building projects require podium and slab waterproofing, especially in large-scale sites like modern hotels, residential buildings, commercial complexes, and stadiums.

Concrete, by nature, is porous and susceptible to water damage. Without proper waterproofing, water infiltration can lead to structural deterioration, particularly in reinforced concrete structures where steel reinforcement is embedded within the concrete matrix. Waterproofing acts 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.



Waterproofing also prevents the growth of mold and mildew, which pose health risks and can lead to further structural issues. By inhibiting their development, waterproofing contributes to a healthier indoor environment. Furthermore, it enhances energy efficiency by preserving insulation properties and reducing energy consumption for heating and cooling. While the initial investment in waterproofing might seem significant, it is cost-effective in the long run, helping to avoid expensive repairs and replacements due to water damage. Proactively addressing waterproofing is essential for compliance with building codes and regulations, ensuring the safety and longevity of structures.

ALCHIMICA provides advanced waterproofing solutions for podiums and slabs, offering excellent concrete protection in high-performance applications. Our

HYPERDESMO®-PB technology, based on bitumen-extended polyurethane liquid membranes, have been the industry standard for almost 20 years and display exceptional properties that efficiently combine the traditional benefits of bitumen with ALCHIMICA's polyurethane technology. Our complete range of PB liquid membranes has exceptional humidity barrier properties, self-healing abilities, certified anti-root performance, and high elongation that provide outstanding crack-bridging capabilities and chemical resistance. This diversity allows them to operate as joint sealers in underground car parking areas and in cut-and-cover tunnels. HYPERDESMO®-PB waterproofing membranes offer advanced waterproofing solutions for foundations, podiums, slabs, and retaining walls in residential and commercial buildings. With our proven, certified, and competitive solutions, we support owners, engineers, and contractors, offering durability, protection, and long-term service life.

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.

ALCHIMICA'S BITUMEN-EXTENDED POLYURETHANE TECHNOLOGY

HYPERDESMO®-PB technology is ALCHIMICA's innovative approach to waterproofing, utilizing bitumen-extended polyurethane technology. This technology leverages the longstanding use of bitumen in waterproofing and protection applications, enhancing it with the flexibility and resilience of polyurethane. Bitumen, known for being an excellent humidity barrier, provides robust protection against moisture, while polyurethane (PU) resins introduce superior flexibility to the bitumen, ensuring the material can handle movement and stress without cracking. ALCHIMICA's pioneering efforts have led to the creation of HYPERDESMO®-PB, a product line that combines these materials to produce waterproofing membranes of exceptional quality.

Bitumen-extended polyurethane technology marks a significant advancement in waterproofing materials by ingeniously merging the durability of bitumen with the flexibility of polyurethane. This innovative blend results in a composite that is not only resilient but also adaptable, making it suitable for a vast array of construction and refurbishment projects. The HYPERDESMO®-PB series of products exemplify this technology, offering liquid-applied waterproofing membranes that integrate the best attributes of their base materials to form a protective layer that is exceptionally elastic and hydrophobic. After curing, HYPERDESMO®-PB creates a robust membrane that adheres strongly to a variety of surfaces, including concrete, metal, and asphalt. The versatility of HYPERDESMO®-PB is evident in its wide range of applications—it can be effectively used in foundations, on both horizontal and vertical surfaces, beneath tiles on balconies and verandas, and for waterproofing green roofs, flat and inclined concrete roofs in non-exposed areas, as well as in complex structures like tunnels and bridges. It is also suitable for areas experiencing heavy traffic and for moisture-rich environments such as bathrooms and saunas.

The benefits of using bitumen-extended polyurethane are manifold. The material exhibits enhanced durability, resisting weathering, chemicals, and physical wear. Its superior elasticity allows it to comfortably handle the natural expansion and contraction caused by temperature fluctuations, maintaining its integrity over time. The strong adhesion of the material ensures a continuous and effective barrier against water ingress on various substrates. Its hydrophobic properties keep surfaces dry, crucial in preventing water damage. The seamless nature of the application eliminates joints or seams, which are potential weak points for leaks, thereby enhancing the overall effectiveness of the waterproofing system. The technology is not only versatile, fitting a broad range of applications but also cost-effective, with the potential for significant long-term savings on maintenance and repairs. Furthermore, some formulations of bitumen-extended polyurethane are designed to be environmentally friendly, reducing the ecological impact associated with traditional waterproofing materials.

The HYPERDESMO®-PB products stand out in the field of construction for their robust, flexible, and durable solutions that meet diverse waterproofing needs. Their reliability and adaptability make them a preferred choice among professionals in the construction industry, underscoring the practical benefits and innovative application of bitumen-extended polyurethane technology.

BELOW GROUND WATERPROOFING: ENSURING LONGEVITY AND INTEGRITY IN CONSTRUCTION

As urban areas continue to expand, the necessity for robust, durable construction becomes increasingly significant. Within the construction industry, a critical component of this durability is below ground waterproofing. This essential practice addresses various threats right from the start, ensuring the integrity and longevity of structures. By implementing extensive waterproofing measures during the construction phase, contractors can provide effective moisture control, avoiding the complications and costs associated with retroactive repairs. Below ground

waterproofing solutions, such as positive side and negative side waterproofing, are vital for maintaining the structural health of structures.

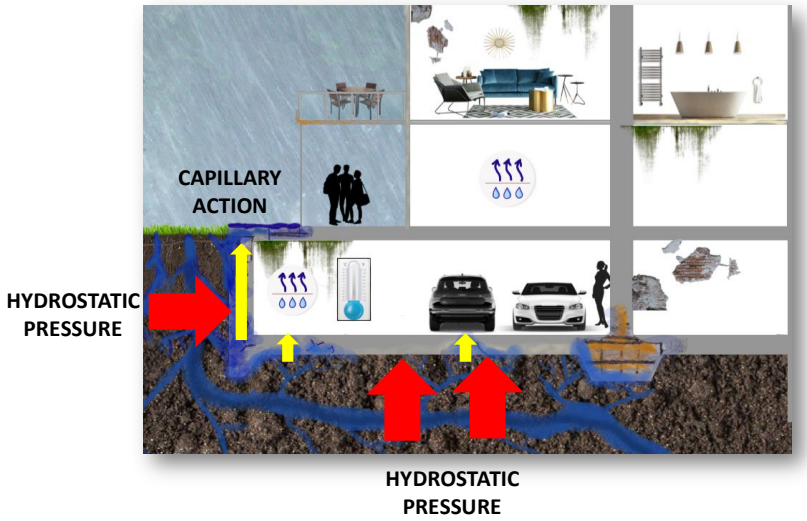
HOW CAN WATER PENETRATE A STRUCTURE?

Causes of leakages:

- Defective structural design
- Use of poor - quality construction materials
- Porous structures
- Improper methodology of construction
- Improper slopes on top surfaces

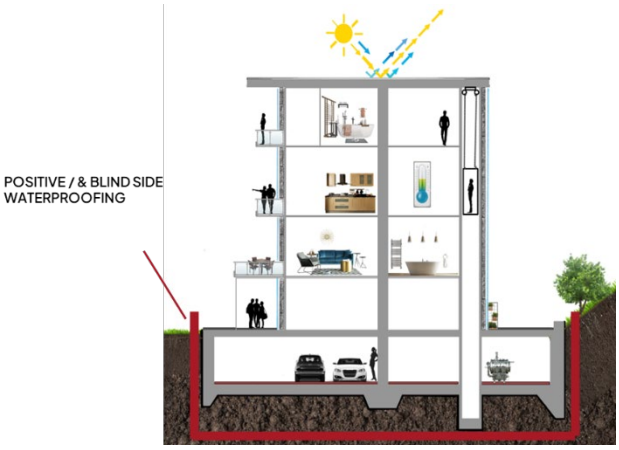
Sources of leakages:

- Subsoil water rising by capillary action
- Cracks in external plaster
- Vegetation growth
- Separation gaps between the partition wall and beams and the columns
- From expansion joints



