



DRAGO® WRAP INSTALLATION INSTRUCTIONS



ENGINEERED PERFORMANCE
LIFE OF THE BUILDING™ PROTECTION



Additional Drago Wrap installation resources and videos are available on our website at:

stegoindustries.com/resources



CONTENTS

NOTE: While the photos in this guide show Drago® Wrap Vapor Intrusion Barrier, these installation instructions are also applicable to Drago® Wrap Soil Gas Barrier and Drago® Wrap Soil Gas Retarder, as all Drago Wrap membranes are installed using the same accessories and installation methodology.

The installation recommendations set forth in these instructions are generally based on ASTM E1643 and specific applications of Drago products. Each section provides explanations and options for the varying conditions.

SECTION 1	Drago Wrap and Drago Accessories	3
SECTION 2	Creating a Monolithic Membrane	4
SECTION 3	Where to Terminate the Drago Wrap	5
SECTION 4	Sealing Drago Wrap at Terminating Edges	6,7
SECTION 5	Sealing Damaged Areas	8
SECTION 6	Sealing Single Pipe Penetrations.....	9
SECTION 7	Sealing Multiple Pipe Penetrations	10
SECTION 8	Avoid Punctures with Beast Concrete Accessories	11

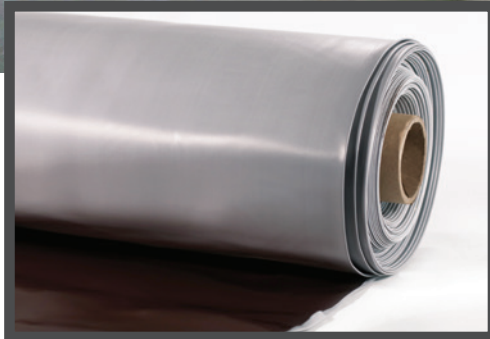


Stego Installation Support - A Free Service

When you choose **Stego® Barrier Solutions** and products, you gain access to a large nationwide network of full-time technical sales representatives providing unmatched local support and service. If you ever have a question or concern regarding the following installation scenarios please contact us and take advantage of our free Stego Installation Support.

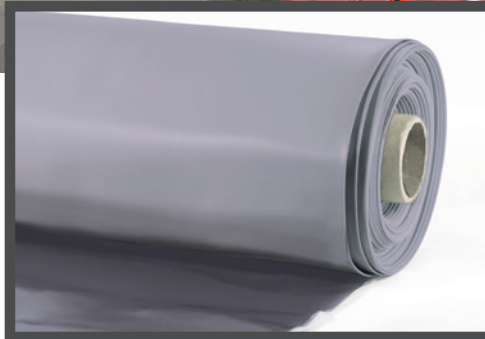


Drago Wrap Barriers & Retarders



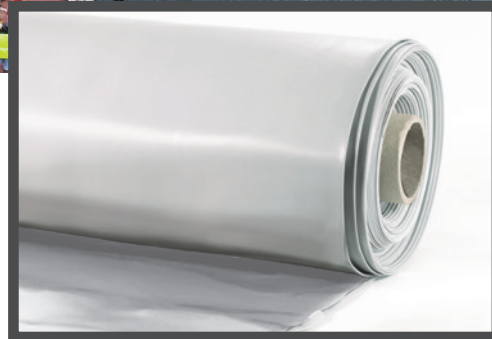
DRAGO WRAP VAPOR INTRUSION BARRIER

A multi-layered plastic extrusion that combines uniquely designed materials with only high grade, prime, virgin resins. This patent pending barrier technology provides high performance and longevity, allowing for the redevelopment of contaminated sites, creating a healthy built environment.



DRAGO WRAP SOIL GAS BARRIER

A multi-layered plastic extrusion that combines gas barrier technology with only high-grade, prime, virgin resins. Drago Wrap Soil Gas Barrier can be used in systems for the control of VOCs, methane, radon, soil poisons, and sulfates.



DRAGO WRAP SOIL GAS RETARDER

A multi-layered plastic extrusion manufactured with only high-grade, prime, virgin resins. Drago Wrap Soil Gas Retarder is a pre-emptive solution for contaminated sites with trace amounts of VOCs.

