IMPERVIUS
ASBESTOS ENCAPSULATION, STABILISATION & WATERPROOFING

PRODUCT DESCRIPTION

IMPERVIUS is a total solution system for encapsulating, stabilising and waterproofing asbestos roof sheeting.

The product is a two-coat system:

IMPERVIUS basecoat: A special spray applied primer stabilisation layer which will re-enforce the asbestos as well as reduce porosity and draughts brought about by air-gaps in the roof as well as provide a solid surface for the topcoat to adhere to.

IMPERVIUS topcoat: A special spray applied flexible waterproof coating which creates a seamless monolithic protection layer for both the asbestos and the basecoat.

IMPERVIUS is specifically designed for easy application with good physical properties. This material has been formulated to perform, once cured, in wet environments and exhibits good resistance to hydrolysis and UV exposure

IMPERIVUS topcoat is much stronger than typical single component waterproofing systems which give it superior hail, bird and traffic protection.

IMPERVIUS will improve the strength of the underlying roof structure, though it is advised that fragile roofs are still treated as such and that the safe working practices for fragile roofs are always adhered to.

TYPICAL APPLICATIONS

- Suitable for all kinds of Industrial/commercial roofing such as:
    - Corrugated asbestos,
    - Flat felted roofs,
    - profile steel sheeting

PROCESSING

IMPERVIUS Basecoat is a 2 component system. A Hardener component, IMPERVIUS M27 Isocyanate, is mixed under high pressure with IMPERVIUS Basecoat Resin, This mixture is then immediately sprayed to produce the fast-curing, stabilising basecoat. The mixing, reaction, spraying and curing process takes a matter of seconds from start to finish. The mixing ratio of the two components is 1:1 by volume. This is fully automated by the spray machine

IMPERVIUS Topcoat is a 2 component system. A Hardener component, IMPERVIUS H Isocyanate, is mixed under high pressure with IMPERVIUS Topcoat Resin. This mixture is then immediately sprayed to produce the fast-curing, waterproof topcoat. The mixing, reaction, spraying and curing process takes a matter of seconds from start to finish.

The mixing ratio of the two components is 1:1 by volume. This is fully automated by the spray machine

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Due to the speed of reaction of the components, only high-pressure impingement mixing is suitable for application of this system. Isothane has developed its products on, and recommends Graco® Reactor spray machines.

Further information on Graco® Reactor spray machines is available upon request. Full product and machine training can be provided by Isothane Personnel or by an approved spray machine supplier.

Typical processing conditions – machine setup - Basecoat

Graco® Reactor spray machine: A25, E30, H30/40/50, A-XP1, E-XP2, H-XP2 or H-XP3
Spray gun: Probler P2 with 01 or 02 mixing chamber and respective spray tip.

A drum of IMPERVIUS M27 Isocyanate is attached to the 'A' Side of the spray machine via a drum mounted transfer pump and line. A desiccant cartridge is recommended to prevent moisture ingress back into the drum and can be installed in the ¾" bung provided.

A drum of IMPERVIUS Basecoat Resin is attached to the 'B' Side of the spray machine via a drum mounted transfer pump and line.

Please note that the recirculation system of the machine must not be used during the application of the basecoat.

When applying Impervius basecoat the machine should be set to 45-50 °C for all 3 heaters (A side, B side and spray hose).
Recommended pressure setting: 1000 psi minimum. Higher setting may be required, depending on the length of spray hose.

Typical processing conditions – machine setup - Topcoat

Graco® Reactor spray machine: A-XP1, E-XP2, H-XP2 or H-XP3
Spray gun: Probler P2 with 00 or 01 mixing chamber and respective spray tip.

A drum of IMPERVIUS H Isocyanate is attached to the 'A' Side of the spray machine via a drum mounted transfer pump and line. The A side return line from the machine is attached to the drum return ¾" bung. A desiccant cartridge is recommended to prevent moisture ingress back into the drum.

A drum of IMPERVIUS Topcoat Resin is attached to the 'B' Side of the spray machine via a drum mounted transfer pump and line. The B side return line from the machine is attached to the drum return ¾" bung. A third bung, mounted in the centre of the lid of the drum, is used for attaching an air powered stirrer. Stirring of the resin for 30 mins prior to application of the product is recommended

When applying Impervius topcoat the machine should be set to 65°C for all 3 heaters (A side, B side and spray hose).
Recommended pressure setting: 2000 psi minimum. 2500 recommended. Higher setting may be required, depending on the length of spray hose.

