

TPO/FPO MEMBRANE REFURBISHMENT AND
PROTECTION BASED ON
HYPERDESMO® SYSTEM.



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REFURBISHING OLD FPO/TPO MEMBRANES WITH ALCHIMICA'S HYPERDESMO® SYSTEM: A SMART, SUSTAINABLE CHOICE

Roof maintenance is a vital component of property management. Deciding whether to refurbish an existing membrane or opt for a complete replacement requires consideration of factors such as cost, disruption, and environmental impact. For aging TPO/FPO membranes, which may still be structurally sound but are showing signs of degradation and leakage, the advancements in roofing technology offered by ALCHIMICA's HYPERDESMO® System make a strong case for refurbishment rather than replacement.

TPO (Thermoplastic Polyolefin) and FPO (Flexible Polyolefin) membranes are favored in roofing for their durability and resistance to environmental factors. However, over time, these membranes can degrade due to UV exposure, environmental pollutants, and mechanical wear. Common signs of aging in TPO/FPO membranes include brittleness, discoloration, surface erosion, and an increased propensity for cracking and leakage. When these membranes begin to fail, addressing the issues promptly is crucial to prevent further damage. For these aging TPO/FPO membranes, ALCHIMICA's HYPERDESMO® System offers a compelling solution for refurbishment over replacement. The system provides a seamless and robust solution for refurbishing and protecting these membranes, delivering superior waterproofing and ease of application, representing the least disruptive option for older roofs.

Refurbishing with the HYPERDESMO® System instead of replacing the entire roof can lead to significant cost savings. Complete roof replacement requires purchasing new materials and extensive labor to remove the old membranes and install new ones. By applying a liquid membrane directly over the existing substrate, the HYPERDESMO® System substantially reduces both material and labor costs. This approach not only extends the life of the existing membrane but also delays the need for full replacement, facilitating better financial management and resource allocation while extending the roof's waterproofing working life.

Roof replacements can be noisy and disruptive, potentially interfering with daily operations within a building. The application process of the HYPERDESMO® System

is much less intrusive, allowing businesses to continue their activities with minimal interruptions. This is particularly advantageous in environments where continuous operation is crucial. Unlike roof replacement, which generates considerable waste typically destined for landfills, refurbishing preserves the existing membrane, significantly reducing waste. Additionally, the production and transportation of new roofing materials consume energy and create emissions. By opting for refurbishment with the HYPERDESMO® System, these environmental impacts are minimized, supporting more sustainable construction practices. The refurbishment process is inherently safer, requiring less manual labor and presenting fewer risks to workers. Furthermore, this system allows for upgrades to comply with current building codes and environmental standards, integrating modern roofing technology with existing structures and enhancing the building's resilience against environmental conditions.

Refurbishment materials like the HYPERDESMO® System often include energy-efficient features, such as reflective surfaces that minimize heat absorption, thus reducing cooling requirements. This enhances the insulation properties of the roof, improving overall energy efficiency, lowering utility expenses, and reducing the building's carbon footprint.

Choosing to refurbish old TPO/FPO membranes with ALCHIMICA's HYPERDESMO® System offers extensive benefits, not just in cost savings but also in minimizing disruptions, reducing environmental impact, and enhancing building performance. This strategy extends the roof's service life, making it a smarter, more sustainable choice for maintaining the effectiveness and longevity of roofing systems and setting a high standard in waterproofing solutions.

WHY CHOOSE ALCHIMICA IN EXPOSED CONCRETE ROOF WATERPROOFING PROJECTS?

Waterproofing exposed concrete roofs in building 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.

WHY WATERPROOF YOUR STRUCTURE?



Waterproofing prevents mold and mildew growth, which pose health risks and further structural issues. By inhibiting their development, waterproofing contributes to a healthier indoor environment. Furthermore, waterproofing

enhances energy efficiency by preserving insulation properties and reducing energy consumption for heating and cooling. The initial investment in waterproofing may seem significant, but it is worth it in comparison to the future costs of repairing water damage. Proactively addressing waterproofing can avoid costly repairs and replacements, making it a cost-effective long-term strategy. Compliance with building codes and regulations is essential for ensuring the safety and longevity of structures.

In reinforced concrete structures, the importance of waterproofing is amplified due to the presence of steel reinforcement. Waterproofing acts as a barrier, preventing water from reaching the steel reinforcement and reducing the risk of corrosion-induced damage. Waterproofing exposed concrete roofs is a critical aspect of construction that protects structural integrity, enhances durability, promotes energy efficiency, and ensures compliance with building standards.

Liquid-applied membranes offer ease of application and installation, taking the shape of the structure, piercing through pores and cracks, filling voids, resulting in a seamless elastic membrane, continuing waterproofing even after minor seismic activity, self-leveling

VERSATILE INSTALLATION ALTERNATIVES



ROLLER



SPATULA

BRUSH

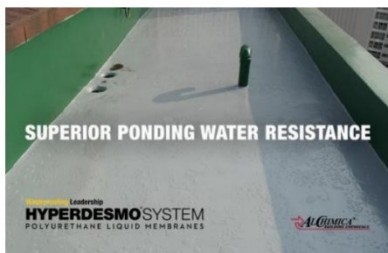


AIRLESS SPAY



property, and versatile installation alternatives. They are a cost-effective investment compared to repairing water damage and removing sheets and roll membranes.

Flat roofs with poor construction and design often face ponding water. This phenomenon occurs when water remains on a roof surface longer than 48 hours after the last rain event, leading to long-term water leakage and costly repairs. It can also damage the roof's substrate, cause concrete corrosion, and damage the existing



waterproofing system. Liquid applied waterproofing systems can prevent these problems and are beneficial for post-repairment actions. These membranes with high ponding water-resistance can bond with the substrate, providing protection against puddles formed due to poor slope design. To test the adhesion of the existing membrane, press it on the ponding areas. Without proper ponding water resistance properties, a waterproofing membrane can start blistering and

peeling, leading to roof system deterioration. HYPERDESMO® waterproofing membranes offer excellent water resistance, with zero water swelling rate, high UV, chemical, and mechanical resistance, and protection against harsh environmental conditions.

