

MULTI-MATERIAL ENGINEERED FASTENERS



SPAX® Multi-Material Engineered Fasteners are the versatile fastening solution for a wide range of interior and exterior applications in multiple materials including wood, masonry, drywall, plastic and sheet metal.



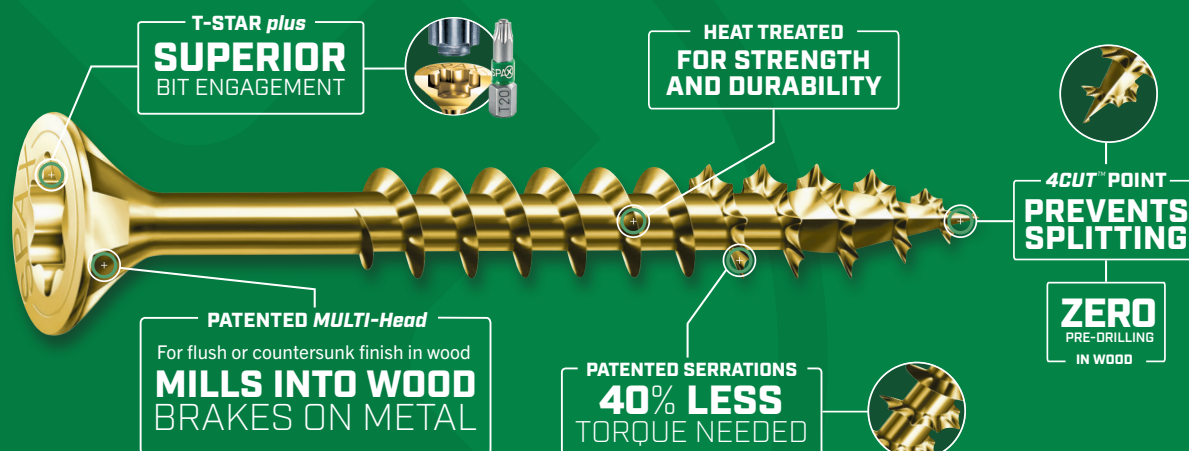
MULTI-MATERIAL SCREWS ENGINEERED FOR VERSATILITY

German engineered and American made, SPAX® Multi-Material Engineered Fasteners are professional grade and designed to make strong connections — the first time.

- Heat treated for strength and durability
- Patented thread serrations reduce driving torque to prolong power tool battery life
- Unique 4CUT™ Point prevents splitting and requires no pre-drilling in wood

MULTIPLE FASTENER STYLES

- Flat head for counter sinking “flush” applications
- Low-profile wafer head for applications requiring extra clamping force (ex. hanging cabinets plus door and window hardware/brackets)
- Pan head for attaching thin flat materials to wood or concrete (medium service duty)
- Zinc, yellow zinc, HCR®, HCR-X™ and 304 stainless steel for many interior and exterior applications
- Drive types: T-STAR *plus* “The PRO’s Choice”, and Unidrive (Phillips/Square drive combination)