TYPES OF BELOW GROUND WATERPROOFING: EXTERNAL AND INTERNAL

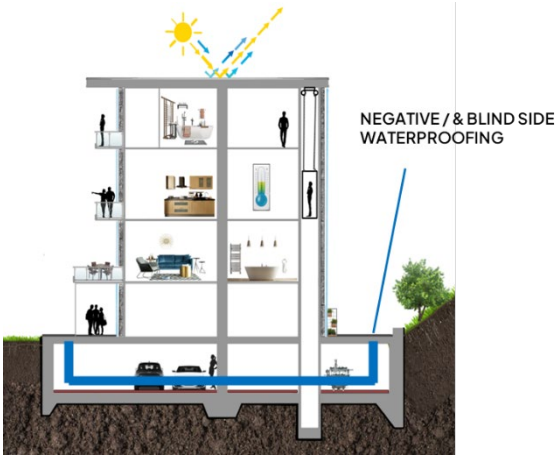
POSITIVE SIDE WATERPROOFING: PROACTIVE PROTECTION



Positive side waterproofing is applied to the exterior surface of the structure, directly facing the source of water. This method is considered the most effective solution because it prevents water from penetrating the building envelope. Positive side waterproofing not only protects the structure from moisture ingress but also withstands hydrostatic pressure, which is the force exerted by standing water. By creating a robust barrier, it shields the foundation from aggressive chemicals and gas penetration, enhancing the building's durability and lifespan. External waterproofing involves applying waterproofing materials to the outside surface of the foundation. It includes techniques such as membrane systems, liquid-applied coatings like bitumen-extended polyurethane membranes, and drainage systems. External waterproofing is

essential for protecting the structure from hydrostatic pressure and external water sources.

NEGATIVE SIDE WATERPROOFING: INTERNAL DEFENSE



Negative side waterproofing, on the other hand, is applied to the internal side of the structure. It is designed to protect and waterproof the internal surfaces against water that has already penetrated the building envelope. While this method is crucial for retrofitting and repairs, it is generally less effective than positive side waterproofing because it addresses water infiltration after it has occurred. However, the negative side waterproofing plays a vital role in managing capillary action, which is the process of water rising through porous materials due to surface tension.

UNDER FOUNDATION SLAB WATERPROOFING: CRUCIAL FOR BASEMENT HEALTH

Waterproofing beneath foundation slabs is vital to prevent water from rising through the concrete due to capillary action. This method ensures that the basement remains dry, protecting the structure and any stored items from moisture damage. It also helps in managing hydrostatic pressure from groundwater, which can cause significant damage if not properly addressed. A comprehensive waterproofing system in new construction includes protecting the floor slab. Installing the waterproofing layer beneath the foundation plate, rather than on top of the concrete slab, ensures that the foundation stays dry, and the concrete offers improved thermal insulation. This technique safeguards the concrete from ground moisture, enhancing the structure's durability and thermal efficiency. By blocking water infiltration at the foundation level, this approach also helps create a healthier indoor environment by minimizing the potential for mold and mildew growth.

KEY BENEFITS OF EXTERNAL WATERPROOFING PRIOR TO INTERNAL IN BELOW GROUND PROJECTS

In below ground projects, external waterproofing is essential for several reasons, offering advantages that make it a preferable choice over internal waterproofing. By

applying waterproofing materials to the exterior surface of the foundation, external waterproofing serves as the first line of defense against water ingress, effectively preventing moisture from penetrating the building envelope. This proactive approach safeguards the structural integrity by stopping water from reaching and damaging the foundation, thereby reducing the risk of deterioration caused by freeze-thaw cycles and corrosion of steel reinforcement. It also provides robust protection against hydrostatic pressure, aggressive chemicals, and gas penetration, challenges that are more complex to address once water has infiltrated the structure.

External waterproofing significantly enhances energy efficiency by maintaining a dry foundation, which improves insulation properties and reduces energy consumption for heating and cooling. It also extends the lifespan of building materials, reducing the likelihood of mold and mildew growth, and contributing to a healthier indoor environment. Furthermore, by addressing waterproofing needs during the construction phase, external waterproofing minimizes the need for costly and disruptive internal repairs later on, making it a cost-effective long-term strategy. Overall, implementing external waterproofing in below ground projects ensures durable, stable, and moisture-resistant structures, providing comprehensive protection against water-related issues.

However, in cases where external waterproofing is not possible or has not been properly executed, internal waterproofing becomes critical. Internal waterproofing acts as a secondary line of defense, addressing water infiltration from the inside. This includes using sealants, negative-side membranes, and coatings to manage moisture and prevent further damage. While internal waterproofing is generally less effective than external methods, it is crucial for retrofitting and repairs, ensuring that buildings remain protected and habitable. Integrating both external and internal waterproofing strategies ensures a comprehensive approach to moisture management, offering robust protection for below ground structures.

ALCHIMICA offers a range of advanced waterproofing solutions tailored for below ground applications. Our certified HYPERDESMO®-PB systems, based on bitumen-extended polyurethane liquid membranes, provide exceptional protection and durability. These systems are designed to address the unique challenges of below

ground waterproofing, offering high-performance solutions that combine the benefits of bitumen with innovative polyurethane technology.

By choosing ALCHIMICA, architects and developers can ensure their projects are protected from water ingress, structural deterioration, and environmental stressors. Our solutions provide long-term protection, enhancing the durability, energy efficiency, and overall health of modern buildings.

THE IMPORTANCE OF WATERPROOFING PODIUMS AND SLABS

In construction, podiums and slabs are fundamental structural elements that play critical roles in the stability and functionality of buildings. Podiums serve as elevated platforms, often providing essential space for amenities, parking, and commercial activities, while slabs form the floors and roofs that bear significant loads. Given their exposure to environmental factors and their importance in maintaining the structural integrity of buildings, effective waterproofing of these components is crucial. Waterproofing not only protects the concrete from water damage and the corrosive effects of moisture but also prevents structural deterioration, mold growth, and energy inefficiencies.

PODIUMS

A podium is a structural element in buildings that forms an elevated platform for underground spaces or landscaped areas for recreational use. Waterproofing is crucial as these structures are exposed to water from various sources, leading to corrosion, structural damage, and mold growth. Effective waterproofing protects the structure's integrity, enhances durability, and ensures a safe, healthy, and energy-efficient environment for building occupants.

Podiums vary in design, function, and location within a structure. Residential podiums serve as shared spaces for amenities like gardens, swimming pools, playgrounds, and recreational areas, while commercial podiums provide spaces for retail shops,

restaurants, and other commercial activities. Mixed-use podiums combine residential, commercial, and office spaces within the same structure, accommodating a variety of uses.

Parking podiums are designed with multiple levels to maximize parking spaces and may include ramps, elevators, and staircases for accessibility. Amenity podiums are dedicated to amenities such as gyms, swimming pools, and leisure areas, often featuring landscaping and seating areas. Green roof podiums promote sustainability and provide green space in urban environments, while outdoor spaces offer communal areas for various activities. Cultural and recreational podiums are used for facilities like theaters, sports arenas, and community centers, accommodating large crowds and providing necessary infrastructure for cultural and recreational activities. Technical spaces contain technical or mechanical areas for building services, often with reinforced structures and specialized access for maintenance.

Understanding different types of podiums helps in planning and designing effective waterproofing solutions that cater to their specific needs and functions, ensuring long-term durability and functionality.

SLABS

A slab is a flat, horizontal concrete element in building construction that forms floors or roofs and plays a crucial role in distributing loads and providing a solid, durable surface for various activities. Waterproofing slabs is essential as they are susceptible to water infiltration, which can cause serious issues such as structural weakening, corrosion of embedded steel reinforcements, and deterioration of the concrete itself. Effective slab waterproofing ensures the longevity and integrity of the structure, maintaining a healthy, safe, and comfortable environment for occupants while enhancing the building's overall energy efficiency.

