GENERAL INFORMATION

ZAMAC NAILIN®

Nail Anchor

PRODUCT DESCRIPTION

The Zamac Nailin is a nail drive anchor which has a body formed from Zamac alloy. Drive nails are available in carbon or stainless steel. The anchor can be used in concrete, block, brick or stone.

A corrosion resistant Zamac alloy is used to form the anchor body with either a mushroom or flat head. The anchor can be used for light duty, tamperproof applications. The anchor is not recommend for overhead, life-safety or sustained tensile loading applications (see performance data section).

GENERAL APPLICATIONS AND USES

- Roof Flashing
- Mechanical Attachments
- Brick Ties and Masonry Anchorage
- Furring Strips
- Electrical Fixtures
- Maintenance

FEATURES AND BENEFITS

+ General purpose anchoring
+ Installs in a variety of base materials

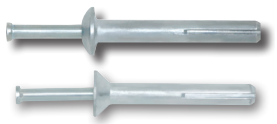
APPROVALS AND LISTINGS

- Federal GSA Specification Meets the proof load requirements of FF-S-325C, Group V, Type 2, Class 3, (superseded) and CID A-A 1925A, Type 1 (mushroom head) & Type 2 (flat head)

GUIDE SPECIFICATIONS

CSI Divisions: 03 16 00 - Concrete Anchors, 04 05 19.16 - Masonry Anchors, and 05 05 19 - Post-Installed Concrete Anchors. Anchors shall be Zamac Nailin anchors as supplied by DEWALT, Towson, MD.

SECTION CONTENTS



ZAMAC NAILIN

ANCHOR MATERIALS

Zamac Alloy body with Carbon or Stainless Steel Drive Nail

ANCHOR SIZE RANGE (TYP.)

- 3/16" diameter x 7/8" length to 1/4" diameter x 3" diameter

SUITABLE BASE MATERIALS

- Normal-Weight Concrete
- Concrete Masonry (CMU)
- Brick Masonry
- Stone

INSTALLATION AND MATERIAL SPECIFICATIONS

Installation Specifications

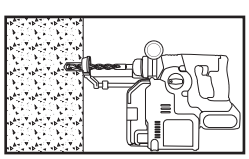
Dimension	Anchor Diameter, d		
	3/16" MH	1/4" MH	1/4" FH
ANSI Drill Bit Size (in.)	3/16	1/4"	1/4"
Fixture Clearance Hole (in.)	1/4	5/16	5/16
Head Height (in.)	7/64	9/64	3/16
Head Width (in.)	13/32	35/64	35/64
MH = Mushroom Head FH = Flat Head			

Material Specifications

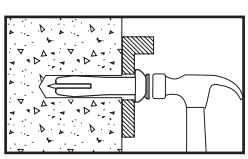
Anchor Component	Component Material		
	Mushroom Head CS Nail	Flat Head CS Nail	Mushroom Head SS Nail
Drive Nail	AISI 1018	AISI 1018	Type 304 SS
Anchor Body	Zamac Alloy	Zamac Alloy	Zamac Alloy
Nail Plating	ASTM B 633, SC1, Type III (Fe/Zn5)		N/A
CS = Carbon Steel SS = Stainless Steel			

Installation Guidelines

Using the proper diameter bit, drill a hole into the base material to a depth of at least 1/4" deeper than the required embedment. The tolerances of the drill bit used should meet the requirements of ANSI Standard B212.15. Remove dust and debris from the hole during drilling (e.g. dust extractor) or following drilling (e.g. suction, forced air) to extract loose particles created by drilling.



Insert the anchor through the fixture and into the drilled hole. Drive the nail into the anchor body to expand it. Be sure the head is seated firmly against the fixture and that the anchor is at the proper embedment. Take care not to overdrive the nail. This anchor is not recommended for installations at an angle or for use overhead.



