

WATERPROOFING SYSTEM APPLICATIONS

by KRYPTON CHEMICAL



RAYSTON
products



Krypton Waterproofing Solutions



KRYPTON CHEMICAL is dedicated to the development and manufacture of liquid membranes for waterproofing, flooring and as anti-corrosive coverings, being one of the main references of the market in the construction and industrial sectors. It currently carries out 100% of its production in Spain and is present in over 70 countries in which it has an extensive network of authorised applicators.

KRYPTON CHEMICAL develops all its systems based on the different regulations in effect and manufactures them in accordance with the highest quality standards, obtaining the most demanding national and international certifications for them.

KRYPTON CHEMICAL offers its clients comprehensive solutions which include additional services such as RD&I, training, specific instructions, technical assistance on site, work execution reports and guarantees, etc.



Although polyurethane based liquid waterproofing systems have been present on the market for over 30 years, they are still being developed, and can therefore be considered state of the art products.

KRYPTON CHEMICAL manufactures and commercialises different ranges of products for liquid waterproofing, seeking to satisfy the different needs of its clients in each and every one of their countless applications.

This extensive range of systems allows seamless waterproofing solutions to be obtained, adapted with full guarantees to the most complex situations, providing excellent technical performance, great versatility of uses and exceptional results.

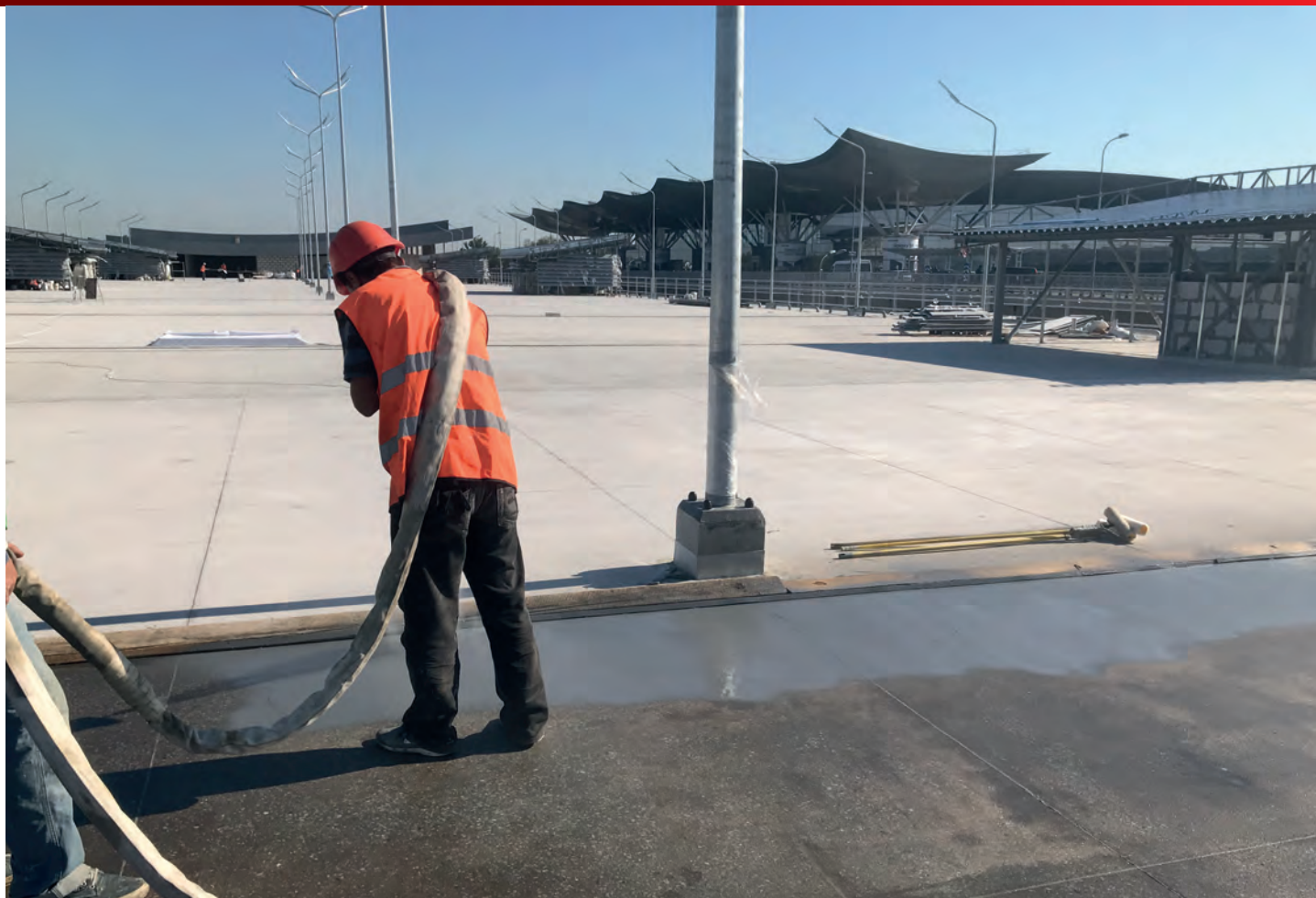
This brochure describes the main applications of our liquid waterproofing systems, developed with experience gathered during over 20 years of activity.