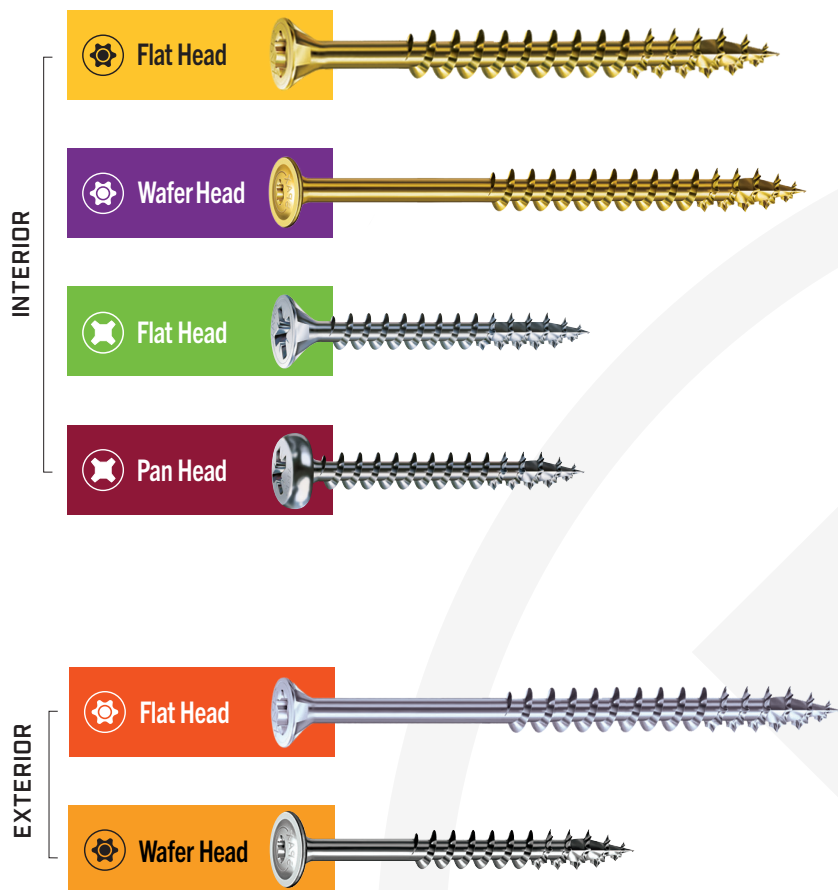
MULTI-MATERIAL ENGINEERED FASTENERS



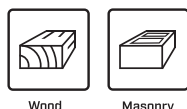
SPAX® – the common denominator that plays well with virtually every material and project type, offering the largest variety of diameters, lengths and head styles in the industry.



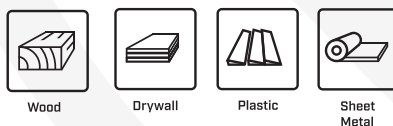
TER No. 2010-02
Construction Screw
Properties



Main Member / Base Material



Side Member / Attached Material





T-STAR *plus* Flat Head Yellow Zinc

Multi-Material Construction



MADE IN USA
WITH GLOBALLY
SOURCED MATERIALS

DESCRIPTION

SPAX® T-STAR *plus* Flat Head fasteners with yellow zinc coating are designed for use in multiple material connections often found inside residential buildings. These “work horse” construction fasteners are designed to countersink in wood for a clean-flush finish and provides a quick and easy installation. In addition, they provide long-lasting, “contractor proven” secure connections.

MATERIALS & COATING

Cold-rolled “carbon steel” wire, heat treated and plated with a yellow zinc finish to prevent red rust. “Yellow zinc” is tested and recognized for use in above ground contact pressure treated lumber for interior dry/damp general construction applications (e.g., AWPA UC1-UC2).



Patented **MULTI-Head**

Countersinks screw head flush with material.

U.S. Patent No. 7,334,976



Unique **4CUT™** Point

Prevents splitting and requires no pre-drilling in wood.



Patented **Serrations**

Allow for quicker, easier fastening.

U.S. Patent No. 7,101,133



T-STAR *plus* Drive

“The PRO’s Choice” drive system provides superior bit engagement, eliminates camming out and facilitates overhead driving.



TYPICAL INTERIOR APPLICATIONS

- 2-by framing connections
- Furring strips to concrete
- Cabinet frames
- Stair treads
- Subflooring attachments
- Hinge installation
- Indoor furniture
- Installing plumbing supports