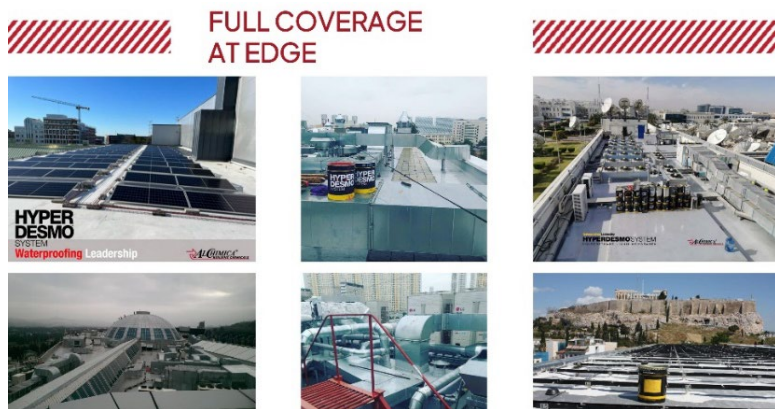
ALCHIMICA is a pioneer and a global leader in complete polyurethane waterproofing solutions. With pedigree and expertise in this field, ALCHIMICA overcomes the challenges that others deem impossible. The technological depth and know-how of ALCHIMICA allow the formulation of innovative PU-based materials 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.

COOL ROOFS: ENHANCING URBAN ENERGY EFFICIENCY IN BUILDINGS THROUGH HEAT ISLAND REDUCTION

Urban heat islands (UHIs) pose a significant challenge in cities, with temperature disparities of up to 4°C between urban and rural areas. The primary culprits are concrete infrastructure and high-density materials in urban environments, which absorb and release heat more than natural landscapes. The low solar reflectance of urban surfaces adds to this heat absorption, contributing to the urban heat island effect.

Cool roofs emerge as a cost-effective solution to combat UHIs, enhancing thermal comfort and reducing cooling costs, especially in hot climates with high solar radiation. By incorporating cool roofs into urban design, we can mitigate the heat absorption and release associated with traditional urban surfaces. However, the transformation of land surfaces exacerbates UHIs, as natural vegetation is replaced by structures with low solar reflectance and high impermeability, intensifying the heat island effect.

Human activities, including the use of vehicles and air-conditioning units, further escalate thermal energy in urban spaces, particularly in residential and commercial sectors. Acknowledging and addressing UHIs is crucial for creating resilient and sustainable cities. Mitigating UHIs requires the widespread adoption of cool roofs and reflective materials in urban construction, coupled with urban planning that prioritizes green spaces and sustainable design. By comprehensively understanding and addressing UHIs, we can contribute to the development of cooler, healthier urban environments capable of withstanding the challenges posed by a changing climate.



COOL ROOF

Roofs are one of the most exposed areas in buildings absorbing a high amount of heat. In this respect, cool roofs are considered one of the most sustainable and cost-effective solutions to reduce the heat island effect in cities and create

at the same time the right thermal comfort in buildings.

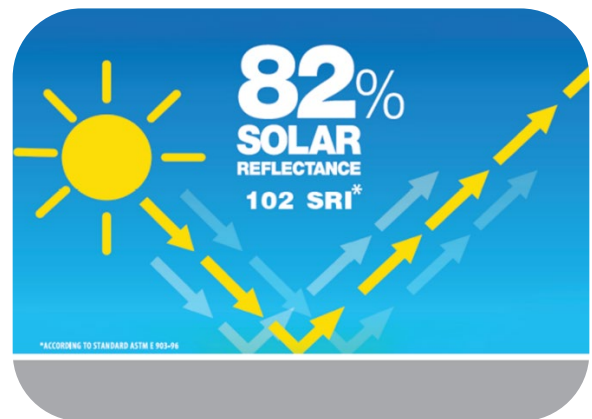
Cool roofs, which reflect over 65% of the sun's rays, play a crucial role in mitigating the urban heat island effect. These roofs, often white, repel heat due to the high solar reflectance of the materials used in their coating. By reflecting sunlight and minimizing heat absorption, cool roofs effectively reduce the heat island phenomenon, positively impacting the microclimate and environment of urban areas. Modern cool roofs employ highly reflective thermoplastic and liquid-applied membranes and coatings, offering long-term benefits.

White cool roofs, compared to traditional dark roofs, offer lower surface temperatures and substantial energy savings, with an average flat roof replacement rate of 5-7% per year. Beyond environmental benefits, cool roofs prove economically attractive to building owners. They foster cooler, healthier cities, enhancing air quality, mitigating climate change, and significantly reducing overall energy consumption. Energy savings range from 15% to 35.7% in diverse climates, and cool roofs reduce roof surface temperatures by 1.4 °C to 4.7 °C, impactful in urban environments. Serving as a passive solution to minimize heat gain, improve indoor conditions, and cost-effectiveness, cool roofs' economic and ecological advantages depend on location, climate, and energy usage. Their versatility aligns seamlessly with sustainability, energy efficiency, and environmental well-being goals, making cool roofs a practical measure for cooler, healthier, and more sustainable urban environments.

How is the efficiency of cool roofs measured:

- **SOLAR REFLECTANCE (SR):** The ability of the roofing material to reflect solar radiation (%).
- **THERMAL EMITTANCE:** It shows how long a roof holds onto the energy when the sun heats the roofing material. The thermal emittance ranges from 0-1.
- **SOLAR REFLECTIVE INDEX (SRI):** The SRI is calculated based on solar reflectance and thermal emittance in conjunction with ambient air temperature, sky temperature, and wind factors. The solar reflective index is reported as a value from 0 to 130 ranging from least reflective at 0 to most reflective at 130.

Cool roofs play a pivotal role in advancing energy efficiency and urban sustainability, fostering cooler and healthier environments with improved air quality, specifically addressing the urban heat island phenomenon. Solar-reflective materials, crucial in warmer climates and densely populated areas, reduce cooling loads in



regions with high solar radiation and elevated temperatures. Simple measures like applying white membrane systems can yield substantial annual energy savings of 10% or more, contributing to individual building energy efficiency and mitigating the broader urban heat island effect.