Slabs come in various types, each serving specific structural and architectural purposes. Solid slabs are the most common type, known for their simplicity in design

and construction, offering excellent load-bearing capacity. Hollow core slabs are precast concrete elements with hollow spaces or voids running through their length, reducing the weight of the slab without compromising its strength. Waffle slabs, also known as ribbed slabs, have a grid pattern of ribs on the underside, giving them a waffle-like appearance.

Flat slabs are reinforced concrete slabs supported directly by columns without the use of beams, allowing for a flexible and open floor plan. Composite slabs combine concrete with other materials, such as steel decking, to create a hybrid structure that benefits from both materials' properties. Post-tensioned slabs are reinforced with high-strength steel tendons that are tensioned after the concrete has cured, allowing for thinner slabs and longer spans without the need for additional support beams. Precast slabs are manufactured off-site and then transported to the construction site for installation, allowing for high-quality control and faster construction times. Floating slabs are a type of slab-on-grade foundation where the slab is not anchored to the ground but "floats" on a bed of gravel or sand, reducing the risk of cracking due to soil movement. Mat or raft slabs are thick, reinforced concrete slabs that cover the entire footprint of a building, distributing loads evenly over a large area.

Understanding the different types of slabs helps in selecting the appropriate slab design for specific construction needs, ensuring structural integrity, efficiency, and durability. Each type offers unique benefits and is suited to different applications, contributing to the overall performance and functionality of the building.

THE CRITICAL ROLE OF WATERPROOFING

Choosing the right waterproofing systems for slabs and podiums is critical for the longevity and functionality of any construction project. The proper waterproofing system must be selected based on the specific needs of the structure, environmental conditions, and intended use of the spaces. High-quality, effective waterproofing solutions can prevent a host of problems, including structural weakening, corrosion of reinforcements, and mold growth, which can compromise the safety and durability of the building. Applying the correct waterproofing system from the beginning of the construction process is essential. Early implementation ensures that the building is

protected from the outset, reducing the risk of future damage and costly repairs. This proactive approach not only extends the lifespan of the structure but also ensures compliance with building codes and standards, providing a safe and comfortable environment for occupants. Investing in the right waterproofing solutions from the start is a cost-effective strategy that safeguards the building's integrity and enhances its overall performance and efficiency.

FROM ETAG 005 (PART 1&6) TO EAD 030350-00-0402

ETAG 005 is a European technical guideline for liquid-applied roof waterproofing systems (kits). The ETAG 005 outlines specific stipulations for liquid-applied roof waterproofing kits based on polymer-modified bitumen emulsions and solutions, glass-reinforced resilient unsaturated polyester, flexible unsaturated polyester, hot-applied polymer-modified bitumen, polyurethane, bitumen emulsions and solutions, and water dispensable polymers. These guidelines aim to ensure the safety and effectiveness of roof waterproofing systems. Since the LARWKs (Liquid Applied Roof Waterproofing Kits) are based on different materials, which might necessitate additional specific verification and/or assessment, the kits are divided into families of products, dealt with in Complementary Parts. Part 1 provides general requirements for the assessment of liquid-applied roof waterproofing kits and Part 6 is a complementary part of ETAG 005 that specifies specific stipulations for kits based on polyurethane.

The ETAG 005 has been replaced by EAD 030350-00-0402 which is a European Assessment Document for Liquid Applied Roof Waterproofing Kits (LARWK). EADs are more comprehensive than ETAGs and provide a more detailed assessment of construction products. EADs are intended to be used as a basis for issuing European Technical Assessments (ETAs).

The EAD 030350-00-0402 specifies the essential characteristics and relevant assessment methods and criteria for LARWKs. It also provides information on the intended use(s) of the construction product, working life/durability, and specific terms used in the EAD. It outlines the methods and criteria for evaluating a product's

performance based on essential characteristics such as external fire performance, reaction to fire, content, emission, and/or release of dangerous substances, resistance to water vapor, watertightness, resistance to wind loads, resistance to mechanical damage (perforation), resistance to fatigue movement, resistance to the effects of low and high surface temperatures, resistance to ageing media, resistance to plant roots, effects of variations in kit components and site practices, effects of day joints, and slipperiness and more.

By choosing a LARWK that is certified according to EAD 030350-00-0402, you can be confident that the product meets the required EU standards and provides long-term protection against water penetration, thus extending the roof's service life.

EN 1504-2

EN 1504-2 is a European standard that focuses on surface protection systems for concrete, aiming to prevent deterioration due to environmental exposure, chemical attack, or physical damage. It covers a wide range of products and aims to enhance the durability and longevity of concrete structures by specifying performance criteria for protection systems. The standard outlines various aspects of concrete repair and protection, including the assessment of existing structures, preparation of surfaces, selection of repair materials, application techniques, and quality control measures.

One key component of EN1504-2 is the assessment of the condition of concrete structures prior to repair and protection activities. This involves evaluating factors such as damage extent, presence of cracks or defects, and environmental conditions affecting the structure. Proper surface preparation is essential for achieving strong adhesion between the substrate and repair materials, maximizing performance and durability.

The standard also provides guidelines for the selection of repair materials based on compatibility, durability, and performance requirements. It addresses application techniques for repair and protection systems, including mixing, placing, and curing procedures. Quality control measures are also a key aspect of EN1504-2, ensuring compliance with specified requirements throughout the repair and protection process. By following these standards, professionals can ensure the durability, safety,

and longevity of concrete infrastructure, contributing to sustainable development and the preservation of critical assets.

THE PURPOSE OF ROOT RESISTANCE PROPERTIES

In construction, waterproofing has evolved into a critical concern, especially in projects that interact with soil and plant roots. Structures like green roofs, planter boxes, and below-grade foundations face unique challenges due to persistent root infiltration. The growing emphasis on sustainable construction practices, including urban green spaces, demands innovative waterproofing solutions that can handle aggressive root growth while maintaining long-term structural integrity. ALCHIMICA's HYPERDESMO®-PB-2K and HYPERDESMO®-PB provides an exceptional solution to these challenges, utilizing bitumen-extended polyurethane technology to provide unmatched protection. Root resistance ensures that waterproofing membranes prevent plant roots from penetrating structural barriers, preventing water leakage and structural damage. This is particularly crucial in environments where waterproof membranes are in direct contact with soil and vegetation. Key applications include:

GREEN ROOFS, TERRACES, PODIUMS &WALLS

Green roofs integrate vegetation into building rooftops, providing ecological benefits like natural insulation and reducing urban heat islands. However, their sustainability depends on maintaining the structural integrity of the building. Waterproofing membranes must prevent root infiltration into the roofing materials, as roots can cause water damage and compromise the structure. A root-resistant membrane ensures the vegetation remains isolated from the building, providing a barrier to root penetration and supporting the longevity of the green roof system.

BELOW-GRADE WATERPROOFING

Below-grade construction involves waterproofing basements, foundations, and tunnels, which are directly exposed to soil. This creates potential vulnerabilities, as plant roots from nearby trees and vegetation seek moisture and nutrients. If not effectively resisted, these roots can compromise the waterproof membrane, leading to

water leakage and damage. A robust root-resistant membrane is essential for protecting below-grade structures from aggressive root growth.

PLANTER BOXES

In both commercial and residential environments, planter boxes are used to cultivate plants, often on rooftops or decks. If plant roots breach the waterproof membrane, water leakage could cause severe damage to the structure. A root-resistant membrane ensures water is contained within the planter box, preventing water damage to the surroundings and maintaining structural integrity.

Recognizing the need for comprehensive root resistance in waterproofing, ALCHIMICA has developed a wide range of products with root-resistant properties. Many of ALCHIMICA's materials have even been certified in compliance with international standards such as UNE 53420:1989 to meet the specific needs of projects and assignments requiring this certification. For more information about the certified materials and certificates, please feel free to contact us at alchimica@alchimica.com.

