EXPOSED METAL ROOF WATERPROOFING SOLUTION BASED ON HYPERDESMO® AQUA

ALCHIMICA® BUILDING CHEMICALS

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WHY CHOOSE ALCHIMICA IN EXPOSED METAL ROOF WATERPROOFING PROJECTS?

Waterproofing exposed metal roofs in building structures is essential due to the nature of metal and its vulnerability to corrosion and water damage. Without proper waterproofing, water infiltration can accelerate rusting and degradation, particularly in metal structures that are exposed to harsh environmental conditions. Waterproofing serves as a protective barrier, preventing water from seeping into and underneath the metal panels, preserving their integrity. It also extends the lifespan of the structure by shielding it from the damaging effects of moisture and environmental elements, such as UV radiation and temperature fluctuations.

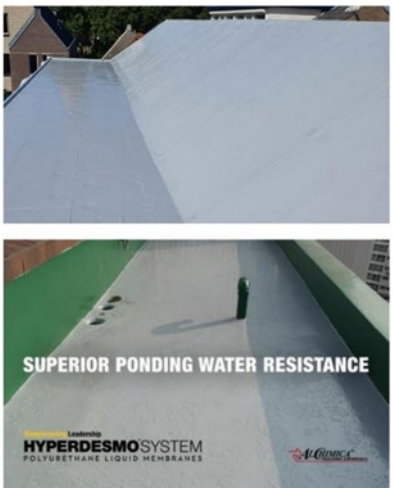
Waterproofing prevents mold and mildew growth, which pose health risks and further structural issues. By inhibiting their development, waterproofing contributes to a healthier indoor environment. Furthermore, waterproofing enhances energy efficiency by preserving insulation properties and reducing energy consumption for heating and cooling. The initial investment in waterproofing may seem significant, but it is justified compared to the future costs of repairing corrosion and 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

metal structures, the importance of waterproofing is critical due to the high risk of corrosion. Waterproofing acts as a barrier, preventing water and corrosive agents from reaching the metal and reducing the risk of corrosion-induced damage. Waterproofing exposed metal roofs is a crucial 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, conforming to the shape of the structure, sealing joints and overlaps, and filling voids, resulting in a seamless, elastic membrane that continues to provide waterproofing even after minor seismic activity, with self-leveling properties and versatile installation alternatives. They are a cost-effective investment compared to the costs of repairing corrosion and replacing damaged panels.

Metal roofs, especially those with inadequate design, often face issues of water pooling. 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 lead to rust formation and degrade the roof's existing waterproofing system. Liquid-applied waterproofing systems can prevent these problems and are beneficial for post-repair actions. These membranes with high resistance to standing water can bond effectively with the metal substrate, providing protection against puddles formed due to inadequate slope design. To test the adhesion of the existing membrane, it should be pressed on the ponding areas. Without proper resistance properties, a waterproofing membrane can start blistering and



peeling, leading to deterioration of the roof system. 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 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 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 expertise of ALCHIMICA in Research and Development laboratories in construction, repair, and renovation solutions of buildings and infrastructure meets international industry standards.

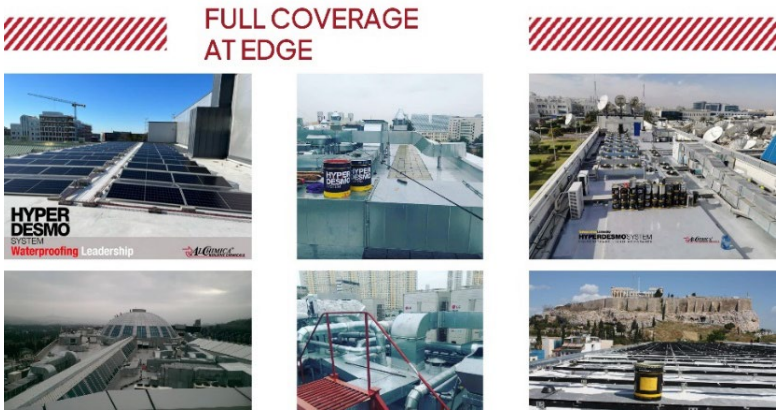
ALCHIMICA'S POLYURETHANE LIQUID MEMBRANES

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 WATER BASED POLYURETHANE TECHNOLOGY

ALCHIMICA's water based polyurethane dispersion (PUD) technology is an advanced and eco-friendly technology that allows for the development of water based polyurethane waterproofing systems that offer numerous benefits, including minimal odor, easy application with standard equipment, rapid drying time, durable and flexible barrier, UV resistance, compatibility with additional treatments, and easy

clean-up. These membranes contribute to a healthier environment, align with sustainability goals and regulatory standards, and provide occupant comfort. They can be applied using brushes, rollers, or spray systems, streamlining the application process and reducing labor requirements. Despite higher initial costs, long-term benefits like reduced maintenance and extended lifespan often outweigh the upfront investment.

ALCHIMICA's range of water based polyurethane products is fully aliphatic, offering excellent resistance to UV rays and chemicals, extreme resistance to ponding water, and fast curing ability. They provide elasticity, crack bridging benefits, enhanced durability, and versatility, making them suitable for various substrates and areas like roofs, balconies, or terraces.