These roofs offer economic benefits by reducing energy bills, enhancing indoor comfort, and potentially extending the roof's service life. Moreover, they contribute to environmental well-being by lowering local air temperatures, peak electric power demand, and power plant emissions. Cool roofs also play a crucial role in reducing heat trapping in the atmosphere by reflecting sunlight, mitigating the demand for air conditioning and overall heat load. In contrast, dark roofs contribute to increased cooling energy needs. Cool roofs stand as an environmentally preferable roofing solution that aligns with economic concerns, offering a practical and sustainable response to the challenges of urban heat islands and energy consumption.

ALCHIMICA's advanced roof waterproofing system with reflective materials based on the HYPERDESMO® System offers an SRI value of 102 tested according to ASTM

E1980-01 and offers all the benefits of cool roofs. The system of HYPERDESMO® + HYPERDESMO® – ADY-E was submitted to the TECNALIA Testing Institute in Spain with the objective of testing the material's Solar Reflective Index (SRI) according to ASTM E1980-01. The results are shown below:

- **Solar Reflection (%): 82,2±0.1**
- **Emittance: 0.87±0.02**

SRI (ASTM E1980-01) Result:

| CONVECTION COEFFICIENT | SRI |
|------------------------|-----------|
| Low (0-2m/s) | 101,8±0,2 |
| Medium (2-6m/s) | 102,1±0,2 |
| High (6-10m/s) | 102,3±0,2 |

Cool roofs are recognized by green building certification systems like LEED, which verify a building's sustainability performance. LEED certification recognizing energy-efficient roofing, water run-off management, and renewable energy as key factors for building credits. Cool roof membranes can earn Credit 5, Option 1 "Heat Island effect – Roofing" in the Site Sustainability category of the LEED protocol.

Thanks to its high solar reflectance the HYPERDESMO® System contributes to the reduction of air conditioning usage which can lessen energy costs by up to 15%. Reduction of the urban heat island effect in cities and suburbs, minimizing thermal impact on the microclimate and local environment. High thermal emissivity to release the absorbed heat. Minimizes heat gains inside buildings, improving occupant comfort. Enhances the durability and the appearance of roofs by significantly lowering material temperatures and extending their life cycle.

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.

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.

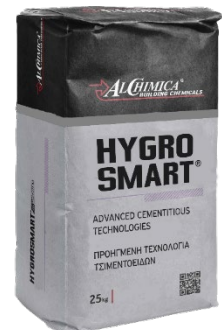
4. **HYGROSMART®-MAK-FLOW** (Single-component, highly flowable and shrinkage compensated mortar for structural repairs and anchoring, certified according to EN 1504-6: 2006 (Anchoring cementitious mortar for strengthening concrete by installing reinforcing steel) and EN 1504-3: 2005, Class R4(Hydraulic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



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.

Selecting the correct and suitable primer over PVC membranes and surfaces is a critical step in the waterproofing process, especially considering the unique challenges presented by PVC-based materials.

Addressing this concern, ALCHIMICA's innovation and R&D capabilities have led to the development of the PRIMER TPO/FPO. PRIMER TPO/FPO is a cleaning agent and primer designed for existing TPO/FPO membranes to prepare them for the application of HYPERDESMO® and HYPERSEAL® products. It is a single-component material with low viscosity, allowing easy application with a brush or roller. Its quick curing properties facilitate a rapid transition to subsequent layers of application. To use PRIMER TPO/FPO, it is essential to apply it to a clean, dry surface, clean it with a high-pressure washer, and remove contaminants like oil, grease, and wax. The product should only be applied when both atmospheric and substrate temperatures are above 5°C, and the substrate is at least 3°C above the dew point to avoid moisture formation. Typically, 50-100 ml per square meter is applied, and the main coat can be applied as soon as the primer is no longer tacky.

As a result, ALCHIMICA's primer stands out as a reliable and efficient choice for professionals tackling the complexities of waterproofing over bituminous surfaces. 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.

| SUBSTRATE AND CONDITIONS | CONCRETE | MOIST CONCRETE | GYPSUM | METAL STEEL | POROUS CERAMIC TILES | GLASS / GLAZED TILES | PVC MEMBRANES | TPO MEMBRANES | BITUMEN MEMBRANES | LOW TEMPERATURE APPLICATION | VAPOUR BARRIER | NEGATIVE PRESSURE / HIGH WINDSUIT (Tensar) |
|----------------------------|----------|----------------|--------|-------------|----------------------|----------------------|---------------|---------------|-------------------|-----------------------------|----------------|--|
| 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 | - | - | - | - | - | - | - | - |
| 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 | - | - |

SEALING SOLUTIONS

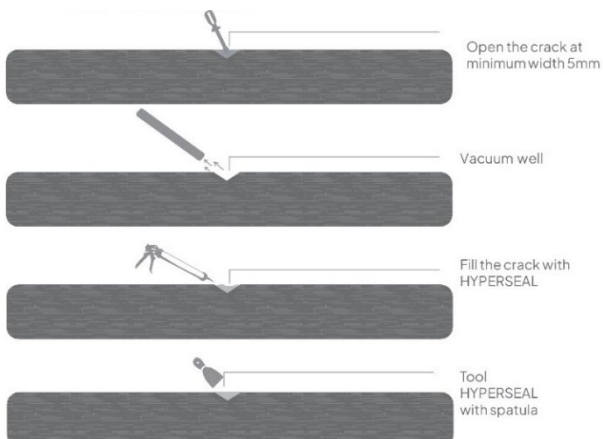


HYPERSEAL®-EXPERT-150 is a low-modulus expansion and construction joints PU sealant designed to ensure a bubble-free cure even in high temperature and humidity conditions. It exhibits excellent thixotropy, making it suitable for large expansion joints. The ratio width to depth should be 2:1 subject to 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/cm² (>2 N/mm²) 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®-EXPERT-150 is available in various colors and compatible with a wide range of construction materials in general. Can be easily applied using standard caulking or gun techniques.

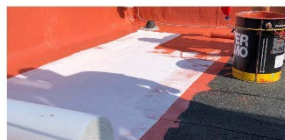
REINFORCEMENT OF WATERPROOFING MEMBRANES WITH GEOTEXTILE

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.

