KRYPTON PROLINE CH55

Pure polyurea membrane with excellent mechanical properties, high chemical resistance for primary and secondary containment, for immersion and explosion mitigation applications.

DESCRIPTION

Krypton ProLine CH55 is a pure polyurea membrane formulated to provide excellent chemical and moisture resistance for immersion applications and for reinforcing structures against explosions. The dense yet flexible nature of the protective coating makes it ideal for applications exposed to damage from handling, transport, installation or operation, such as impact or abrasion. Once cured, it forms a continuous, seamless barrier with high impact properties, making it an ideal coating for tanks and pipes for both above ground and buried applications.

APPLICATIONS

- As a shield to reinforce structures against damage that may be caused by explosions. Explosion mitigation.
- Coating of tanks containing chemical liquids and/or liquids with high solids content.
- Coating of secondary containment sumps exposed to chemical leaks.
- Coating of buried pipes, even in soils with high moisture and chemical content.
- Coating of pipes exposed to sand abrasion.
- Rehabilitation of leaking concrete tanks or substrates subject to movement.
- In situations where load slippage needs to be improved.
- Excellent protection of metal structures with very high durability.
- Protection of EPS structures. Theming. Set design.

PROPERTIES

- Easy application to any thickness in a single coat.
- Remains flexible over a wide temperature range.
- Extremely fast curing, reducing handling and usage times.
- High impact resistance.
- High resistance to explosions, blast mitigation.
- High puncture and compression resistance.
- Very good abrasion resistance.
- Protection of hydraulic infrastructures from chemical waste (high resistance to H2S).
- Very good chemical resistance.
- Low friction coefficient.
- Very low permeability to gases, radon, methane and carbon dioxide. Very low permeability.

CERTIFICATION

- C5H and C5VH system certified in accordance with ISO 12944-6:2018.
- Im2, Im3 continuous immersion system (salt water, brackish water and soil) with very high durability VH certified in accordance with ISO 12944-6:2018.
- Determination of permeability to carbon dioxide, UNE-EN 1062-6:2003.
- CE marking according to EN-1504-2 for the protection of concrete structures. Certification number 0370-CPR-2247.

CE

TECHNICAL DATA

PRODUCT INFORMATION BEFORE APPLICATION

	Component A	Component B
Chemical description	Polyamine	Aromatic isocyanate prepolymer
Physical state	Liquid	Liquid
Presentation Note: The pigment is supplied in a third container. See the Pigment Spray technical data sheet for more details.	Metal container 196 kg 18.6 kg	Metal container 220 kg 21 kg
	Component C (pigment paste) Metal container (4 kg or 0.4 kg)	
Solids content (%)	100	100%
Flash point	>100ºC	>100ºC
Colour	Dark yellow	Yellowish
Density	1.045 g/cm^3 20ºC	1.170 g/cm^3 20ºC

Viscosity Approximately	1100 mPa.s 5 ºC 740 mPa.s 10 ºC 425 mPa.s 20 ºC 250 mPa.s 30 ºC 140 mPa.s 40 ºC 80 mPa.s 50 °C 60 mPa.s 60 °C	2500 mPa.s 5 °C 1800 mPa.s 10 °C 800 mPa.s 20 °C 450 mPa.s 30 °C 300 mPa.s 40 °C 200 mPa.s 50 °C 120 mPa.s 60 °C
A/B ratio	A=1, B=1.12 by weight A=1, B=1 by volume	
Density and viscosity of the mixture	Rapid polymerisation. See pot life	
Colour	Dark yellow, component A is pigmented by adding pigment paste (Pigment Spray) supplied with each ProLine CH55 kit	
Curing	Gel time of mixture A+B (20 g) 6 s at 25°C 4 s at 60ºC	
Storage	Store between 10ºC and 30ºC.	
Expiry	Approximately 12 months from the date of manufacture, provided it remains in its original, perfectly sealed packaging.	