Drago Accessories

At Stego, we know every project has its own unique challenges. To make a Drago Wrap installation easy and flexible, we offer an extensive line of accessory items that gives you options to create a monolithic membrane between all interior intrusion pathways and vapor sources below the slab as well as at the slab perimeter. **Consult the project architect, owner's representative, and design engineer of record before proceeding with any of these options.**



DragoSeal® Tape

Combines Drago Wrap technology with a powerful adhesive for a barrier solution to seal seams, patches, and other details, defending against vapor intrusion.



DragoTack® Tape

A solvent-resistant, double-sided adhesive strip used to bond and seal Drago Wrap to concrete, masonry, wood, metal, and other surfaces.



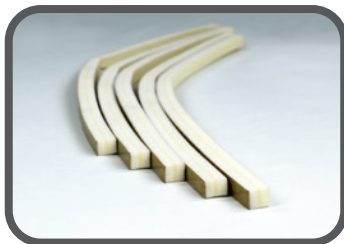
Drago® Sealant

A two-component, high-performance epoxy, designed to be used with Drago Wrap for sealing utility and pipe penetrations.



Drago® Mastic

A polymer-modified anionic asphalt emulsion, designed to be used with Drago Wrap, for sealing utility, pipe penetrations, and terminating edges.



Drago® Sealant Form

A low-density, cross-linked, closed-cell polyethylene foam designed to be used as a detailing piece with Drago Sealant.

Creating a Monolithic Membrane

The key to an effective Drago Wrap installation is to create a monolithic layer of protection between the building foundation and vapor sources below. While Drago Wrap installation instructions are generally based on ASTM E1643 - *Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs*, these instructions are meant to be used as a guide, and do not take into account specific job site situations. Consult local building codes and regulations along with the building owner or owner's representative before proceeding.

ASTM E1643 discusses the selection of the vapor retarder and preparation of the subbase to minimize potential damage during installation and concrete placement.

ASTM E1643, Section 5.3.4.1 - *Select a vapor retarder material capable of withstanding potential construction site damage.*

ASTM E1643, Section 5.3.5.1 - *Select vapor retarder material capable of withstanding tear or puncture damage due to the type, gradation, and texture of the base material to be installed below the material. Prepare base material to minimize risk of puncture, for example, by rolling or compacting.*

ASTM E1643, Section 6.1 - *Level and compact base material.*

ASTM E1643 then states to create a monolithic membrane to protect the slab from adjacent moisture sources.

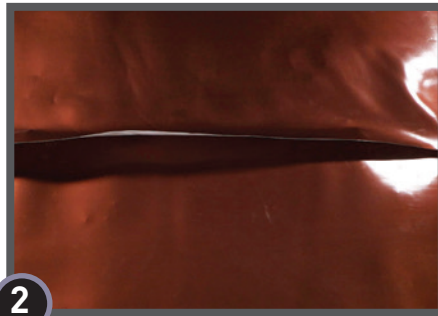
ASTM E1643, Section 6.4 - *... create a monolithic membrane between the surface of the slab and vapor sources below the slab as well as at the slab perimeter.*

ASTM E1643, Section 6.5 - *Lap joints as instructed by the manufacturer and seal laps in accordance with the manufacturer's recommendations.*

Drago Wrap can be installed over an aggregate, sand, or tamped earth base. If installing on a design approved aggregate base, it is recommended to use a non-woven geotextile below Drago Wrap. Consult the design team for project-specific recommendations.



1 Unroll Drago Wrap over the area where the slab is to be placed.
Note: Grey color side of membrane is face-down, copper color side is face-up.



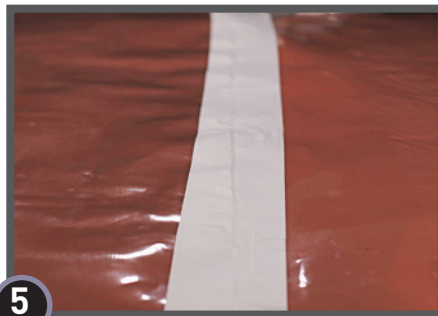
2 Unless otherwise indicated by the design professional(s) of record, unfold Drago Wrap to completely cover the placement area.