THE PURPOSE OF RADON GAS RESISTANCE PROPERTIES

In areas where radon gas is common, incorporating radon-resistant materials and techniques during the construction process is essential. These materials help create a barrier that prevents radon from entering the building, ensuring a safer indoor environment. This proactive approach is particularly important in regions known for high radon concentrations. By integrating radon gas resistance properties into the design and construction of buildings, it is possible to significantly reduce the risk of radon exposure, thereby protecting the health and well-being of occupants. Radon is a naturally occurring radioactive gas that can seep into buildings from the soil through cracks and openings in the foundation.

Many materials may have resistance properties, but HYPERDESMO®-PB-MONO has been tested and certified in compliance with international standards. HYPERDESMO®-PB-MONO has undergone rigorous testing and has been certified for its radon resistance properties by a recognized standards institution. The certification process involved exposing the product to high concentrations of radon gas and measuring its effectiveness in preventing radon penetration. The test results

demonstrated that HYPERDESMO®-PB-MONO creates an impermeable barrier, significantly reducing radon levels. The average impermeability factor was found to be 0.87%, and the ℓ/L ratio (thickness of the sample to the diffusion length of radon) consistently exceeded the threshold value, classifying the material as Radon Tight. This certification confirms that HYPERDESMO®-PB-MONO meets international standards for radon resistance, ensuring its reliability and effectiveness in protecting buildings from radon infiltration. HYPERDESMO®-PB-MONO creates an impermeable barrier that not only blocks water but also prevents radon gas from penetrating the building envelope. This dual functionality enhances the safety and health of the indoor environment. ALCHIMICA has developed a range of products with radon-resistant properties. For more information about the certified materials and certificates, please feel free to contact us at alchimica@alchimica.com.

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:

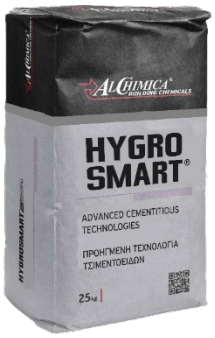
1. **HYGROSMART®-FIX&FINISH** (Single component, rapid-setting shrinkage-compensated, thixotropic, fiber-reinforced, cementitious mortar applied in a single layer from 3 to 40 mm thick, for repairing and smoothing concrete, certified according to EN1504-03, Type R4 CLASS III), or
2. **HYGROSMART®-BUILDING-45-THIXO** (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 (1atm)
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

Dilatation joints and inner angles should NOT be treated with a polyurethane-based sealant if bitumen-based materials are used or exist. Bitumen-based materials and polyurethane-based sealants are not compatible if in contact directly. The chemical properties of these materials can react negatively when they come into contact, potentially causing degradation or failure of the sealant. Flashing points, surface irregularities, cracks, and details can be repaired using HYPERDESMO® PB-1K. Dilatation joints and large cracks should be treated with HYPERDESMO®-PB-1K or with HYPERDESMO®-PB-2K.

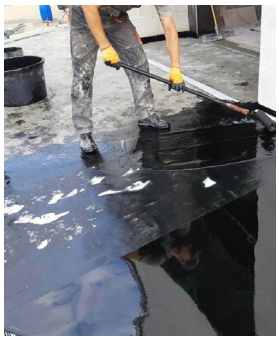
VERTICAL AND HORIZONTAL AREAS CAN BE TREATED WITH HYPERDESMO®-PB-1K.

HYPERDESMO®-PB-1K is a quick-curing, one component, thixotropic, bitumen-extended polyurethane fluid for flashing, waterproofing and protection. It produces a hydrophobic, elastic membrane with very strong adhesion to most types of substrates while offering excellent mechanical and chemical resistance properties. It is ideal for application on vertical surfaces: no running, no bubbling. It is based on pure elastomeric hydrophobic polyurethane resin and is extended with chemically polymerised virgin bitumen. Also, you can reinforce the joints and cracks with geotextile stripes and HYPERDESMO®-PB-1K applied wet-on-wet, allowing it to form a composite layer that offers additional protection from future cracking at these vulnerable points.

The material does not require thinning, but SOLVENT-01 may be used if needed. HYPERDESMO®-PB-1K has excellent thermal resistance and never turns soft, with a maximum service temperature of 80°C and a maximum shock temperature of 150°C. It also has outstanding mechanical properties, including high elongation, tensile and tear strength, and high abrasion resistance. The material has excellent chemical resistance and is an effective humidity barrier.

HORIZONTAL AREAS CAN BE TREATED WITH HYPERDESMO®-PB-2K.

HYPERDESMO®-PB-2K stands out not only as a waterproofing membrane but also as an exceptionally effective sealant for joints, cracks, detailed areas, and especially large areas thanks to its versatile and resilient properties. This two-component, bitumen-extended polyurethane product creates a highly elastic membrane that excels in sealing and bridging gaps, even in areas that experience significant movement or vibration. Its superior adhesion capabilities ensure a strong bond to a variety of substrates including concrete, asphalt, and metal, which is critical for long-term durability and integrity of the seal. Additionally, HYPERDESMO®-PB-2K cures quickly, reducing wait times and accelerating project timelines. The material is also capable of withstanding extreme temperatures and environmental conditions without degradation, making it an ideal choice for both indoor and outdoor applications where reliability is paramount.



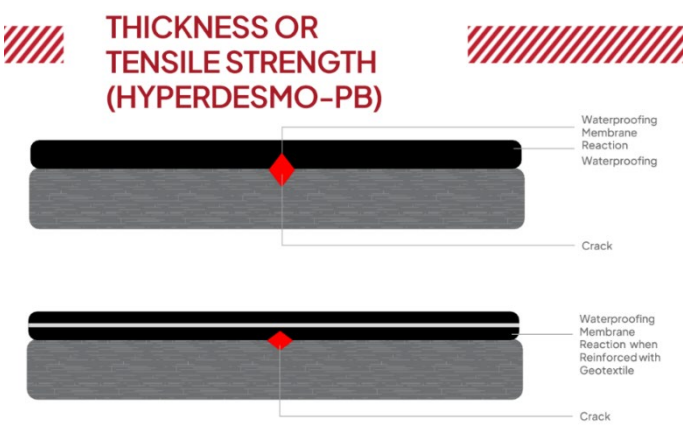
Treating joints, cracks, and detailed areas under the main waterproofing membrane with HYPERDESMO®-PB-2K is crucial for ensuring the integrity and longevity of waterproofing systems. Proper treatment of these vulnerable points with HYPERDESMO®-PB-2K before applying the main waterproofing layer is essential to prevent water ingress and structural damage.

HYPERDESMO®-PB-2K is a two-component waterproofing system that leverages a reaction curing process, allowing for a single-coat application to achieve the desired total thickness. This method ensures strong adhesion, making it ideal for seamless waterproofing. To ensure maximum compatibility and adhesion, particularly when HYPERDESMO®-PB-2K is used both for sealing and as the primary waterproofing layer, the application should follow a "wet-on-wet" method. Start by treating the joints and angles, then immediately proceed with the main waterproofing application while the HYPERDESMO®-PB-2K is still wet. This approach creates a seamless bond between layers, ensuring secure adhesion. The product's self-leveling properties and ability to be applied in full thickness with a single coat, using a notched trowel, squeegee,or roller, offer strong protection. This reduces the risk of leaks and

guarantees the seamless bond that preserves the structural integrity and protection of the building.

REINFORCEMENT OF WATERPROOFING MEMBRANES WITH GEOTEXTILE

Geotextile reinforcement is a crucial component in the construction industry, providing long-term protective solutions for waterproofing systems. These fabric-made sheets are used in various applications, including drainage and construction projects. They are divided into two categories: non-woven and woven geotextiles. Woven geotextiles have high load capacity and tensile strength, making them ideal for stabilization and reinforcement applications. Non-woven geotextiles, on the other hand, offer durability and ease of application benefits. Nonwoven geotextiles are manufactured by binding short and long fibers together through needle punching or other alternative methods. The term "pressed" in relation to non-woven geotextiles usually refers to the process of needle punching. In this context, "pressed" refers to a non-woven geotextile that has undergone the needle punching process, while "unpressed" usually refers to a non-woven geotextile before this process. The needle-punching process can improve the strength of the geotextile. For cold climatic conditions, it is recommended to choose the PRESSED geotextile.