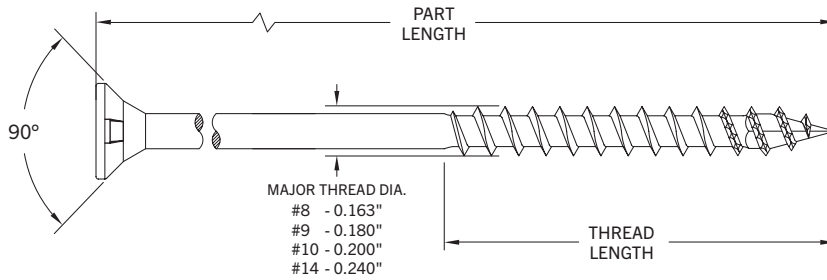


T-STAR *plus* Flat Head Yellow Zinc

Multi-Material Construction



INTERIOR



PRODUCT SELECTION

PART LENGTH	THREAD LENGTH FULL	THREAD LENGTH PARTIAL	HEAD SIZE	DRIVE/BIT SIZE	APPROX. QTY.	PKG. TYPE	MASTER QTY.	PART NO.
#8 x 1-1/4"	N/A	0.670"	0.320"	T20+	240	1 lb. Box	5	4191020400324
					675	3 lb. Box	3	41910204003245
					2500	Bulk Pail	N/A	3191020400320
#8 x 1-1/2"	N/A	0.870"	0.320"	T20+	197	1 lb. Box	5	4191020400404
					597	3 lb. Box	3	41910204004045
					2500	Bulk Pail	N/A	3191020400400
#8 x 2"	N/A	1.240"	0.320"	T20+	161	1 lb. Box	5	4191020400504
					465	3 lb. Box	3	41910204005045
					1500	Bulk Pail	N/A	3191020400500
#8 x 2-1/2"	N/A	1.340"	0.320"	T20+	133	1 lb. Box	5	4191020400604
					375	3 lb. Box	3	41910204006045
					1500	Bulk Pail	N/A	3191020400600
#9 x 2-1/2"	N/A	1.655"	0.340"	T20+	116	1 lb. Box	5	4191020450604
					1500	Bulk Pail	N/A	3191020450600
#9 x 3-1/4"	N/A	1.810"	0.340"	T20+	89	1 lb. Box	5	4191020450804
					1500	Bulk Pail	N/A	3191020450800
#10 x 1-1/2"	N/A	1.000"	0.390"	T20+	133	1 lb. Box	5	4191020500404
					2500	Bulk Pail	N/A	3191020500400
#10 x 2"	N/A	1.250"	0.390"	T20+	107	1 lb. Box	5	4191020500504
					1500	Bulk Pail	N/A	3191020500500
#10 x 2-1/2"	N/A	1.600"	0.390"	T20+	87	1 lb. Box	5	4191020500604
					230	3 lb. Box	3	41910205006045
					1500	Bulk Pail	N/A	3191020500600
#10 x 3"	N/A	1.600"	0.390"	T20+	16	Retail Pax**	10	4191020500752
					72	1 lb. Box	5	4191020500754
					200	3 lb. Box	3	41910205007545
					1500	Bulk Pail	N/A	3191020500750
#10 x 3-1/2"	N/A	2.375"	0.390"	T20+	57	1 lb. Box	5	4191020500904
					170	3 lb. Box	3	41910205009045
					1500	Bulk Pail	N/A	3191020500900

NOTE: Only sold in master cartons.

* Bit not included.



T-STAR *plus* Flat Head Yellow Zinc

Multi-Material Construction



1 and 3 lb. Boxes



Retail Pax®



Bulk Pail



T-STAR *plus* Bit

BIT SELECTION

DRIVE BIT	BIT SIZE	MASTER QTY.	PART NO.
T20+	1"	10	5000009185209
	2"	10	5000009285209

NOTE: Only sold in master cartons. Made in Taiwan.



FASTENER LENGTHS

PART LENGTH	HEAD	FASTENER	PART LENGTH	HEAD	FASTENER
#8 x 1-1/4"			#10 x 1-1/2"		
#8 x 1-1/2"			#10 x 2"		
#8 x 2"			#10 x 2-1/2"		
#8 x 2-1/2"			#10 x 3"		
#9 x 2-1/2"			#10 x 3-1/2"		
#9 x 3-1/4"					

MASONRY & CONCRETE PRE-DRILL SPECIFICATIONS

NOTE: In masonry/concrete, pre-drill a hole at least 1/4" to 1/2" longer than the length of the screw (refer to chart). No anchor required. In sheet metal, no pre-drilling is required up to 24 gauge.

SCREW DIAMETER	DRILL BIT	WEIGHT
#8/9	1/8"	Light
#10	5/32"	Medium



T-STAR *plus* Flat Head Yellow Zinc

Multi-Material Construction



INTERIOR

PERFORMANCE SPECIFICATIONS



TER No. 2010-02
Construction Screw Properties

DIAMETER	ALLOWABLE WITHDRAWAL (W) AND HEAD PULL-THROUGH (W_H) ^{1,2,3,4}					
	SOUTHERN PINE (SG=0.55)		DOUGLAS-FIR (SG=0.50)		HEM FIR & SPRUCE-PINE-FIR (SG=0.42)	
	WITHDRAWAL	HEAD PULL-THROUGH	WITHDRAWAL	HEAD PULL-THROUGH	WITHDRAWAL	HEAD PULL-THROUGH
	W (lbs./inch)	W_H (lbs.)	W (lbs./inch)	W_H (lbs.)	W (lbs./inch)	W_H (lbs.)
#8	175	157	133	157	127	123
#9	190	303	146	211	132	177
#10	190	315	176	238	144	177

