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STEGO® INDUSTRIES, LLC

Slab-On-Ground

Stego® Vapour Mitigation System

Product Guide



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THE STEGO® DIFFERENCE

Since 1998, Stego Industries have earned the respect and trust of the architectural, engineering and construction communities as a leading supplier of under-slab, vapour mitigation technologies. Stego's world renowned Stego Wrap - the most widely specified below-slab vapour barrier in North America, is now available in Australia from ramsetreid®.

THE STEGO RANGE OF VAPOUR MITIGATION TECHNOLOGIES HAVE REVOLUTIONISED THE CONCRETE CONSTRUCTION INDUSTRY.

STEGO® INDUSTRIES, LLC

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Contents

About Stego Industries	4
Stego Wrap Vapour Barrier	5
Stego Tapes	6
Black Poly: An Australian Industry Misconception	7
International Standards	7
How To Specify Stego	8
How To Use Stego Wrap	9

DATA SHEETS

Stego Wrap Vapour Barrier	10
Stego Wrap Tape	11
Stego Crete Claw Tape	12
StegoTack Tape	13



About Stego® Industries:

It's the side of the building you never see, but it's the foundation that keeps your building safe. Stego Industries creates the game-changing barriers below your building's floor slab.

Since 1998, Stego's engineered films have revolutionised the way the construction industry defends against harmful moisture vapour and soil gases with its flagship product: Stego Wrap Vapour Barrier – which dramatically improves performance against moisture intrusion over conventional methods.

Stego Industries recognises the complex and controversial nature of moisture/contaminant-related problems facing architects, engineers, flooring installers, concrete contractors and building owners. ramsetreid® is proud to partner with Stego Industries in providing the world's leading innovative vapour mitigation solutions with the highest level of technical support possible to the Australian slab-on-ground construction industry.

WHY USE A STEGO VAPOUR BARRIER?

The emerging trends within the Australian construction industry including water-based, low VOC adhesive products for floor coverings, green building codes, and the growing liability for mould and related contaminants have forced the building industry to re-evaluate, and switch to cost-effective, solution-oriented products which will help control moisture, moisture vapour, soil gases and other contaminants. Available now in Australia from ramsetreid, Stego Wrap helps to eliminate major moisture sources that can lead to serious curing and drying problems with the concrete slab (ie curling), floor covering failures, poor indoor air quality, and delays to construction timelines.

Infiltration of moisture through concrete slabs is a major building defect liability. Stego Wrap Vapour Barrier has an extremely low permeance preventing water vapour, soil gases (i.e. Radon) and soil sulphates from compromising the integrity of the building envelope. Stego Wrap Vapour Barrier is the best protection against these costly failures, which would otherwise lead to expensive remedial works that are a source of frustration for the asset owner and/or tenant.

Stego Vapour Barrier provides a solution to mitigate common industrial warehouse issues:

- Damage to Moisture Sensitive Flooring Coverings
- Mould Growth
- Curling/Cracking
- Plastic Shrinkage Cracking
- Sweating Slab Syndrome
- Alkaline Efflorescence
- Alkali-Silica Reaction (ASR)



Stego Wrap Vapour Barrier

Product Description

STEGO™ WRAP VAPOUR BARRIER (15mil/381µm) is manufactured with Stego Industries' proven blend of prime virgin resins and additives. Stego Wrap Vapour Barrier is an ASTM E1745 compliant Class A Vapour Barrier (less than 0.01 perms). Stego Industries focus on producing a product that will maintain its extremely low permeance provides long-term protection. The protection of Stego Wrap Vapour Barrier provides the flexibility to change flooring types and overall building use without worrying about below-slab moisture vapour.

FEATURES & BENEFITS

- Unsurpassed permeance characteristics.
- Provides long-term protection.
- Exceptional tear and puncture resistance.
- Quick and easy to install. Installation support available.
- Helps reduce long term slab curling.
- Available nationwide, with local support from ramsetreid®.

USES

Stego Wrap is used as a below-slab vapour barrier for slab-on-ground flooring applications.

COMPOSITION

Stego Wrap Vapour Barrier is a multi-layer plastic extrusion manufactured with only high grade prime, virgin, polyolefin resins.

ENVIRONMENTAL FACTORS

Stego Wrap Vapour Barrier can also be used as a system which controls soil gases (radon, methane), soil poisons (oil by-products) and sulphates.