ALCHIMICA's water-based technology is directly linked to energy efficiency upgrades in buildings, providing top elasticity, durability, and high resistance for roofs exposed to adverse weather conditions. This specialized elastomeric liquid-applied waterproofing membrane/coating ensures the external protection of buildings in sea or mountainous areas while contributing to their aesthetic upgrade.

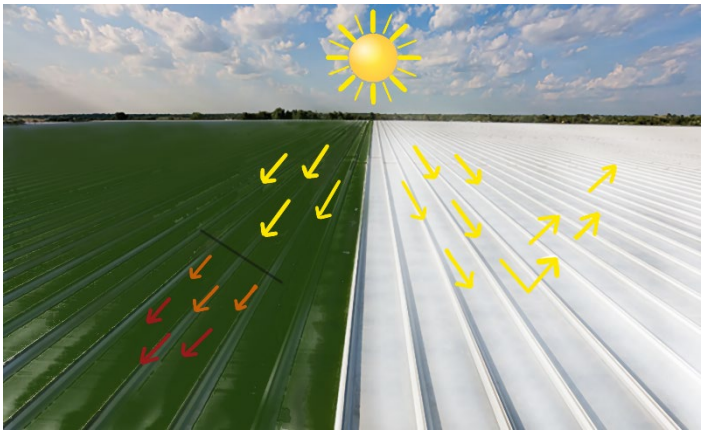
COOL ROOFS: ENHANCING URBAN ENERGY EFFICIENCY IN BUILDINGS THROUGH HEAT ISLAND REDUCTION

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

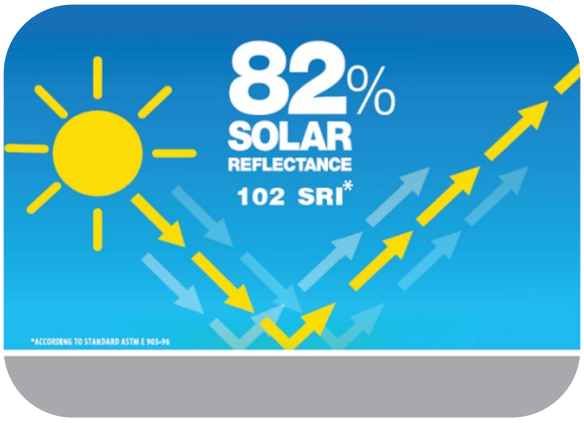
Roofs are one of the most exposed areas in buildings absorbing a high amount of heat. In this respect, cool roofs are considered one of the most sustainable and cost-effective solutions to reduce the heat island effect in cities and create at the same time the right thermal comfort in buildings.

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:

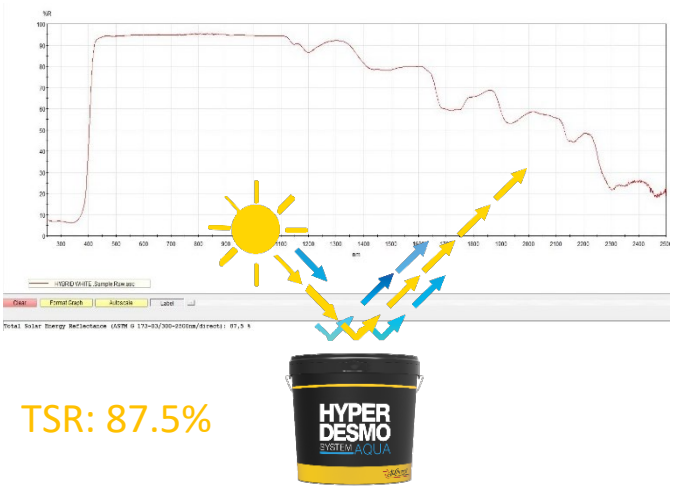
- SOLAR REFLECTANCE (SR): The ability of the roofing material to reflect solar radiation (%).
- THERMAL EMITTANCE: It shows how long a roof holds onto the energy when the sun heats the roofing material. The thermal emittance ranges from 0-1.
- SOLAR REFLECTIVE INDEX (SRI): The SRI is calculated based 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.



The "Total Solar Energy Reflectance" (TSER) of HYPERDESMO®-AQUA is a critical measure that indicates its efficiency in reflecting solar radiation across a broad spectrum of wavelengths, ranging from 300 to 2500 nanometers, which encompasses the visible to near-infrared light. The high TSER value of 87.5%, ascertained in accordance with the ASTM G 173-03 standard, suggests that this material is highly reflective, making it an excellent choice for applications that require the management of solar heat gain. Such a characteristic is particularly beneficial in reducing cooling loads for buildings, enhancing the efficiency of solar panels by keeping them cooler, or in automotive applications where heat rejection can improve comfort and fuel efficiency. The exceptional reflectance across a comprehensive range of solar wavelengths underscores the product's potential to contribute significantly to energy-saving strategies, reflecting a substantial portion of the incident solar energy, thereby mitigating heat absorption and contributing to thermal management solutions.

ALCHIMICA's advanced roof waterproofing systems with reflective materials offers all the benefits of cool roofs. Thanks to their high solar reflectance they contribute 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.

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.

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.

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.

