

EXPOSED CONCRETE ROOF WATERPROOFING
SOLUTION BASED ON **HYPERDESMO[®]-POLYUREA-**
2K-HC/ELASTIC.



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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.



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 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.



FULL COVERAGE AT EDGE



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 HOT CURE POLYUREA COATINGS

ALCHIMICA's hot cure polyurea coatings are a revolutionary solution for protective coatings, designed to withstand extreme temperatures and harsh environmental conditions. These coatings form a seamless, impermeable barrier on surfaces, providing superior protection against moisture ingress, chemical exposure, and mechanical damage. They are suitable for roofs, industrial floors, and infrastructure projects, ensuring structural integrity and longevity.

Polyurea coatings offer advantages such as fast setting, rapid return to service, and high abrasion resistance. They can be applied in various temperatures, built up to any thickness, and are flexible enough to be used across various applications. They form a strong bond to most structures and materials, making them suitable for sectors like water engineering, power engineering, and construction-infrastructure engineering.

There are two versions available: a pure polyurea version and a hybrid version. The standard version provides a hard, durable finish, while the elastic version offers additional elasticity and flexibility. Both are suitable for waterproofing coatings, but the choice depends on the application. The standard version is ideal for high traffic or chemical environments, while the elastic version is better suited for dynamic environments with substrate movement or expansion. The choice between the two depends on the specific requirements of the application, with the standard version preferred for its robustness and the elastic version for its adaptability to dynamic conditions.

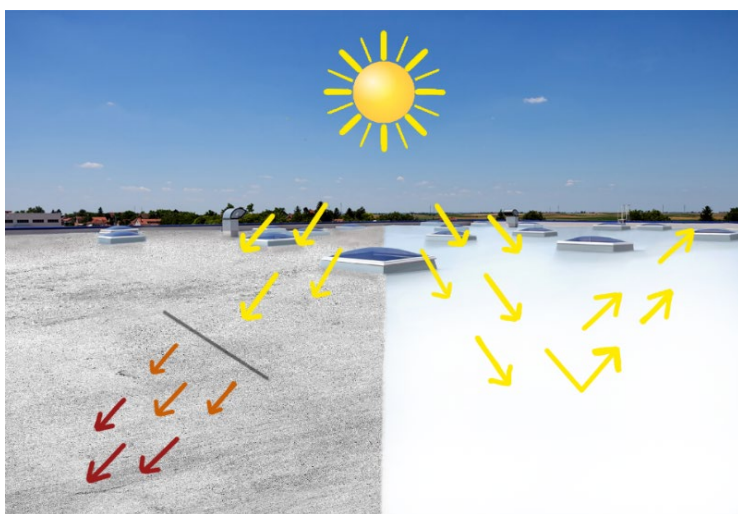


COOL ROOFS: ENHANCING URBAN ENERGY EFFICIENCY IN BUILDINGS THROUGH HEAT ISLAND REDUCTION

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.

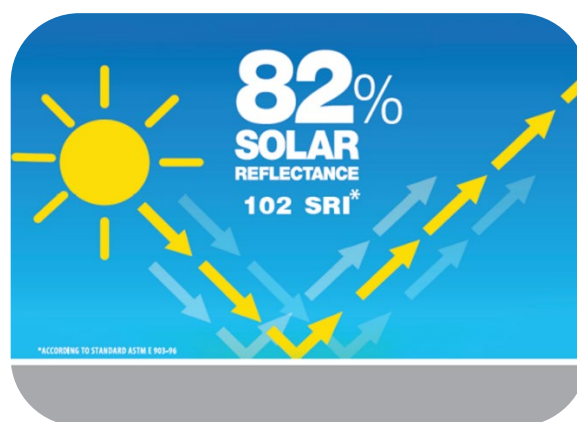
White cool roofs, compared to traditional dark roofs, offer lower surface temperatures and substantial energy savings, with an average flat roof replacement rate of 5-7% per year. Beyond environmental benefits, cool roofs prove economically attractive to building owners. They foster cooler, healthier 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.

ETAG 005 (PART 1&6)

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.



By choosing a LARWK that is certified according to ETAG 005, 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. Hot-Applied polyurea systems must be applied using plural component spray systems that are specifically developed for such products. Before installing the system, the weather working conditions should be considered in order to ensure the correct and safe application of the system. Overall, avoid extreme cold or hot surface



conditions. In case of high heat, contractors may apply the products either in the morning or afternoon. The application temperature range is 5°C to 35°C, with no dew point conditions, a maximum 95% relative humidity, and substrate temperature above 3°C. Store materials cool, tools dry, and avoid application during hot hours.