ADVANTAGES

Superior defence against Floor Failures

Infiltration of moisture through concrete slabs is a major building defect liability. Stego Wrap Vapour Barrier has an extremely low permeance preventing water vapour, soil gases (i.e. Radon), alkaline salts and soil sulphates from compromising the integrity of the building envelope and leading to serious problems with the concrete slab, floor coverings and indoor air quality. Stego Wrap Vapour Barrier is the best protection against these costly failures.

Asset Protection Benefits

Mould needs three things to survive: moisture, sustained temperature (between 10° C and 50° C), and a food source (such as dust and dirt). In any given building environment, contractors can only control one of these variables: moisture. Mould spores are present in 100% of building interiors. If moisture is allowed into your building environment mould can and will grow. Toxic moulds like Stachybotyrus can be fatal. Stego Wrap Vapour Barrier offers the level of protection that many architects are now seeking and is considered to be inexpensive insurance against these costly failures.

Longevity & Strength

Stego Wrap Vapour Barrier is NOT made with recycled materials and will not degrade. Prime, virgin resins are the key. Molecules within Stego Wrap "interlock" to provide strength, durability and unprecedented resistance to moisture vapour and radon gas. Stego Wrap's puncture resistance is excellent. Stego Wrap will not tear, crack, flake, snag or puncture, even when 8t laser-screed machines are driving directly across the barrier.

Manufacturing Tolerance

PERMEANCE	0.0086 gr/(ft²*hr*in-Hg)	**PUNCTURE**	2,266 grams	**TENSILE**	12.4 kN/m

ITEM CODE:	DESCRIPTION	UOM:	WEIGHT (KGS)	WIDTH (M)	ROLL LENGTH (M)	ROLL COVER (M²)
STEGOVB15	Stego Wrap Vapour Barrier (15mil/381µm)	Roll	63	4.3	42.7	180

Stego Tape Solutions



Stego™ Wrap Tape

Specifically designed and engineered for use with Stego™ Wrap. Stego Tape is a low-permeance tape designed for protective sealing, hanging, seaming, splicing, and patching applications where a highly conformable material is required. It has been engineered to bond specifically to Stego Wrap, making it ideal for sealing seams and penetrations.

COMPOSITION

Stego Tape is composed of polyethylene film and an acrylic, pressure-sensitive adhesive.

SIZE

Stego Tape is 95mm Wide.
Roll length is 55 metres.



Stego™ Crete Claw™ Tape

Stego Crete Claw Tape is a multi-layered tape that is used to seal Stego Wrap to the perimeter of the slab while the concrete is placed. Stego Crete Claw Tape allows wet concrete to cast into the textured top surface to form a mechanical bond/seal.

COMPOSITION

Stego Crete Claw Tape is composed of polyethylene film and an acrylic, pressure-sensitive adhesive.

SIZE

Stego Crete Claw Tape is 75mm Wide.
Roll length is 55 metres.



StegoTack™ Tape

StegoTack Tape is a double-sided adhesive strip used to bond and seal Stego Wrap to concrete, masonry, wood, metal, and other surfaces. StegoTack is a flexible and mouldable material to allow for a variety of applications and installations.

COMPOSITION

StegoTack Tape is made from a blend of synthetic rubber and resins.

SIZE

StegoTack Tape is 51mm Wide.
Roll length is 15 metres.

ITEM CODE:	DESCRIPTION	UOM:	WEIGHT (KGS)	WIDTH (MM)	ROLL LENGTH (M)
STEGOST100	Stego Seaming Tape 95mm x 55m	Roll	1.2	95	55
STEGOCCT75	Stego Crete Claw Tape 75mm x 55m	Roll	1.37	75	55
STEGOTT51	StegoTack Tape 51mm x 15m	Roll	0.83	51	15

Black Polyethylene:

AN AUSTRALIAN INDUSTRY MISCONCEPTION

"We specify and use black polyethylene sheeting as a vapour barrier"



Problems associated with moisture vapour movement through a concrete slab will be alleviated as the slab dries – provided there is no source of additional moisture permeating through the slab. Since the most common source is moisture in the ground beneath the slab, the solution is to completely take the ground out of the equation. This is achieved by sealing the underside of the concrete slab.