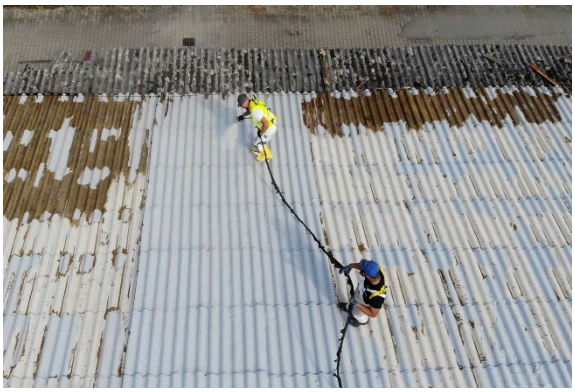
Substrate: For a metal roof, it is imperative to prepare the substrate properly before applying any primers or waterproofing systems. If any areas show signs of deterioration such as flaking metal roof paint or the fading of anodized aluminum color, these must be addressed first. All old paints, previous waterproofing coats, signs of mold, and corrosion should be meticulously removed. This can often involve sanding, power washing, or using appropriate rust-removers and cleaners designed for metal surfaces. Once the roof is stripped of these defective layers and cleaned, it is ready for priming. Proper substrate preparation is key to ensuring that the new

waterproofing system adheres securely and provides long-lasting protection for the metal roof.

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

PRIMER SELECTION

After checking weather conditions and completing substrate preparation, along with any necessary repairs, the build-up of the waterproofing system for metal roofs begins with selecting a suitable primer. Selecting the right primer for metal roofs is crucial, as these substrates are subject to corrosion and may have a non-porous surface that can challenge adhesion. Metal expands and contracts with temperature changes, and without proper preparation, this can lead to coating failure. Additionally, metal roofs may have residues from previous coatings or atmospheric contamination that could hinder the adhesion of new waterproofing systems. For metal surfaces ALCHIMICA offers a specialized primer, MICROSEALER-50.



MICROSEALER-50 addresses these concerns with its low viscosity, polyurethane-based composition that is specifically formulated to provide excellent wetting and impregnation on non-porous surfaces such as metal. This one-component primer can be used on both dry and slightly damp substrates, allowing for flexibility in various weather conditions. It offers strong adhesion even on challenging surfaces, making it an ideal base for subsequent waterproofing or protective coatings. The cured film of MICROSEALER-50 boasts remarkable mechanical properties, with elongation over 300% and tensile strength surpassing 30 N/mm². This elasticity is particularly beneficial for metal roofs, accommodating the natural thermal movement without compromising the waterproofing integrity.

For application, surfaces should be clean and free from oil, grease, and wax contaminants. Any cement laitance, loose particles, mold release agents, and cured membranes must be removed to ensure a strong bond. The primer is easily applied

with a brush, roller or airless spray machine and has been CE certified according EN 1504-2:2004 and to exceed the requirements of E.O.T.A.(European Organization of Technical Approval).

Once the MICROSEALER-50 has cured, the main membrane—such as the HYPERDESMO® waterproofing membranes—can be applied, ensuring a durable and effective waterproofing solution. ALCHIMICA's primer not only enhances the durability and longevity of the waterproofing system but also adapts to the unique requirements of metal roofs, confirming ALCHIMICA's position as a leader in polyurethane waterproofing solutions.

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 (tanks)
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

HYPERSEAL® range of PU sealants is essential in sealing applications on metal roofs due to its exceptional adhesion and elasticity, which ensures a durable seal even with the metal's natural expansion and contraction. Its robust formulation offers superior resistance to weathering and UV, making it an ideal choice for both repair and detail treatment in the harsh rooftop environment.

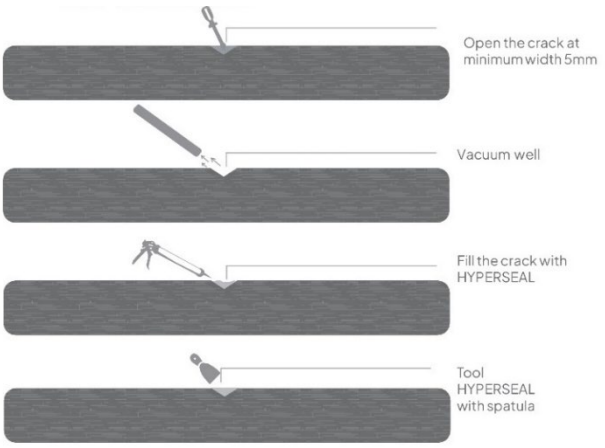
Additionally, HYPERSEAL® sealants provide a waterproof seal that prevents leaks, safeguarding the structure from water damage and corrosion, which is vital for maintaining the integrity of metal roofing systems over time. HYPERSEAL®-EXPERT-150 and HYPERSEAL®-EXPERT-60FC are both high-performance polyurethane sealants from ALCHIMICA, but they serve different purposes and conditions.

HYPERSEAL®-EXPERT-150 is a low-modulus sealant, making it ideal for high humidity conditions and ensuring a bubble-free cure, which is critical in large expansion joints. With an impressive elongation of over 700%, it's designed to accommodate significant movement, making it well-suited for dynamic joints. On the other hand, HYPERSEAL®-EXPERT-60FC is a fast-curing sealant with a higher hardness and chemical resistance, recommended for cold environments where contact with water polluting liquids occurs, such as petrol stations or secondary containment structures. Its fast tack-free time makes it preferable for projects requiring a quick return to service. Both products offer excellent adhesion to a variety of substrates including metal, but their different physical properties make them suitable for specific conditions encountered in metal roof applications. HYPERSEAL® sealants are 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. Choose the suitable HYPERSEAL® sealant for your project requirements.