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

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

REPAIR AND LEVELING MORTARS

REPAIRING

In case any spots on the concrete surface require repairs, filling, and/or smoothing such as large cracks, cavities, or surface levelling, ALCHIMICA's HYGROSMART®



range of cementitious mortars may be used:

- 1. HYGROSMART®-FIX&FINISH** (Single component, rapid-setting shrinkage-compensated, thixotropic, fiber-reinforced, cementitious mortar applied in a single layer from 3 to 40 mm thick, for repairing and smoothing concrete, certified according to EN1504-03, Type R4 CLASS III), or
- 2. HYGROSMART®-BUILDING-45-THIXO** (Single-component, shrinkage-compensated, thixotropic, fiber-reinforced cementitious repair mortar, certified according to EN1504-03, Type R4 CLASS III), or
- 3. HYGROSMART®-BUILDING-F** (Single-component, reinforced, quick-setting, cementitious repair mortar with excellent adhesion and mechanical properties, easy application in horizontal/vertical substrates. Long pot life allows the application of

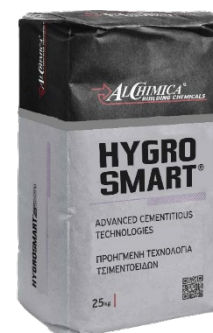
thick coats without cracking. CE Certified as Class R3 class III repair mortar according to EN 1504-03.

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

**HYGRO
SMART®**
SYSTEM 
Advanced Cementitious Technologies

LEVELING

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



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

PRIMER SELECTION

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

SUBSTRATE AND CONDITIONS	CONCRETE	HUMID CONCRETE	G YPSUM	METAL STEEL	POROUS CERAMIC TILES	GLASS / GLAZY TILES	PVC MEMBRANES	TPO MEMBRANES	BITUMEN MEMBRANES	LOW TEMPERATURE APPLICATION	VAPOR BARRIER	NEGATIVE PRESSURE / RISING HUMIDITY (bina)
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®-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.

UNHSOUND SURFACES AND DETAILS



WOOD



BITUMEN MEMBRANES



SCREED



METAL SEAMS

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



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®-ADY-810, 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.

METHOD STATEMENT

EXPOSED CONCRETE ROOF WATERPROOFING BASED ON THE HYPERDESMO®-POLYUREA-2K-HC/ELASTIC.

The exposed concrete roof based on the HYPERDESMO®-POLYUREA-2K-HC/ELASTIC, offers high-performance waterproofing with a CE certification for an expected working life of 25 years. Additionally, HYPERDESMO®-POLYUREA-2K-HC meets key standards for potable water tank waterproofing by being compliant with UNE-EN 12873-1/2014 and RD 140/2003 standards. With certifications for root barrier, radon gas resistance, fire safety, and no water contamination. It's a safe, reliable choice for demanding waterproofing applications.

GENERAL SYSTEM CONDITIONS

EQUIPMENT

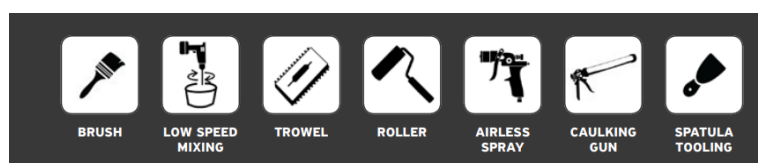
For successful and safe applications specific tools and equipment are required. Each application might have different requirements in terms of application and protection equipment.

The following application equipment is at minimum required:

- Protective clothing: Protective overalls, goggles, face mask 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 for HYPERDESMO®-POLYUREA-2K-HC/ELASTIC: Plural component dispensing machines. All personnel working on site with these machines must wear double filter breathers with OSHA ratings. Hot-Applied polyurea systems must be applied using plural component spray systems that are specifically developed for such products. Please contact our technical department for further information.

- Application equipment for additional parts of the system: Brush, roller, notched trowel, squeegee, rubber spatula, caulking gun, spatula. Specific airless spray machines can also be used.
- Extra equipment: Digital scale or other measuring equipment

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



**HYPERDESMO®-
POLYUREA-2K-
HC/ELASTIC**

**Applied with Plural
Component Spray**

WORKING WEATHER CONDITIONS

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

SURFACE PREPARATION

THE FOLLOWING FACTORS PRIOR TO APPLICATION SHOULD BE CHECKED:

- ✓ Substrate type and condition.
- ✓ Previous substrate mechanical preparations (sanding, polishing, shot blasting, or milling)
- ✓ Porosity of the surface
- ✓ Existing cracks or damaged areas.

- ✓ In existing dilatation joints, remove old material, 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.).

CONCRETE SUBSTRATES

Concrete substrates are used in the construction of roofs and foundations in modern architectural designs. However, because concrete is a porous surface exposed to different climatic conditions, it can absorb water which can then cause damage. Waterproofing is a basic need at almost all stages

of construction work, in order to protect structures from the adverse effects of moisture and water ingress. In the case of exposed concrete roofs, it is vital to avoid any water leak in order to prevent any wear and corrosion of reinforcing steel in the concrete structure.