Recent industry research and testing in Australia has shown that the traditional methods of installing either a single layer (200µm/0.2mm), or even a double layer (400µm/0.4mm) of black or orange generic polyethylene sheeting under the slab is **NOT effective** as a vapour barrier for three main reasons:

1. Although it may seem to be water-tight, this grade of material allows a lot of water vapour to pass through.
2. 200µm/0.2mm grade polyethylene often gets damaged during placement of reinforcement and concrete, creating holes that can let a considerable amount of water vapour into the slab.
3. In most cases, commercially available black or orange polyethylene is manufactured from approximately 85% to 100% recycled materials, whereby the material's natural anti-oxidants are removed through the recycling process. This further reducesthe resin's ability to retard vapour permeance, and compromises its strength and longevity as the recycled material breaks down over time.

STEGO: COMPLIANCE TO INTERNATIONAL STANDARDS

ASTM E1745 *Standard Specification for Plastic Water Vapour Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs* is the main standard for evaluating plastic films that will be used in this application. Three performance classes are outlined A, B and C (with Class A being the strongest). Permeance levels are the same for each class. Tensile Strength and Puncture Resistance change with each class.

ASTM E1745 refers to ASTM E154 *Standard Test Methods for Water Vapour Retarders Used in Contact with Earth Under Concrete Slabs, On Walls or as Ground Cover* - which describes test methods for testing the performance of a plastic film **after** it is subjected to certain elements.

The installation of a Stego Vapour Barrier with a permeance rating of 0.01 perms provides the best level of protection of floor covering adhesives from moisture transmission.

TYPE:	STEGO VAPOUR BARRIER	GENERIC BLACK POLY
Permeance:	0.0086 gr/(ft²*hr*in-Hg)	0.297 gr/(ft²*hr*in-Hg)
Puncture:	2,266 grams	<346 grams
Tensile:	12.4 kN/m	0.002 kN/m
Class:	Class A	Class C

Note: Testing conducted on generic black polyethylene samples commercially available throughout Australia.

How to specify Stego®

Stego Industries recognises the complex and controversial nature of the moisture/contaminant-related problems facing architects and engineers during the design phase of industrial slab-on-ground projects.

The specification of Stego moisture mitigation technologies reduce the most common issues relating to moisture intrusion through the floor slab:



ARCHITECTURAL ISSUES CAUSED BY MOISTURE TRANSMISSION:

- Mould Growth
- Air quality issues
- Failure of moisture sensitive floor coverings: Sheet Rubber • Epoxy Coatings • Vinyl Composition • Tile (VCT) • Sheet Vinyl • Carpet • Athletic Flooring • Laminates • Hardwood



ENGINEERING ISSUES CAUSED BY MOISTURE TRANSMISSION:

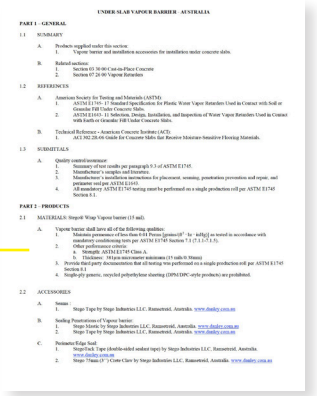
- Curling/Cracking
- Plastic Shrinkage Cracking
- Sweating Slab Syndrome
- Alkaline Efflorescence & Associated Safety Benefits
- Alkali-Silica Reaction (ASR)

To assist with the architectural and engineering specification of Stego Vapour Barrier and related accessories, contact the ramsetreid customer service team for a copy of the full Stego specification.

PART 2 – PRODUCTS

2.1 MATERIALS: Stego® Wrap Vapour barrier (15 mil).

A. Vapour barrier shall have all of the following qualities:
1. Maintain permeance of less than 0.01 Perms [grains/(ft² · hr · inHg)] as tested in accordance with mandatory conditioning tests per ASTM E1745 Section 7.1 (7.1.1-7.1.5).
2. Other performance criteria:
   a. Strength: ASTM E1745 Class A.
   b. Thickness: 381µm micrometer minimum (15 mils/0.38mm)
3. Provide third party documentation that all testing was performed on a single production roll per ASTM E1745 Section 8.1
4. Single-ply generic, recycled polyethylene sheeting (DPM/DPC-style products) are prohibited.