Please note that if you plan to spray the basecoat and the topcoat with the same machine, some flushing of chemical is required when changing between them in order to achieve the correct final properties of the desired product.

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Preparing the product for spraying - basecoat

1. On cold days (ambient temperature below 10°C) The Impervius M27 Isocyanate component may require conditioning with a heater jacket. Typically the heater jacket is switched on the night before the spraying is carried out, to allow sufficient time for the jacket to gently warm the material.
2. At the start of the work day or a minimum of 30 mins prior to spraying. Turn on the machine and turn on the heater for the spray hoses.
3. Perform daily, weekly or monthly maintenance checks on the machine and spray gun, as required. The line filters should be removed and inspected for cleanliness at regular intervals, ideally whenever the drums are changed.
4. Turn on the transfer pumps for both drums A and B and check that the transfer line valves are open.
5. Turn on the heaters for both drums A and B
6. The machine is now ready for spraying.

Preparing the product for spraying - topcoat

1. At the start of the work day or a minimum of 30 mins prior to spraying. Turn on the machine and turn on the heater for the spray hoses.
2. Perform daily, weekly or monthly maintenance checks on the machine and spray gun, as required. The line filters should be removed and inspected for cleanliness at regular intervals, ideally whenever the drums are changed.
3. Open the recirculating valves on the machine, so that each chemical can be pumped into the machine and returned to its respective drum.
4. Turn on the stirrer for drum B.
5. Turn on the transfer pumps for both drums A and B and check that the transfer line valves are open.
6. Turn on the heaters for both drums A and B
7. Allow the transfer pumps to bring material into the machine, warm it and return in to the drums. For 30 mins or until the drum temperatures have reached at least 35°C
8. Once the drums have been suitably warmed, close the recirculating valves on the machine.
9. The machine is now ready for spraying.

For more details on operating the machine, such as maintenance and shutdown procedures please consult Isothane technical staff or your spray machine supplier

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APPLICATION – COVERAGE RATES

Recommended minimum dry film thickness (DFT) of IMPERVIUS topcoat is 2mm. IMPERVIUS is a protective coating, not a paint and as such protection is only achieved with a high film build to minimise the possibility of thin patches, missed areas and pin holing.

Due to the cure speed of both IMPERVIUS basecoat and topcoat it is possible to build layers quickly on any sloping or even vertical surfaces. Therefore coverage rate is equal for all surface planes.

IMPERVIUS Basecoat 2Kg/ m² nominal.

IMPERVIUS topcoat: 2Kg/ m² nominal

Coverage rates may vary with surface texture and porosity. The information given is based on average usage. A site trial is recommended.

SURFACE PREPARATION AND APPLICATION

1. Remove all loose material by vigorous brushing, wire brush if necessary, *dependent on material roof is constructed from.*
2. Treat any fungal growth with proprietary fungicide as recommended and remove.
3. Asbestos may require additional jet washing and treatment to remove lichens and moss growth etc. Please consult with the HSE guidelines with regards to handling asbestos
4. Blasting of steel substrates to SA2.5 is recommended for improved adhesion.
5. Allow surfaces to dry thoroughly and any moisture contained in the structure to evaporate. **IMPERVIUS** should not be applied to damp substrates. (Moisture content <5%)
6. Apply IMPERVIUS basecoat to *a nominal* thickness. Care must be taken with respect to overspray. Mask the area accordingly and apply the material when the wind conditions are light to minimise the distance that the aerosol will travel.
7. The topcoat can then be applied within minutes. It is recommended that the topcoat be applied within 7 days of the application of the basecoat, as the basecoat is not designed to be exposed for extended periods.
8. Apply IMPERVIUS topcoat to an approximate film thickness of 2 mm by spraying in a cross-hatch pattern. Care must be taken with respect to overspray. Mask the area accordingly and apply the material when the wind conditions are light to minimise the distance that the aerosol will travel.
9. Day-work joints – where application extends over more than a working day, an overlap of 150mm should be used.