3 All joints/seams should be overlapped a minimum of 12 inches.



4 Ensure Drago Wrap is clean and dry when applying DragoSeal Tape.
Tip: Use a cloth or other means to remove dust, debris, and excess moisture from Drago Wrap prior to applying DragoSeal Tape.



5 Seal the seams with DragoSeal Tape.
Note: Remove the release liner of DragoSeal Tape prior to application. After applying DragoSeal Tape, use consistent, firm pressure along the 4" width of DragoSeal Tape to ensure continuous adhesion. Optional ~4" steel roller is ideal.



OPTIONAL SEALING METHOD:
Hot air wedge welding equipment is ideal for heat welding seams of Drago Wrap.

Where to Terminate the Drago Wrap

Always consult the project design team for where to terminate the vapor barrier to strike a balance between the location of the vapor barrier on or around foundation constructions and any structural concerns before proceeding.

ASTM E1643 provides direction on where to terminate the vapor barrier as follows:

ASTM E1643, Section 6.4 - *Extend vapor retarder over footings and seal to foundation wall, grade beam, or slab at an elevation consistent with the top of the slab or terminate at impediments such as waterstops or dowels...*

ASTM E1643, Section 6.6 - *Extend vapor retarder over the tops of pile caps and grade beams to a distance acceptable to the structural engineer.*

In accordance with ASTM E1643, terminate the Drago Wrap as follows:

At an elevation (height) consistent with the top of the slab;



Note: Turn Drago Wrap up foundation walls or forms. Ensure Drago Wrap is flush against the corner to avoid tenting.

At Impediments; OR



Note: Impediments may include rebar, dowels, water stops, etc. and may be located at interior grade beams in addition to perimeter walls and footings.

At a location of termination designated by the project design team.



Note: The distance to which the vapor barrier is extended adjacent to, onto, or completely over a footing or grade beam should be determined by the project design team.

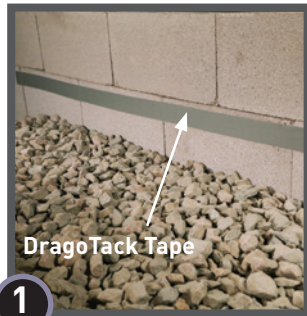
If the location of vapor barrier termination has not been clearly addressed in the construction documents, then clarification should be requested from the project design team. Should no direction be given, Stego recommends the project team follow, at minimum, the guidelines of ASTM E1643.

Regardless of where the vapor barrier is determined to be terminated, ASTM E1643 requires the terminating edges to be sealed.

Sealing the Terminating Edges of Drago Wrap Up Foundation Walls & Vertical Surfaces Using DragoTack Tape or DragoSeal Tape

DragoTack Tape or DragoSeal Tape can be used to seal Drago Wrap to foundation walls, grade beams or other adjacent concrete constructions.

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

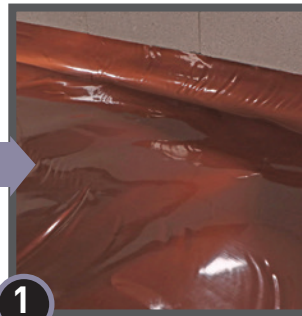


Remove the release liner on one side of **DragoTack Tape** and adhere to foundation wall at the height of the slab or at impediments.



When ready to apply Drago Wrap, remove the exposed release liner from **DragoTack Tape**.

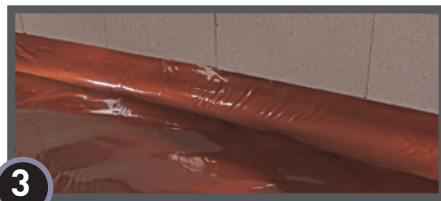
OR



Extend Drago Wrap up the vertical surface, likely to the height of the slab.
Note: See Where to Terminate the Drago Wrap, page 5.



Apply **DragoSeal Tape** on the perimeter edge so that 2" is on the Drago Wrap and 2" is on the wall/vertical surface. Press firmly to secure.



