

TECHNICAL DATA SHEET

DESCRIPTION

The P27 Yeti-Anchor[®] is a high performance, non-conductive, non-corrosive continuous glass-fiber reinforced polymer anchor used as a wythe connector for concrete insulated sandwich panel construction.

The Yeti-Anchor is offered for 1.5" (YS) and 2" (YL) concrete embedment and insulation thicknesses of 2" - 4" (see size chart for more information). Additional insulation thicknesses can be offered upon request. The Yeti-Anchor was tested in accordance with ICC-ES AC320, Acceptance Criteria for Fiber-Reinforced Composite Anchors in Concrete. The Yeti also has a 4-hour ASTME-119 fire rating and passed the NFPA 285 fire testing.

APPLICATION

Yeti-Anchors are compatible with a variety of standard, code compliant insulation types. The Yeti-Anchor allows the installer to "self-drill" the anchor through the insulation. This means the user can drill a hole while simultaneously installing an anchor by using a standard ½" or 13mm deep well socket (see Installation instructions for further information). Anchors must be placed at a minimum of 4" and a maximum of 12" from any edge or opening.

PRODUCT SPECIFICATION

- Composite Flexural Modulus – 7,291,000 psi
- Composite Tensile Strength – 200,000 psi
- Bar Diameter – 0.31 in
- Cross-Sectional Area – 0.078 in²
- Moment of Inertia – 0.000483 in⁴
- Thermal Conductivity – 4.8 BTU in/hr ft² F°



FEATURES

- No thermal bridging between wythes
- Limits occurrence of interstitial condensation
- Provides a range of composite action levels
- Application software to aid with design and layout

BENEFITS

- Fast and Flexible installation
- Increased load bearing
- Stiffer panels for easier handling
- Material, labor, and transportation reduction
- Compatible with all code compliant rigid foam insulation

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		P27 Yeti-Anchor YS	P27 Yeti-Anchor YL
Wythe Thickness Compatibility		2 - 3"	3" and greater
Nominal Concrete Embedment Depth		1.5"	2"
Allowable Tension Load* (lbs.)	2,500 psi	306	461
	3,000 psi	351	595
	3,500 psi	396	730
	4,000 psi	442	864
	4,500 psi	463	866
	5,000 psi	485	869
	5,500 psi	506	871
	6,000 psi	527	873
Allowable Shear Load* (lbs.)		232	232
Insulation Hole Dia. (if not self-drilling)		5/16"	

* Allowable load provides an industry standard factor of safety of approximately 4 to 1.

Square-Foot Coverage per Anchor*				
		Insulation Thickness		
		2"	3"	4"
Exterior Wythe Thickness	2"	4 Sq. Ft. (PN: 100531)	4 Sq. Ft. (PN: 100532)	4 Sq. Ft. (PN: 100533)
	3"	4 Sq. Ft. (PN: 100534)	4 Sq. Ft. (PN: 100535)	4 Sq. Ft. (PN: 100536)
	4"	4 Sq. Ft. (PN: 100534)	4 Sq. Ft. (PN: 100535)	4 Sq. Ft. (PN: 100536)

* Spacing provided is the maximum allowed square-foot coverage per anchor for the given wall condition with the 4 to 1 factor of safety assuming an unsupported exterior wythe. It is acceptable to decrease the spacing to allow for easier installation. Spacing does not need to be broken down into perfect squares.
(i.e. 2 Sq. Ft. could be 1' x 2' or 17" x 17")

APPROVALS / COMPLIANCE

- ICC-ES AC320, Acceptance Criteria for Fiber-Reinforced Composite Anchors in Concrete.
- 4-hour ASTME-119 fire rating
- Passed the NFPA 285 fire testing

INSTALLATION

Self-drilling the anchors through the insulation is possible with a standard ½" or 13mm hex deep well socket with at least 2" of depth. Pushing the Yeti-Anchor directly through the insulation is NOT recommended as the bond between the anchor and lower concrete wythe may be compromised by large insulation fragments.

METHOD 1: SELF-DRILLING YETI-ANCHOR

1. Cut insulation boards to fit the panel then measure and mark anchor positions on the insulation boards. Reference the placement drawings for panel sizing and anchor spacing.

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2. Prepare the lower wythe concrete bed, then place, vibrate, and screed the concrete to its designed thickness. Flat sheet mesh and concrete design mix using a superplasticizer admixture are recommended. Installer must ensure that the concrete has not reached initial set prior to installing anchors to ensure concrete remains in its plastic state during anchor placement.

3. Place the insulation boards according to the placement drawings. Place boards tightly into position and against concrete forms. Placement must occur on top of just-cast concrete while still in its wet or plastic state.