Geotextiles protect and separate membranes from structures due to their higher pre-break elongation capacity than other materials like glass mesh or fiberglass mesh. They can follow the movement of elastomeric waterproofing materials, achieving reinforcement and long-term durability. However, unsound

substrates often have high movement or large cracks, which can cause problems on unarmed waterproofing membranes. Geotextiles can prevent future cracks by sealing and protecting details in areas like roofs, flashing, and joints, and repairing existing cracks and gaps. They are often made of Polyester, which is a strong fiber with excellent oxidation resistance and good mechanical stability. It offers strong oxidation or mildew resistance because it stays resilient when wet. It is used as a reinforcement material embedded between the waterproofing coats, so it does not have direct exposure to the conditions. in this case, any resistance concerns those materials that are in direct contact with the environment and conditions. The HYPERDESMO® and HYPERDESMO®-PB System remains elastic at -40°C. Another very important advantage of our materials that are in the technology of liquid polyurethane waterproofing membranes is the fact that they can easily be reinforced with geotextile if needed.

ALCHIMICA offers a high-tensile strength range of non-woven geotextiles made of 100% polyester fibers, manufactured with the needle punching process. They can be applied on the full surface between the first two layers of the HYPERDESMO®-PB System, providing the required reinforcement for certain applications, such as over old bitumen membranes and unsound screeds. They are suitable for solvent-based or water-based liquid waterproofing systems.

GEOTEXTILE-50 (1X200m)

GEOTEXTILE-50 is a non-woven geotextile, from 100% polyester fibers, manufactured with the needle punching process.

COLOR	PACKAGING
WHITE	200m

GEOTEXTILE-50 PRESSED (1.02X100m) (0.17X100m)

GEOTEXTILE-50 PRESSED is a non-woven geotextile, from 100% polyester fibers, manufactured with spun-lacing process (hydro-entanglement).

COLOR	PACKAGING
WHITE	100m
WHITE	100m

GEOTEXTILE-45 PRESSED (1.02X100m)

COLOR	PACKAGING
WHITE	100m²

METHOD STATEMENT

PODIUMS & SLADS WATERPROOFING SYSTEM BASED ON THE HYPERDESMO®-PB SYSTEM

Waterproofing slabs and podiums is a critical and necessary step before advancing in any construction project. Effective waterproofing tackles a variety of threats from the outset, including water ingress, structural weakening, corrosion of steel reinforcements, and environmental impacts like temperature variations and mechanical pressures. ALCHIMICA provides advanced waterproofing solutions for slabs and podiums, ensuring exceptional protection and longevity in high-performance applications. This system is based on the HYPERDESMO-PB range of products. HYPERDESMO-PB products are based on a pure elastomeric hydrophobic polyurethane resin extended with chemically polymerized virgin bitumen. After curing they give a seamless, very elastic, and extremely hydrophobic membrane which is ideal for several NON exposed waterproofing applications. HYPERDESMO-PB materials also serve as perfect vapour barriers and have excellent anti-root properties. This system involves four main different HYPERDESMO-PB products: HYPERDESMO-PB-2K, HYPERDESMO-PB-1K-FC, HYPERDESMO-PB-Mono and HYPERDESMO-PB-1K.

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 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 EQUIPMENT CLEANING

To maintain the integrity and efficacy of products, especially when working with liquid chemicals, it is crucial to use equipment that is 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
- Hardness: R28 = 15 MPa.
- Humidity: W < 10%.
- 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:

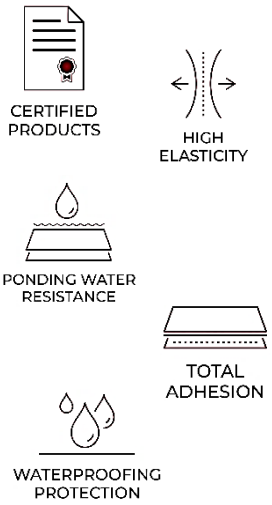
Testing the products to be used in this build-up application on the specific substrate and conducting mock-up tests are essential steps to ensure good adhesion. Mock-up tests replicate real-world conditions and provide a practical way to evaluate the performance of the products in situ. Pull-out tests 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 MICROSEALER-50 GEODESMO-50	200-400 gr/m^2 Subject to porosity
2. DETAILS TREATMENT	HYPERDESMO®-PB-1K HYPERDESMO®-PB-2K	Subject to project needs
3. MAIN MEMBRANE	HYPERDESMO-PB-1K-FC HYPERDESMO-PB-MONO HYPERDESMO®-PB-2K	Total consumption: 2-2,5 kg/m^2
4. PROTECTION GEOTEXTILE	GEOTEXTILE-45/50 PRESSED	Subject to project needs
	DRAINING SYSTEM OR ADDITIONAL PARTS	



SUBSTRATE PRIMING

PRIMER	AQUASMART-DUR / AQUADUR	MICROSEALER-50	GEODESMO-50
CONSUMPTION	- 150-200 gr/m² - water/humidity barrier –three coats with total cons. of 500-600 gr/m²	- 150-200 gr/m² per coat - 100-300 gr/m², subject to substrate porosity	- 150-200 gr/m² per coat - 100-500 gr/m², subject to substrate porosity.
COMPOSITION	WATER BASED EPOXY	SOLVENT-BASED PU	SOLVENT-BASED PU
APPLICATIONS METHODS	brush, roller	brush, roller	brush, roller
TACK FREE TIME, @ 77 °F (25°C) & 55% RH	3-5 Hours	6-12 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	6-12 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	12-24 Hours	2-24 Hours
RECOMMENDED DILUTION	10% WATER	X	X
ADDITIVES	X	X	X
COLORS	TRANSPARENT	TRANSPARENT	TRANSPARENT
POT LIFE	1 Hour	X	X
COMPONENTS	TWO COMPONENTS	SINGLE COMPONENT	SINGLE COMPONENT

Choose a suitable primer for your project needs and requirements:

■ 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/m² in 3 successive layers (150-200gr/m² per coat)

■ MICROSEALER-50 is a polyurethane based primer/concrete sealer suitable for both porous and non-porous substrates. It is a single component with low viscosity, deep penetration, and slow cure, offering excellent wetting, impregnation, and paint-over time on various substrates. It seals and stabilizes substrates, ensuring good adhesion of the main coat. It is suitable for concrete, humid concrete, metal/steel, porous ceramic tiles, and gypsum boards.

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

Application: You choose this primer if your concrete surface is porous. MICROSEALER-50 primer will penetrate, stabilize, and seal the concrete surface in depth. After MICROSEALER-50 application you should wait at least 12 hours in order to apply the main membrane. Apply the main membrane within a maximum of 3 days after primer application.

■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.

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

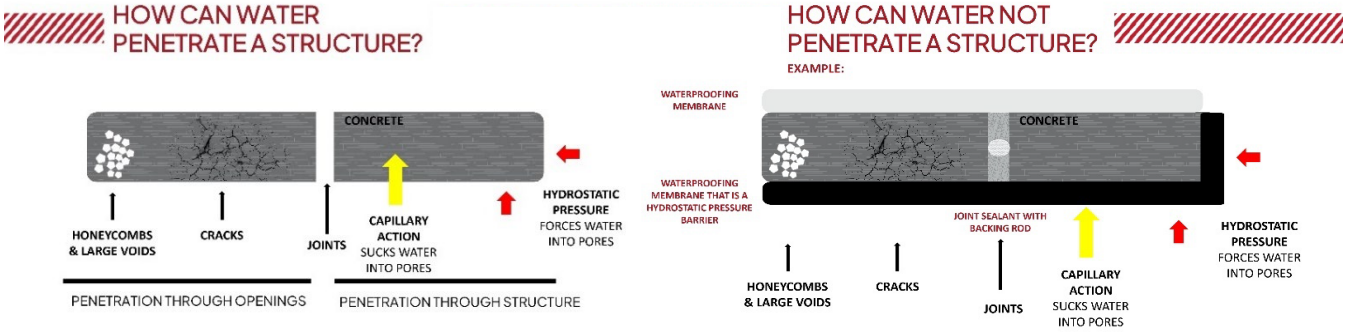
Application: You choose this primer if the concrete surface is extremely porous. GEODESMO-50 has a very fast curing profile (same-day primer), which allows it to be used more successfully in colder climates and when rain is not very predictable because 2-3 hours after this primer application, you can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

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.