PERFORMANCE DATA

Ultimate and Allowable Load Capacities for Zamac Nailin in Normal-Weight Concrete[1,2,3,4,5]

Nominal Anchor Diameter d in.	Min. Embed. Depth in. (mm)	Minimum Concrete Compressive Strength, f 'c											
		2,000 psi				4,000 psi				6,000 psi			
		Tension		Shear		Tension		Shear		Tension		Shear	
		Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)
3/16	3/4 (19)	285 (1.3)	70 (0.3)	415 (1.8)	105 (0.5)	400 (1.8)	100 (0.4)	560 (2.5)	140 (0.6)	480 (2.1)	120 (0.5)	560 (2.5)	140 (0.6)
1/4	5/8 (16)	410 (1.8)	105 (0.5)	440 (2.0)	110 (0.5)	580 (2.6)	145 (0.6)	655 (2.9)	165 (0.7)	580 (2.6)	145 (0.6)	655 (2.9)	165 (0.7)
	3/4 (19)	540 (2.4)	135 (0.6)	600 (2.7)	150 (0.7)	765 (3.4)	190 (0.8)	850 (3.8)	215 (1.0)	800 (3.6)	200 (0.9)	850 (3.8)	215 (1.0)
	1 (25)	620 (2.8)	155 (0.7)	640 (2.8)	160 (0.7)	875 (3.9)	220 (1.0)	890 (4.0)	225 (1.0)	895 (4.0)	225 (1.0)	890 (4.0)	225 (1.0)
	1-1/4 (32)	700 (3.1)	175 (0.8)	720 (3.2)	180 (0.8)	990 (4.4)	250 (1.1)	970 (4.3)	245 (1.1)	990 (4.4)	250 (1.1)	990 (4.4)	250 (1.1)

1. Tabulated load values are for anchors installed in concrete. Concrete compressive strength must be at the specified minimum at the time of installation.
2. Allowable load capacities listed are calculated using and applied safety factor of 4.0. Anchors are not recommended for use overhead or for life safety. Consideration of safety factors of 20 or higher may be necessary depending upon the application such as in sustained tensile loading applications.
3. Linear interpolation may be used to determine allowable loads for anchors at intermediate embedment depths and compressive strengths.
4. The tabulated load values are applicable to single anchors installed at critical edge and spacing distances. Allowable load capacities are multiplied by reduction factors when anchor spacing or edge distances are less than critical distances.
5. Anchors installed flush with face or end of concrete surface.

Ultimate and Allowable Load Capacities for Zamac Nailin in Hollow Concrete Masonry[1,2,3]

Nominal Anchor Diameter d in.	Minimum Embedment Depth in. (mm)	f´m ≥ 1,500 psi (10.4 MPa)			
		Ultimate Load		Allowable Load	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
3/16	3/4 (19.1)	270 (1.2)	560 (2.5)	55 (0.2)	110 (0.5)
1/4	5/8 (15.9)	360 (1.6)	655 (2.9)	70 (0.3)	130 (0.6)
	3/4 (19.1)	735 (3.3)	850 (3.8)	145 (0.7)	170 (0.8)
	1 (25.4)	835 (3.8)	890 (4.0)	165 (0.7)	180 (0.8)
	1-1/4 (31.7)	990 (4.4)	970 (4.3)	200 (0.9)	195 (0.9)

1. Tabulated load values are for anchors installed in minimum 6-inch wide, minimum Grade N, Type II, lightweight, medium-weight or normal-weight concrete masonry units conforming to ASTM C 90. Mortar must be minimum Type N. Masonry compressive strength must be at the specified minimum at the time of installation (f'm ≥ 1,500 psi). Hollow masonry cells may also be grouted or solid.
2. Allowable load capacities listed are calculated using and applied safety factor of 5.0. Anchors are not recommended for use overhead or for life safety. Consideration of safety factors of 20 or higher may be necessary depending upon the application such as in sustained tensile loading applications.
3. Anchors installed flush with face or end of masonry surface.

Ultimate and Allowable Load Capacities for Zamac Nailin in Solid or Hollow Clay Brick Masonry[1,2,3]

Nominal Anchor Diameter d in.	Minimum Embedment Depth in. (mm)	f´m ≥ 1,500 psi (10.4 MPa)			
		Ultimate Load		Allowable Load	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
3/16	3/4 (19.1)	460 (2.1)	550 (2.5)	90 (0.4)	110 (0.5)
1/4	5/8 (15.9)	570 (2.6)	750 (3.3)	115 (0.5)	150 (0.7)
	3/4 (19.1)	790 (3.6)	840 (3.7)	160 (0.7)	170 (0.8)
	1 (25.4)	820 (3.7)	840 (3.7)	165 (0.7)	170 (0.8)
	1-1/4 (31.7)	865 (3.9)	840 (3.7)	175 (0.8)	170 (0.8)

1. Tabulated load values are for anchors installed in multiple wythe, minimum Grade SW, solid clay brick masonry walls conforming to ASTM C 62. Mortar must be minimum Type N. Masonry compressive strength must be at the specified minimum at the time of installation (f'm ≥ 1,500 psi).
2. Allowable load capacities listed are calculated using and applied safety factor of 5.0. Anchors are not recommended for use overhead or for life safety. Consideration of safety factors of 20 or higher may be necessary depending upon the application such as in sustained tensile loading applications.
3. Anchors installed flush with face or end of masonry surface.