4. Fix a 1/2" or 13mm hex deep well socket into any traditional drill or driver. Utilizing the hex feature on the plastic collar, securely fix the Yeti-Anchor into the deep well hex socket. Set the drill's rotational speed as low as possible (100 - 200 rpm). Position the tip of the Yeti-Anchor at the desired, pre-marked location on the insulation board, ensuring the anchor is perpendicular to the plane of the insulation board, and begin to drill. Only slight downward pressure is required, in most cases the weight of the drill alone is enough. Do NOT apply excessive downward force as this could cause excessive insulation blowout on the backside. Drill and apply slight downward pressure until the plastic collar is flush with the insulation.

- Insulation varies widely and will impact the effectiveness of the self-drill installation method. Contact Dayton Superior to discuss the appropriateness of the self-drill method with your selected insulation type.

- Excessive insulation fragments in the concrete around the notched anchor end can be caused by deformed insulation boards caused from de-lamination of lower film/membrane or large pieces of insulation punched out on the lower face of the insulation due to excessive downward force while drilling.

5. Walk on insulation near each row of anchors and apply foot pressure on each side of the anchor. This is to further ensure proper consolidation around the anchor. Mechanical vibration can also be used near each anchor or by use of bed vibration in pre-cast/pre-stressed plants. It is crucial that proper concrete consolidation efforts are taken and to ensure an effective installation. Poor consolidation around the embedded anchors can result in premature failure.

- A consolidation check should be performed by removing 5% (minimum of 5) of the installed anchors from the panel; choose anchors in corners and center of insulated sheets. Wet concrete slurry should be present on the embedded end. Replace the anchor in the same hole and reconsolidate. If concrete slurry is not present additional consolidation measures are required.

- Avoid disturbing the anchors and insulation after concrete has reached initial set.

6. Prior to placing the upper layer of concrete, all exposed joints, gaps, and spaces in the insulation greater than 1/8" should be injected with expanding foam.

7. Once the bottom wythe has reached its initial set, place the necessary reinforcing steel, lifting inserts, embeds, and concrete. Finish and cure the upper wythe per the project's specifications.

8. After proper concrete set, strip forms and remove excessive slag to minimize thermal bridging at panel edges. Remove the panel from form bed and repeat the process as necessary.

METHOD 2: PRE-DRILLED HOLES

It is also possible to install the Yeti-Anchors by use of insulation board that are either factory drilled or drilled on-site prior to placing on top of the lower concrete wythe. If this is the desired method, mark and drill a 5/16" hole in the appropriate anchor locations. Remove debris and insulation fragments from in and around the drilled holes. Once pre-drilled boards are placed over the wet concrete according to the placement drawings, immediately place the Yeti-Anchors through the pre-drilled holes in the insulation and into the wet concrete until the plastic collar is flush with the insulation. Then twist/rotate the anchor 90 degrees and wiggle the anchor to ensure concrete fully encloses the embedded end. Anchors MUST be placed while concrete is still in its plastic state prior to its initial set. Proceed with steps 5 through 8 of "**METHOD 1: SELF-DRILLING YETI-ANCHOR**" to complete the panel construction.

NOTE:

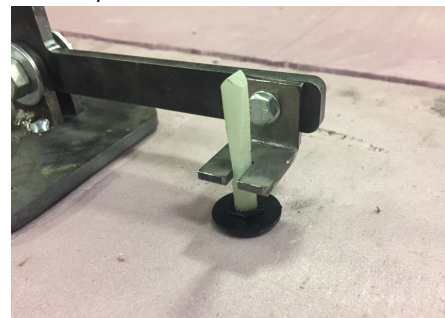
A post installation strength test must be performed prior to placement of the second layer of concrete. It is the installer's responsibility to ensure proper embedment and anchorage.

POST PLACEMENT INSPECTION OF YETI-ANCHORS

1. Once the concrete has reached 25% of its 28-day compressive strength, the in-field anchorage pull test can be conducted.

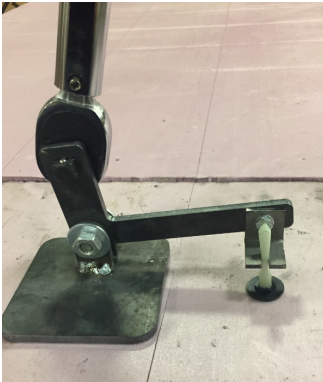
2. The Yeti Pull-Tester (Part Number 100576) is used in conjunction with a 1/2" drive torque wrench set to a maximum torque rating of 83 ft.-lbs. (112 N-m) to determine if appropriate anchorage was achieved during consolidation. This will apply a maximum tension load of 200 lbs. to the anchor.

3. Place the pull tested on the insulation surface next to the Yeti-Anchor to be tested and slide the Yeti-Anchor into the forked collar piece as show.



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4. Make sure the torque wrench is set to a maximum of 83 ft.-lbs. (112 N-m) and connect the torque wrench to the opposite end of the pull tester as shown.



5. Apply hand pressure to the handle of the torque wrench until the torque setting is reached and the torque wrench handle "breaks over".

6. Verify that the connector did not pull out from its anchored position. If the Yeti-Anchor displaced more than 0.125", it shall be deemed a failure. Make note of all failed connectors and follow the retrofit procedure (below) to replace with a new Yeti-Anchor.