DIAMETER	ALLOWABLE WITHDRAWAL (W) AND HEAD PULL-THROUGH (W_H) ^{1,2}											
	PLYWOOD 15/32" (0.39)		PLYWOOD 19/32" (0.39)		PLYWOOD 23/32" (0.50)		OSB 15/32" (0.50)		OSB 19/32" (0.50)		OSB 23/32" (0.50)	
	WITHDRAWAL	HEAD PULL-THROUGH	WITHDRAWAL	HEAD PULL-THROUGH	WITHDRAWAL	HEAD PULL-THROUGH	WITHDRAWAL	HEAD PULL-THROUGH	WITHDRAWAL	HEAD PULL-THROUGH	WITHDRAWAL	HEAD PULL-THROUGH
	W (lbs./inch)	W_H (lbs.)	W (lbs./inch)	W_H (lbs.)	W (lbs./inch)	W_H (lbs.)	W (lbs./inch)	W_H (lbs.)	W (lbs./inch)	W_H (lbs.)	W (lbs./inch)	W_H (lbs.)
#8	51	120	83	120	162	212	36	68	48	78	52	110
#9	51	125	92	145	186	258	54	68	54	78	66	110
#10	90	151	92	177	186	293	54	78	54	78	66	110

¹ Tabulated withdrawal and head pull-through design values (W) and (W_H) are shown at a $C_D = 1.0$. Tabulated withdrawal and head pull-through values shall be adjusted by all applicable adjustment factors per *NDS Table 11.3.1*.

² Full withdrawal strength is calculated by multiplying the length of thread embedded in the main member by the tabulated reference withdrawal values.

³ Head pull-through values for #8 diameter and larger in Southern Pine, Douglas-Fir, Hem-Fir and Spruce-Pine-Fir are minimum 1.5" side member thickness.

⁴ For wood species with an assigned specific gravity between 0.42 and 0.50, use the tabulated values for specific gravity of 0.42. For wood species with an assigned specific gravity between 0.50 and 0.55, use the tabulated values for specific gravity of 0.50. For wood species with an assigned specific gravity greater than or equal to 0.55, use the tabulated values for specific gravity of 0.55.

DIAMETER	BENDING YIELD STRENGTH ¹ , f_{yb} (psi)	ALLOWABLE STEEL STRENGTH (lbs)	
		TENSILE	SHEAR ²
#8	187,000	460	345
#9	201,000	540	435
#10	187,000	690	545

¹ Bending yield strength, f_{yb} , is determined in accordance with *ASTM F1575* using minor thread diameter when fastener is tested in thread section.

² Shear strength is determined in accordance with *AISI S904* using minor thread diameter when fastener is tested in threaded section.



T-STAR *plus* Flat Head Yellow Zinc

Multi-Material Construction



INTERIOR

DIAMETER	REFERENCE LATERAL SHEAR VALUE ^{4,5,6} , Z (lbf)				
	MINIMUM MAIN MEMBER PENETRATION ¹ (in)	MINIMUM SIDE MEMBER THICKNESS (in)	WOOD SPECIES (SPECIFIC GRAVITY ^{2,3})		
			SP (0.55)	DF-L (0.50)	SPF/HF (0.42)
#8 x 1-1/2"	3/4"	3/4"	70	59	43
#8 x 1-3/4"	1"	3/4"	80	69	50
#8 x 2"	1-1/4"	3/4"	80	70	55
#8 x 2-1/2"	1"	1-1/2"	84	75	58
#9 x 2-1/2"	1"	1-1/2"	105	92	73
#9 x 3-1/4"	1-3/4"	1-1/2"	116	106	90
#10 x 1-1/2"	3/4"	3/4"	86	72	53
#10 x 2"	1-1/4"	3/4"	112	99	73
#10 x 2-1/2"	1"	1-1/2"	115	101	81
#10 x 3"	1-1/2"	1-1/2"	132	121	103
#10 x 3-1/2"	1-1/2"	1-1/2"	132	121	103

SI: 1 in = 25.4 mm, 1 lbf = 4.45 N

¹ Penetration depth includes the length of tapered tip.

² The species applies to both the main and the side members. Where the Members are different specific gravities, use the lower of the two.

³ For wood species with an assigned specific gravity between 0.42 and 0.50, use the tabulated values for specific gravity of 0.42. For wood species with an assigned specific gravity between 0.50 and 0.55, use the tabulated values for specific gravity of 0.50. For wood species with an assigned specific gravity greater than or equal to 0.55, use the tabulated values for specific gravity of 0.55.

⁴ The fastener orientation shall be perpendicular to the grain, and the underside of the fastener head shall be installed flush with the surface of the side member.