BARCELONA AIRPORT ROOF, SPAIN, 18,500 M².

Roofs must endure extreme temperatures, exceeding 50°C in summer and under 0°C in winter, which makes the use of highly elastic waterproofing systems necessary, which maintain their properties in these thermal conditions and which can absorb movements of expansion and contraction of the roofs without tearing.

KRYPTON CHEMICAL has applied its systems on the roofs of numerous airports in Spain, managed by AENA. Among these are the airports of Barcelona, Reus, Seville, Mallorca, Tenerife and Fuerteventura.



ROOF OF AIRPORT CAR PARK IN KIEV, UKRAINE, 30,000 M².

To prevent leaks to lower floors, it was decided to apply a KRYPTON CHEMICAL waterproofing system resistant to the circulation of vehicles and with great capacity for preventing cracks.



ROOF FOR OCCASIONAL PEDESTRIAN TRAFFIC, MADRID, SPAIN, 800 M².

Roofs with pedestrian traffic can mainly be categorised as having heavy traffic or occasional traffic (for maintenance work).

KRYPTON CHEMICAL has thoroughly tested solutions for both cases, both for cold and hot application by spraying machine.



WATERPROOFING OF INDUSTRIAL ROOFS WITH EXPANSIVE POLYUREA



WATERPROOFING OF INDUSTRIAL ROOF WITH RAYSTON X5 POLYUREA, ZARAGOZA, SPAIN, 6,500 M².

Rayston X5 Polyurea is an expandible, flexible and elastic polyurea for hot application with a great capacity for preventing potential cracks of the material. These characteristics, combined with its reduced costs, its fast application and its great durability make it an ideal system for waterproofing large industrial roofs.



ROOF OF LAS ARENAS SHOPPING CENTRE, BARCELONA, SPAIN, 4,182 M².

The wooden dome of the Las Arenas shopping centre (Plaza España, Barcelona), was treated with the IMPERMAX STRAT system (Waterproofing + Insulation with PIR panels) in 2010. Since then, the system has worked perfectly, without letting any water enter the interior of the dome.

However, due to the pollution produced by the chimneys of the building and the environmental pollution of the city of Barcelona, the finish had lost its aesthetic appearance, being darkened by grease and soot. Once the problem had been analysed, it was decided to apply a new protective maintenance layer

(Colodur + Pigment Paste), to thereby recover the attractive finish that the IMPERMAX STRAT system offered when it was applied. In this way, the guarantee offered by KRYPTON CHEMICAL on the materials used for waterproofing the dome was also extended.



GARDENED ROOF, BILBAO, SPAIN, 300 M².

The gardened roof, also known as the green roof, eco roof or greenery roof, not only combines the advantages of thermal and acoustic insulation, but also contributes to improving biodiversity, and is an effective natural treatment against atmospheric pollution, especially in urban areas.



WATERPROOFING AND ASBESTOS ENCAPSULATION



WATERPROOFING AND ASBESTOS ENCAPSULATION, MALLORCA, SPAIN, 1,500 M².

According to several EU reports, asbestos is still the main cancer causing toxin that affects European workers. Many roofs of buildings have been constructed with urallite for decades, and pose a high risk to health due to containing millions of asbestos fibres which may be released.

How to treat these roofs?

KRYPTON CHEMICAL has developed a comprehensive procedure for cleaning, encapsulation and waterproofing of fibre cement.

The encapsulation and sealing system offers the advantages of being more economical, faster and more durable than the full removal and replacement of the roof. In addition to waterproofing the roof and improving the thermal and acoustic insulation of the building, during encapsulation work, the activities carried out in the building are NOT interrupted.

System certified for a lifespan of 10 or 25 years, in accordance with ETA 06-0263.



IMPROVEMENT OF THERMAL AND ACOUSTIC INSULATION OF ROOFS



THERMAL AND ACOUSTIC INSULATION ROOF, MADRID, SPAIN, 1,000 M².

Thermal and acoustic insulation improves the quality of life of the residents and users of buildings.



WATERPROOFING OF FOOTBALL STADIUM STANDS



(LEFT) NASTIC STADIUM, TARRAGONA, SPAIN. 16,000 M².

(RIGHT) LEVANTE UD FOOTBALL STADIUM STANDS, VALENCIA, SPAIN, 30,000 M².