Press Drago Wrap firmly against **DragoTack Tape** to secure.



MECHANICAL SEAL OPTION:

If a mechanical seal is needed, fasten a termination bar over the top of the Drago Wrap inline with the **DragoTack Tape** (as shown in image) or **DragoSeal Tape**.

Using Drago Mastic

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



Apply Drago Mastic to the foundation wall at the anticipated edge of the subsequently applied Drago Wrap at the height of the slab or impediments.



Press Drago Wrap firmly against the applied Drago Mastic on the foundation wall.



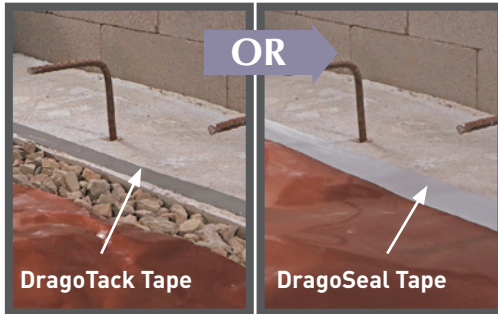
Fasten a termination bar over the top of the Drago Wrap inline with the Drago Mastic.

Sealing the Terminating Edges of Drago Wrap on a Horizontal Plane

Always consult the project design team for where to terminate the vapor barrier to strike a balance between the location of the vapor barrier on or around foundation constructions and any structural concerns before proceeding.

After the location of where to terminate the vapor barrier has been determined, seal Drago Wrap along all terminating edges as indicated by the project team.

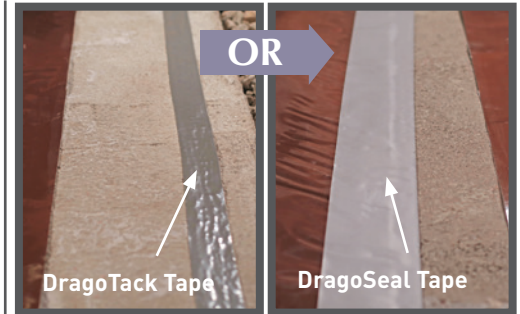
Using DragoTack Tape or DragoSeal Tape



Onto a Perimeter Footing at Impediments: Seal Drago Wrap to concrete with **DragoTack Tape** or **DragoSeal Tape**.



Onto Interior Grade Beams at Impediments: Seal Drago Wrap to concrete with **DragoTack Tape** or **DragoSeal Tape**.



At a Location Designated by the Design Team: Seal Drago Wrap to concrete with **DragoTack Tape** or **DragoSeal Tape**.



MECHANICAL SEAL OPTION:

If a mechanical seal is needed, fasten a termination bar over the top of the Drago Wrap inline with the **DragoTack Tape** (as shown in image); or fasten a termination bar over the 2" of **DragoSeal Tape** that is on top of Drago Wrap (not shown).

Using Drago Mastic



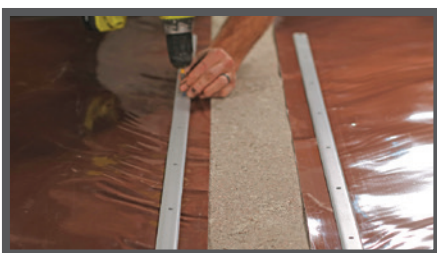
Onto a Perimeter Footing at Impediments: Seal Drago Wrap to concrete with Drago Mastic.



Onto Interior Grade Beams at Impediments: Seal Drago Wrap to concrete with Drago Mastic.



At a Location Designated by the Design Team: Seal Drago Wrap to concrete with Drago Mastic.



MECHANICAL SEAL OPTION:

If a mechanical seal is needed, fasten a termination bar over the top of the Drago Wrap inline with the Drago Mastic.

See
"Where to Terminate the Vapor Barrier"
on page 5 prior to choosing your
terminating edge sealing accessory.