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

Standard concrete substrate conditions

- Hardness: R28 = 15 MPa.
- Humidity: W < 10%.
- Temperature: 5-35 °C.
- Relative humidity: < 85%

PREPARATION

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

- New concrete or other cementitious substrates should be at least 28 days old.
- The substrate should be clean and free of loose particles, oil, and grease.
- The substrate should be free of any irregularities. If needed, it should be ground with the appropriate mechanical equipment in order to achieve a flat and sound surface.
- The substrate should be free of dust. Vacuum treatment or/ and high-pressure washing is recommended to remove dust.
- Primer application can be done over damp concrete too. But any ponding water should be removed before primer application.

- Metal details should be free of rust, oils, and old paints.
- The surface of PVC pipes should be treated with sandpaper in order to become rough.
- Surface irregularities can be filled with the appropriate HYGROSMART® products.
- For concrete levelling or sloping the appropriate HYGROSMART® products must be used.
- For more information about surface preparation please contact our technical assistance team.





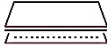





MANDATORY DISCLAIMER BEFORE APPLICATION:

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

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

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

SYSTEM PRODUCTS BUILD-UP

	PRODUCT	CONSUMPTION		
1. PRIMER	AQUASMART-DUR	150-200 gr/m ² Subject to porosity		
	EPOXY-RESIN-21 CLEAR			
	GEODESMO-50			
	AQUASMART-PU PRIMER 2K			
2. SEALANT	HYPERSEAL®-EXPERT-150	Subject to project needs		
3. MAIN MEMBRANE	HYPERDESMO®-POLYUREA-2K-HC/ELASTIC	Total consumption: 1,6 -2 kg/m ²		
4. TOP-COAT	HYPERDESMO®-ADY-E	0.2 -0.3kg/m ² per coat, depending on traffic requirements		
	HYPERDESMO®-ADY-810	0.7-1 kg/m ² Per coat Subject to traffic needs		

1 PRIMING

EPOXY-RESIN-21-CLEAR/
GEODESMO-50/
AQUASMA[®] PU PRIMER 2K

2 SEALING

HYPERSEAL[®]-EXPERT-150

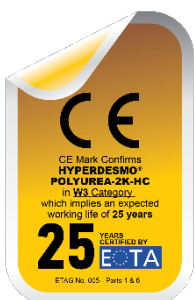
3 WATERPROOFING

HYPERDESMO[®]-POLYUREA-2K-HC /
ELASTIC

4 TOP COAT APPLICATION

HYPERDESMO[®]-ADY-E /
HYPERDESMO[®]-ADY-810

HYPERDESMO[®]-POLYUREA-2K-HC meets key standards for potable water tank waterproofing by being compliant with UNE-EN 12873-1/2014 and RD 140/2003 standards. With certifications for root barrier, radon gas resistance, fire safety, and no water contamination. It's a safe, reliable choice for demanding waterproofing applications.



SUBSTRATE PRIMING

PRIMER	AQUASMART-DUR / AQUADUR	AQUASMART-PU PRIMER 2K	EPOXY RESIN- 21 CLEAR	GEODESMO-50
CONSUMPTION	- 150-200 gr/m ² per coat - water/humidity barrier -three coats with total cons. of 500-600 gr/m ²	- 150-200 gr/m ² per coat	- 200-250 gr/m ² per coat - subject to substrate porosity	- 150-200 gr/m ² per coat - 100-500 gr/m ² , subject to substrate porosity.
COMPOSITION	WATER BASED EPOXY	WATER BASED PU	100% SOLIDS EPOXY	SOLVENT-BASED PU
APPLICATIONS METHODS	brush, roller	brush, roller	brush, roller	brush, roller
TACK FREE TIME, @ 77 °F (25°C) & 55% RH	3-5 Hours	1-2 Hours	3-5 Hours	1-3 Hours
RECOAT TIME OF PRODUCT WHEN NEEDED	When the material has hardened to the degree where it can no longer be punctured by fingernail 6-24 Hours	1-2 Hours	3-24 Hours	1-3 Hours
NEXT COAT TIME (HYPERDESMO®-POLYUREA-2K-HC/ELASTIC MEMBRANE)	Once the colour on the current coat goes from milky white to transparent 6-24 Hours	2-24 Hours	3-24 Hours	2-24 Hours
RECOMMENDED DILUTION	10% WATER	10% WATER	X	X
ADDITIVES	X	X	X	X
COLORS	WHITE	TRANSPARENT	TRANSPARENT	TRANSPARENT
POT LIFE	1 Hour	25 min	20mins@25°C	X
COMPONENTS	TWO COMPONENTS	TWO COMPONENTS	TWO COMPONENTS	SINGLE COMPONENT

Choose a suitable primer for your project needs and requirements:



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

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



Application: You choose to apply this primer over a sound concrete surface. AQUASMART-DUR primer will create a slight film sealing the concrete and increasing the adhesion. After the AQUASMART-DUR application, you should wait at least 12 hours to apply the main membrane. The main membrane application has to be done within 48 hours after the AQUASMART-DUR application. AQUASMART-DUR is completely solvent-free and low VOC primer. If a negative pressure humidity barrier is required, increase total

consumption of AQUASMART-DUR at a minimum of 500 gr/m² in 3 successive layers (150-200gr/m² per coat)

■ AQUASMART®-PU PRIMER 2K is a revolutionary polyurethane water-based primer. It is a 100% polyurethane product that can be applied on damp concrete, making it an ideal same-day primer. The product is solvent-free and zero VOC, making it suitable for both indoor and outdoor use. This two-component, 1:1 volume product is fast curing, low-odor, safe, non-flammable, and non-IMO, suitable for closed spaces. It has a long pot life, easy clean-up, and strong adhesion, even on damp or green concrete. It can be used on concrete, humid concrete, metal/steel, aluminum, glass, and wood and can be applied with brush, roller, or airless spraying. The product is recommended for use as a primer for HYPERDESMO® and AQUASMART®-based products and for difficult main coat applications like POLYUREA-based materials.

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

Application: You choose this primer when the application temperature is below 15°C and when you need a fast-curing primer that will allow same day application. Apply with roller in one or two thin coats with total consumption of 150 gr/m². Following application of AQUASMART-PU PRIMER 2K, the main membrane may be applied within 2-24 hours.

■ EPOXY-RESIN-21 CLEAR is a two component, low viscosity epoxy resin with outstanding bonding capabilities. The product is 100% solids therefore after hardening no shrinkage occurs, this coupled with the material's extremely high penetration ability render EPOXY-RESIN-21 Clear highly successful in construction applications. Recommended for bonding of cement mortars, old and new concrete,

and metal structures. The material is ideal for filling and sealing cavities and cracks in pillars, foundations, beams etc.

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

Application: Mix the two components of EPOXY-RESIN -21 CLEAR. Clear until the mixture becomes homogenous and apply with brush or roller. Application on slightly damp substrates is also possible. For priming the substrate, you apply EPOXY 21 CLEAR as a primer with a consumption of 0.2-0.3 kg/m² on concrete per coat, coats subject to substrate porosity. It is recommended to apply 2 coats of primer.

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

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

Application: You choose this primer if the concrete surface is extremely porous. GEODESMO-50 has a very fast curing profile (same-day primer), which allows it to be used more successfully in colder climates and when rain is not very predictable because 2-3 hours after this primer application, you can apply the main membrane. Although the material has such a fast-curing profile, it has a good memory also. Application over it, is possible even the next day and up to 48 hours.

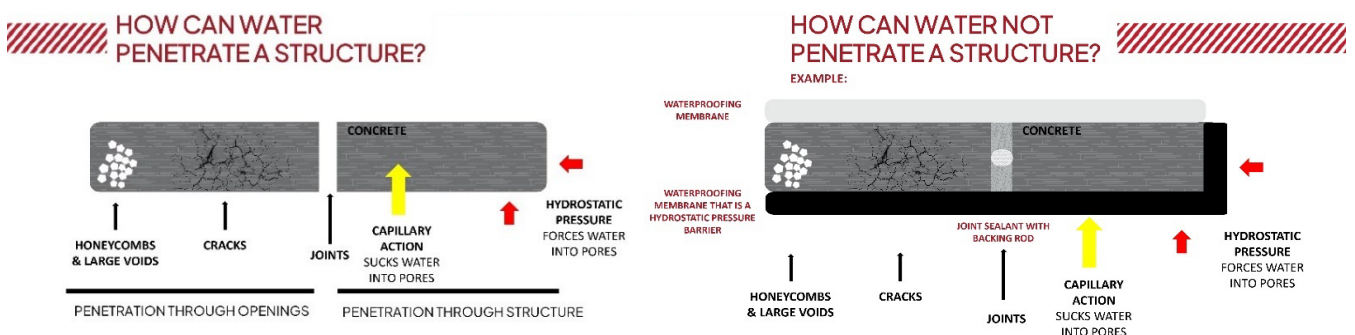


Notes:

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

DILATATION JOINTS, INNER ANGLES & SMALL CRACKS

Concrete expansion joints are 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



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

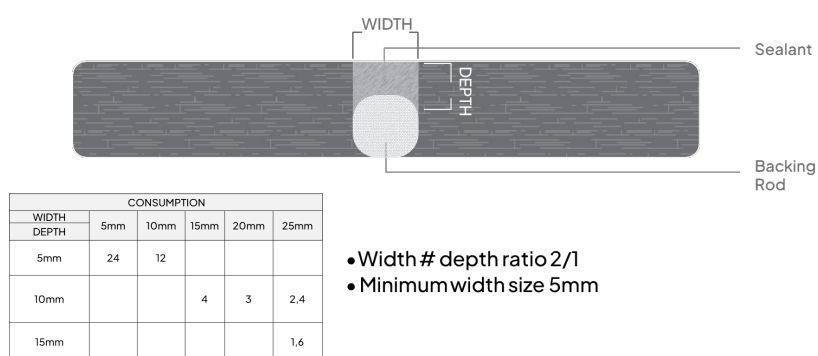
substrate the primer is required, as there is a possibility of air bubbles blown into the uncured sealant if the substrate temperature rises.