Waterproofing of large concrete structures prevents their deterioration and prolongs their lifespan. KRYPTON CHEMICAL has hot spraying systems and cold manual application systems for quickly waterproofing football stadium stands, which are therefore very well suited to the short periods of time during which works may be carried out in sports stadiums.



FOLLEDO TUNNEL, SPAIN, 800 M².

In road and railway tunnels, water leaking entails a serious problem due to the effect it may have on traffic and jeopardising the integrity of installations. It is therefore necessary to optimise the resources allocated to effectively resolving the entry of water in tunnels through systems which guarantee normal traffic and prolong the lifespan of the infrastructure.

The KRYPTON CHEMICAL tunnel waterproofing system offers the following advantages over traditional solutions:

- It allows installation directly on irregular, wet and/or dilapidated materials.

- Self-supporting system: No external structure is needed for its stability.
- Waterproof membrane with very high resistance and mechanical performance, which ensures the integrity of the tunnel against forces generated by the effect of suction and/or pressure due to the action of the air.
- Contains internal detachments of loose rocks, thereby preventing these rocks from falling on the traffic area.
- Speed: The different activities can be coordinated to streamline application times.



WATERPROOFING OF DECK OF COLMENAR MOTORWAY ON THE M-40, MADRID, SPAIN, 6,000 M².
CARRIED OUT USING RAYSTON SPRAY ROBOT, POLYUREA APPLICATOR

Bridge decks can be affected by water seepage from the road, causing damage to their internal structure, mainly caused by the accelerated deterioration of the concrete and the corrosion of their metal components. To prolong the lifespan of bridges and improve road safety, their waterproofing with effective and durable systems is necessary.

KRYPTON CHEMICAL has developed the H Flex polyurea with a great capacity for preventing cracks, therefore making it ideal for structures with movement. The system proposed has ETA 16-0149 for 25 years, in accordance with ETAG 033 for the

specific waterproofing of bridge decks. The finish layer can be adapted for use on road bridges (due to being tested for enduring asphalt pouring at temperatures exceeding 250°C) or railway bridges on which a geotextile protecting against ballast is attached to the membrane with resin.

The RAYSTON SPRAY ROBOT increases the application performance up to 1,500m² per day per device and machine.



PROTECTION OF CONCRETE FROM CARBONATION



WATERPROOFING AND PROTECTION OF CONCRETE FROM CARBONATION, TOULOUSE, FRANCE, 3,200 M².

Carbonation of concrete is a common form of damage in reinforced concrete structures, and one of the main causes of their deterioration. In emerging cases it may cause cracks, and in more advanced cases it may even generate losses of sections of the structure.

KRYPTON CHEMICAL has developed 2 membranes certified for CO₂ permeability which drastically reduce the destructive effects of this damage.



WATERPROOFING OF FOUNDATIONS AND BARRIERS AGAINST RADON GAS



WATERPROOFING AND BARRIER AGAINST RADON GAS, 800 M².

Radon is a radioactive noble gas which is imperceptible by human senses (being odourless, colourless and tasteless), slightly water-soluble and highly mobile. It is generated naturally in the earth's crust by the decomposition of Uranium-238 and rises to the surface through the porosity of the ground, especially in siliceous soils (granite 5 ppm U238).

In enclosed or poorly ventilated spaces (basements/ground floors), radon tends to accumulate, creating a risk to the health of inhabitants (lung cancer).

KRYPTON CHEMICAL has several membranes certified as protective barriers against radon, in accordance with the provisions established in the modification of the Technical Building Code of 27/12/19.



WATERPROOFING OF CHANNELS AND IRRIGATION DITCHES FOR TRANSPORT OF WATER



(LEFT) WATERPROOFING OF CHANNELS, ITALY, 2,000 M².

(RIGHT) WATERPROOFING OF CHANNELS, MADRID, SPAIN, 200 M².

In regions with extreme climates, where frost is common in the winter months and very high temperatures are reached in the summer months, the surfaces of concrete channels and irrigation ditches suffer serious deterioration. This problem is increased during the winter if there are scheduled periods without or with a limited supply of irrigation. The frost/thaw cycles end up degrading the surface of the external layer of the concrete of the channels, generating cracks, fissures and breakage of joints, which in turn cause losses of water when they are used. The waterproofing of channels and irrigation ditches with conti-

nuous membranes by KRYPTON CHEMICAL increases their lifespan and reduces maintenance costs. Our systems are seamless and are easy and quick to apply.



WATERPROOFING OF PRIMARY AND SECONDARY CONTAINMENT OF LIQUIDS



WATERPROOFING OF CONTAINMENT BASINS, NETHERLANDS, 1,500 M².

European legislation requires that containment basins, often built with concrete, ensure the watertightness of the products stored during the expected time necessary for their discharge. However, spills of chemical products easily damage the concrete and filter through it, contaminating the soil.