Sealing Damaged Areas: Small Hole or Slice

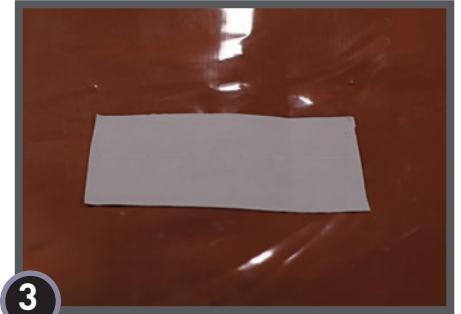
In the event that Drago Wrap is damaged during or after installation, repairs must be made. For smaller holes or slices in Drago Wrap, DragoSeal Tape can be used as noted below.



1 Small hole or slice in Drago Wrap.



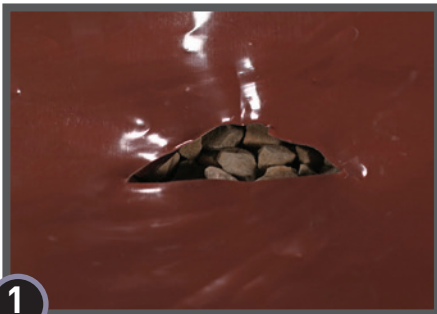
2 Clean area of adhesion.



3 Center DragoSeal Tape over small hole or slice in Drago Wrap. Apply pressure to DragoSeal Tape after application.

Larger Hole

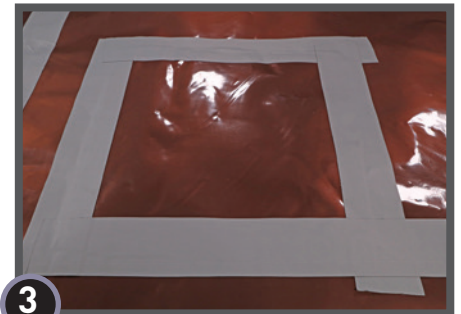
In the event that Drago Wrap is damaged during or after installation, repairs must be made. For larger holes, cut a piece of Drago Wrap to a size and shape that covers any damage by a minimum overlap of 6" in all directions. Clean all adhesion areas of dust, dirt, moisture, and frost. Tape down all edges using DragoSeal Tape.



1 Occasionally there are larger holes in the vapor barrier that require a patch.



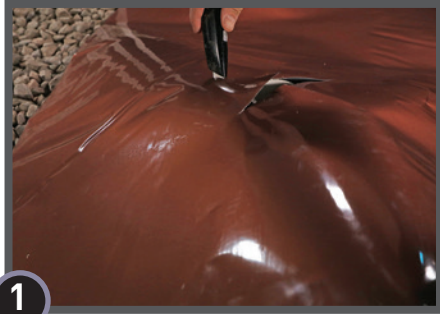
2 Measure and cut a piece of Drago Wrap to cover damaged area 6" in all directions. Clean area of adhesion.



3 Seal the patch with DragoSeal Tape.

Sealing Single Pipe Penetration: Minimal Void Space

All penetrations must be sealed. All pipe, ducting, rebar, wire penetrations and block outs should be sealed using Drago Wrap and either DragoSeal Tape, Drago Mastic, or Drago Sealant and Drago Sealant Form. If penetrations are encased in other materials, such as expansive materials like foam, unless otherwise specified, Drago Wrap should be sealed directly to the underlying penetration.



1 Install Drago Wrap around pipe penetrations by slitting/cutting material as needed. Try to minimize the void space created.



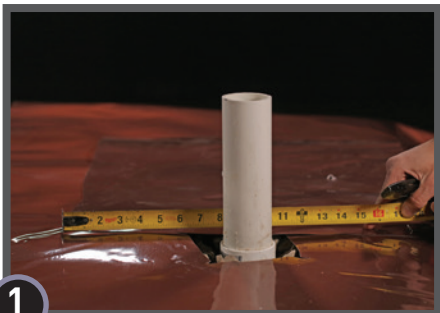
2 Pull material over and flatten. Clean area of adhesion where the Drago accessory will be applied.



3 If Drago Wrap is close to pipe and void space is minimized then seal around pipe penetration with either DragoSeal Tape (as shown), Drago Mastic or Drago Sealant and Drago Sealant Form.

