TECHNICAL DATA SHEET:

THREADED ROD

PLAIN, ZINC, GALVANIZED & STAINLESS STEEL

PLAIN | ZINC PLATED | HOT DIP GALVANIZED | 304 STAINLESS STEEL | 316 STAINLESS STEEL

Threaded rods can be used in both anchoring and suspension applications. When used for suspension, they are threaded into an anchor in the ceiling and used to hang pipe, strut, HVAC ducts. Anchor rods are embedded in concrete to support structural steel and can be used with epoxy in existing concrete applications. Threaded rod is often used along with a nut and/or square plate washer when embedded in concrete to achieve required pull-out values.

KEY BENEFITS

PLAIN

- Manufactured from low carbon steel
- Metallic gray in appearance and in the 'as manufactured' state
- A light residual coating of oil may remain

ZINC PLATED

- Manufactured from low carbon steel

HOT DIP GALVANIZED

- Hot dip galvanizing is a thick zinc coating offering more corrosion protection
- Preferable for applications where exposed to the elements
- Use with over-tapped galvanized nuts

304 STAINLESS STEEL

- Stainless steel is naturally corrosion and rust resistant making it the standard for outdoor applications

316 STAINLESS STEEL

- 316 Stainless Steel has molybdenum added which is an alloy drastically enhancing corrosion resistance, especially for more saline or chloride exposed environments. Often used in marine applications

SPECIFICATIONS - ZINC PLATED

The ASTM A307 specification covers carbon steel bolts and studs ranging from 1/4" through 4" diameter. This is your everyday, run of the mill bolt specification often manufactured using A36 round bar. There are three grades: A, B, and C*, which denote tensile strength, configuration, and application. Refer to the Mechanical Properties Chart for the subtle strength differences within each grade.

GRADES

Grade A	Headed bolts, threaded rods and bent bolts intended for general applications.
Grade B	Heavy hex bolts and studs intended for flanged joints in piping systems with cast iron flanges.
Grade C*	Nonheaded anchor bolts, either bent or straight, intended for structural anchorage purposes. The end of the grade C anchor bolt intended to project from the concrete will be painted green for identification purposes. Permanent marking is a supplemental requirement. *As of August 2007, Grade C has been replaced by specification F1554 Grade 36. We will continue supplying grade C, if required for the project.

ZINC PLATED THREADED ROD

MECHANICAL PROPERTIES

Grade	Tensile, ksi	Yield, min, ksi	Elong %, min
A	60 min	-	18
B	60 - 100	-	18
C*	58 - 80	36	23

CHEMICAL PROPERTIES

Element	Grade A	Grade B
Carbon, Max	0.29%	0.29%
Manganese, Max	1.20%	1.20%
Phosphorus, Max	0.04%	0.04%
Sulfur, Max	0.15%	0.15%

PERFORMANCE DATA

Size	WGT / FT (lbs)	Max Rec Load (lbs)	
		600°F	750°F
1/4 - 20	0.12	240	210
3/8 - 16	0.29	610	540
1/2 - 13	**0.54**	**1130**	**1010**
5/8 - 11	**0.83**	**1810**	**1610**
3/4 - 10	**1.25**	**2710**	**2420**
7/8 - 9	**1.70**	**3770**	**3360**
1 - 8	**2.23**	**4960**	**4420**
1-1/8 - 7	**2.81**	**6230**	**5560**
1-1/4 - 7	**3.54**	**8000**	**7140**
1-1/2 - 6	5.12	11630	10370