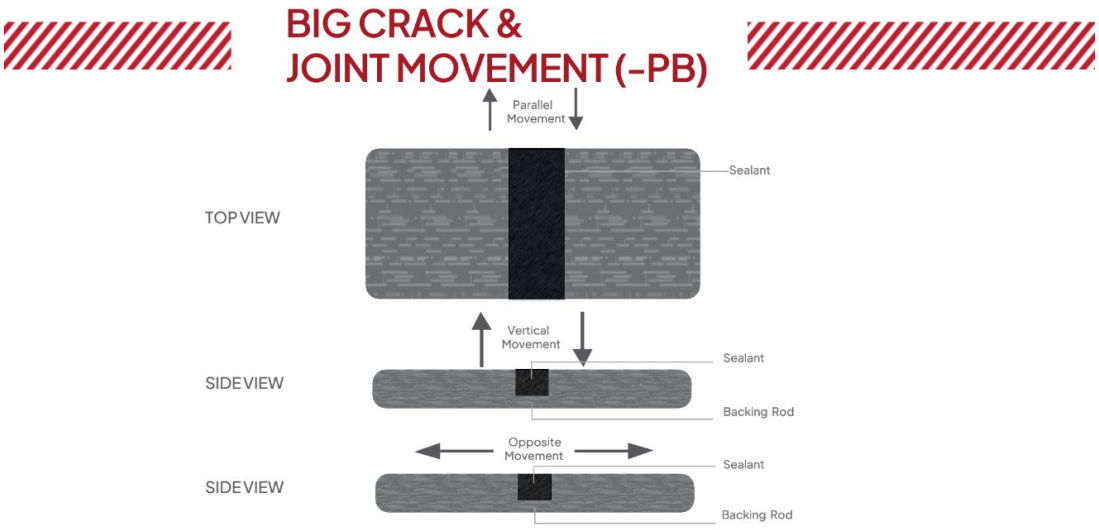
DILATATION JOINTS, INNER ANGLES & SMALL CRACKS

Concrete expansion joints are crucial elements in external foundation structures below ground, where they function to prevent cracking by absorbing stresses and allowing for soil movement. These joints facilitate independent movement and thermal expansion of the concrete, which is inherently non-elastic and prone to cracking. Strategically placed, these joints are designed to prevent structural failure. However, in below-ground applications, such structures with expansion joints are particularly vulnerable to water ingress. To combat this, robust waterproofing and the application of durable sealants are imperative to maintain joint flexibility and ensure proper functionality. It's essential to address all dilatation joints, inner angles, wall-floor connections, visible cracks, and drainage systems. Additionally, elements such as



pipes and any mechanically installed equipment on the foundation need thorough waterproofing treatment to prevent leakage and protect the structural integrity.
Dilatation joints, large cracks and inner angles should be treated with HYPERDESMO-PB-1K-FC, HYPERDESMO-PB-Mono, HYPERDESMO-PB-1K Or HYPERDESMO-PB-2K.

Clean joints thoroughly, and ensure that no dust, oil, grease, wax contaminants, or silicone remains are present. While a primer may not always be necessary in detailstreatment, it becomes essential on porous or wet substrates to prevent air bubbles from forming due to rising substrate temperatures. Once the primer has



cured, apply HYPERDESMO-PB-1K or HYPERDESMO-PB-2K. Apply HYPERDESMO®-PB-2K (or HYPERDESMO®-PB-1K) locally over any cracks larger than 1 mm before the main coat.

Choose one of the following methods, depending on your preference and needs:

FOR HORIZONTAL AND VERTICAL SURFACES: HYPERDESMO®-PB-1K

Teat joints, small cracks and details with HYPERDESMO®-PB-1K using a brush or small roller. For reinforcement then apply a piece of GEOTEXTILE (strips 0.17x100m, non-woven geotextile of 50-100gr/m^2) cut in proper size, wet on wet, for better protection from cracks in these specific points, if movement happens in the future. Immediately, cover the details areas with the sufficient consumption of

HYPERDESMO®-PB-1K to cover completely the GEOTEXTILE. If an anti-slippery effect is required, natural dry quartz sand can be broadcasted over the fresh coat. Remove any excess sand with a vacuum. Alternatively, use HYPERDESMO-PB-1K-FC or HYPERDESMO-PB-Mono.



FOR HORIZONTAL SURFACES: HYPERDESMO®-PB-2K

Using HYPERDESMO®-PB-2K to treat joints, cracks, and intricate areas before applying the main waterproofing membrane is crucial for establishing a robust system. Ensure surfaces are clean and dry, then apply the product to these vulnerable spots. Its flexibility and strong adhesion make it ideal for sealing joints and detailed areas.

Follow with the main waterproofing layer while the initial application is still wet, ensuring a strong and seamless bond.


Utilize tools like notched trowels, squeegees or rollers to apply the product in a single coat. Its self-leveling properties make application smooth and efficient. For additional reinforcement, place GEOTEXTILE strips over the treated joints while wet, and cover fully with HYPERDESMO®-PB-2K for added protection against future movement.

MAIN WATERPROOFING

	HYPERDESMO®-PB-2K	HYPERDESMO-PB-1K-FC	HYPERDESMO-PB-MONO	HYPERDESMO-PB-1K
CONSUMPTION	1,5 -2 kg/m^2	1,5 -2 kg/m^2	1,5 -2 kg/m^2	1,5 -2 kg/m^2
APPLICATION AREA	HORIZONTAL	VERTICAL & HORIZONTAL	VERTICAL & HORIZONTAL	VERTICAL & HORIZONTAL
APPLICATIONS METHODS	notched trowel, squeegee, roller	notched trowel, squeegee, roller, or airless spray machine	notched trowel, squeegee, roller, or airless spray machine	notched trowel, squeegee, roller
TACK FREE TIME, @ 77 °F (25°C) & 55% RH	1-2 Hours	1-2 Hours	1-2 Hours	1.5-2.5 Hours
APPLICATION OVER PREVIOUS COAT (PRIMER)	Depending on the primer curing time	Depending on the primer curing time	Depending on the primer curing time	Depending on the primer curing time
RECOAT TIME	Only wet-on-wet	6-24 Hours	6-24 Hours	3-24 Hours
COLORS	BLACK	BLACK	BLACK	BLACK
POT LIFE	30-45 min at 20 °C.	-	-	-
COMPONENTS	TWO COMPONENT	SINGLE COMPONENT	SINGLE COMPONENT	SINGLE COMPONENT

HYPERDESMO-PB-2K

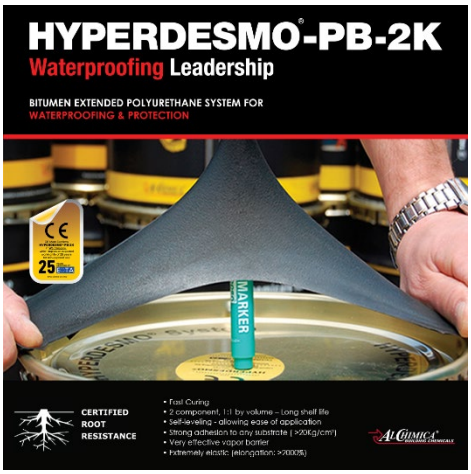
	HYPERDESMO®-PB-2K
CONSUMPTION	1,5 -2 kg/m^2
APPLICATION AREA	HORIZONTAL
APPLICATIONS METHODS	notched trowel, squeegee, roller
TACK FREE TIME, @ 77 °F (25°C) & 55% RH	1-2 Hours
APPLICATION OVER PREVIOUS COAT (PRIMER)	Depending on the primer curing time

For large horizontal surfaces, HYPERDESMO-PB-2K is an excellent choice due to its self-leveling properties, which enable easy application to achieve the required thickness in a single coat. Alternatively, HYPERDESMO-PB-1K-FC or HYPERDESMO-PB-Mono can be applied in two coats. Ensure a minimum consumption of 1.5 kg/m² for optimal performance.