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How to use Stego™ Wrap

FIGURE 1: UNDER-SLAB INSTALLATION

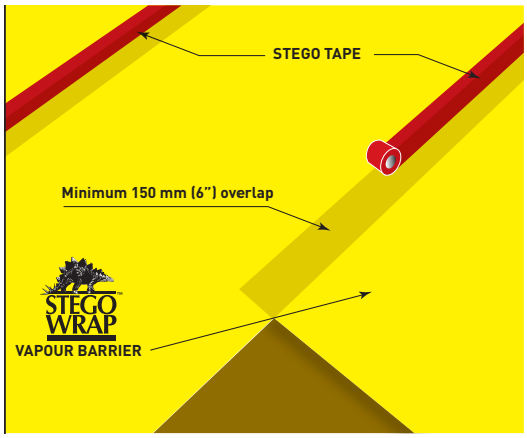
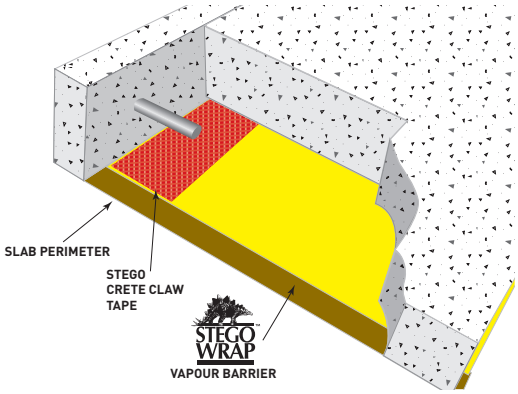


FIGURE 2a: SEAL TO SLAB AT PERIMETER



UNDER-SLAB INSTRUCTIONS:

1. Stego Wrap can be installed over an aggregate, sand, or tamped earth base. It is not necessary to have a cushion layer or sand base, as Stego Wrap is tough enough to withstand rugged construction environments.

2. Unroll Stego Wrap over the area where the slab is to be placed. Stego Wrap should completely cover the concrete placement area. All joints/seams both lateral and butt should be overlapped a minimum of 150mm (6") and taped using Stego™ Tape.

NOTE: The area of adhesion should be free from dust, dirt, moisture, and frost to allow maximum adhesion of the pressure-sensitive tape.

3. ASTM E1643 requires sealing the perimeter of the slab. Consult the structural engineer of record before proceeding.

SEAL TO SLAB AT THE PERIMETER (FIGURE 2a):*

NOTE: Clean the surface of Stego Wrap to ensure that the area of adhesion is free from dust, dirt, moisture, and frost to allow maximum adhesion of the pressure-sensitive adhesive.

a. Install Stego™ Crete Claw™ Tape on the entire perimeter edge of Stego Wrap.

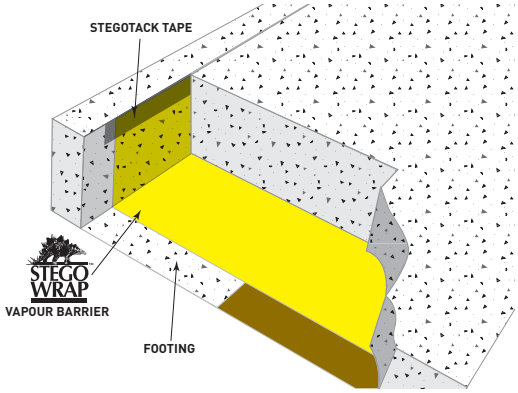
b. Prior to the placement of concrete, ensure that the top of Stego Crete Claw Tape is free of dirt, debris, or mud to maximise the bond to the concrete.

STEGO LABOUR SAVER!

This method not only complies with ASTM E1643, but it also:

- **reduces labour compared to other perimeter sealing techniques.**
- **can be used even without an existing wall or footing, unlike alternatives.**

FIGURE 2b: SEAL TO PERIMETER WALL



OR **SEAL TO PERIMETER WALL WITH STEGOTACK™ TAPE (FIGURE 2b):***

a. Make sure area of adhesion is free of dust, dirt, debris, moisture, and frost to allow maximum adhesion.

b. Remove release liner on one side and stick to desired surface.

c. When ready to apply Stego Wrap, remove the exposed release liner and press Stego Wrap firmly against StegoTack Tape to secure.

* NOTE: If ASTM E1643 is specified, consult with project architect and structural engineer to determine which perimeter seal technique should be employed for the project.