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APPLICATION – REPAIRS

Minor damage to **IMPERVIUS topcoat** can be repaired by

1. Removing loose material around the damaged area;
2. Abrade to 150mm overlap onto sound, existing coating around the area to be recoated and remove dust.
3. Wipe the overlap area with acetone
4. Prime the whole area with **IMPERVIUS primer**, including overlap.
5. Once the primer has suitably cured, apply a 2mm overcoat of **IMPERVIUS topcoat**.

If the basecoat is also damaged such that the substrate is exposed, refer to the surface preparation guidelines and reapply the whole system to the affected area. In addition, where new topcoat is to be applied over old in this case, follow the guidelines above.

Depending on the size of the repair, it may be possible to avoid setting up spray equipment again. Isothane personal can give specific recommendations on repair patch kits.

APPLICATION – GENERAL

Ambient conditions should be suitable for PU processing, with particular emphasis on whether humidity is 90% or above or the substrate temperature is less than 3ºC above the local dew point.

It is recommended any applicators of polyurea systems familiarise themselves with the guidelines set out by the Polyurea Developers Association.

Further specific application details are available on request, covering a wide range of application scenarios.

STORAGE, HANDLING AND PERSONAL PROTECTION

- The products should be stored indoors and away from direct sunlight.
- Recommended storage temperature range: 5 – 25°C.
- IMPERVIUS Basecoat Resin and Impervius Topcoat Resin have a shelf life of 6 months if stored unopened and at the recommended storage temperature.
- IMPERVIUS H and IMPERVIUS M27 have a shelf life of 6 months if stored unopened and at the recommended storage temperature. When in use, a desiccant cartridge on the small bung of the isocyanate drum is recommended to eliminate moisture ingress into the drum and help prolong storage life.
- Opened, part used containers must be resealed immediately after use.
- It is recommended that the drums be left attached to the machine as this closed system will protect both the machine and the material, so long as the desiccant cartridge on the isocyanate component is checked regularly for saturation and replaced when necessary.
- The recommendations in our Safety Data Sheet for this product must be followed at all times. More general information is included in our publication “A Guide to the Safe Handling of Polyurethane Chemicals” and in the following Technical Data Sheet which is available on request:-
    - Decontamination of Isocyanates using Isothane Decontaminant

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TYPICAL PROPERTIES OF THE LIQUID COMPONENTS

	IMPERVIUS Basecoat Resin	IMPERVIUS M27 Isocyanate
Appearance	Dark Amber Liquid	Hazy Yellow Liquid
Viscosity, cPs @ 25°C	Up to 500	Up to 500
Specific Gravity @ 25°C	1.10 – 1.20	1.22 – 1.26

	IMPERVIUS Topcoat Resin	IMPERVIUS H Isocyanate
Appearance	Dark Amber Liquid	Hazy Yellow Liquid
Viscosity, cPs @ 25°C	Up to 1500	Up to 1500
Specific Gravity @ 25°C	1.0 – 1.1	1.08 – 1.12
Water Content	<0.01%	N/A

IMPERVIUS TOPCOAT CURED PHYSICAL PROPERTIES

	UNITS	TYPICAL VALUES	TEST METHOD
Shore Hardness	°A	80-85	ASTM D2240
Tensile Strength	MPa	20	ASTM 638
Elongation	%	380	ASTM 638
100% Modulus	MPa	6.8	ASTM 638
300% Modulus	MPa	10	ASTM 638
Tear Strength	KN/m	65	ASTM D624, Die C
Abrasive Resistance (Loss)	Mg	150 max	ASTM D4060

REACTION PROFILE – APPLIES TO BOTH BASECOAT AND TOPCOAT

Gel Time	15 secs
Touch Dry	30 secs
Cure	80% of maximum tensile strength is attained within 24 hrs at 20°C

CHEMICAL RESISTANCE

The cured elastomer has a good resistance to 5% Acetic Acid, 5% Hydrochloric Acid, 5% sulphuric Acid, 15% Sodium Hydroxide, 10% Sodium Chloride, Sea Water and Motor Oil. Moderate resistance to 5% Nitric Acid, 20% Phosphoric Acid and Ethylene Glycol and is not recommended with MEK.

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