TYPE 304 STAINLESS STEEL THREADED ROD

DIMENSIONAL DATA

Size	Characteristic	Nominal Length (cm)	Major Diameter (cm)	Functional Diameter (Go/Nogo)	Visual Appearance
	Specification	IFI 136-2002			ASTM F788-08
	Test Method				
1/4-20 x 6ft	Requirements	182.73 - 184.08	6.12 - 6.32	5.41 - 5.49	
	Results	183.90 - 184.00	6.12 - 6.13	PASSED	PASSED
	Test Qty	16	16	16	100
	Pass	16	16	16	100
3/8-16 x 6ft	Requirements	182.58 - 184.08	9.26 - 9.49	8.35 - 8.46	
	Results	183.10 - 183.20	9.35 - 9.39	PASSED	PASSED
	Test Qty	16	16	16	100
	Pass	16	16	16	100
1/2-13 x 6ft	Requirements	182.58 - 184.08	12.39 - 12.66	11.27	
	Results	183.90 - 184.00	12.69 - 12.40	PASSED	PASSED
	Test Qty	8	8	8	100
	Pass	8	8	8	100
5/8-11 x 6ft	Requirements	182.58 - 184.08	15.53 - 15.83	14.20 - 14.33	
	Results	183.90 - 184.00	15.53 - 15.54	PASSED	PASSED
	Test Qty	8	8	8	100
	Pass	8	8	8	100
3/4-10 x 6ft	Requirements	182.58 - 184.08	18.68 - 19.00	17.21 - 17.35	
	Results	183.90 - 184.00	18.68 - 18.69	PASSED	PASSED
	Test Qty	8	8	8	100
	Pass	8	8	8	100

CHEMICAL COMPOSITION %

Size	Heat No.	Carbon (c)	Silicone (Si)	Manganese (Mn)	Phosphorus (P)	Sulfer (S)	Nickel (Ni)	Chromium (Cr)	Molybdenum (Mo)	Copper (Cu)	Nitrogen (N)
		x 100	x 100	x 100	x 1000	x 1000	x 100	x 100	x 100	x 100	ppm
1/4-20 x 6ft	3Y445	4.5	38.0	189.0	28.0	1.7	804.0	1821.0	11.0	78.0	-
3/8-16 x 6ft	3Z987	3.9	33.0	189.0	27.0	4.4	804.0	1838.0	13.0	75.0	-
1/2-13 x 6ft	3Y726	3.8	42.0	181.0	29.0	7.3	802.0	1807.0	11.0	74.0	-
5/8-11 x 6ft	3Z635	3.8	43.0	187.0	26.0	3.3	802.0	1800.0	12.0	76.0	-
3/4-10 x 6ft	4A102	4.1	34.0	191.0	28.0	7.0	804.0	1841.0	13.0	76.0	-

TYPE 304 STAINLESS STEEL THREADED ROD CONTINUED

MECHANICAL PROPERTIES

Size	Characteristic	Core Hardness (HRBW)	Tensile Strength (ksi)	Yield Strength (ksi)	Elongation (%)	Elongation (%
	Specification	ASTM A193-11a Class 1 B8				
	Test Method	ASTM F606-11a				
1/4-20 x 6ft	Requirements	96 MAX	75 MIN	30 MIN	30 MIN	50 MIN
	Results	95 - 96	116.8 - 122.5	85.0 - 85.7	30.5 - 33.6	50.3 - 53.2
	Test Qty	8	3	3	3	3
	Pass	8	3	3	3	3
3/8-16 x 6ft	Requirements	96 MAX	75 MIN	30 MIN	30 MIN	50 MIN
	Results	95 - 96	114.6 - 116.7	80.8 - 81.7	30.2 - 33.5	50.4 - 53.7
	Test Qty	8	3	3	3	3
	Pass	8	3	3	3	3
1/2-13 x 6ft	Requirements	96 MAX	75 MIN	30 MIN	30 MIN	50 MIN
	Results	95 - 96	110.2 - 111.2	77.2 - 77.9	30.5 - 33.7	50.3 - 53.2
	Test Qty	8	2	2	2	2
	Pass	8	2	2	2	2
5/8-11 x 6ft	Requirements	96 MAX	75 MIN	30 MIN	30 MIN	50 MIN
	Results	95 - 96	108.7 - 112.8	78.3 - 79.0	30.2 - 33.3	50.4 - 53.7
	Test Qty	8	2	2	2	2
	Pass	8	2	2	2	2
3/4-10 x 6ft	Requirements	96 MAX	75 MIN	30 MIN	30 MIN	50 MIN
	Results	95 - 96	105.8 - 106.5	73.9 - 74.6	30.3 - 33.5	50.3 - 53.6
	Test Qty	8	2	2	2	2
	Pass	8	2	2	2	2