Larger Void Space Requires Detail Patch

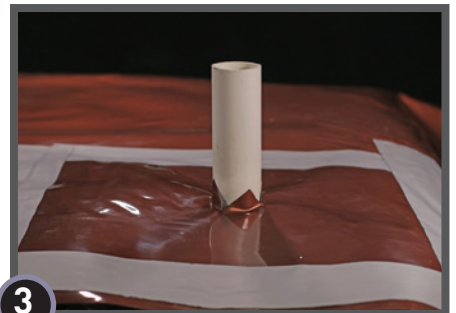
To minimize void space around a larger penetration, a detail patch may be required.



1 Cut a detail patch to a size and shape that creates a 6" overlap on all edges around the void space at the base of the pipe.



2 Cut an "X" the size of the pipe diameter in the center of the detail patch and slide tightly over pipe.



3 Seal all sides of the detail patch with DragoSeal Tape.



4a Seal around the base of the pipe using DragoSeal Tape.

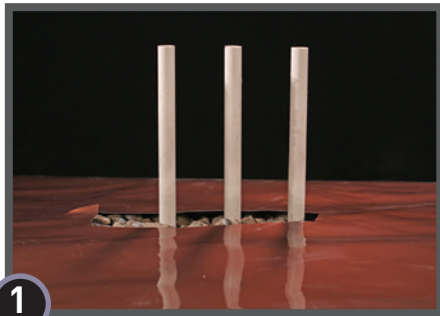


4b Seal around the base of the pipe with Drago Mastic.
Note: apply using disposable glove, paint brush, or similar.

OR

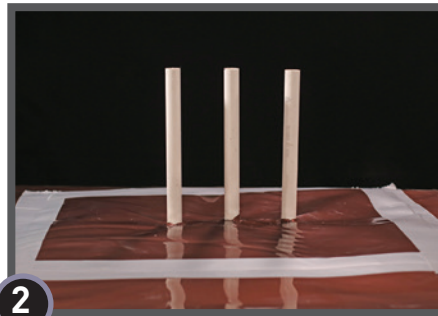
Sealing Multiple Pipe Penetrations: Using Drago Mastic or Using Drago Sealant and Drago Sealant Form

Multiple pipe penetrations in close proximity and very small pipes may be most efficiently sealed using Drago Wrap and Drago Mastic, or Drago Wrap, Drago Sealant, and Drago Sealant Form.



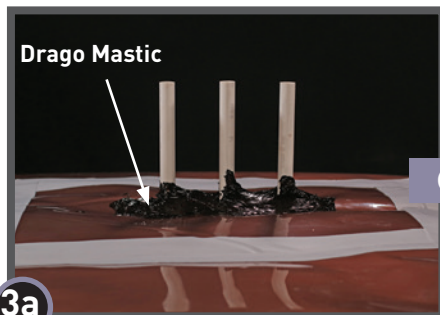
1

Cut a slit the size to accommodate the width of the multiple pipes. Try to minimize the void space created.



2

Place a detail patch over and around the base of the pipe penetrations as closely as possible, ensuring that it is flush with the base of the penetrations. Seal all sides of the detail patch with DragoSeal Tape.

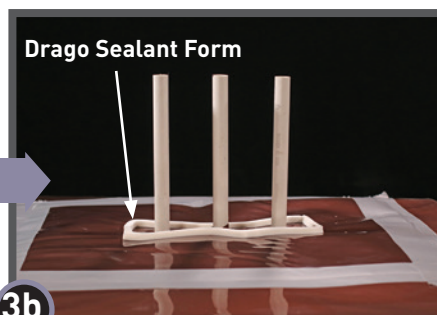


3a

Apply Drago Mastic around the entire perimeter of the group of penetrations and between the penetrations to fill any void spaces present.

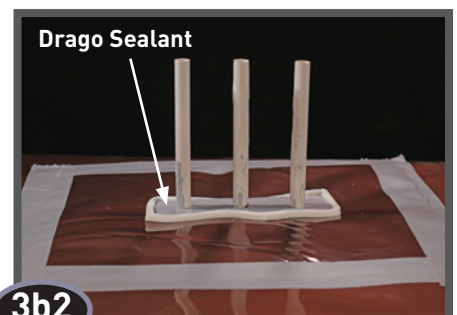
Note: apply using disposable glove, paint brush, or similar.