HYPERSEAL®-EXPERT-150

HYPERSEAL®-EXPERT-150 is a low-modulus expansion and construction joints PU sealant designed to ensure a bubble-free cure even in high temperature and humidity conditions. It exhibits excellent thixotropy, making it suitable for large expansion joints. The ratio width to depth should be 2:1 subject to a minimum depth of 10mm. It cures by reacting with atmospheric humidity, producing a joint sealant with a 50% joint movement accommodation factor, elongation >700% (ASTM D412 / EN-ISO-527-3), and excellent adhesion to a variety of substrates (Adhesion to concrete >20 kg/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 60FC

For metal roof sealing applications where quick return to service is crucial and chemical resistance is a priority, HYPERSEAL®-EXPERT-60FC is the sealant of choice, offering fast curing times and robust adhesion to a variety of metal surfaces. HYPERSEAL®-EXPERT 60FC stands out as a fast-curing polyurethane sealant, designed for high-performance sealing, providing excellent early grab adhesion even on challenging substrates such as aluminum, steel, and polycarbonate found in metal roofing applications. With its remarkable chemical resistance and resilience to microorganisms and fungus, it is an ideal sealant for metal roof joints exposed to harsh environmental conditions and those requiring contact with water or water-polluting liquids. Moreover, HYPERSEAL®-EXPERT 60FC assures a durable seal

in metal roofing with an exceptional elongation rate over 600%, ensuring that the seal remains intact and flexible, accommodating the natural movement of the metal without compromise, even in the most demanding of sealing and repair scenarios. For metal roof applications, HYPERSEAL®-EXPERT 60FC offers a swift and dependable sealing solution with its fast-curing properties and high hardness, ensuring quick return to service and long-lasting performance. Its exceptional adhesion capabilities make it suitable for a variety of metal surfaces, including challenging ones like aluminum and steel, eliminating the need for special primers in many cases. The sealant's robust chemical resistance and resilience to environmental factors, including UV exposure, provide a reliable defense against the elements, making HYPERSEAL®-EXPERT 60FC an advantageous choice for both the repair and detail treatment of metal roofs. It's fast curing profile, is making it ideal for cold climates and challenging weather conditions.

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.

UNSOUND SURFACES AND DETAILS

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 -40ºC. 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	100m²

METHOD STATEMENT

EXPOSED METAL ROOF WATERPROOFING BASED ON THE HYPERDESMO® AQUA.

Metal roofing is a common method for industrial or commercial buildings, however, climatic conditions such as high temperatures, high moisture or heavy rains have a great impact in the lifecycle of metal sheets, causing corrosion and considerable damages that lead to water leaks. HYPERDESMO® AQUA is a specialized elastomeric waterproofing membrane/coating of vertical and horizontal elements based on ALCHIMICA's unique water-based polyurethane technology. As a 2-in-1 solution, it combines the functionalities of both a waterproofing membrane and a top coat, eliminating the need for an additional protective layer.

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

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*

- 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, clean it, and replace it with HYPERSEAL®.
- ✓ Existing membranes or coatings.
- ✓ The substrates must be both durable and cohesive. Check the substrate for contamination (oil, grease, etc.).

Metal Substrates

Metal roofing is a common method for industrial or commercial buildings; however, climatic conditions have a great impact in the lifecycle of metal sheets, causing corrosion and damages that lead eventually to water leaks. ALCHIMICA's waterproofing system provides economical and durable refurbishment and protection for metal roofs in inclined and vertical substrates, easy coloring and high resistance to harsh weather effects with excellent UV resistance while preventing from corrosion and damages, extending the life cycle of the metal sheets.

PREPARATION

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

Standard metal substrate conditions
- Humidity: W < 10%.
- Temperature: 5-35 °C.
- Relative humidity: < 85%

- 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.
- If there are areas/spots that the original metal roof paint (or possibly anodized aluminium colour) has been damaged or worn out, you should remove these old paints or old waterproofing coats (if any), mold and/or corrosion before proceeding with priming.
- The substrate should be free of dust. High pressure washing is recommended to remove dust.
- 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.

- Primer application can be done over damp metal substate too. But any ponding water should be removed before primer application.
- For more information about surface preparation please contact our technical assistance team.

MANDATORY DISCLAIMER BEFORE APPLICATION:

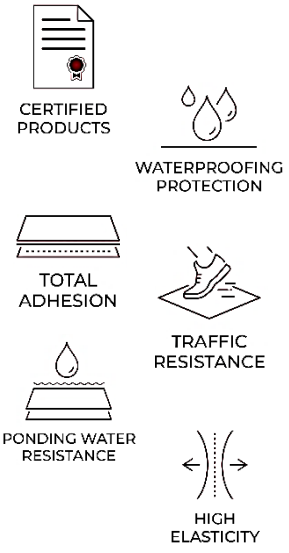
Testing the products to be used in this build-up application on the specific substrate and conducting mock-up tests are essential steps to ensure good adhesion. Mock-up tests replicate real-world conditions and provide a practical way to evaluate the performance of the products in situ. Pull-out tests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