TYPE 316 STAINLESS STEEL THREADED ROD

DIMENSIONAL INSPECTIONS

Size	Characteristic	Requirements	Results	S/S	Pass	Rej	Specification*1	Test Method [Device*2] (Sample Plan*3)
1/4-20 x 6ft	Nominal Length (in.)	71.9400 - 72.4800	72.2835 - 72.3228	9	9	0	IFI 136-2002	[MTP] (18)
	Major Diameter (in.)	0.2408 - 0.2489	0.24606 - 0.24724	9	9	0	ASME B1.1-2003	[MCR] (18)
	Functional Dia.	UNC 2A	PASSED	9	9	0	ASME B1.1-2003	[TRG] (18)
	Visual Appearance		PASSED	11	11	0	ASTM F788-13	(18)
3/8-16 x 6ft	Nominal Length (in.)	71.8800 - 72.4800	72.2441 - 72.2835	6	6	0	IFI 136-2002	[MTP] (18)
	Major Diameter (in.)	0.3643 - 0.3737	0.36811 - 0.36929	6	6	0	ASME B1.1-2003	[MCR] (18)
	Functional Dia.	UNC 2A	PASSED	6	6	0	ASME B1.1-2003	[TRG] (18)
	Visual Appearance		PASSED	7	7	0	ASTM F788-13	(18)
1/2-13 x 6ft	Nominal Length (in.)	71.8800 - 72.4800	72.2441 - 72.2835	5	5	0	IFI 136-2002	[MTP] (18)
	Major Diameter (in.)	0.4876 - 0.4985	0.49409 - 0.49528	5	5	0	ASME B1.1-2003	[MCR] (18)
	Functional Dia.	UNC 2A	PASSED	5	5	0	ASME B1.1-2003	[TRG] (18)
	Visual Appearance		PASSED	6	6	0	ASTM F788-13	(18)
5/8-11 x 6ft	Nominal Length (in.)	71.8800 - 72.4800	72.2835 - 72.3228	4	4	0	IFI 136-2002	[MTP] (18)
	Major Diameter (in.)	0.6112 - 0.6233	0.61417 - 0.61614	4	4	0	ASME B1.1-2003	[MCR] (18)
	Functional Dia.	UNC 2A	PASSED	4	4	0	ASME B1.1-2003	[TRG] (18)
	Visual Appearance		PASSED	5	5	0	ASTM F788-13	(18)
3/4-10 x 6ft	Nominal Length (in.)	71.8800 - 72.4800	72.2441 - 72.2835	4	4	0	IFI 136-2002	[MTP] (18)
	Major Diameter (in.)	0.7353 - 0.7482	0.74213 - 0.74409	4	4	0	ASME B1.1-2003	[MCR] (18)
	Functional Dia.	UNC 2A	PASSED	4	4	0	ASME B1.1-2003	[TRG] (18)
	Visual Appearance		PASSED	5	5	0	ASTM F788-13	(18)

Notes:

*1: Additional explanation: N/A.

*2: Device: [Mcr] Micrometer; [Mtm] Material Testing Machine; [Mtp] Measuring Tape; [Rht] Rockwell Hardness Tester; [Trg] Thread Ring Gauge.

*3: Sample Plan: (14) ASTM F1470-2012 MECHANICAL TEST (18) ASME B18.18-2017 CATEGORY 2.