UN SOUND SURFACES AND DETAILS



WOOD



BITUMEN MEMBRANES



SCREED



METAL SEAMS

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® 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® 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).

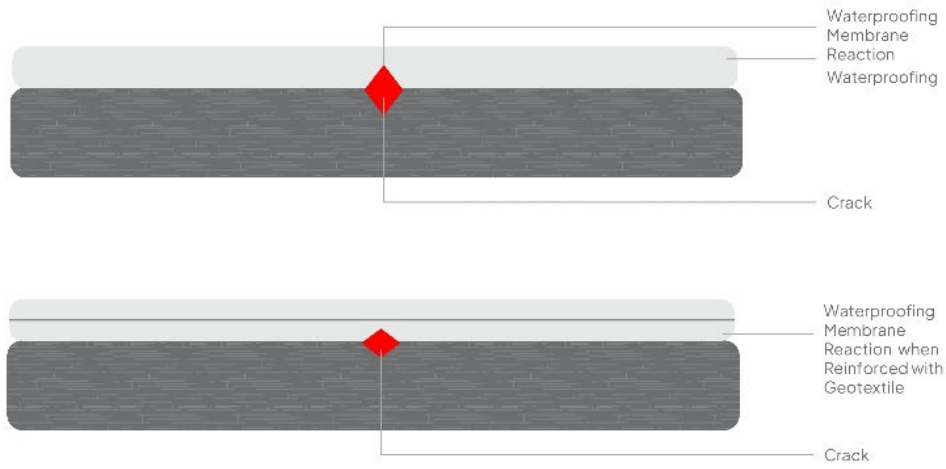
| COLOR | PACKAGING |
|-------|-----------|
| WHITE | 100m |
| WHITE | 100m |

GEOTEXTILE-45 PRESSED (1.02X100m)

| COLOR | PACKAGING |
|-------|-------------------|
| WHITE | 100m ² |



THICKNESS OR TENSILE STRENGTH



METHOD STATEMENT

TPO/FPO MEMBRANE REFURBISHMENT AND PROTECTION BASED ON THE HYPERDESMO® SYSTEM.

The exposure of TPO/FPO membranes to harsh environmental conditions, including fluctuating temperatures, UV radiation, and varying weather patterns, can significantly accelerate their aging process. This often results in degradation and the potential for leaks to develop. Such leaks can lead to considerable damage, including the corrosion of underlying structures. For aging TPO/FPO membranes that may still be structurally sound but show signs of wear and leakage, ALCHIMICA's HYPERDESMO® System offers a strong argument for refurbishment instead of complete replacement. This approach can extend the life of the existing membranes, ensuring continued protection against the elements while minimizing the need for costly and extensive replacements.

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

APPLICATION WITH AIRLESS SPRAY MACHINE.

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.

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*



- 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.).

TPO/FPO MEMBRANE SUBSTRATES

TPO (Thermoplastic Polyolefin) and FPO (Flexible Polyolefin), types of single-ply roofing membranes, over time can face several issues that include leaks and moisture intrusion, often due to poor installation or membrane damage. Seam failures can lead to water infiltration and leaks. Proper installation and regular maintenance can help prevent these issues and extend the lifespan of TPO/FPO membranes. ALCHIMICA's solution for TPO/FPO membrane refurbishment and protection is ideal for cases where removal in the immediate period is not an option, making them a non-intrusive option for both new and aging structures.

Our specialized PRIMER-TPO/FPO allows adhesion and seamless application of the HYPERDESMO® System over this quite challenging surfaces. The PRIMER-TPO/FPO is used to chemically activate the surface in order to obtain the highest possible binding parameter of the HYPERDESMO® membrane to the substrate and high durability of the waterproofing. ALCHIMICA's solutions for TPO/FPO membrane refurbishment and protection are seamless and provide a working life extension to the existing TPO/FPO waterproofing membranes.

PREPARATION

Proper preparation of the 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, grease.
- PVC membranes should be sound and well adhered to the substrate. Loose membrane parts should be fixed.
- The substrate should be free of any irregularities.
- The substrate should be free of dust. Vacuum treatment or/ and high-pressure washing is recommended to remove dust.
- For more information about surface preparation please contact our technical assistance team.

- Metal details should be free of rust, oils, and old paints.
- The surface of PVC pipes should be treated with sand paper in order to become rough.
- For more information about surface preparation please contact our technical assistance team.
- Concrete 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.

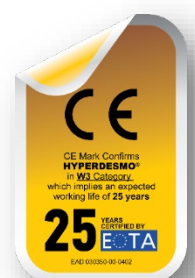
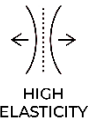
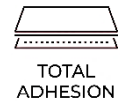
SYSTEM PRODUCTS BUILD-UP

| | PRODUCT | CONSUMPTION |
|-----------|----------------|--|
| 1. PRIMER | PRIMER TPO/FPO | 200-400 gr/m ² Subject to porosity |



CERTIFIED
PRODUCTS

| | | |
|------------------|--------------------------|---|
| 2. SEALANT | HYPERSEAL-EXPERT-150 | Subject to project needs |
| 3. MAIN MEMBRANE | HYPERDESMO® SYSTEM | Total consumption: 2-2,5 kg/m ² |
| 4. REINFORCEMENT | GEOTEXTILE-45/50 PRESSES | Subject to project needs |
| 5. TOP-COAT | HYPERDESMO®-ADY-E | 0.2 -0.3kg/m ² per coat, depending on traffic requirements |



SUBSTRATE PRIMING

PRIMER-TPO/FPO is a cleaning agent and primer designed specifically for existing TPO/FPO membranes, preparing these surfaces for the application of HYPERDESMO® and HYPERSEAL® products. This single-component solution simplifies the preparation process by eliminating the need for mixing. Its low viscosity allows for a smooth application, ensuring thorough cleaning and priming for optimal coating performance. PRIMER-TPO/FPO's quick curing time is particularly beneficial in fast-paced project environments. It effectively removes dirt, grease, and other contaminants that can impair coating adhesion. As a primer, it enhances the bonding capabilities of coatings like HYPERDESMO® and HYPERSEAL®, ensuring proper adhesion and performance.