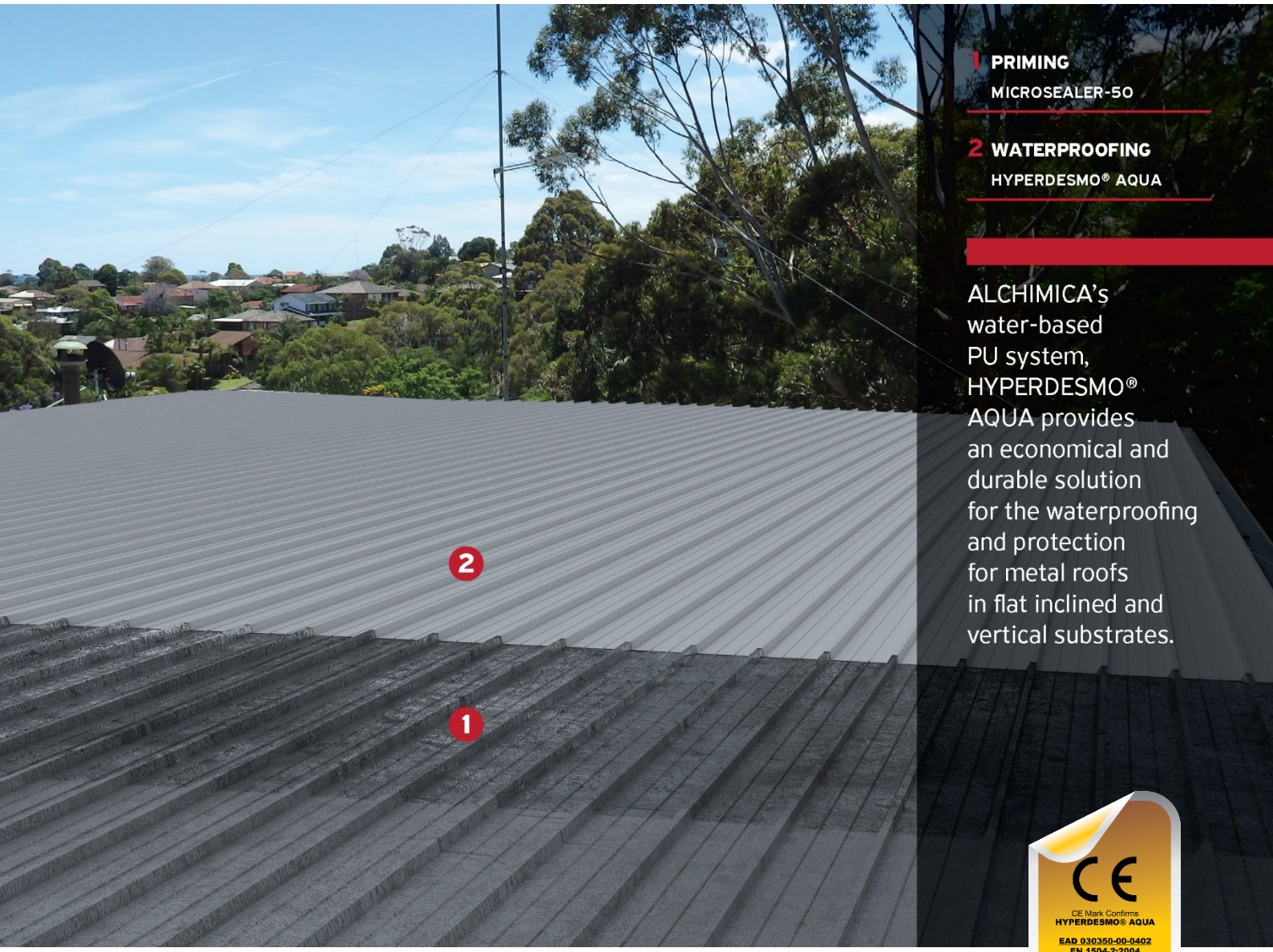
By testing the products on the specific substrate and conducting mock-up tests, any potential issues or concerns regarding adhesion can be identified and addressed before full-scale implementation. This proactive approach helps mitigate risks associated with poor adhesion, ensuring the long-term durability 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	MICROSEALER-50	80-100 kg/m^2
2. SEALANT	HYPERSEAL®-EXPERT-150	Subject to project needs
3. MAIN MEMBRANE	HYPERDESMO® AQUA	Total consumption: 1,6 -2,2 kg/m^2





1 PRIMING
MICROSEALER-50

2 WATERPROOFING
HYPERDESMO® AQUA

ALCHIMICA's water-based PU system, HYPERDESMO® AQUA provides an economical and durable solution for the waterproofing and protection for metal roofs in flat inclined and vertical substrates.

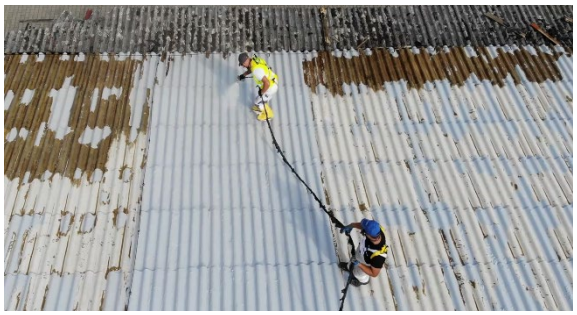
CE Mark Confirms
HYPERDESMO® AQUA
EAD 030350-00-0402
EN 1504-2:2004
CERTIFIED BY
EOTA

SUBSTRATE PRIMING

MICROSEALER-50 is a polyurethane based primer/concrete sealer suitable for both porous and non-porous substrates. It is specifically formulated to provide excellent wetting and impregnation on non-porous surfaces such as metal. 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.