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



Slide the sealant HYPERSEAL®-EXPERT-150 or HYPERSEAL® 25LM-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.

POLYETHYLENE BACKER ROD

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



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

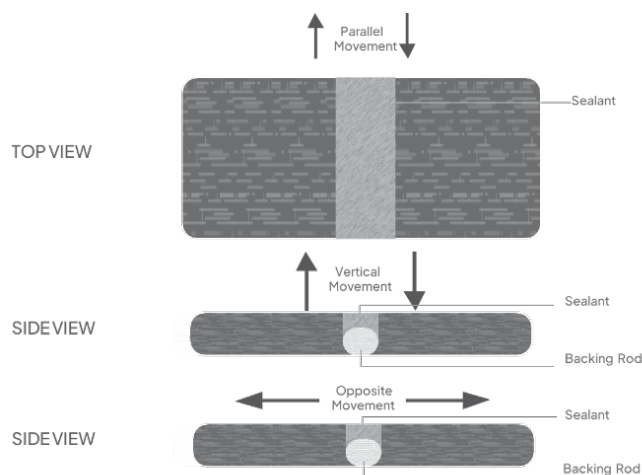
NOTE:

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

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 or HYPERSEAL® 25LM-S.

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.

NOTE:

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

MAIN WATERPROOFING MEMBRANE

		HYPERDESMO®-POLYUREA-2K-HC	HYPERDESMO®-POLYUREA-2K-HC-ELASTIC
HYPERDESMO®-POLYUREA-2K-HC and HYPERDESMO®-POLYUREA-2K-HC-ELASTIC are based on the same polyurea technology of ALCHIMICA, however, the standard version provides a hard, durable finish, while the elastic version offers additional elasticity and flexibility. Both are suitable for	CONSUMPTION	2-2,5 Kg/m ²	2-2,5 Kg/m ²
	COMPOSITION	PURE POLYUREA	HYBRID POLYUREA
	APPLICATIONS METHODS	plural component spraying equipment.	plural component spraying equipment.
	GEL TIME	20-30 SEC	20-30 SEC
	CURE TIME	24 Hours	24 Hours
	APPLICATION OVER PREVIOUS COAT (PRIMER)	Depending on primers curing time	Depending on primers curing time
	NEXT COAT TIME (TOP COAT)	1-24 Hours	1-24 Hours
	COLORS	GREY	GREY
	COMPONENTS	TWO COMPONENTS	TWO COMPONENTS

waterproofing coatings, but the choice depends on the application. The standard version is ideal for high traffic or chemical environments, while the elastic version is

better suited for dynamic environments with substrate movement. The elastic version may also be better compatible with substrates prone to movement or expansion, reducing the risk of cracking or delamination. Choose the suitable version depending on your project requirements.

The HYPERDESMO®-POLYUREA-2K-HC is a two-component, 100% solids, aliphatic, pure polyurea coating with excellent mechanical properties like high tensile strength and abrasion resistance. It provides a hard, durable surface finish suitable for impact and chemical resistance applications. Typically used for protective coatings on concrete floors and industrial surfaces, it is suitable for high traffic or harsh chemical environments.

HYPERDESMO®-POLYUREA-2K-HC-ELASTIC is a two-component hybrid polyurea coating with increased elasticity compared to the standard version. It retains mechanical properties like high tensile strength and chemical resistance but offers greater flexibility and elongation. This increased elasticity makes it suitable for applications requiring substrate movement or expansion, such as temperature fluctuations or structural movement. It can accommodate slight substrate movement without cracking or delamination, providing a durable, long-lasting finish in dynamic environments. Common applications include waterproofing and protective coatings on surfaces with flexibility and crack-bridging properties.

IMPORTANT NOTES:

Drums of components should be pre-heated to 25° C prior to mixing or dispensing.

In cold weather conditions, it is recommended that the drums be protected with a heating jacket prior to use.

Please contact our technical department for information on setting up plural component dispensing machines.

Do not walk on membrane for 24 hours after application.