| PRIMER | PRIMER-TPO/FPO |
|---|-----------------------|
| CONSUMPTION | 100 gr/m ² |
| COMPOSITION | SPECIALIZED PRIMER |
| APPLICATIONS METHODS | brush, roller, cloth |
| TACK FREE TIME, @ 77 °F (25°C) & 55% RH | 15-30min |
| RECOAT TIME OF PRODUCT WHEN NEEDED | 30min |
| NEXT COAT TIME (HYPERDESMO® MEMBRANE) | 15-30min |
| RECOMMENDED DILUTION | X |
| ADDITIVES | X |
| COLORS | TRANSPARENT |
| POT LIFE | X |
| COMPONENTS | SINGLE COMPONENT |

Primer-TPO/FPO is commonly used on TPO/FPO membranes in construction settings such as roofing and waterproofing systems. It is suitable for both old and new membranes, making it a versatile choice for maintenance repairs and new construction projects. To ensure optimal results, the TPO/FPO membrane should be clean and dry, the primer evenly applied, and the manufacturer's curing time recommendations followed. Overall, PRIMER-TPO/FPO is essential for optimizing TPO/FPO membrane conditions for coating applications, ensuring enhanced durability and performance of the finished system.

Application: PRIMER TPO/FPO is a one component low viscosity material designed to prime old and new TPO/FPO membranes prior to the application of the HYPERDESMO System. Apply with roller at a maximum consumption of 100ml/m². Main coat may be applied as soon as the primer is no longer tacky, approximately 15-30 minutes.

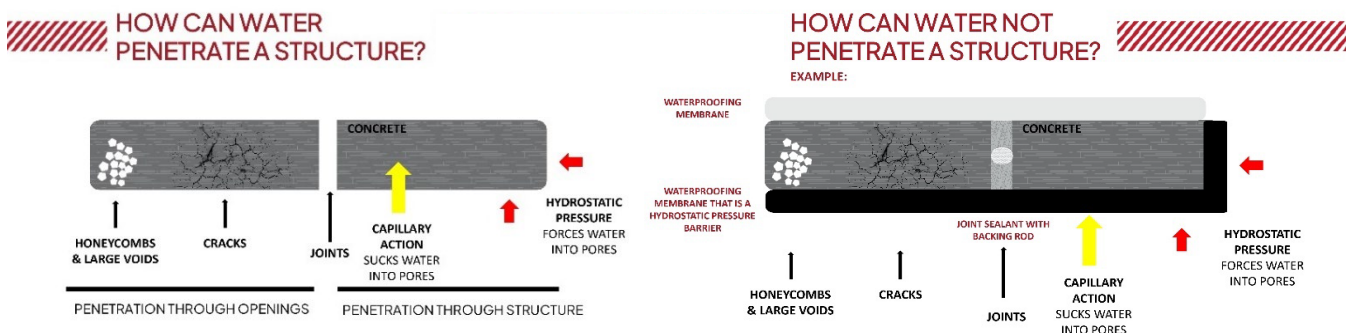
Notes:

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 on a roof (air conditioning, antennas, photovoltaic systems, etc.) must be treated.



Dilatation joints and inner angles should be treated with HYPERSEAL®-EXPERT-150 or HYPERSEAL®-25LM-S, polyurethane based sealants.

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.



DILATATION JOINTS & INNER ANGLES TREATMENT



- On concrete: pieces of 25-50m²
- On Screed: pieces of 15-25m²
- Over the junction points where the horizontal surface meets the vertical

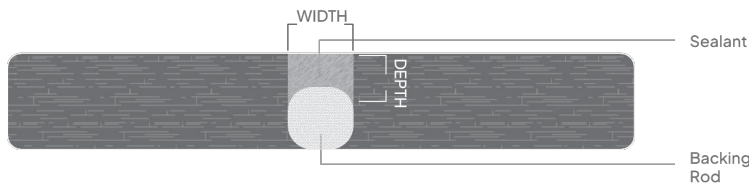
After the primer is cured, apply in dilatation joints the right backing material (where needed) – an open cell polyurethane or a closed cell polyethylene backing rod. Be sure that when applying a closed cell polyethylene backing rod, its outer skin is not punctured, as rising temperature may cause bubbles. 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-150 or HYPERSEAL® 25 LM-S.



■ 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® 25LM-S** is a low modulus expansion joint sealant. It has been modified in order to give enhanced thixotropic properties. It cures by reaction with atmospheric humidity to produce a joint sealant with a 50% joint movement accommodation factor and excellent adhesion on substrates traditionally problematic for PU sealants, e.g. glass, aluminum, steel, polycarbonate, etc. Additionally, the sealant has been modified in order to have an extrusion profile identical to hybrid PU or MS technology. The extrusion rate and tooling of the sealant remain the same throughout a very wide range of temperature and humidity conditions. The sealant is easy to apply even in very low temperatures.



| 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** or **HYPERSEAL® 25 LM-S** 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.

NOTE:

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

POLYETHYLENE BACKER ROD

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



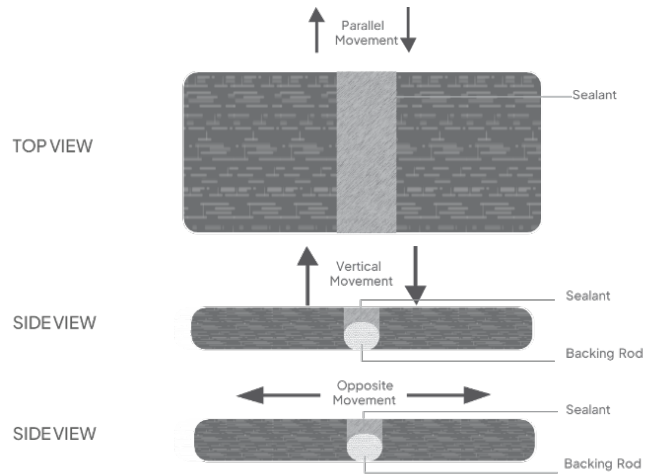
| SIZE | PACKAGING |
|------|-----------|
| F6 | 1500m |
| F10 | 680m |
| F15 | 250m |
| F20 | 180m |
| F25 | 100m |
| F30 | 100m |
| F40 | 100TEM |
| F50 | 65TEM |