PRIMER	MICROSEALER-50
CONSUMPTION	- 80-100 gr/m² per coat - do not exceed more than 100gr/m²
COMPOSITION	SOLVENT-BASED PU
APPLICATIONS METHODS	brush, roller, airless spray
TACK FREE TIME, @ 77 °F (25°C) & 55% RH	6-12 Hours
RECOAT TIME OF PRODUCT WHEN NEEDED	6-12 Hours
NEXT COAT TIME (HYPERDESMO® MEMBRANE)	6-24 Hours
RECOMMENDED DILUTION	X
ADDITIVES	X
COLORS	TRANSPARENT
POT LIFE	X
COMPONENTS	SINGLE COMPONENT

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



Application: You choose this primer if your substate is metal. MICROSEALER-50 primer will stabilize and seal the 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.

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, SCREWS AND BOLTS

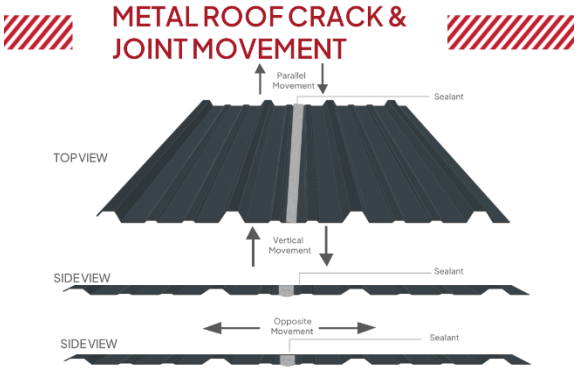
Metal roofs require robust and flexible sealing solutions for dilatation joints, inner angles, and small cracks to prevent leaks and maintain structural integrity. These components allow for thermal expansion and independent movement without inducing stress on the metal, which is crucial due to the material's susceptibility to expansion and contraction. For metal roofs, it is critical to waterproof and apply a durable sealant to dilatation joints, inner angles, wall-to-roof connections, small cracks, and areas around mechanically installed equipment such as air conditioning units, antennas, and photovoltaic systems. This ensures the roof remains flexible and functional despite environmental stresses.

The recommended treatments for these areas are HYPERSEAL®-EXPERT-150 or HYPERSEAL®-EXPERT-60FC, both polyurethane-based sealants designed for high performance and adaptability. Prior to application, all joints should be thoroughly cleaned to remove dust, oil, grease, wax, and any silicone residues. While a primer may not always be necessary, it becomes essential on porous or moist substrates to prevent air bubbles, which can occur if the substrate temperature increases.

Apply HYPERSEAL®-EXPERT-150 or HYPERSEAL®-EXPERT-60FC directly into the joints using a sealant dispensing gun. Cut the nozzle to match the required bead size and ensure no air is trapped during application. Immediate tooling after application is recommended to achieve a smooth finish, maintaining a width-to-depth ratio of 2:1 with a maximum depth of 25mm.

■ 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.

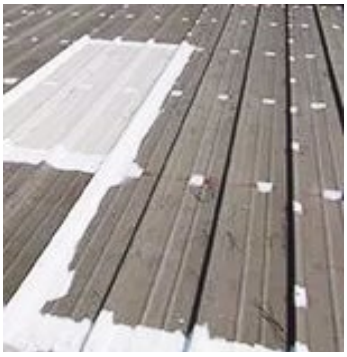
■ HYPERSEAL®-EXPERT-60FC is a high-performance sealant engineered to deliver exceptional sealing capabilities in diverse environments. This product is specially designed for fast curing and low modulus, making it ideal for applications requiring rapid turnaround without sacrificing quality. The sealant excels in bubble-free curing, even under extreme conditions of temperature and humidity, ensuring a consistent application every time. HYPERSEAL®-EXPERT-60FC reacts with atmospheric humidity to form a durable seal with a 60% joint movement accommodation factor, adhering superbly to a variety of substrates including concrete, aluminum, glass, and polymers. It maintains excellent extrusion rate and ease of tooling across a broad spectrum of climatic conditions, demonstrating its versatility in both indoor and outdoor settings.



HYPERSEAL®-EXPERT-150 is particularly effective in high humidity and temperature conditions, offering a 50% joint movement accommodation factor and excellent adhesion to a variety of substrates. HYPERSEAL®-EXPERT-60FC, known for its rapid curing and low modulus, is ideal for fast-paced projects requiring durable and reliable sealing under extreme environmental conditions. Both sealants ensure consistent performance and adaptability across a wide range of climatic conditions, making them ideal for metal roofing applications.

Slide the sealant HYPERSEAL®-EXPERT-150 or HYPERSEAL®-EXPERT-60FC 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.