STEGO™ WRAP VAPOUR BARRIER

A STEGO INDUSTRIES, LLC INNOVATION

1. PRODUCT NAME

STEGO WRAP VAPOUR BARRIER

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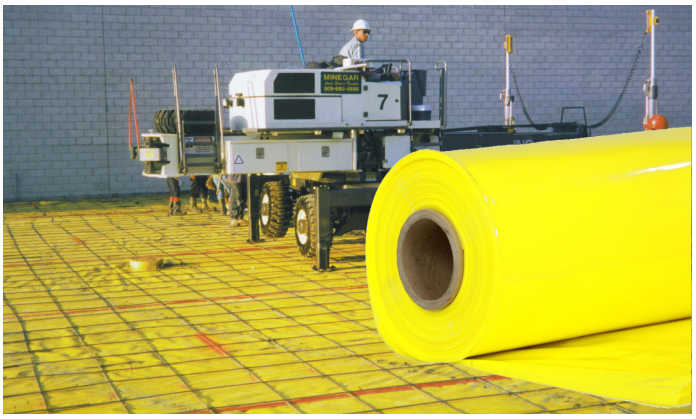

3. PRODUCT DESCRIPTION

USES: Stego Wrap Vapour Barrier is used as a below-slab vapour barrier.

COMPOSITION: Stego Wrap Vapour Barrier is a multi-layer plastic extrusion manufactured with only high grade prime, virgin, polyolefin resins.

ENVIRONMENTAL FACTORS: Stego Wrap Vapour Barrier can be used in systems for the control of soil gases (radon, methane), soil poisons (oil by-products) and sulfates.

4. TECHNICAL DATA

TABLE 1: PHYSICAL PROPERTIES OF STEGO WRAP VAPOUR BARRIER

PROPERTY	TEST	RESULTS	
Under Slab Vapour Retarders	ASTM E1745 Class A, B & C– Standard Specification for Water Vapour Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs	Exceeds Class A, B & C	
	Permeance Units (perms):	ng/(m²*s*Pa)	gr/(ft²*hr*in-Hg)
Water Vapour Permeance	ASTM F1249 – Test Method for Water Vapour Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor	0.49	0.0086
Permeance After Conditioning (ASTM E1745 Sections 7.1.2 - 7.1.5)	ASTM E154 Section 8, F1249 – Permeance after wetting, drying, and soaking	0.56	0.0098
	ASTM E154 Section 11, F1249 – Permeance after heat conditioning	0.52	0.0091
	ASTM E154 Section 12, F1249 – Permeance after low temperature conditioning	0.56	0.0097
	ASTM E154 Section 13, F1249 – Permeance after soil organism exposure	0.54	0.0095
Methane Transmission Rate	ASTM D1434 – Standard Test Method for Determining Gas Permeability Characteristics of Plastic Film and Sheeting	GTR - 192.8 mL(STP)/m²*day	
Radon Diffusion Coefficient	K124/02/95	8.8 x 10^{-12} m²/second	
Puncture Resistance	ASTM D1709 – Test Method for Impact Resistance of Plastic Film by Free-Falling Dart Method	2,266 grams	
Tensile Strength	ASTM D882 – Test Method for Tensile Properties of Thin Plastic Sheeting	12.4 kN/m (70.6 lbf/in)	
Thickness		0.38 mm (15 mil)	
Roll Dimensions	width x length: area:	4.3 m x 42.7 m (14' x 140') 180 m² (1,960 f²)	
Roll Weight		63 kg (140 lb)	

STEGO™ TAPE

A STEGO INDUSTRIES, LLC INNOVATION

1. PRODUCT NAME

STEGO TAPE



2. SUPPLIER

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3. PRODUCT DESCRIPTION

USES: Stego Tape is a low-permeance tape designed for protective sealing, hanging, seaming, splicing, and patching applications where a highly conformable material is required. It has been engineered to bond specifically to Stego™ Wrap, making it ideal for sealing Stego Wrap seams and penetrations.

COMPOSITION: Stego Tape is composed of polyethylene film and an acrylic, pressure-sensitive adhesive.

SIZE: Stego Tape is 95 mm (3.75") x 55 m (180'). Stego Tape ships 12 rolls in a case.

4. TECHNICAL DATA

APPLICABLE STANDARDS:
Pressure Sensitive Tape Council (PSTC)

- PSTC 101 – International Standard for Peel Adhesion of Pressure-Sensitive Tape

American Society for Testing & Materials (ASTM)

- ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapour Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs

TABLE 4.1: PHYSICAL PROPERTIES OF STEGO TAPE

PROPERTY	RESULTS
Dimensions	95 mm x 55 m (3.75" x 180')
Total Thickness	0.15 mm (6 mil)
Permeance (perms)	1.7 ng/(m²*s*Pa) (0.03 gr/(ft²*hr*in-Hg)
Tensile Strength	3 kN/m (17 lb/in)
Elongation (at break) MD	1060%
Adhesion (20 min dwell ss, PSTC 101)	.92 kN/m (84 oz/in)
Ultraviolet Resistance	Excellent