The solutions by KRYPTON CHEMICAL are fully attached to the base material and are highly resistant against chemical agents.



WATERPROOFING OF INDOOR WET ROOMS



WATERPROOFING OF INDOOR WET ROOMS, MIDDLE EAST 80-100 M².

KRYPTON CHEMICAL offers a complete range of solvent-free, polyurethane and polyurea based waterproofing resins for cold application.

These solutions are particularly recommended for indoor application (wet rooms): kitchens, bathrooms, showers, etc. The coverings may be exposed with the application of a protective finish (also solvent-free) or protected with tiling.



WATERPROOFING OF DRINKING WATER RESERVOIRS



WATERPROOFING OF DRINKING WATER RESERVOIRS, BARCELONA, SPAIN, 1,000 M².

KRYPTON CHEMICAL has different solutions for waterproofing of water reservoirs, depending on their size and technical requirements:

- Small drinking water reservoirs are waterproofed with polyurethane based systems with cold manual application.
- Large reservoirs are waterproofed with polyurea applied hot with a spraying machine.
- Furthermore, a bonded system may be recommended, which in addition to waterproofing, protects the surface, prolonging its lifespan. Alternatively, a floating system may be recommended,

which allows rapid application, minimising the shutdown of operational infrastructure.



WATERPROOFING OF PONDS AND ARTIFICIAL LAKES



(LEFT) WATERPROOFING OF PONDS OF WATER, PARQUE WARNER, MADRID, SPAIN, 1,500 M².

(RIGHT) WATERPROOFING OF STORM LAKE, IRELAND, 4,000 M².

Polyurea is an ideal material for waterproofing ponds and lakes for decorative use, leisure, breeding of aquatic animals, supply or those which are used for regulation purposes.

The continuous waterproofing systems of KRYPTON CHEMICAL are seamless, thereby exponentially reducing the possibility of loss of water. Additionally, the operating performance is much higher than those which use traditional systems.



PURIFICATION PLANT, ITALY, 2,500 M².

Purification plants are formed by a series of concrete structures, which are continuously subjected to different, very aggressive physical-chemical processes.

In anaerobic environments, the bacteria present in waste water break down grease, carbohydrates and proteins with complex chemical reactions, producing gases such as H₂S (hydrogen sulphide).

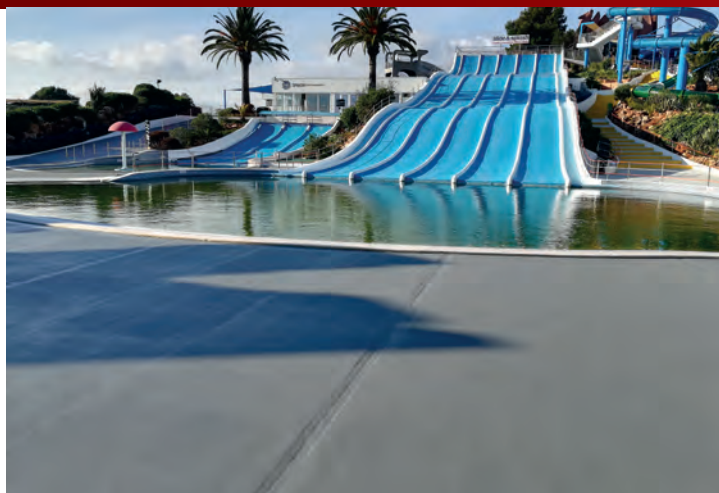
KRYPTON CHEMICAL has membranes certified to withstand these working environments with great durability, minimising stoppage times of this infrastructure.



WATERPROOFING OF SWIMMING POOLS, MARSEILLES, FRANCE, 1,200 M².

The covering of a swimming pool is subject to different requirements, whether chemical (due to contact with chlorinated water or other maintenance products) or physical (due to wear caused by friction or movements which the swimming pool may experience).

KRYPTON CHEMICAL has hundreds of success stories in the waterproofing of swimming pools.



(LEFT) WATERPROOFING OF SLIDE AND SPLASH WATERPARK, PORTUGAL, 1,300 M².

(RIGHT) WATERPROOFING OF SLIDE AND SPLASH WATERPARK, PORTUGAL, 1,300 M².

(BOTTOM) WATERPROOFING OF WATERPARK, VALENCIA, SPAIN, 900 M².



KRYPTON CHEMICAL waterproofing solutions allow continuous membranes to be created and applied quickly and effectively as a liquid. These elastomeric coverings have a thermostable performance, great mechanical resistance (materials which are durable and soft at the same time), high chemical resistance (against acidic or basic environments), and great resistance against external agents. KRYPTON CHEMICAL resins have all European certifications required (CE marking, contact with drinking water, etc.) for this type of application.



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