

SILCOR[®] 990MP



Pure polyurea, spray-applied waterproofing membrane

Product Description

Two-part, fast-curing, pure polyurea, spray-applied elastomeric coating.

It provides a premium quality, high build, long life protective coating to concrete and metal substrates on major civil, infrastructure and commercial construction projects. Formulated using the latest polyurea technology, it forms an impenetrable barrier that is resistant to water, chemicals, sewage and wear.

Features

SILCOR[®] 990MP contains no TDI, MOCA, bitumen or tar-based compounds. Being polyurea, it has good resistance to humidity during application and forms a tough, bubble-free, impermeable coating.

Silcor 990MP is a simple 100:100 by volume mix ratio system that applies with good flow out and rapid cure, resulting in a smooth, even coating finish that can be walked on in seconds.

The cured elastomer has high substrate adhesion plus excellent resistance to tear, puncture, chemicals, water and abrasion. Unlike rigid coating materials such as epoxies, vinyl ester, etc., Silcor 990MP resists post-application reflection cracking in concrete substrates.

- Simple application — fast cure
- Potable water certified
- Suitable for continuous immersion
- Long-life — permanently flexible
- Abrasion and chemical resistance
- Total adhesion — no water tracking
- Resistant to sewage gases — H₂S, H₂SO₄ etc Resists reflection cracking in concrete
- Suitable for continuous immersion in demineralised, fresh and salt waters plus desalination permea

Uses

Silcor 990MP elastomer system is ideally suited for most areas of protective coating, lining and waterproofing in civil and commercial applications.

Used as a waterproof and highly chemical-resistant barrier on:

- Sewage and water treatment plants
- Desalination plants
- Potable water containment
- Chlorinated swimming lagoons
- Tunnels
- Bridge-decks
- Chemical process facilities

It provides lasting protection to plant room floors, chemical storage and secondary containment areas. Silcor 990MP is compatible with most stable, suitably-prepared rigid substrates, including concrete, steel, aluminium, shotcrete, brick, block, render and fibre cement sheet.

Application Equipment

Silcor 990MP is designed for application through high-pressure, plural component spray equipment capable of processing polyurea coatings.

Suitable equipment includes Graco Reactor E-XP2 or H-XP2 machinery fitted with high output heaters, heated lines and Graco Fusion Air Purge or Fusion CS impingement mix spray guns. Equipment should also be fitted with a drum mounted agitator for the polyamine component, material recirculation and drum mounted desiccant driers on both the polyamine and isocyanate components.

Silcor 990MP polyamine component must be agitated before and during use. The isocyanate component does not require agitation.

Typical machine spray settings required for Silcor 990MP application are:

Material Temperature	20 °C to 25 °C
Main Heater Temperature	60 °C to 70 °C
Line Heater Temperature	60 °C to 70 °C
Spray Pressure	2500 to 2800 psi

Round pattern spray gun mix chambers will minimise overspray produced considerably.

Application Guidelines

Substrate

Substrates must be clean, dry, free of curing compounds, oil, grease, solvent or other contaminants. Moisture content of concrete must be below 5%. Concrete should be cured 28 days and render 7 days.

Environmental Conditions

The following conditions must be achieved prior to and maintained during Silcor 990MP application

Ambient Temperature	4 °C to 45 °C
Substrate Temperature	5 °C to 60 °C
Relative Humidity	85% maximum
Dew Point	3 °C below substrate
Approximate Wind Speed	10 knots maximum

Application

Apply product in one or more passes to the required dry film thickness. Typically a DFT of 2.0mm to 3.5mm is required for protective coating/lining applications. Specified minimum DFT required will be detailed in our GCP project specific AMS.

Surfacing

Where colour stability is required in sun-exposed applications, apply our aliphatic, UV-stable topcoat, Silcor Top Coat 80, where colour stable protection and a non-slip finish is required.

Repairing

Small area < 1m² may be repaired by reapplication of Silcor 990MP as detailed in the relevant AMS. In space restricted areas where spray application is not practical, Silcor 580 membrane systems (with Silcor Top Coat 80 finish where UV stability or non-slip finishes are required) can be used, in consultation with your local GCP representative.

Surface Preparation

See project-specific Application Method Statement (AMS) for detailed requirements. Generally, for concrete substrates use wet, wet-abrasive or dry-abrasive blasting to remove laitance, etc.

Patch concrete defects using high strength (minimum 25MPa), non-shrink, repair mortar and allow to cure fully.

Fill all joints, cracks, gaps and form angle fillets in internal corners or penetrations with Silcor LM PU sealant.

