

SILCOR[®] 780 HI-LP



Hybrid polyurea, spray-applied waterproofing membrane

Product Description

Two-part, moderately fast-curing, hybrid 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, many chemicals and wear.

Features and Benefits

SILCOR[®]780 HI-LP is a low toxicity elastomer system, containing no TDI, MOCA, bitumen or tar-based compounds.

Being polyurea-based, it has good resistance to humidity during application and forms a tough, bubble-free, impermeable coating.

Silcor 780 HI-LP is a simple 100:100 by volume mix ratio system that applies with improved flow out and rapid cure, resulting in a smooth, even coating finish that can be walked on in minutes.

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 780 HI-LP resists post-application reflection cracking in concrete.

- Simple application — fast-cure
- Long life — permanently flexible
- Slower cure provides smooth surface finish
- Resists reflection cracking in concrete
- Suitable for continuous immersion in fresh and salt waters

Uses

Silcor 780 HI-LP elastomer system is ideally suited for most areas of protective coating, lining and waterproofing in civil and commercial applications.

Used as a tough, flexible, waterproof membrane and coating, particularly over concrete substrates on:

- Water treatment plants
- Roof decks
- Green roofs
- Podium slabs

- Water tanks
- Bridge decks
- Tunnels and underground structures include cut & cover, drill and blast tunneling

Silcor 780 HI-LP is compatible with most stable, suitably prepared rigid substrates, including concrete, steel, aluminium, shotcrete, brick, block, render, fibre cement sheet, plywood and timber.

Application Equipment

Silcor 780 HI-LP is designed for application through high-pressure, plural component spray equipment capable of processing polyurea coatings, such as electrical motor pump driven machine and hydraulic pump driven machine.

Silcor 780 HI-LP polyamine component must be agitated before and during use. The isocyanate component does not require agitation.

Typical machine spray settings required for Silcor 780 HI-LP application are:

Material Temperature: 20 °C to 25 °C

Main Heater Temperature: 60 °C to 75 °C

Line Heater Temperature: 60 °C to 75 °C

Spray Pressure: 2200 to 3000 psi

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

This product may also be suitable for 1:1 by volume, low-pressure dispensing machines fitted with static mix spray heads. Suitability should be determined by the user prior to application.

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)	1.03g / mL	ASTM D1475
Isocyanate Viscosity (@ 25°C)	400 - 1000 mPa.s	ASTM D2196
Isocyanate Specific Gravity (@ 25°C)	1.11g / mL	ASTM D1475
Gel Time (@ 25°C)	20 seconds	-
Tack Free Time (@ 25°C)	60 seconds	-
% Solids (v/v)	100%	-
Recommended Applied Thickness	1.5mm	-

Return to Service	5 minutes	-
- Light Foot Traffic	2 hours	-
- Heavy Foot Traffic	8 hours	-
- Continuous Water Immersion	8 hours	-
- Paving, Topping, Backfill, Landscaping	7 days	-
- Chemical or Abrasion Exposure		
Shore A Hardness (Minimum)	80 ± 5	ASTM D2240
Tensile Strength (Minimum)	> 9.0 MPa	ASTM D412
Elongation (Minimum)	350%	ASTM D412
Taber Abrasion Resistance (Maximum)	220 mg	ASTM D4060
Crack Bridging, 2mm	Pass	ASTM C836
Pull-Off Strength (Minimum)		
- Concrete (Primed) (Substrate Failure Occurred)	> 2.0 MPa	ASTM D4541
- Steel (90µm Blast Profile)	> 3.0 MPa	
Root resistance certification	Certified	FLL 2008, 2-year test

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 780 HI-LP application.

Ambient Temperature: 5 °C to 45 °C

Substrate Temperature: 10 °C to 60 °C

Relative Humidity: 85% maximum

Dew Point: 3 °C below substrate

Approximate Wind Speed 10 knots maximum

Coverage

1.1kg (1 litre) of Silcor 780 HI-LP system provides coverage of 1m² at 1.0mm coating thickness. Allow for processing losses, over-spray, etc depending on surface and ambient conditions.

Packaging

Silcor 780 HI-LP Polyamine: 18.5kg & 200kg drums

Silcor 780 HI-LP Isocyanate: 20kg & 210kg drums

Surface Preparation

See project-specific Application Method Statement (AMS) for detailed requirements. Generally, for concrete substrates, use wet, wet-abrasive e.g. high pressure water jet, rotary head water blaster or dry-abrasive blasting e.g. mechanical grinding 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 at 0.12 - 0.25kg / m² or Silcor Primer BS at 0.15 - 0.3kg / m² dependent on substrate condition. Allow to dry approximately 2 to 5 hours depending on ambient conditions and surface porosity.

Product Risk

Silcor 780 HI-LP 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.

Clean Up

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

Storage

Silcor 780 HI-LP polyamine and isocyanate components should be stored < 25°C, < 60% RH. Drums must remain tightly sealed against moisture ingress. Under these storage conditions the 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 the materials unusable.

Application

Apply product in one or more passes to the required dry film thickness. Typically a DFT of 1.5mm is required for waterproof applications and 2.0 to 3.5mm is required for protective coating/lining applications. Specified minimum DFT required will be detailed in GCP's 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

An area smaller than 1 m² may be repaired by re-application of Silcor 780 HI-LP as detailed in the relevant Application Method Statement. 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.

Out-grassing and pin-hole formation due to poorly compacted, high porosity or wood float finished concrete after spray application, can be spot patch/touch up the pin-holes with Silcor[®]LM PU Sealant or epoxy filler.

Handling

Refer to Silcor 780 HI-LP Material Safety Data Sheet (MSDS).

Operators must have full awareness of the material safety requirements before any work is undertaken.

Silcor 780 HI-LP polyamine component is a mild irritant. Avoid contact with skin or eyes. Silcor 780 HI-LP isocyanate component contains methylenebisphenyl 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 780 HI-LP 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 chemically-resistant safety boots.

Health and Safety

In case of spills and accidents, refer to the MSDS of the products or when in doubt contact your local GCP representative.

Always wear protective clothing, gloves and protective goggles when handling chemical products.

For full information, consult the relevant MSDS.

Project Specification

GCP Applied Technologies 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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22Xuan Thoi Son Village, Hoc Mon District, Ho Chi Minh City

GCP Applied Technologies Inc., 2325 Lakeview Parkway, Alpharetta, GA 30009, USA

GCP Vietnam Company Ltd, Lot B14, Section B, Street No. 12, Xuan Thoi Son Small Scale Arts & Crafts Group, National Road 22Xuan Thoi Son Village, Hoc Mon District, Ho Chi Minh City

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Last Updated: 2025-05-15

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