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STEGO DATA

STEGO™ CRETE CLAW™ TAPE (75 mm wide)

A STEGO INDUSTRIES, LLC INNOVATION

1. PRODUCT NAME

STEGO CRETE CLAW TAPE (75 mm wide)



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3. PRODUCT DESCRIPTION

USES: Stego Crete Claw Tape is a multi-layered tape that is used to seal Stego™ Wrap to the perimeter of the slab while the concrete is placed. Stego Crete Claw Tape allows wet concrete to cast into the textured top surface to form a mechanical bond/seal.

COMPOSITION: Stego Crete Claw Tape is composed of polyethylene film, aperture film, and an acrylic, pressure-sensitive adhesive.

SIZE: Stego Crete Claw Tape is 75 mm (3") x 55 m (180'). Stego Crete Claw Tape (75 mm Wide) ships 16 rolls in a case.

4. TECHNICAL DATA

TABLE 4.1: PHYSICAL PROPERTIES OF STEGO CRETE CLAW (75 mm wide)

PROPERTY	RESULTS
Dimensions	75 mm x 55 m (3" x 180')
Total Thickness	0.66 mm (26 mil)
Permeance: ASTM F1249	1.7 ng/(m²*s*Pa) (0.03 perms)
180° Adhesion Peel Strength: ASTM D903	3.1 kN/m (17.6 lbf/in)
Sheer Adhesion Strength: 6.5 cm² (1 in²) shear test using an Instron 3345 Machine	>338 kPa (>49 lbf/in²)*

* Specimens failed by stretching vapour barrier to failure before pulling Crete Claw from concrete.

5. INSTALLATION

UNDER SLAB: Clean surface of Stego Wrap to ensure that it is free of moisture, frost, dirt, and debris prior to the installation of Stego Crete Claw Tape. When ready to apply Stego Crete Claw Tape, peel back the release liner and apply to Stego Wrap. Stego Crete Claw Tape should be completely on Stego Wrap.

To detail, cut Stego Crete Claw Tape with a box knife or scissors. Stego Crete Claw Tape should be installed above 4°C for maximum adhesion. For additional information please refer to Stego's complete installation instructions.

TIP: Wrap the release liner back over the entire roll while unrolling Stego Crete Claw Tape. This technique will allow the release liner to pull off easily and keep it out of the way.

STEGOTACK™ TAPE

A STEGO INDUSTRIES, LLC INNOVATION

1. PRODUCT NAME

STEGOTACK TAPE

2. SUPPLIER

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3. PRODUCT DESCRIPTION

USES: StegoTack Tape is a double-sided adhesive strip used to bond and seal Stego™ Wrap Vapour Barrier to concrete, masonry, wood, metal, and other surfaces. StegoTack Tape is a flexible and mouldable material to allow for a variety of applications and installations.

COMPOSITION: StegoTack Tape is made from a blend of synthetic rubber and resins.

SIZE: StegoTack Tape is 51 mm (2") x 15 m (50'). StegoTack Tape ships 12 rolls in a case.

4. TECHNICAL DATA

TABLE 4.1: PHYSICAL PROPERTIES OF STEGOTACK TAPE

PROPERTY	RESULTS
Dimensions	51 mm (2") x 15 m (50')
Total Thickness	0.76 mm (30 mil)
Permeance (at 0.76 mm/30 mil)	1.7 ng/(m²*s*Pa) (0.03 gr/(ft²*hr*in-Hg)
Colour	Grey
Material	Synthetic rubber blend
Adhesion to Steel	2.19 kN/m (12.5 lb/in) width ASTM D1000
Installation Temperature	4°C/43°C (40°F/110°F)
In Service Temperature Range	-29°C/60°C (-20°F/+140°F)
VOC Content	No VOCs, 100% solids

5. INSTALLATION

TO WALLS: Make sure the area of adhesion is free of dust, dirt, debris, moisture, and frost to allow maximum adhesion. Remove release liner on one side and stick to desired surface. When ready to apply Stego Wrap, remove the exposed release liner and press Stego Wrap firmly against StegoTack Tape to secure.

Cut StegoTack Tape using a utility knife or scissors. Cut StegoTack Tape before removing the release liner for easier cutting. Install StegoTack Tape between 4°C and 43°C. For additional information please refer to Stego's complete installation instructions.

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customer service

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