TREATMENT OF DETAILS

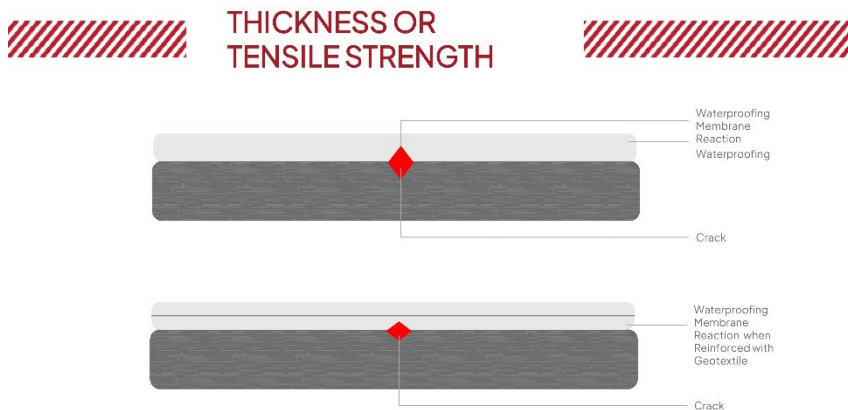
All connections, cracks, drainage details, pipes, and other elements of equipment mechanically installed on a roof (air conditioning, antennas, photovoltaic systems, etc.) should be treated. Select the preferable treatment using sealants **HYPERSEAL®-**

EXPERT-150, HYPERSEAL® 25LM-S, or/and HYPERDESMO® System with GEOTEXTILE, or/and HYPERDESMO®-PARTICULAR.

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.



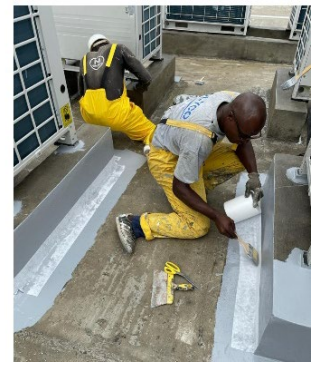
Dilatation joints, inner angles, and small cracks should be treated with HYPERSEAL®-EXPERT- 150 polyurethane-based sealant or any other suitable HYPERSEAL® sealant as described above.



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

TREATMENT WITH REINFORCEMENT: HYPERDESMO® SYSTEM with GEOTEXTILE.

Cracks and details can also be treated by application of HYPERDESMO® System with GEOTEXTILE reinforcement. When the primer is fully cured, treat the details with



HYPERDESMO® SYSTEM using a brush or small roller. Apply a piece of GEOTEXTILE (strips 0.17x100m, non-woven geotextile of 50-100gr/m²) cut in proper size, wet on wet, for better protection from cracks in these specific points, if movement happens in the future. After the details treatment has been completed you continue with the application of the full surface waterproofing system.

FIBER-REINFORCED PU: HYPERDESMO®-PARTICULAR.

This is an alternative option when application of HYPERDESMO® System with GEOTEXTILE is difficult. HYPERDESMO®-PARTICULAR is a thixotropic and fiber-reinforced, one component polyurethane liquid

membrane used for waterproofing and protection of roof detail structures. Due to its unique formulation, it cures rapidly to form a bubble free thick layer membrane with excellent mechanical properties. HYPERDESMO®-PARTICULAR is an effective sealing material for the treatment of installation details on roofs, such as chimneys, pipes, photovoltaic systems, air-conditioning units, and gutters. This product is ideal for usage during the winter months or in climates with relatively low humidity.

Apply the material with a spatula or a brush with the consumption required to fill in the gaps, but with a thickness of no more than 2 mm. It can be applied as the only sealing material as well as together with HYPERSEAL®-EXPERT-150 or HYPERSEAL® 25 LM-S. In this case, the depth is filled in with sealant HYPERSEAL®-

EXPERT-150, and then the irregularities on the top part are treated with thixotropic HYPERDESMO®-PARTICULAR.

NOTE:

- Clean tools and equipment first with a paper towel and then using SOLVENT-01.

MAIN WATERPROOFING MEMBRANE

After PRIMER TPO/FPO is no longer tacky, you may apply the main membrane. The **HYPERDESMO® System** is a single-component polyurethane membrane with excellent mechanical, chemical, thermal, and natural element resistance properties. It is suitable for exposed waterproofing applications like concrete roofs, metal roofs, and bitumen membrane refurbishment. The system is the only polyurethane liquid membrane in the world with CE certification at a thickness of 1.2mm without reinforcement. It has excellent adhesion, UV, and thermal resistance, and can achieve over 82% solar reflectance in white. It remains elastic even at -40°C and high temperatures up to +90°C. The system is non-toxic after full cure, has good chemical resistance, and is resistant to hydrolysis. Select the suitable version of **HYPERDESMO®** for your project requirement that meets your needs.

| HYPERDESMO® SYSTEM | |
|---|---|
| CONSUMPTION | 2-2.5 kg/m ² |
| 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) | 6-24 Hours |
| ADDITIVES | <ul style="list-style-type: none"> • THIXO-TOOL • ACCELERATOR-300A <p>CHECK THE TDS FOR COMPATIBILITY</p> |
| COLORS | WHITE, GREY, TEJA |
| COMPONENTS | SINGLE COMPONENT |



The refurbishment of old TPO/FPO membranes using **ALCHIMICA's HYPERDESMO® System**, reinforced with geotextile, is a crucial strategy for enhancing roof longevity and effectiveness.

Geotextiles, particularly non-woven types, enhance the performance of waterproofing systems by complementing the elastic properties of elastomeric membranes like **HYPERDESMO®**. This synergy ensures that the waterproofing layer accommodates structural movements and prevents membrane tearing, even in scenarios of

significant substrate movement or large cracks. TPO/FPO membranes are susceptible to environmental and mechanical degradation over time, and incorporating geotextile helps manage and evenly distribute mechanical stresses that can lead to membrane damage. The superior pre-break elongation capacity of geotextiles significantly reduces the risk of future cracks, maintaining the membrane's integrity for an extended period.