⁵ Lateral design values apply to both perpendicular grain (Z_{\perp}) and parallel to grain (Z_{\parallel}) orientations.

⁶ Tabulated lateral design values shall be adjusted by all applicable adjustment factors per NDS 11.3.1.

DIAMETER	REFERENCE LATERAL SHEAR VALUE, Z (lbf)			
	MINIMUM MAIN MEMBER PENETRATION ¹ (in)	MINIMUM SIDE MEMBER THICKNESS (in)	REFERENCE LATERAL SHEAR VALUE ^{1,3,4} , Z (lbf)	
			OSB ⁵ (0.50)	PLYWOOD ⁵ (0.39)
#8 x 1-1/4"	13/16"	7/16"	40	-
#8 x 1-1/4"	25/32"	15/32"	40	33
#8 x 1-1/4"	21/32"	19/32"	42	32
#8 x 1-1/2"	1-1/16"	7/16"	51	-
#8 x 1-1/2"	1-1/32"	15/32"	50	44
#8 x 1-1/2"	29/32"	19/32"	49	41
#8 x 1-1/2"	25/32"	23/32"	51	39
#8 x 1-3/4"	1-5/16"	7/16"	53	-
#8 x 1-3/4"	1-9/32"	15/32"	54	46
#8 x 1-3/4"	1-5/32"	19/32"	59	48
#8 x 1-3/4"	1-1/32"	23/32"	58	48
#8 x 2"	1-9/16"	7/16"	53	-
#8 x 2"	1-17/32"	15/32"	54	46
#8 x 2"	1-13/32"	19/32"	59	48
#8 x 2"	1-9/32"	23/32"	64	51
#8 x 2-1/2"	1-9/16"	7/16"	53	-
#8 x 2-1/2"	1-17/32"	15/32"	54	46
#8 x 2-1/2"	1-13/32"	19/32"	59	48
#8 x 2-1/2"	1-9/32"	23/32"	64	51
#9 x 2-1/2"	2-1/16"	7/16"	71	-



T-STAR *plus* Flat Head Yellow Zinc

Multi-Material Construction



INTERIOR

DIAMETER	REFERENCE LATERAL SHEAR VALUE, Z (lbf)			
	MINIMUM MAIN MEMBER PENETRATION ¹ (in)	MINIMUM SIDE MEMBER THICKNESS (in)	REFERENCE LATERAL SHEAR VALUE ^{1,3,4} , Z (lbf)	
			OSB ⁵ (0.50)	PLYWOOD ⁵ (0.39)
#9 x 2-1/2"	2-1/32"	15/32"	71	62
#9 x 2-1/2"	1-29/32"	19/32"	76	63
#9 x 2-1/2"	1-25/32"	23/32"	81	66
#10 x 1-1/4"	13/16"	7/16"	48	-
#10 x 1-1/4"	25/32"	15/32"	48	40
#10 x 1-1/2"	1-1/16"	7/16"	61	-
#10 x 1-1/2"	1-1/32"	15/32"	60	53
#10 x 1-1/2"	29/32"	19/32"	60	49
#10 x 1-1/2"	25/32"	23/32"	63	48
#10 x 2"	1-9/16"	7/16"	80	-
#10 x 2"	1-17/32"	15/32"	81	70
#10 x 2"	1-13/32"	19/32"	85	72
#10 x 2"	1-9/32"	23/32"	83	71
#10 x 2-1/2"	2-1/16"	7/16"	80	-
#10 x 2-1/2"	1-17/32"	15/32"	81	70
#10 x 2-1/2"	1-29/32"	19/32"	85	72
#10 x 2-1/2"	1-25/32"	23/32"	90	74

SI: 1 in = 25.4 mm, 1 lbf = 4.45 N

¹ Reference lateral design values apply to two-member single shear connections where the side member is OSB or plywood, the main member is SPF (SG = 0.42), and the fastener is installed in the face of the member and oriented perpendicular to the grain. The underside of the fastener head shall be installed flush with the surface of the side member.

² Penetration depth includes the length of the tapered tip.

³ Lateral design values apply to both perpendicular to grain (Z_{\perp}) and parallel to grain (Z_{\parallel}) orientations.

⁴ Tabulated lateral design values shall be adjusted by all applicable adjustment factors per *NDS Table 11.3.1*.

⁵ OSB shall comply with *DOC PS 2* and have a minimum specific gravity of 0.50. Plywood shall comply with *DOC PS 1* and have a minimum specific gravity of 0.39.