FINAL PRODUCT INFORMATION

Final state	Solid elastomeric membrane
Colour	Pigment paste is supplied Spray for colours similar to grey RAL 7001, 7011. Roof tile red, beige RAL 1001, blue RAL 5015. Other colours available on request.
Shore hardness	55 D (± 5)
Mechanical properties	Maximum elongation: 450% Tensile strength: 25 MPa (UNE EN ISO 527-1/3) Tear resistance: 100 N/mm (ISO 34-1 method B)
Radon gas diffusion coefficient	8 x 10^{-12}m^2/s (ISO/DTS 11665-13)
Methane gas permeation coefficient (DIN 53380/ISO 15105-1)	140 Ncm^3 x mm / m^2 x day x bar
Permeability to carbon dioxide (EN ISO 7783:2012)	μ = 50,484. Sd > 50 (if the coating thickness exceeds 1 mm).

Adhesion to substrates

Surface	Adhesion (MPa)
Concrete	2.5
Steel	≥ 8

UV resistance	Good resistance to UV degradation. Aromatic polyureas undergo colour changes under sunlight. This change does not affect their mechanical properties. Additional UV protection can be achieved by applying an aliphatic krypton topcoat.
Abrasion resistance	Taber, CS17, 1000 c, 1 kg: 13 mg
Impact resistance	24.5 N x m, Class III > 20 N x m (EN ISO 6272-1)
Dielectric strength	29.3 KV/mm (IEC EN-60243-1:2013)
Surface and volumetric resistivity	1.30 x 1014 Ω/cm² (ASTM D257-14)
Foldability at low temperatures (-45ºC)	Does not break or crack (EN-495-5)

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CHEMICAL RESISTANCE

Immersion test, 80ºC, 7 days (0=worst resistance, 5=best resistance)

Krypton recommends that a preliminary test be carried out on all customer applications involving chemicals to verify the suitability of the coating. Consult with Krypton's technical team.

Agents	Conditions	Result
Water	15 d, 80ºC	5
Salt water (at saturation)	15 d, 80ºC	5
Xylene	7d, 80ºC	2
Ethyl acetate	7d, 80ºC	1
Isopropyl alcohol	7d, 80ºC	0
Sodium hydroxide 50%	7 d, 80ºC	5
Hydrogen peroxide 33%	7 d, 25ºC	4
Sulphuric acid 10%	7 d, 80ºC	5
Sulphuric acid 30%	30 d, 80ºC	4
Bleach	7 d, 80ºC	4
Ammonia	7 d, 80ºC	5
Diesel	16 d, 80ºC	5
Hydrochloric acid 12M 37%	7 d, 80ºC	0
Hydrochloric acid 6M 18%	7 d, 80ºC	1
Hydrochloric acid 3M 9%	7 d, 80ºC	4
Hydrochloric acid 0.75M 2%	7 d, 80ºC	5
Sodium hypochlorite 15%	7 d, 80ºC	4
Engine oil	7 d, 80ºC	5
Crude oil	21 d, 20ºC	5
Sulphamic acid 85%	7 d, 60ºC	4
Oleic acid	7 d, 80ºC	0
Glycerine	7 d, 80ºC	5
Kerosene	7 d, 80ºC	3

SUBSTRATE REQUIREMENTS

The substrate must be free of contaminants (grease, oils, silicones and chemical residues), dust and poorly adhered materials. Pointed irregularities or those that protrude from the rest of the surface must be removed.

If the substrate is concrete, it must be fully cured and free of grout. Ideally, a concrete substrate should be completely dry, in which case it should be primed with Epoxy 100 or Epoxy 100 Gel primer. Epoxy 100 Gel is especially suitable for application on vertical surfaces that are not well levelled in tanks. If the concrete substrate has a moisture content of more than 4%, it should be primed with Primer GC.

Metal substrate: the substrate should be prepared with SA 2.5 grade blasting with a roughness profile of approximately 50-80 microns, followed by the application of Krypton ProLine Pu Zn primer or Krypton ProLine Pu Al primer.

For specific application methodologies, consult Krypton's technical department.

ENVIRONMENTAL CONDITIONS

The substrate temperature must be between 5ºC and 40ºC. In any case, it must always be 3ºC above the dew point to prevent condensation on the surface.

MIXING

Stir and homogenise the two components using suitable equipment. Add the (pre-measured) amount of Pigment Spray to component A and homogenise again. Recirculate the two components while heating them to the prescribed application temperature.