APPLICATION GENERAL GUIDELINES

APPLICATIONS METHODS	plural component spraying equipment.
COMPONENT A (ISO) TEMPERATURE:	70-75 °C
HYPERDESMO® - POLYUREA	
-2K-HC VS -2K-HC-ELASTIC	
- PURE POLYUREA	- HYBRID POLYUREA
HOSE TEMPERATURE: 15°C MINIMUM	- 170 °C ELASTIC
- MORE EXPENSIVE	- MORE EXPENSIVE PRICING
WORKING PRESSURE:	- HARDNESS Shore A: 70
- HARDNESS Shore A: 90	- HARDNESS Shore A: 70
- Tensile strength at break: >10 (N/mm2)	- Tensile strength at break: >8 (N/mm2)
- Elongation: >400%	-Elongation: >550%
- Tear resistance: >100 [KN/m]	- Tear resistance: >30 [KN/m]
In applications that demand HIGH TRAFFIC RESISTANCE and/or CHEMICAL RESISTANCE	In all other applications over concrete, metal, etc., -2K-HC-ELASTIC is perfectly suitable



HYPERDESMO® -POLYUREA-2K-HC

ULTIMATE WATERPROOFING
AND PROTECTION

Highly elastic two-component polyurea waterproofing membrane

ALCHIMICA®
BUILDING CHEMICALS

HYPERDESMO®-POLYUREA-2K-HC

HYPERDESMO®-POLYUREA-2K-HC is a two-component pure polyurea system for waterproofing and protection, composed of 100% solids. It is applied using plural component spraying equipment and is elastic with a polymerization profile designed for enhanced adhesion. This system is highly recommended for commercial and industrial applications requiring high levels of abrasion resistance and impact strength. The product is quick curing, with a gel time of around 20-30 seconds, and offers excellent mechanical properties such as high tensile and tear strength and high abrasion resistance. It is suitable for use in environments with high traffic or exposure to harsh chemicals.

HYPERDESMO®-POLYUREA-2K-HC	
CONSUMPTION	2-2,5 Kg/m ²
COMPOSITION	PURE POLYUREA
APPLICATIONS METHODS	plural component spraying equipment.
GEL TIME	20-30 SEC
FULL CURE TIME	24 Hours
APPLICATION OVER PREVIOUS COAT (PRIMER)	Depending on primers curing time
COLORS	GREY
COMPONENTS	TWO COMPONENTS

The product is fast curing, bubble, and defect-free membrane, and contains no plasticizers or heavy metal toxic catalysts. It offers excellent thermal resistance, with a maximum service temperature of 80°C and a maximum shock temperature of 350°C. The film remains elastic even down to -40°C, and it has excellent mechanical properties, including high tensile and tear strength and abrasion resistance. It also has good chemical resistance and moisture vapor transmission, preventing humidity accumulation under the coat. HYPERDESMO®-POLYUREA-2K-HC is certified for potable water tanks and is used in various applications such as PU and polystyrene insulation foams, floors, roofs, tanks, drinking water tanks, and pipes. It is applied using plural component spraying equipment.

Application: Spray apply HYPERDESMO®-POLYUREA-2K-HC with minimum total consumption of 1.5-2.0 kg/m². However, in these systems as they are spray applied, always keep in mind of a material loss of up to 5%-15 due to winds (depending how strong they are). In such systems, the minimum thickness is usually 1,5-2mm and this can be achieved in 1 coat and an approximate consumption of 1,5-2.5kg/m². It can also

be applied in more layers if needed. This can be done within the same hour as the application of the first coat.

The product has a CE certification and declared performance W3 (25 years expected working life) if applied at minimum thickness 1.6 mm with estimated total consumption 1.6kg/m².

HYPERDESMO®-POLYUREA-2K-HC-ELASTIC

HYPERDESMO®-POLYUREA-2K-HC-ELASTIC

is a two-component hybrid polyurea product for waterproofing and protection, composed of 100% solids. It is applied by plural component spraying equipment and is highly elastic and has a polymerization profile formulated for enhanced adhesion. It is highly recommended for commercial and industrial applications requiring high levels of abrasion resistance and impact strength. The product is quick curing, with a gel time of around 20-30 seconds and is unaffected by

humidity and weather. It is highly elastic, with good chemical resistance and excellent thermal resistance. It also has excellent mechanical properties, including high tensile and tear strength and high abrasion resistance.

HYPERDESMO®-POLYUREA-2K-HC-ELASTIC is formulated to provide additional elasticity compared to the standard version, offering greater flexibility and elongation. This increased elasticity makes it suitable for applications where substrate movement or expansion is expected, such as in environments with temperature fluctuations or structural movement. Common applications include waterproofing and protective coatings on surfaces where flexibility and crack-bridging properties are crucial, such as roofs and moderate traffic decks. The product is a two-component, 100% solids, aliphatic, hybrid polyurea coating, offering excellent mechanical properties, such as

HYPERDESMO®-POLYUREA-2K-HC-ELASTIC	
CONSUMPTION	2-2,5 Kg/m ²
COMPOSITION	HYBRID POLYUREA
APPLICATIONS METHODS	plural component spraying equipment.
GEL TIME	20-30 SEC
FULL CURE TIME	24 Hours
APPLICATION OVER PREVIOUS COAT (PRIMER)	Depending on primers curing time
COLORS	GREY
COMPONENTS	TWO COMPONENTS

high tensile strength and abrasion resistance. It is typically used for protective coatings on concrete and industrial surfaces, or other areas requiring a robust and durable coating.