OR



3b

Install Drago Sealant Form continuously to Drago Wrap and around the entire perimeter of the group of penetrations and at least 1 inch beyond the terminating edge of Drago Wrap.



3b2

Pour Drago Sealant inside of Drago Sealant Form to create a seal around the penetrations.

Note: If the void space between Drago Wrap and the penetrations is not minimized and/or the base course allows for too much drainage of sealant, a second coat of Drago Sealant may need to be poured after the first application has cured.

Drago Sealant pot/working life is roughly 30-45 minutes.

Avoid Punctures with Beast® Concrete Accessories

To help eliminate the use of non-permanent penetrations in Drago Wrap installation, Stego recommends the use of Beast vapor barrier-safe concrete accessories.

IMPORTANT: Avoid puncturing Drago Wrap with stakes while forming, bracing, and screeding.

Preventing punctures in the vapor barrier.



BEAST® FORM STAKE can be used with **BEAST® FOOT** as part of the Stego vapor barrier-safe forming system which meets ASTM E1643 requirements.



This concrete form stake takes the place of traditional nail stakes for interior forming applications, utilizing SpeedTrack™ Fastening Grooves for unlimited fastener placement.

Note: Refer to Beast Form Stake Installation Guide for detailed usage instructions.



Beast Form Stake is strong enough to withstand a beating during concrete placement while holding its shape. It is easy to remove and reusable for the next job.

Note: Beast Form Stake can be removed once concrete has set sufficiently to hold its shape. Fill and repair any voids in the concrete as necessary once the Beast Form Stake has been removed and strike Beast Form Stake against a hard surface to loosen the concrete buildup.



Locate it and lock it down!

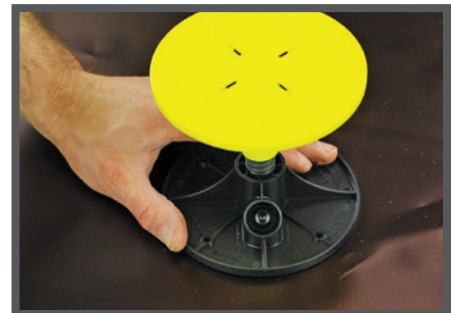
BEAST® HOOK is a faster, easier way to set 2x4 overhead screeds. Use Beast Foot and Beast Form Stake and make it a vapor barrier-safe screed system.

No tools are required, just grip the knob to loosen or tighten. Fast, easy, efficient.



BEAST® SCREED is a fixed-elevation, point-to-point guide screed system designed to replace common wet-screed methods.

Improve efficiency and maintain concrete floor levelness with the **BEAST SCREED SYSTEM!**



Set it and forget it. Beast Screed eliminates the need to frequently re-establish grade to ensure floor elevation has not changed during the screeding operation as is typical with traditional wet-screed methods.

Note: Refer to Beast Screed System Installation Instructions for detailed usage instructions.

NOTE: Stego Industries, LLC's ("Stego") installation instructions are based on ASTM E1643 - *Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs*. These instructions are meant to be used as a guide, and do not take into account specific job site situations. Consult local building codes and regulations along with the building owner or owner's representative before proceeding. If you have any questions regarding the above mentioned installation instructions or Stego products, please call us at 877-464-7834 for technical assistance. While Stego employees and representatives may provide technical assistance regarding the utility of a specific installation practice or Stego product, they are not authorized to make final design decisions.



When it comes to building construction, ***don't take the vapor intrusion barrier installation lightly.*** After all, it is there to protect the building's vital foundation from the threats lurking below the slab.

Stego's industry-leading barriers and unrivaled support equip you with the confidence to create resilient foundations for buildings where people work, learn, and gather.



We help keep you up to speed on the latest installation methods.

DISCUSS YOUR PROJECT NEEDS

Have questions? Give us a call.

877-464-7834

stegoindustries.com