Geotextiles are particularly effective in demanding construction environments, providing the necessary reinforcement to handle diverse conditions and ensure sustained protection. They complement the elastomeric properties of the HYPERDESMO® System, ensuring that the waterproofing membrane remains intact and functional even if the underlying substrate moves or develops cracks. ALCHIMICA's non-woven geotextiles are designed to be compatible with both solvent-based and water-based liquid waterproofing systems, enhancing the reliability and effectiveness of the waterproofing treatment. This strategic choice promotes durability, reliability, and sustainability in building maintenance, ensuring high-quality, long-lasting waterproofing that safeguards both the structure and the investment.

TREATMENT OF DETAILS WITH REINFORCEMENT: HYPERDESMO® SYSTEM with GEOTEXTILE.

In the refurbishment process, specifically treating the joints and connections of TPO/FPO membranes as well as and details can also be treated by application of HYPERDESMO® System with GEOTEXTILE reinforcement. When the primer is fully cured, treat the details with HYPERDESMO® SYSTEM using a brush or small roller. Apply a piece of GEOTEXTILE (strips 0.17x100m, non-woven geotextile of 50-100gr/m²) cut in proper size, wet on wet, for better protection from cracks in these specific points, if movement happens in the future. After the details treatment has been completed you continue with the application of the full surface waterproofing system.

APPLICATION OVER THE WHOLE SURFACE

Begin by applying the initial coat of HYPERDESMO® System at a rate of at least 1kg/m² kg per square meter to ensure proper coverage. While this first layer is still

tacky, lay down the GEOTEXTILE-50 PRESSED, which is a non-woven geotextile material weighing 50 grams per square meter. This reinforcement should be carefully placed onto the wet HYPERDESMO® coat to ensure it bonds well with the membrane. Once the first coat with the geotextile in place has sufficiently dried and is no longer sticky to the touch, proceed to apply the second layer of HYPERDESMO® System. Maintain the same application rate of at least 1kg/m² kg per square meter for this top coat, which seals in the geotextile and completes the waterproofing process, enhancing the overall strength and longevity of the membrane.

Mixing: Use a low speed (300 rpm) mixer.

- *Clean tools and equipment first with a paper towel and then using SOLVENT-01.*

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: 1.5-1.8 kg/m².

APPLICATION WITH REINFORCEMENT

- ✓ GEOTEXTILE
- ✓ FIBER TEXTILE

You apply the 1st coat of HYPERDESMO® SYSTEM with a minimum consumption of 1-1.2 kg/m². When HYPERDESMO® System is still wet, you apply the reinforcement (GEOTEXTILE-50 PRESSED (non-woven geotextile of 50gr/m²)). As soon as HYPERDESMO® SYSTEM 1st coat cures, application of the 2nd coat of HYPERDESMO® SYSTEM, with a minimum consumption of 1-1.2 kg/m² takes place.

APPLICATION WITH BROADCASTING SAND

Silica sand can be broadcasted over the ALCHIMICA topcoat that is used in order to protect the HYPERDESMO® SYSTEM waterproofing membrane. Check more details in the TOPCOAT section below.

SINGLE COAT APPLICATION

HYPERDESMO® SYSTEM can be applied in only 1 single coat, with a maximum consumption of up to 2kg/m² if you add ACCELERATOR-3000A to HYPERDESMO®. For more details refer to the ADDITIVES section below.

NOTE: Adding an accelerator decreases the curing time as well as the pot life of HYPERDESMO®.

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.

The use of an airless spray machine is not recommended when ACCELERATOR-3000A is added to the material.

TOPCOAT

For abrasion resistance and colour protection, you should finally apply a topcoat of HYPERDESMO®-ADY-E pigmented at the desired colour. It is fully aliphatic and provides excellent color and UV protection with no yellowing effects. It increases traffic resistance, forming the highest level of protection. It can be part of both flooring and waterproofing systems. HYPERDESMO®-ADY-E is ideal for color and traffic protection of HYPERDESMO® system products, maximizing the system's working life.

| HYPERDESMO®-ADY-E | |
|---|---|
| CONSUMPTION | 0.2 -0.3kg/m ² per coat In Total: 0.2-0.6 kg/m ² in one or more coats, depending on traffic conditions |
| APPLICATIONS METHODS | brush, roller, airless spraying |
| TACK FREE TIME, @ 77 °F (25°C) & 55% RH | 6-8 Hours |
| APPLICATION OVER PREVIOUS COAT | It must be applied WITHIN 24-72 hours of HYPERDESMO® depending on weather conditions. |
| RECOAT TIME OF THE PRODUCT | 24 Hours |
| ADDITIVES | X |
| COLORS | WHITE, GREY, NEUTRAL, TRANSPARENT |
| COMPONENTS | SINGLE COMPONENT |

HYPERDESMO®-ADY-E is a semi-glossy, fully aliphatic, high traffic polyurethane topcoat with excellent hiding power and high traffic resistance. It is suitable for anti-slip systems and has excellent UV, mechanical, and chemical properties. It is hydrophobic, strong, and durable, maintaining elasticity even at -40°C. It also offers excellent heat and ultraviolet/UV resistance, and outstanding resistance to chemicals and mechanical stresses.

Mixing: Use a low speed (300 rpm) mixer.

Application: Total consumption of HYPERDESMO®-ADY-E should be 0.2 -0.4 kg/m² in 1- 2 successive coats over the well cured HYPERDESMO® SYSTEM surface. Total consumption depends on traffic conditions and requirements.



TYPES OF APPLICATIONS

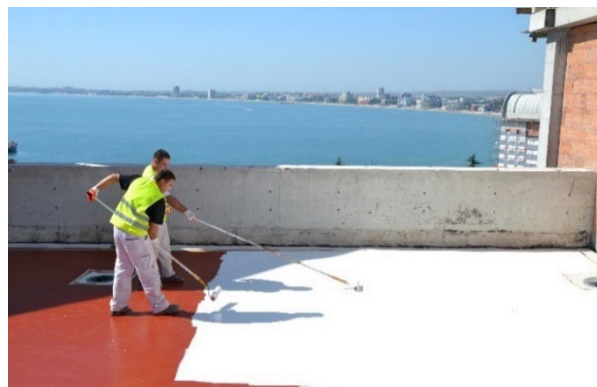
APPLICATION BY COATS

Per coat: 0.2-0.3 kg/m².