APPLICATION GUIDE

- Krypton ProLine CH55 can only be applied using suitable two-component hot plural spray equipment by professional and experienced applicators.
- At ambient temperatures below 20°C, the pumps must be preheated using band heaters to 30-40°C.
- Component A must be thoroughly stirred before application and periodically during the application process to ensure that there is no sedimentation of the chemical components of component A.
- The pigment is always mixed into component A using a mechanical stirrer.
- Component A and B pumps must be equipped with desiccant dryers.
- The compressed air supply must be supplied through an air dryer.
- Primary heaters should be set between 65-70°C. Adjustments can be made on site depending on environmental conditions, mixing module size and application circumstances.
- It is important to maintain sufficient heat. Failure to maintain sufficient heat may compromise the mixing and final physical properties of the coating.
- Hose heaters should be set to 70°C. Adjustments can be made on site depending on environmental conditions, mixing module size, and application circumstances.
- For best results, ensure that the spray pressure (not static pressure) is a minimum of 155 bar (approximately 2250 psi).
- For complete substrate preparation and/or repair procedures, consult your Krypton technical representative.

Contact Krypton Chemical for more detailed technical information.

DRYING TIME

Approximate hardness values are referenced to (2 mm, polypropylene substrate, 20°C, 50% RH).

Time	Shore hardness D
5 min	35
45 min	43
6 hours	50
24 hours	55

REAPPLICATION

Usually, the required thickness is obtained in a single coat. If reapplication is necessary, it is advisable to do so immediately after the first coat.
reapply, it is advisable to do so immediately after the first application.
In any case, do not allow more than 2 hours to pass since the first coat. If a primer has been applied, observe the recoating intervals between the primer and the application of Polyurea. Consult the technical data sheets or the Krypton Technical Department.

COMMISSIONING

Under normal conditions (25ºC, 50% RH), the membrane is resistant to raindrops in 5 minutes and can withstand light foot traffic in 1 hour. The membrane reaches more than 90% of its properties in 1 day.

CLEANING OF TOOLS

In order to keep the spraying equipment (gun, joints, etc.) in good condition, cleaning the equipment with solvents is not recommended. Instead, a plasticiser such as Rayston Fluid can be used. Component B must be completely cleaned from those parts exposed to the air and replaced with the plasticiser.

SAFETY

Component B contains isocyanates. Always follow the instructions on the safety data sheet for this product and take the protective measures described therein. In general, adequate ventilation and/or respiratory protection for the operator (combined particle and organic vapour filter) is mandatory, together with protective clothing for the skin. The product must only be used for its intended purposes and in the prescribed manner. This product is intended for industrial and professional use only.

ENVIRONMENT

The product complies with LEED requirements.
EQ Credit 4.2, Low-Emission Materials: Paints and Coatings.
Empty containers must be handled with the same precautions as if they were full. Consider containers as waste to be treated by an authorised waste manager. If containers contain residues, do not mix them with other products without first ruling out possible dangerous reactions. Residues of components A and B can be mixed in equal parts to convert them into an inert solid material, but never in a volume greater than 5 litres at a time to avoid dangerous heat generation.

OTHER INFORMATION

The information contained in this TECHNICAL DATA SHEET, as well as our advice, both written and verbal information, or information provided through tests, is given in good faith based on our experience and the results obtained through tests carried out by independent laboratories, and does not serve as a guarantee

for the applicator, who should take it as a reference for guidance purposes only and strictly for informational value.

We recommend that you study this information in depth before proceeding with the use and application of any of these products, although it is particularly advisable to carry out on-site tests to determine the suitability of a treatment on site, for the purpose and under the specific conditions of each case.

Our recommendations do not exempt the applicator from the obligation to have in-depth knowledge of the correct method of application of these systems before proceeding to use them, as well as to carry out any preliminary tests that may be appropriate if there is any doubt as to their suitability for any work, installation or repair, taking into account the specific circumstances in which the product is to be used.

The application, use and processing of our products are beyond our control and are therefore the sole responsibility of the installer. Consequently, the applicator shall be solely and exclusively liable for any damage and injuries resulting from total or partial non-compliance with the user and installation manual and, in general, from the inappropriate use or application of these products.

This technical data sheet supersedes all previous versions.

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