Application: Spray apply HYPERDESMO®-POLYUREA-2K-HC-ELASTIC with minimum total consumption of 1.5-2.0 kg/m². However, in these systems as they are spray applied, always keep in mind of a 5-15 % material loss due to winds (depending how strong they are). In such systems, the minimum thickness is usually 1,5-2mm and this can be achieved in 1 coat and an approximate consumption of 1,5-2.5kg/m². It can also be applied in more layers if needed. This can be done within the same hour as the application of the first coat.

The product has a CE certification and declared performance W3 (25 years expected working life) if applied at minimum thickness 1.6 mm with estimated total consumption 1.6kg/m².

TOPCOAT

For abrasion resistance, UV and colour protection, you should finally apply an aliphatic topcoat. Choose the suitable aliphatic top coat for your project's traffic requirements and needs.

- HYPERDESMO®-ADY-E is a top coat designed for waterproofing applications and surface protection. It offers high elasticity, durability, and long-lasting protection. It provides a seamless, impermeable membrane, making it ideal for roofs, balconies, and terraces. Its excellent adhesion properties, ease of application, versatility, and aesthetic finish make it a suitable choice for various projects.

- HYPERDESMO®-ADY 810, on the other hand, is tailored for heavy-duty high traffic areas, offering exceptional abrasion, scratch resistance, and UV resistance. It's suitable as a top coat for exposed car parking decks and can be used in both single-layer applications or as a top coat over HYPERDESMO® systems. This product is

recommended for areas subjected to vehicular traffic and where high durability and heavy-duty resistance are critical.

Choose HYPERDESMO®-ADY-E for projects where the traffic is moderate and color stability and UV protection are priorities, and HYPERDESMO®-ADY 810 for areas requiring heavy duty requirements, high abrasion resistance and durability under vehicular traffic.



HYPERDESMO®-ADY -E

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 hours of HYPERDESMO®-POLYUREA-2K-HC/ELASTIC depending on weather conditions.
RECOAT TIME OF THE PRODUCT	24 Hours
ADDITIVES	X

For abrasion resistance and colour protection, you should finally apply a topcoat of HYPERDESMO®-ADY-E pigmented at the

COLORS	WHITE, GREY, NEUTRAL, TRANSPARENT
COMPONENTS	SINGLE COMPONENT

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®-POLYUREA-2K-HC products, maximizing the system's working life.

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®-POLYUREA-HC-2K/ELASTIC 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®-POLYUREA-HC-2K/ELASTIC 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®-POLYUREA-HC-2K/ELASTIC 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.

HYPERDESMO®-ADY 810

HYPERDESMO®-ADY 810 is a fully aliphatic, one-component polyurethane liquid membrane designed for use as a waterproofing membrane or as a top coat for heavy duty and high traffic deck coating systems and roofs. It is based on ALCHIMICA's HAA - Humidity Activated Accelerator Technology (H.A.A) and it is self-levelling, with a good viscosity profile over a large temperature range that will cure to form a bubble-free membrane that is recommended to be applied in only one coat. It is heavy-duty, fully aliphatic, with excellent mechanical, chemical, thermal, UV and natural element resistance properties, excellent abrasion, impact, and UV resistance, excellent mechanical properties, high elasticity, tensile and tear strength, and excellent chemical and hydrolysis resistance.

WATERPROOFING	HYPERDESMO-ADY-810
	0.7-1 kg/m ² . Per coat
CONSUMPTION	1.6-2 kg/m ² >2 kg/m ² Subject to traffic needs
APPLICATIONS METHODS	brush, roller, airless spraying
TACK FREE TIME, @ 77 °F (25°C) & 55% RH	6-12 Hours
APPLICATION OVER PREVIOUS COAT (PRIMER)	It must be applied WITHIN 24 hours of HYPERDESMO®-POLYUREA-2K-HC/ELASTIC depending on weather conditions.
RECOAT TIME OF PRODUCT	24 Hours
ADDITIVES	<ul style="list-style-type: none"> • THIXO-TOOL • CHECK THE TDS FOR COMPATIBILITY
COLORS	WHITE, GREY
COMPONENTS	SINGLE COMPONENT

Usage for heavy-duty exposed waterproofing applications such as car parking decks and heavy-duty concrete roofs is recommended. The HYPERDESMO®-ADY 810 system is a must-have for top-coating HYPERDESMO® systems and HYPERDESMO®-POLYUREA-2K-HC/ELASTIC when traffic resistance is required, as well as for main membrane and top coat application in one layer in typical heavy-duty waterproofing applications. This 2-in-1 solution eliminates the need for an additional protective layer and saves on labor costs.