RETROFIT AND REPAIR PROCEDURE

1. For any Yeti-Anchor that failed the anchorage pull test or was damaged during or after installing, a new Yeti-Anchor must be installed.

2. Near the location of the pin to be replaced, drill a 3/8" hole through the insulation and into the concrete either 1.75" deep for the (YS) Yeti-Anchor or 2.25" deep for the (YL) Yeti-Anchor.

3. Clean out the hole to rid it of insulation and concrete debris using compressed air.

4. Fill the hole with Pro-Poxy 100, 300 or 500 (per appropriate Pro-Poxy Technical Data Sheet and Safety Data Sheet instructions).

5. Insert a new Yeti-Anchor into the epoxy-filled hole, twisting with a screw-like motion as it is inserted to promote maximum epoxy coverage.

6. Allow epoxy to cure per the epoxy instructions.

IMPORTANT



Yeti-Anchors are very hard pointed and present a trip/fall hazard when fixed into a concrete surface with one end exposed. Take extreme care when walking over a panel with Yeti-Anchors protruding from the face of the insulation during panel manufacture.



Loose fiberglass fibers can cause mild to moderate skin and/or eye irritation. Wear appropriate Personal Protection Equipment (PPE) when handling.

It is the responsibility of the panel manufacturer to ensure concrete consolidation around the notched end of the Yeti-Anchor, per Method 1, Item 5.

It is the sole responsibility of the contractor or installer to install the Yeti-Anchor in accordance with these published installation procedures. Dayton Superior is not responsible for malfunctions resulting from a failure to follow these published installation procedures.

Dayton Superior makes no representations to the performance of any panel fabricated with the Yeti-Anchor. The concrete wall panel manufacturer is solely responsible for the performance of all building systems panels regardless of the installation procedure used.

Our recommendations should not be taken as inducements to infringe on any patent or violate any law, safety code or insurance regulation.

Concrete set times vary as a function of many factors, including (but not limited to): mix design, concrete temperatures, ambient temperature, and mix time. The installer MUST ensure that the concrete has not reached initial set before installing and consolidating around anchors.

HOW TO ORDER

■ Specify: (1) qty, (2) size [embedment (YS or YL) - insulation (thickness multiplied by 10)], (3), name

Example: 500, YS-20, P27 Yeti-Anchor
 (This would order 500 pins that have 1.5" concrete embedment and used with 2" insulation)

ORDERING INFORMATION

YETI-ANCHOR[®]

Product Code	Description	Weight
100531	YS - 20 YETI-ANCHOR [®] (1.5" EMBEDMENT / 2" INSULATION)	0.028 LB
100532	YS - 30 YETI-ANCHOR [®] (1.5" EMBEDMENT / 3" INSULATION)	0.034 LB
100533	YS - 40 YETI-ANCHOR [®] (1.5" EMBEDMENT / 4" INSULATION)	0.040 LB
100534	YL - 20 YETI-ANCHOR [®] (2" EMBEDMENT / 2" INSULATION)	0.033 LB
100535	YL - 30 YETI-ANCHOR [®] (2" EMBEDMENT / 3" INSULATION)	0.039 LB
100536	YL - 40 YETI-ANCHOR [®] (2" EMBEDMENT / 4" INSULATION)	0.045 LB

YETI-ANCHOR[®] - PULL TESTER

Product Code	Description	Weight
100576	YETI-ANCHOR [®] PULL TESTER	2.5 LB

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MANUFACTURER

Dayton Superior Corporation
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Customer Service: 888-977-9600
Technical Services: 877-266-7732
Website: www.daytonsuperior.com

WARRANTY (ACCESSORIES)

Limited Warranty. Dayton warrants, for a period of 60 days from the date of shipment (three years from the date of shipment in the case of formwork, excluding any consumable Products included with such formwork), that Products and any associated application drawings and engineering services provided by Dayton ("Ancillary Services") will be free from defects in material and workmanship and, in the case of custom designed formwork, that the formwork will meet the specifications set forth in the design drawings approved by Dayton and Customer. Any claim under this warranty must be made in writing within such warranty period. If any Product and/or Ancillary Service covered by a timely claim are found to be defective, Dayton will, within a reasonable time, make any necessary repairs or corrections or, at Dayton's option, replace the Product. Unless pre-authorized by Dayton in writing, Dayton will not accept any charges for correcting defects or accept the return of any Product. This warranty will not apply to any Products that have been subjected to misuse, neglect, storage damage, misapplication, accident or any other damage caused by any person other than Dayton, or that have not been maintained in accordance with Dayton's specifications. THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES AS TO THE PRODUCTS AND ANCILLARY SERVICES. DAYTON MAKES NO OTHER WARRANTIES OR GUARANTEES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE. THE REMEDIES SET FORTH IN THIS SECTION ARE CUSTOMER'S EXCLUSIVE REMEDY FOR BREACH OF WARRANTY.