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

APPLICATION WITH BROADCASTING FLAKES

For decorative colour chips finish, apply the first coat of HYPERDESMO®-ADY-E (PIGMENTED) at the consumption of 0.2 -0.3 kg/m² over the well-cured HYPERDESMO® SYSTEM surface. Over the fresh first coat of HYPERDESMO® ADY-E, you broadcast the color flake chips. Flakes broadcast at usually 1kg/m² (consumption depends on the result that the client wants) while the product is still wet.



The next day you remove the excess non-bonded flakes. Most applicators use a leaf blower in order to remove, but also recover any non-used flakes, instead of using a vacuum cleaner which would destroy the flakes.

Then, you apply on top a second thin coat of HYPERDESMO®-ADY-E TRANSPARENT or HYPERDESMO®-T at 200gr/m² in order to encapsulate the flakes. Most applicators usually use a squeegee to spread the product and follow with a roller to smoothen it out. For traffic requirements, after this coat has cured, you can apply another coat of HYPERDESMO®-ADY-E TRANSPARENT or HYPERDESMO®-T at 400gr/m².

APPLICATION WITH SILICA SAND BROADCASTING

If an anti-slippery effect is required, silica sand or corundum aggregates can be broadcasted over the ALCHIMICA topcoat that is used in order to protect the HYPERDESMO® waterproofing membrane.

Apply the first coat of HYPERDESMO®-ADY-E (PIGMENTED) at consumption of 0.2 -0.3 kg/m² over the well-cured HYPERDESMO® SYSTEM surface.

Broadcast natural dry quartz or corundum aggregates over the fresh first layer of HYPERDESMO® ADY-E. The next day you remove the excess non-bonded aggregates. Most applicators use a vacuum cleaner.

Then, you apply on top a second thin coat of HYPERDESMO®-ADY-E (pigmented or transparent) at 200-300 gr/m² in order to encapsulate the silica sand.

PIGMENTATION OF HYPERDESMO®-ADY-E NEUTRAL

HYPERDESMO®-ADY-E when used as a topcoat, for colour and UV protection of HYPERDESMO® products, it is either pre-pigmented from the factory in white/grey colour or it comes in NEUTRAL version that must be pigmented with ALCHIMICA's PIGMENT PASTES only (10% max).

At a maximum ratio of 10% by weight, the PIGMENTS PASTES are designed to be compatible with ALCHIMICA's products, offering high hiding power to the transparent or neutral versions of HYPERDESMO®-ADY-E. Pour the PIGMENT PASTE content of the pail into the product at a maximum ratio of 10% by weight. Mix thoroughly using a low-speed electric mixer until the product homogenizes. Apply the product as per standard application instructions.

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

1. Open the pail and stir it up to homogenize. Stirring can either be done manually or with a low speed (300 rpm) mixer.
2. If necessary, add up to 5% SOLVENT-01 into the pail and mix it with low-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.

ADDITIVES FOR THE HYPERDESMO® SYSTEM

ADDITIVES

ACCELERATOR-3000A

ACCELERATOR-3000A is a high technology curing accelerator specifically designed for HYPERDESMO® SYSTEM products.

Mixing Ratios: Follow the instructions according to the TDS file.

Pot life 25 min at 25 °C.



PLEASE REFER TO THE TDS OF ACCELERATOR-3000A
TO MAKE SURE WHICH HYPERDESMO PRODUCTS
ARE COMPATIBLE WITH THE ADDITIVE.

Prior to application, shake the pail containing ACCELERATOR-3000A. Pour the content of the pail into the pail containing HYPERDESMO®. Mix thoroughly using a low-speed electric mixer and immediately apply.

THIXO-TOOL

THIXO-TOOL is a unique additive used for Increasing the thixotropy (reducing the self-leveling characteristics) of the HYPERDESMO® System. It was developed by ALCHIMICA in order to solve application difficulties of the HYPERDESMO® System in severely inclined, uneven, or completely vertical substrates.

The recommended addition ratio is 10-30% depending on the surface inclination, substrate condition, and desired final consumption.

Open the can of HYPERDESMO® and mix thoroughly before adding THIXO-TOOL. Open the sausage of THIXO-TOOL and empty the desired amount by hand into the pail (leftover material can be sealed and stored for later use).

The addition of THIXO-TOOL depends on specific project requirements, but the recommended amount is 10-30%. Mix the THIXO-TOOL with a low-speed mixer, careful not to introduce air. Apply final material as described in the Technical Data Sheet at the time of purchase.



PLEASE REFER TO THE TDS OF THIXO-TOOL TO MAKE SURE WHICH HYPERDESMO PRODUCTS ARE COMPATIBLE WITH THE ADDITIVE.

THIXO-TOOL can be used alongside ACCELERATOR 3000A when the use of the latter is recommended.

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 PRIMER TPO/FPO at a consumption of 50-60gr/m² by overlapping the membrane at the prementioned perimeter.
- 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.

- OPTION 1: clean the area and apply PRIMER TPO/FPO at the consumption of 50-80gr/m² 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

REFURBISHED ROOFS 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 TPO/FPO MEMBRANE REFURBISHMENT AND PROTECTION 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

- This is a technical document, without legal value.

- PVC MEMBRANE REFURBISHMENT AND PROTECTION BASED ON **HYPERDESMO® SYSTEM** 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.
- No liability or warranty of product performance is created by this document.
 - All the information included is collected from materials TDS, DoP, and certificates available at the moment of publishing.
 - ALCHIMICA S.A. does not guarantee the accuracy of its instructions or specifications, nor do we assume any responsibility for damages resulting from the use or reference of the information provided. The company reserves the right to change the properties of its products at any time, and the current version of the technical data sheet is available on the website www.alchimica.com/en
 - Appropriate Technical Documentation and/or Specific Technical Documentation: The performance of the products
 - It is recommended to check the TDS and MSDS of all the materials before use and application.
 - The use of these materials and products is beyond the scope and control of ALCHIMICA.
 - Proper application is the responsibility of the Buyer and/or Contractor.
 - It is forbidden to reproduce it in any form, totally or partially.
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