TYPE 316 STAINLESS STEEL THREADED ROD CONTINUED

MECHANICAL PROPERTIES

Size	Characteristic	Requirements	Results	S/S	Pass	Rej	Test Method [Device*2] (Sample Plan*3)
1/4-20 x 6ft	Core Hardness*4 (HRBW)	MAX 96	95 - 96	9	9	0	ASTM F606/F606M-16 [RHT] (14)
	Tensile Strength (KSI)	MIN 75.0	118.9 - 125.1	3	3	0	ASTM F606/F606M-16 [MTM] (14)
	Yield Strength (0.2% offset) (KSI)	MIN 30.0	86.8 - 87.5	3	3	0	ASTM F606/F606M-16 [MTM] (14)
	Elongation (%)	MIN 30.0	30.6 - 33.5	3	3	0	ASTM F606/F606M-16 (14)
	Reduction of Area (%)	MIN 50.0	50.2 - 53.8	3	3	0	ASTM F606/F606M-16 (14)
3/8-16 x 6ft	Core Hardness*4 (HRBW)	MAX 96	95 - 96	6	6	0	ASTM F606/F606M-16 [RHT] (14)
	Tensile Strength (KSI)	MIN 75.0	113.4 - 116.8	2	2	0	ASTM F606/F606M-16 [MTM] (14)
	Yield Strength (0.2% offset) (KSI)	MIN 30.0	80.8 - 81.7	2	2	0	ASTM F606/F606M-16 [MTM] (14)
	Elongation (%)	MIN 30.0	30.1 - 33.4	2	2	0	ASTM F606/F606M-16 (14)
	Reduction of Area (%)	MIN 50.0	50.2 - 53.6	2	2	0	ASTM F606/F606M-16 (14)
1/2-13 x 6ft	Core Hardness (HRBW)	MAX 96	95 - 96	5	5	0	ASTM F606/F606M-16 [RHT] (14)
	Tensile Strength (KSI)	MIN 75.0	110.5 - 111.9	2	2	0	ASTM F606/F606M-16 [MTM] (14)
	Yield Strength (0.2% offset) (KSI)	MIN 30.0	77.7 - 78.3	2	2	0	ASTM F606/F606M-16 [MTM] (14)
	Elongation (%)	MIN 30.0	30.4 - 33.5	2	2	0	ASTM F606/F606M-16 (14)
	Reduction of Area (%)	MIN 50.0	50.4 - 53.2	2	2	0	ASTM F606/F606M-16 (14)
5/8-11 x 6ft	Core Hardness (HRBW)	MAX 96	95 - 96	4	4	0	ASTM F606/F606M-16 [RHT] (14)
	Tensile Strength (KSI)	MIN 75.0	108.7 - 113.0	1	1	0	ASTM F606/F606M-16 [MTM] (14)
	Yield Strength (0.2% offset) (KSI)	MIN 30.0	78.4 - 79.1	1	1	0	ASTM F606/F606M-16 [MTM] (14)
	Elongation (%)	MIN 30.0	78.4 - 79.1	1	1	0	ASTM F606/F606M-16 (14)
	Reduction of Area (%)	MIN 50.0	50.2 - 53.6	1	1	0	ASTM F606/F606M-16 (14)
3/4-10 x 6ft	Core Hardness (HRBW)	MAX 96	95 - 96	4	4	0	ASTM F606/F606M-16 [RHT] (14)
	Tensile Strength (KSI)	MIN 75.0	105.8 - 106.7	1	1	0	ASTM F606/F606M-16 [MTM] (14)
	Yield Strength (0.2% offset) (KSI)	MIN 30.0	74.0 - 74.7	1	1	0	ASTM F606/F606M-16 [MTM] (14)
	Elongation (%)	MIN 30.0	30.1 - 33.4	1	1	0	ASTM F606/F606M-16 (14)
	Reduction of Area (%)	MIN 50.0	50.2 - 53.6	1	1	0	ASTM F606/F606M-16 (14)

Notes:

*1: Additional explanation: N/A.

*2: Device: [Mcr] Micrometer; [Mtm] Material Testing Machine; [Mtp] Measuring Tape; [Rht] Rockwell Hardness Tester; [Trg] Thread Ring Gauge.

*3: Sample Plan: (14) ASTM F1470-2012 MECHANICAL TEST (18) ASME B18.18-2017 CATEGORY 2.