Blast or mechanically clean steel substrates to a 90µm surface profile. Prime with Silcor Primer BW N105-DT at 0.2 – 0.5 kg/m² or Silcor Primer BS at 0.15 – 0.3 kg/m² dependent on substrate condition. Allow to dry approximately 1.5 to 3.5 hours (23 degree Celsius) depends on GCP primer used and depending on ambient conditions and surface porosity. Recommended moisture content <5% based on ASTM F2659.

Application to highly porous substrates while substrate temperature is increasing may result in concrete outgassing and pinhole formation in primer. This can be reduced or prevented by priming substrates in the late afternoon or evening, when concrete temperature is stable or falling.

Coverage

1.1kg (1 litre) of Silcor 990MP system provides coverage of 1m² at 1.0mm coating thickness. Allow for processing losses, over spray, etc – typically 10% or greater depending on surface and ambient conditions.

Typical Properties

PROPERTY	TYPICAL VALUE	TEST METHOD
Mix ratio – polyamine : Iso (by volume)	100 : 100	-
Polyamine viscosity (@ 25°C)	400 – 1000 mPa.s	ASTM D2196
Polyamine specific gravity (@ 25°C)	1.02g / mL	ASTM D1475
Isocyanate viscosity (@ 25°C)	400 – 1000 mPa.s	ASTM D2196
Isocyanate specific gravity (@ 25°C)	1.12g / mL	ASTM D1475

Gel time (@ 25°C)	4 seconds	-
Tack free time (@ 25°C)	20 seconds	-
% solids (v/v)	100 %	-
Recommended applied thickness	2.0 - 3.5mm	-
Return to service		
- Light foot traffic		-
- Heavy foot traffic	3 minutes	-
- Continuous water immersion	1 hour	-
- Paving, topping, backfill, landscaping	4 hours	-
- Potable water, chemical or abrasion exposure	8 hours	-
	7 days	
Shore a hardness (minimum)	90 ± 5	ASTM D2240
Tensile strength (minimum)	>16 MPa	ASTM D412
Elongation (minimum)	300%	ASTM D412
Tear strength (minimum)	58.8N / mm	ASTM D624
Taber abrasion resistance (maximum)	50 mg	ASTM D4060
Crack bridging	Pass	ASTM C836
Pull-off strength (minimum)		ASTM D4541
- Inter-coat adhesion	> 2.0 MPa	
- Concrete (primed) (substrate failure occurred)	> 2.0 MPa	
- Steel (90µm blast profile)	> 3.0 MPa	
Potable water certification	Certified	BS6920:2000

Product Risk

The Silcor 990MP system is not intended for use by other than experienced operators. The data herein requires experience and knowledge to attain correct interpretation and outcome. The user must undertake all relevant tests to determine the suitability for the intended application, as such determination of fitness of purpose for product use, is the sole responsibility of the purchaser.

Packaging

Silcor 990MP Polyamine	18.5kg & 200kg drums
Silcor 990MP Isocyanate	20kg & 210kg drums

Clean Up

Clean-up liquid leakage or spills before hardening occurs using solvents such as xylene, MEK or acetone.

Storage

The Silcor 990MP polyamine and isocyanate components should be stored <25 °C, <60% RH. Drums must remain tightly sealed against moisture ingress. Under these storage conditions these materials will have a shelf life of 12 months. Storage at temperatures other than detailed can result in degradation and crystallisation in the drum, rendering the materials unusable. Ingress of humidity or water into the drums during storage or use will also make product unusable.

Handling

Refer to Silcor 990MP Safety Data Sheet (SDS).

Operators must have full awareness of the material safety requirements before any work is undertaken. Silcor 990MP polyamine component is a mild irritant. Avoid contact with skin or eyes.

Silcor 990MP isocyanate component contains Methylenediphenyl Diisocyanate (MDI). It is an irritant and allergic sensitizer to skin and respiratory systems. Avoid contact with skin or eyes. Avoid breathing vapour or spray aerosol.

Silcor 990MP system spray application must occur in areas with adequate ventilation. Suitable organic vapour respirators or air-fed hoods must be worn during spray operations. Other required PPE includes butyl or nitrile gloves, safety goggles or full-face shield, coveralls and chemical-resistant safety boots.

Health and Safety

Read and understand the product label and Safety Data Sheet (SDS) for each system component. All users should acquaint themselves with this information prior to working with the products and follow the precautionary statements. SDSs can be obtained by contacting your local GCP representative or office and in some cases from our web site at gcpat.com.

Project Specification

GCP offers a comprehensive package of quality and proven systems to meet different project and application needs. Contact your local GCP representative for further information.

gcpat.com | For technical information: asia.enq@gcpat.com

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