RECOAT TIME	Only wet-on-wet
COLORS	BLACK
POT LIFE	30-45 min at 20 °C.
COMPONENTS	TWO COMPONENT

HYPERDESMO®-PB-2K is a high-performance waterproofing solution designed for challenging non-exposed applications. By blending pure elastomeric hydrophobic polyurethane resins with virgin bitumen, this membrane provides superior protection. Fast-curing and easy to apply, it meets stringent waterproofing demands with strong adhesion and mechanical resilience.

As a two-component liquid membrane mixed in a 1:1 ratio by volume, HYPERDESMO®-PB-2K forms a seamless coating that cures quickly, offering reliable, long-term protection. With a minimum consumption of 2 kg/m², it ensures consistent thickness and full coverage, whether applied by roller, brush or trowel. It remains stable up to 80°C and withstands thermal shocks up to 200°C. Certified by EOTA with CE certification, it provides an expected working life of at least 25 years (W3). Its strong adhesion and crack-bridging properties make it an effective joint sealant. Flexible down to -40°C, this membrane has high tensile, tear, and abrasion strength while resisting groundwater and moisture. With over 2000% elongation, it offers exceptional waterproofing, chemical resistance, and root resistance for green roofs and landscaping.



Mixing: Use a low speed (300 rpm) mixer. HYPERDESMO®-PB-2K is straightforward to mix and use. Both components mix easily on-site with a 1:1 ratio by volume, and unmixed components can be securely stored for future use. Mixed products Potl life is 30-45 minutes, ensuring smooth application.

- *Flashing Points treatment: After applying HYPERDESMO®-PB-2K over the horizontal areas, you must treat flashing points, vertical parts and other details while it's still wet with HYPERDESMO®-PB-2K, by overlapping on horizontal HYPERDESMO®-PB-2K by 10cm.*
- *Clean tools and equipment first with a paper towel and then using SOLVENT-01.*
- *** Alternatively you may apply HYPERDESMO®-PB-1K-FC at 2kg/m² in two coats.*

TYPES OF APPLICATIONS

SINGLE COAT APPLICATION	HYPERDESMO®-PB-2K is applied in only 1 single coat, with total minimum consumption of 2kg/m² over the total horizontal area. Due to its two components' reaction curing process, it can be applied at the desired total thickness with just one single coat. *Note:* if applying in layers, ensure each subsequent layer is applied while the previous layer is still wet to secure strong adhesion between them.
APPLICATION WITH REINFORCEMENT ✓ GEOTEXTILE ✓ FIBER TEXTILE	You apply the 1st coat of HYPERDESMO®-PB-2K with a minimum consumption of 1-1,5 kg/m². When HYPERDESMO®-PB-2K is still wet, you apply the reinforcement (GEOTEXTILE-50 PRESSED (non-woven geotextile of 50gr/m²)). Immediately, wet on wet, application of the 2nd coat of HYPERDESMO®-PB-2K with a minimum consumption of 1-1,5 kg/m² takes place.

HYPERDESMO-PB-1K-FC

HYPERDESMO®-PB-1K FC is an advanced waterproofing solution for non-exposed applications, such as foundation wall and slab waterproofing, below ground projects and green systems such as green walls. This fast-curing, one-component bitumen-extended polyurethane liquid membrane is formulated to deliver superior performance in challenging underground environments. Its thixotropic properties ensure a thick, non-sag consistency, making it ideal for vertical, inclined, and overhead surfaces where traditional liquid membranes struggle.

	HYPERDESMO-PB-1K-FC
CONSUMPTION	1,5 -2 kg/m²
APPLICATION AREA	VERTICAL & HORIZONTAL
APPLICATIONS METHODS	notched trowel, squeegee, roller, or airless spray machine
TACK FREE TIME, @ 77 °F (25°C) & 55% RH	1-2 Hours
APPLICATION OVER PREVIOUS COAT (PRIMER)	Depending on the primer curing time
RECOAT TIME	6-24 Hours
COLORS	BLACK
POT LIFE	-
COMPONENTS	SINGLE COMPONENT

The membrane is based on pure elastomeric hydrophobic polyurethane resin extended with chemically polymerized virgin bitumen. This unique composition ensures excellent adhesion to a wide variety of substrates and enables it to cure rapidly without bubbling, even under high temperatures and humidity. These features make HYPERDESMO®-PB-1K FC highly effective in maintaining integrity and flexibility under extreme conditions. CE certified under EN 1504-2:2004 and designed for efficiency, HYPERDESMO®-PB-1K FC remains elastic at temperatures as low as -40°C and withstands maximum service temperatures of up to 80°C and shock temperatures of 150°C. It exhibits outstanding mechanical properties, including high elongation, tensile and tear strength, and excellent abrasion resistance. Furthermore, its chemical resistance and effective humidity barrier capabilities provide robust, long-lasting protection against moisture and environmental stressors.

Application is straightforward and versatile, allowing use with a brush, spatula, or airless spray. The recommended total consumption is 1.5-2.0 kg/m², applied in two coats. HYPERDESMO®-PB-1K FC is recognized worldwide for its combination of rapid curing, minimal bubbling formation, and exceptional adhesion properties makes it an ideal choice for any vertical non exposed waterproofing, such as green walls and below-ground waterproofing projects.

TYPES OF APPLICATIONS

APPLICATION BY COATS

- First coat: 0.7-0.9 kg/m².
- Second coat: 0.8-0.9 kg/m².

Apply more coats depending on traffic requirements and system build-up.

- Minimum total consumption: 1.5-2 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.

HYPERDESMO-PB-Mono

HYPERDESMO®-PB-MONO is an advanced, quick-curing, one-component, thixotropic, bitumen-extended polyurethane fluid designed for flashing, waterproofing, and protection applications. It is particularly effective for vertical substrates, making it an ideal solution for foundation walls, slabs, and other below ground and non-exposed applications. The product forms a hydrophobic, elastic membrane with exceptional adhesion to a wide variety of substrates and exhibits outstanding mechanical and chemical resistance properties.

	HYPERDESMO-PB-MONO
CONSUMPTION	1,5 -2 kg/m²
APPLICATION AREA	VERTICAL & HORIZONTAL
APPLICATIONS METHODS	notched trowel, squeegee, roller, or airless spray machine
TACK FREE TIME, @ 77 °F (25°C) & 55% RH	1-2 Hours
APPLICATION OVER PREVIOUS COAT (PRIMER)	Depending on the primer curing time
RECOAT TIME	6-24 Hours
COLORS	BLACK
POT LIFE	-
COMPONENTS	SINGLE COMPONENT

The formulation of HYPERDESMO®-PB-MONO is based on pure elastomeric hydrophobic polyurethane resin extended with chemically polymerized virgin bitumen. This unique composition ensures that the product cures rapidly without bubbling or running, even under high temperatures and humidity. Its thixotropic nature allows for easy application on complex shapes and vertical surfaces, ensuring a smooth and effective waterproofing layer. Certified for radon resistance, HYPERDESMO®-PB-MONO is suitable for projects that require protection against radon gas infiltration.

This feature, combined with its excellent thermal resistance—remaining elastic at temperatures as low as -40°C and withstanding service temperatures up to 80°C and shock temperatures up to 150°C—makes it a robust choice for demanding underground environments.