In addition to treating dilatation joints, it is crucial to address the sealing around screws and bolts on metal roofs to prevent potential leak points. These fasteners, integral to the structural assembly of metal roofing, can create pathways for water if not properly sealed. For optimal protection, HYPERSEAL®-EXPERT-150 or HYPERSEAL®-EXPERT-60FC should be used to encapsulate the heads of screws and bolts. Before application, ensure that all metal surfaces around the screws and bolts are clean and free from rust, debris, and oily residues. Application of a small bead of sealant directly over and around each fastener will create a waterproof barrier that conforms to the irregularities of the fastening points. This method not only seals against moisture ingress but also helps in preventing corrosion by isolating the metal fasteners from environmental elements. After applying the sealant, it is important to smooth it out around each fastener to ensure full coverage and a neat finish. This additional step fortifies the roof's defense against water damage and extends the longevity of the metal roofing system.

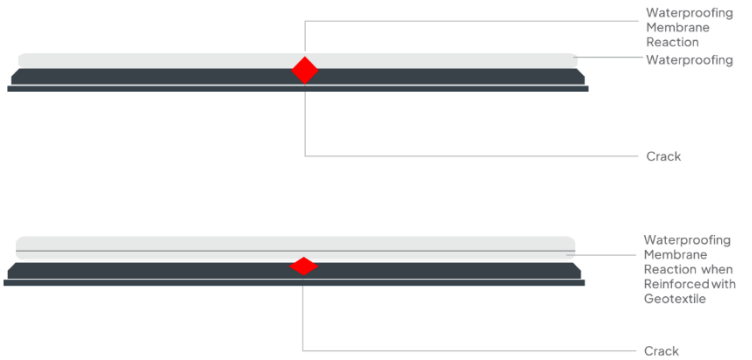
NOTE:

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

TREATMENT OF DETAILS

For metal roofs, it is essential to thoroughly seal all connections, including sheet connections, screws and bolts, as well as any cracks, drainage elements, pipes, and mechanical equipment installations such as air conditioning units, antennas, and photovoltaic systems. Proper treatment of these components ensures the integrity and longevity of the roofing system by preventing leaks and corrosion. Select the preferable treatment using sealants HYPERSEAL®-EXPERT-150, HYPERSEAL®-EXPERT-60FC, or/and HYPERDESMO® System with GEOTEXTILE, or/and HYPERDESMO®-PARTICULAR.

METAL ROOF THICKNESS OR TENSILE STRENGTH

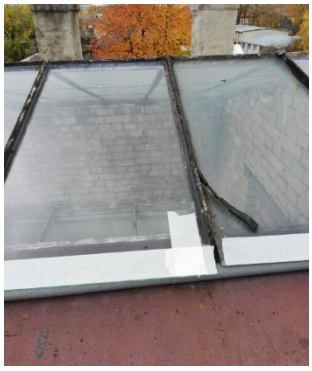


Before applying any sealant, it is crucial to clean all areas thoroughly to remove dust, oil, grease, wax, and any silicone residues. This ensures that the sealant adheres properly and performs effectively. Although a primer is not always required, it is crucial for damp substrates to prevent the formation of air bubbles in the sealant, particularly if temperatures are likely to rise during or after application. Choosing the right primer will depend on the type of substrate and the specific environmental conditions faced by the roof. Once the surface is prepared, apply the chosen sealant meticulously to all joints, inner angles, screws, bolts, and other critical details on the metal roof. Ensure comprehensive coverage to create a robust barrier against moisture and environmental factors, thus safeguarding the roof against potential damage and extending its operational life.

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® AQUA with GEOTEXTILE.



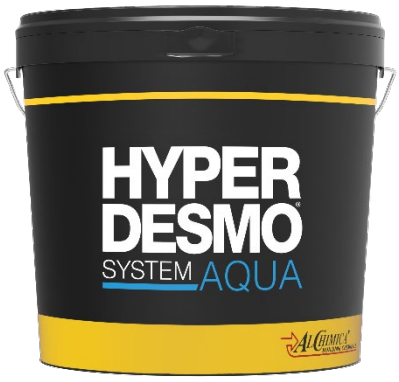

Cracks and details can also be treated by application of HYPERDESMO® System with GEOTEXTILE reinforcement. When the primer is fully cured, treat the details with HYPERDESMO® SYSTEM using a brush or small roller. Apply a piece of GEOTEXTILE (strips 0.17x100m, non-woven geotextile of 50-100gr/m^2) cut 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.

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

MAIN WATERPROOFING MEMBRANE

HYPERDESMO® AQUA	
CONSUMPTION	1.5-2.2 kg/m²
APPLICATIONS METHODS	brush, roller airless spraying
TACK FREE TIME, @ 77 ºF (25ºC) & 55% RH	6-24 Hours
APPLICATION OVER PREVIOUS COAT (PRIMER)	Depending on the primer curing time
RECOAT TIME OF PRODUCT	6-48 Hours
ADDITIVES	X
COLORS	WHITE/GREY
COMPONENTS	SINGLE COMPONENT

HYPERDESMO® AQUA is a specialized elastomeric waterproofing membrane/coating designed for walls and roofs, based on ALCHIMICA's innovative water-based polyurethane dispersion technology. It offers environmental protection, providing waterproofing in difficult weather conditions and reducing surface temperatures. It is an aliphatic, thixotropic, easy to apply, and quick drying, making it suitable for various substrates like concrete or metal ceilings and polyurethane foam. It can be applied by brush, roller, or spray in two or more coats, forming an elastic and hydrophobic film. As a 2-in-1 solution, it combines the functionalities of both a waterproofing membrane and a top coat, eliminating the need for an additional protective layer. The product can be used with a second component (booster) during cold weather for faster curing. It has achieved a CE certification for 10 years expected working life (W2), using a film thickness of just 1.6 mm.