DESIGN CRITERIA

Combined Loading

For anchors loaded in both shear and tension, the combination of loads should be proportioned as follows:

$$\left(\frac{Nu}{Nn}\right) + \left(\frac{Vu}{Vn}\right) \leq 1$$

Where: N_u = Applied Service Tension Load, V_u = Applied Service Shear Load, N_n = Allowable Tension Load, V_n = Allowable Shear Load

Load Adjustment Factors for Spacing and Edge Distances in Normal-Weight Concrete[1]

Anchor Dimension	Load Type	Critical Distance (Full Anchor Capacity)	Critical Load Factor	Minimum Distance (Reduced Capacity)	Minimum Load Factor
Spacing (s)	Tension and Shear	s_{cr} = 10d	$F_{NS} = F_{VS} = 1.0$	s_{min} = 5d	$F_{NS} = F_{VS} = 0.50$
Edge Distnace (c)	Tension	c_{cr} = 12d	$F_{NC} = 1.0$	c_{min} = 6d	$F_{NC} = 0.80$
	Shear	c_{cr} = 12d	$F_{VC} = 1.0$	c_{min} = 6d	$F_{VC} = 0.50$

1. Allowable load values found in the performance data tables are multiplied by reduction factors when anchor spacing or edge distances are less than critical distances. Linear interpolation is allowed for intermediate anchor spacing and edge distances between critical and minimum distances. When an anchor is affected by both reduced spacing and edge distance, the spacing and edge reduction factors must be combined (multiplied). Multiple reduction factors for anchor spacing and edge distance may be required depending on the anchor group configuration.

ORDERING INFORMATION

Mushroom Head Zamac Nailin with Carbon Steel Nail

Catalog Number	Anchor Size	Drill Diameter	Standard Box	Standard Carton	Wt./ 100
2802	3/16" x 7/8"	3/16"	100	500	3/4
2806	1/4" x 3/4"	1/4"	100	500	1-1/2
2808	1/4" x 1"	1/4"	100	500	1-3/4
2814	1/4" x 1-1/4"	1/4"	100	500	2-1/4
2820	1/4" x 1-1/2"	1/4"	100	500	2-1/2
2826	1/4" x 2"	1/4"	100	500	3
2804	1/4" x 3"	1/4"	100	500	4

The published size includes the diameter and length of the anchor measured from under the shoulder of the anchor body.

Master Pack Mushroom Head Zamac Nailin with Carbon Steel Nail

Catalog Number	Anchor Size	Drill Diameter	Standard Box	Standard Carton	Wt./ 100
2803	3/16" x 7/8"	3/16"	–	1,000	3/4
2807	1/4" x 3/4"	1/4"	–	1,000	1-1/2
2809	1/4" x 1"	1/4"	–	1,000	1-3/4
2815	1/4" x 1-1/4"	1/4"	–	1,000	2-1/4
2821	1/4" x 1-1/2"	1/4"	–	1,000	2-1/2
2827	1/4" x 2"	1/4"	–	1,000	3
2805	1/4" x 3"	1/4"	–	1,000	4

The published size includes the diameter and length of the anchor measured from under the shoulder of the anchor body.

Flat Head Zamac Nailin with Carbon Steel Nailin

Catalog Number	Anchor Size	Drill Diameter	Standard Box	Standard Carton	Wt./ 100
2836	1/4" x 1-1/2"	1/4"	100	500	2-1/2
2838	1/4" x 2"	1/4"	100	500	3

The published size includes the diameter and length of the anchor measured from under the shoulder of the anchor body.

Mushroom Head Zamac Nailin with Stainless Steel Nailin

Catalog Number	Anchor Size	Drill Diameter	Standard Box	Standard Carton	Wt./ 100
2858	1/4" x 1"	1/4"	100	500	1-3/4
2864	1/4" x 1-1/4"	1/4"	100	500	2-1/4
2870	1/4' x 1-1/2"	1/4"	100	500	2-1/2
2876	1/4" x 2"	1/4"	100	500	3

The published size includes the diameter and length of the anchor measured from under the shoulder of the anchor body.