The membrane boasts superior mechanical properties, including high elongation, tensile and tear strength, and abrasion resistance. It also provides excellent chemical resistance and acts as an effective humidity barrier, ensuring long-lasting protection against moisture and environmental stressors.

Application is straightforward, using a brush or roller, with a recommended total consumption of 1.5-2.0 kg/m² in one or two coats. Recognized for its combination of rapid curing, minimal bubbling formation, and exceptional adhesion properties, HYPERDESMO®-PB-MONO is a dependable, efficient, and cost-effective solution for any below-ground waterproofing project. Its versatility and robust performance make it an ideal choice for ensuring the integrity and protection of foundations and other non-exposed structures.

TYPES OF APPLICATIONS

APPLICATION BY COATS

- First coat: 0.7-0.9 kg/m².
- Second coat: 0.8-0.9 kg/m².

Apply more coats depending on traffic requirements and system build-up.

- Minimum total consumption: 1.5-2 kg/m².

APPLICATION WITH AIRLESS (200- 250 bar) SPRAY MACHINE.

6. Open the pail and stir it up to homogenize.
7. If necessary, add 5~10% SOLVENT-01 into the pail and mix it with medium-speed mechanical equipment.
8. Apply thin layers using an airless spray machine.
9. Wait for the recoat time.
10. Repeat this process until the desired or recommended thickness.

HYPERDESMO-PB-1K

	HYPERDESMO-PB-1K
CONSUMPTION	1,5 -2 kg/m²
APPLICATION AREA	VERTICAL & HORIZONTAL

HYPERDESMO®-PB-1K is a versatile, quick-curing, one-component, thixotropic, bitumen-extended polyurethane fluid designed primarily as a repair paste for flashing, waterproofing, and protection applications. This advanced product has a paste-like consistency, making it exceptionally well-suited for detailed repairs and treatments on vertical surfaces and complex shapes, ensuring no running or bubbling during application.

APPLICATIONS METHODS	notched trowel, squeegee, roller
TACK FREE TIME, @ 77 °F (25°C) & 55% RH	1.5-2.5 Hours
APPLICATION OVER PREVIOUS COAT (PRIMER)	Depending on the primer curing time
RECOAT TIME	3-24 Hours
COLORS	BLACK
POT LIFE	-
COMPONENTS	SINGLE COMPONENT

The product is based on pure elastomeric hydrophobic polyurethane resin extended with chemically polymerized virgin bitumen, producing a hydrophobic, elastic membrane with exceptional adhesion to most substrates, including bituminous surfaces. Its thixotropic nature allows for easy application without sagging, and its rapid curing properties enhance project efficiency. Although it has a paste consistency, HYPERDESMO®-PB-1K can be diluted with SOLVENT-01 to function as a waterproofing membrane, extending its versatility.

HYPERDESMO®-PB-1K is recognized for its excellent thermal resistance, remaining elastic at temperatures as low as -40°C and not softening up to a maximum service temperature of 80°C and a shock temperature of 150°C. It also offers outstanding mechanical properties, including high elongation, tensile and tear strength, and superior abrasion resistance. Additionally, its chemical resistance and effective humidity barrier capabilities ensure long-lasting protection against moisture and environmental stressors. Certified under EN 1504-2:2004 for concrete surface protection systems, HYPERDESMO®-PB-1K is particularly suitable for details treatment, flashing, and asphalt membrane repairs. When applied with a brush, roller, or spatula, it provides a reliable and efficient solution for these applications. The product does not require thinning when used as a paste, but SOLVENT-01 can be used if necessary.

Overall, HYPERDESMO®-PB-1K stands out as an effective, economical, and easy-to-use product for ensuring the integrity and protection of various surfaces, especially in

challenging environments where high performance and reliability are essential. Its unique paste consistency makes it ideal for targeted repairs and treatments, while its versatility allows it to be used as a waterproofing membrane when needed.

TYPES OF APPLICATIONS

APPLICATION BY COATS	- First coat: 0.7-0.9 kg/m^2. - Second coat: 0.8-0.9 kg/m^2. Apply more coats depending on traffic requirements and system build-up. - Minimum total consumption: 1.5-2 kg/m^2.

PROTECTION GEOTEXTILE

After completing the waterproofing of the slab or podium, a protective layer must be applied before adding the concrete screed. Apply GEOTEXTILE 50/45 PRESSED to the whole surface. The geotextile serves to safeguard the waterproof membrane and acts as an intermediate protective layer. The geotextile should be applied over the entire surface above the waterproofing system to ensure the integrity of the waterproofing membrane is maintained and protected during subsequent construction phases.

CEMENT SCREED

Once the geotextile layer is in place, a cement screed can be applied on top, providing a durable and even surface for further construction. In case tiles are applied on top, follow the selected tile system, accordingly, choosing HYGROSMART TILE ADHESIVES to ensure proper adhesion and longevity of the tile installation.

ADDITIONAL PARTS OF THE SYSTEM

Incorporating insulation boards and additional membranes alongside the waterproofing system, particularly with HYPERDESMO®-PB products, significantly enhances the protection and efficiency of the structure. ALCHIMICA expertly combines its liquid-applied waterproofing solutions to meet the varied needs and project requirements of any structure. This synergy allows for a tailored approach to waterproofing that ensures maximum durability and performance.

Draining system: After the waterproofing is finished, the installation of the drainage membranes takes place. These membranes are crucial for directing water away from the foundation, preventing moisture intrusion, and protecting the structural integrity of the building. HYPERDESMO®-PB-1K serves as an excellent fixation paste to securely attach the drainage membranes. Its thixotropic, bitumen-extended polyurethane composition ensures strong adhesion and easy application on vertical surfaces without running or bubbling. This reliable bond between the drainage membrane and the wall ensures effective water management and enhances the durability of the structure before the soil backfill process begins.

Insulations Boards: Utilizing insulation boards such as EPS (Expanded Polystyrene) or XPS (Extruded Polystyrene) in conjunction with HYPERDESMO®-PB products helps to improve thermal insulation, creating a more energy-efficient building. These boards are typically installed directly on the structure under the waterproofing membrane to shield the insulation from environmental factors and to enhance its thermal resistance.

Additional Protective Membranes: The integration of additional protective membranes, such as geotextile fabrics or vapor barriers, further strengthens the waterproofing system. These membranes serve multiple purposes: enhancing mechanical protection, facilitating better water drainage, and providing an additional layer of moisture resistance. When used with HYPERDESMO®-PB products, they ensure a seamless barrier that guards against water ingress and structural damage.

ALCHIMICA's approach to waterproofing systems is fundamentally centered around customization, enabling civil engineers and construction experts to select and tailor solutions according to their specific project needs and structural specifications. This versatile strategy ensures that each component of the waterproofing system aligns perfectly with the unique demands of each construction project. By facilitating a bespoke application of their products, ALCHIMICA enhances not only the water and environmental resistance of foundations but also significantly improves the overall integrity and longevity of the structure. This adaptable approach allows professionals

in the field to effectively address a wide range of structural challenges, ensuring that ALCHIMICA's solutions deliver optimal performance and durability.

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

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 UNIVERSAL-PRIMER-2K-4060 at a consumption of 50-60gr/m^2 by overlapping the membrane at the prementioned perimeter.
- Fill the area by using HYPERDESMO®-PB-1K, tool it to form a smooth 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®-PB 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.

- OPTION 1: 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®-PB
- OPTION 2: solvent wipe the whole area with SOLVENT-01, let it dry, and then apply HYPERDESMO®-PB.

When overlapping layers of HYPERDESMO®-PB-2K, ensure that the application is done while the existing layer is still tacky, within a maximum window of 2 hours. This will ensure a secure bond between layers for a seamless, effective waterproofing system.

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

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.

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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 **PODIUMS & SLABS WATERPROOFING SYSTEM BASED ON HYPERDESMO® SYSTEM**. 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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