TYPE 316 STAINLESS STEEL THREADED ROD CONTINUED

CHEMICAL COMPOSITION

Size	Heat No.	Material Source	Carbon (c)	Silicone (Si)	Manganese (Mn)	Phosphorus (P)	Sulfer (S)	Nickel (Ni)	Chromium (Cr)	Molybdenum (Mo)	Copper (Cu)	Nitrogen (N)
			x 100	x 100	x 100	x 1000	x 1000	x 100	x 100	x 100	x 100	X10000
1/4-20 x 6ft	5C434	Taiwan	4.3	32	117	30	5.4	1004	1626	205	25	305
3/8-16 x 6ft	4Z345	Taiwan	3.6	31	124	29	4.1	1002	1639	204	25	278
1/2-13 x 6ft	5B300	Taiwan	4.0	32	121	25	3.9	1004	1628	204	24	359
5/8-11 x 6ft	5C470	Taiwan	4.8	38	121	24	6.0	1004	1614	202	24	359
3/4-10 x 6ft	5F921	Taiwan	3.9	28	123	29	1.8	1000	1631	202	28	261

ORDERING INFORMATION

PLAIN

PART #	SIZE	QUANTITY / TUBE	QUANTITY / PALLET
2TRU38166	3/8-16 x 6ft	25 / TUBE	1250 / PALLET
2TRU12136	1/2-13 x 6ft	12 / TUBE	600 / PALLET
2TRU58116	5/8-11 x 6ft	8 / TUBE	400 / PALLET
2TRU34106	3/4-10 x 6ft	5 / TUBE	250 / PALLET
2TRU01086	1-8 x 6ft	2 / TUBE	100 / PALLET

ZINC PLATED

PART #	SIZE	QUANTITY / TUBE	QUANTITY / PALLET
2TRZ14206	1/4-20 x 6ft	50 / TUBE	2500 / PALLET
2TRZ56186	5/16-18 x 6ft	35 / TUBE	1750 / PALLET
2TRZ38166	3/8-16 x 6ft	25 / TUBE	1250 / PALLET
2TRZ381610	3/8-16 x 10ft	25 / TUBE	625 / PALLET
2TRZ12136	1/2-13 x 6ft	12 / TUBE	600 / PALLET
2TRZ58116	5/8-11 x 6ft	8 / TUBE	400 / PALLET
2TRZ34106	3/4-10 x 6ft	5 / TUBE	250 / PALLET
2TRZ78096	7/8-9 x 6ft	4 / TUBE	200 / PALLET
2TRZ01086	1-8 x 6ft	2 / TUBE	100 / PALLET

304 STAINLESS STEEL

PART #	SIZE	QUANTITY / TUBE	QUANTITY / PALLET
2TRS214206	1/4-20 x 6ft	50 / TUBE	2500 / PALLET
2TRS238166	3/8-16 x 6ft	25 / TUBE	1250 / PALLET
2TRS212136	1/2-13 x 6ft	12 / TUBE	600 / PALLET
2TRS258116	5/8-11 x 6ft	8 / TUBE	400 / PALLET
2TRS234106	3/4-10 x 6ft	5 / TUBE	250 / PALLET

316 STAINLESS STEEL

PART #	SIZE	QUANTITY / TUBE	QUANTITY / PALLET
2TRS414206	1/4-20 x 6ft	50 / TUBE	2500 / PALLET
2TRS438166	3/8-16 x 6ft	25 / TUBE	1250 / PALLET
2TRS412136	1/2-13 x 6ft	12 / TUBE	600 / PALLET
2TRS458116	5/8-11 x 6ft	8 / TUBE	400 / PALLET
2TRS434106	3/4-10 x 6ft	5 / TUBE	250 / PALLET

HOT DIP GALVANIZED

PART #	SIZE	QUANTITY / TUBE	QUANTITY / PALLET
2TRG38166	3/8-16 x 6ft	25 / TUBE	1250 / PALLET
2TRG12136	1/2-13 x 6ft	12 / TUBE	600 / PALLET
2TRG58116	5/8-11 x 6ft	8 / TUBE	400 / PALLET
2TRG34106	3/4-10 x 6ft	5 / TUBE	250 / PALLET