HYPERDESMO® AQUA forms a seamless, elastic membrane, ensuring complete and long-lasting waterproofing, painting, and protection. It is thixotropic, elastic, and resistant to ponding water, UV radiation, and extreme weather conditions. It can be applied to horizontal and vertical surfaces, forming an elastic and hydrophobic film for waterproofing applications.

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

TYPES OF APPLICATIONS

APPLICATION BY COATS

- First coat: 0.6-0.8 kg/m².
- Second coat: 0.6-0.9 kg/m².

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

- Minimum total consumption: 1.5-2.2 kg/m².

APPLICATION WITH REINFORCEMENT

✓ GEOTEXTILE
✓ FIBER TEXTILE

You apply the 1st coat of HYPERDESMO® AQUA with a minimum consumption of 0.8-1.2 kg/m². When HYPERDESMO® AQUA is still wet, you apply the reinforcement (GEOTEXTILE-50 PRESSED (non-woven geotextile of 50gr/m²)). As soon as HYPERDESMO® AQUA 1st coat cures, application of the 2nd coat of HYPERDESMO® AQUA, with a minimum consumption of 0.8-1.2 kg/m² takes place.

APPLICATION WITH BROADCASTING SAND

If an anti-slippery effect is required, silica sand or corundum aggregates can be broadcasted over the HYPERDESMO® AQUA waterproofing membrane.

Over the fresh and last coat of HYPERDESMO® AQUA broadcast natural dry quartz or corundum aggregates, and let it cure. The next day you remove the excess non-bonded aggregates. Most applicators use a vacuum cleaner.

Then, you apply on top a thin coat of HYPERDESMO® AQUA at 0.8 kg/m² in order to encapsulate the silica sand. For traffic requirements, after this coat has cured, you can apply another coat of HYPERDESMO® AQUA.

APPLICATION AS PAINT

Due to its thixotropic nature, it is easily applied on inclined and vertical surfaces. For use as a protective paint, recommended consumption is 0,5 Kg/m².

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

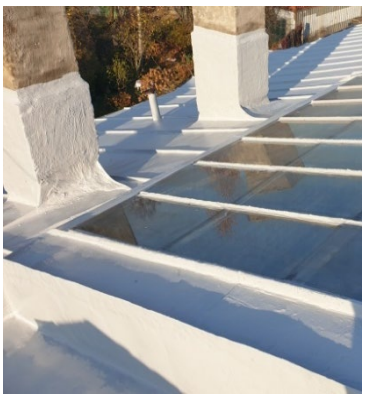
Applied by airless spraying: 0.5 kg/m² per coat.

1. Open the pail and stir it up to homogenize.
2. If necessary, add 10-15% WATER 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.

APPLICATION ON INCLINED METAL SURFACES

When applying HYPERDESMO® products on inclined metal surfaces, it is advisable to modify the application method to ensure optimal coverage and effectiveness. Due to the challenges presented by the slope of these surfaces, it is beneficial to apply the product in multiple thinner layers rather than a single, thicker layer. This approach helps manage the application more precisely and prevents the product from running or pooling, which can be problematic on inclined surfaces.

For spray applications, which are common for extensive or hard-to-reach areas, it is particularly important to use multiple layers. Achieving the full recommended consumption rate of up to 2kg/m² in one go is not feasible with spray methods on inclined surfaces. Instead, applying the waterproofing in successive layers allows for gradual build-up, ensuring thorough coverage and adherence to the metal surface, enhancing the waterproofing integrity and durability of the treatment.



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.

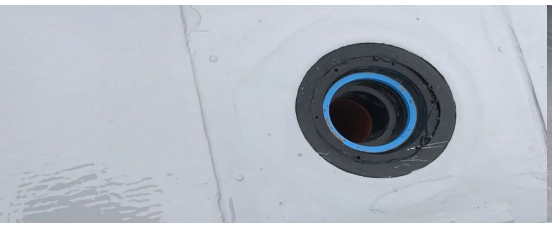
REPAIR AND OVERLAPS PROCESSES

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.
- Apply a thin layer of primer AQUASMART-DUR at a consumption of 50-60gr/m^2 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® AQUA SURFACE should be clean and free of loose particles and dust. If it rains after the first main coat application, you may need to solvent wipe the area and apply one thin coat of primer again.

Clean the whole area, use water if needed and let it dry, and then apply AQUASMART-DUR primer at 50-80gr/m^2 in order to secure adhesion. After 3-6h you can apply the next coat of HYPERDESMO® AQUA.

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

METAL 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 **EXPOSED METAL ROOF WATERPROOFING BASED ON HYPERDESMO® AQUA**. 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.

- 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 identified in the DoP files conform with the set of declared performances. This declaration of performance is issued in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer.
- It is recommended to check the TDS and MSDS of all the materials before use and application.

- The use of these materials and products is beyond the scope and control of ALCHIMICA.
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