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.

SINGLE COAT APPLICATION

HYPERDESMO®-ADY 810 can be applied in only 1 single coat, with a maximum consumption of up to 2kg/m².

APPLICATION WITH
REINFORCEMENT

- ✓ GEOTEXTILE
- ✓ FIBER TEXTILE

You apply the 1st coat of HYPERDESMO®-ADY 810 with a minimum consumption of 0.8-1 kg/m². When HYPERDESMO®-ADY 810 is still wet, you apply the reinforcement (GEOTEXTILE-50 PRESSED (non-woven geotextile of 50gr/m²)). Immediately, wet on wet, application of the 2nd coat of HYPERDESMO®-ADY-810 with a minimum consumption of 0.8-1 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®-ADY-810 waterproofing membrane.

Over the fresh and last coat of HYPERDESMO®-ADY 810 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®-ADY 810 at 0.8 kg/m² in order to encapsulate the silica sand.

If transparent top coat is needed in order to keep the sand aesthetic result, apply HYPERDESMO®-ADY-E TRANSPARENT or HYPERDESMO®-T at 200gr/m² in order to encapsulate the silica sand. For traffic requirements, after this coat has cured, you can apply another coat of HYPERDESMO®-ADY-E TRANSPARENT or HYPERDESMO®-T at 400gr/m².

ANTI-SLIP TRAFFIC COAT WITH
SILICA SAND AND
HYPERDESMO-ADY 810

For traffic resistance and color protection, over the main waterproofing layer, you should apply an additional traffic coat of HYPERDESMO®-ADY 810 combined with silica sand.

In general: Total consumption of HYPERDESMO®-ADY 810 should be 1.5-2.0kg/m² in 2 successive coats over the intermediate waterproofing coat. The consumption of the silica sand for each layer of HYPERDESMO®-ADY-810 should be +/-1kg/m², depending on the sand's granulometry.

Application of traffic coat should be as follows:

1. Apply the first layer of HYPERDESMO®-ADY 810 traffic coat at a consumption of 0.7kg-1kg/m² with roller, squeegee, notched trowel or air-less spray machine.
2. Immediately broadcast silica sand (recommended granulometry: 0.3-1mm).
3. Spread the sand as to homogenously cover the total surface.
4. Immediately rollback the surface with roller in order to homogenize the silica sand with HYPERDESMO®-ADY 810 and to achieve the above-mentioned consumption.
5. The following day, apply the second layer of traffic coat, repeating the same procedure and consumption of HYPERDESMO®-ADY 810, as per first layer (0.7kg- 1kg/m²).

APPLICATION WITH
BROADCASTING FLAKES

For decorative colour chips finish, apply the last coat of HYPERDESMO®-ADY 810 and over the fresh coat, 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.

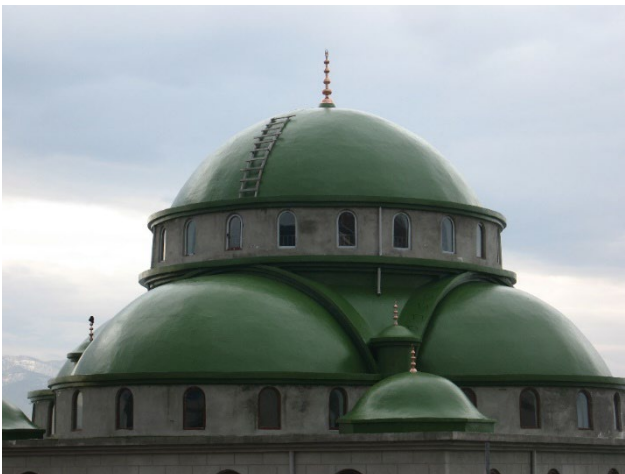
APPLICATION WITH AIRLESS
(200- 250 bar) SPRAY MACHINE.

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.

PIGMENTATION OF
HYPERDESMO®-ADY 810
NEUTRAL

HYPERDESMO®-ADY 810 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 810. 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.



CLEANING

Clean tools and equipment first with paper towels. Polyurea machine and equipment clean up should be done as per manufacturers' instructions. 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®-ADY-810

ADDITIVES

THIXO-TOOL

THIXO-TOOL is a unique additive used for increasing the thixotropy (reducing the self-leveling characteristics) of the HYPERDESMO®-ADY-810. It was developed by ALCHIMICA in order to solve application difficulties of the HYPERDESMO® System Products 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 MICROSEALER-50 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.

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

CONCRETE 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 CONCRETE ROOF WATERPROOFING BASED ON HYPERDESMO®-POLYUREA-2K-HC/ELASTIC**. 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.

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