

Ply-Fast/Ply-Lo Ultimate Pullout Values

PLY-FAST AVERAGE PULLOUT 1" PENETRATION

Screw Description	Test Material	Specific Gravity	Ultimate Pullout/Lbs
Ply-Fast #9 - 16 Mechanical Zinc Plating (.0007) Min. ECF Sharp Point	Douglas Fir	.4900	589
	Yellow Pine	.5500	882
	1/2" CDX	.4600	270
	3/4" CDX	.5364	480

Screw Description	Test Material	Specific Gravity	Ultimate Pullout/Lbs
Ply-Fast #14 - 10 Type "S" Mechanical Zinc Plating (.0007) Min.	Douglas Fir	.4900	625
	Yellow Pine	.5500	985
	1/2" CDX	.4622	300
	3/4" CDX	.5217	526

PLY-LO AVERAGE PULLOUT 1" PENETRATION

Screw Description	Test Material	Specific Gravity	Ultimate Pullout/Lbs
Ply-Lo #10-14 Type 17 milled point Mechanical Zinc Plating (.0007) Min.	Douglas Fir	.4900	610
	Yellow Pine	.5500	960
	1/2" CDX	.4622	290
	3/4" CDX	.5217	475

FASTENER STRENGTH CHARACTERISTICS

SIZE	STEEL	TENSILE	SHEAR	TORSIONAL	RC HARDNESS CASE CORE
9 - 16	C1018	1800 Lbs	1100 Lbs	65 Inch Lbs	56 37
14 - 10	C1018	3900 Lbs	2600 Lbs	140 Inch Lbs	55 38
10 - 14	C1018	2100 Lbs	1400 Lbs	65 Inch Lbs	56 37

Lumber for these tests is typical of the wood used in post frame construction. This lumber was not kiln dried. Tighter grain structure would provide substantial increase in pullout values. Values with 1" penetration can vary from 240 lbs to 1150 lbs, depending on wood density. We believe these are typical values found in field applications. These values are ultimate with no safety factors. Recommended minimum penetration is 1".

Ruff-Con Technical Data

FASTENER SELECTION GUIDE

Attached Fixture	Ruff-Con™ Length	Depth of Drilled Hole	Bit* Length
A 0 - 1/4"	C 1 1/4"	B 1 1/2"	3 1/2"
1/4" - 3/4"	1 3/4"	2"	3 1/2"
3/4" - 1 1/4"	2 1/4"	2 1/2"	4 1/2"
1 1/4" - 1 3/4"	2 3/4"	3"	4 1/2"
1 3/4" - 2 1/4"	3 1/4"	3 1/2"	5 1/2"
2 1/4" - 2 3/4"	3 3/4"	4"	5 1/2"
2 1/2" - 3"	4"	4 1/4"	5 1/2"
3" - 4"	5"	5 1/4"	6 1/2"
4" - 5"	6"	6 1/4"	7 1/2"

*5/32" diameter drill bit for 3/16" anchors and 3/16" diameter drill bit for 1/4" anchors

ULTIMATE PULLOUT & SHEAR VALUES

Material	Embedment	3/16" Anchor	1/4" Anchor
Ruff-Con Ultimate Pullout Values (LBS)			
3000 PSI Concrete (Cured 40 days)	1"	890	1480
Hollow Block	1"	380	490
Ruff-Con Ultimate Shear Values (LBS)			
3000 PSI Concrete (Cured 40 days)	1"	930	1610
Hollow Block	1"	760	950

NOTE: Above results represents ultimate values. Appropriate safety factors should be applied before utilizing these figures.

Sheeting Fasteners Technical Data

SUGGESTED DRILL SIZES

#14 TYPE A				1/4" TYPE AB				1/4" TYPE B			
Steel Gauge	Hole Size	Steel Gauge	Hole Size	Steel Gauge	Hole Size	Steel Gauge	Hole Size	Steel Gauge	Hole Size	Steel Gauge	Hole Size
26 gauge	1/8"	16 gauge	#8 Bit	26 gauge	1/8"	16 gauge	#8 Bit	3/16"	#1 Bit	Over 3/8"	231 Bit
24 gauge	3/16"	14 gauge	#8 Bit	24 gauge	3/16"	14 gauge	#7 Bit	Thru			
22 gauge	3/16"			22 gauge	3/16"	12 gauge	#7 Bit	3/8"			
20 gauge	3/16"			20 gauge	3/16"	10 gauge	#1 Bit				
18 gauge	3/16"			18 gauge	3/16"						

STRENGTH OF THE FASTENER

TEST RESULTS	1/4" Type B	#14 Type A
Minimum tensile strength	2700 lbs.	2360 lbs.
Minimum shear strength	1760 lbs.	1535 lbs.
Minimum torsional strength	142 inch lbs.	125 inch lbs.

PULL OVER TESTS - In 26 Gauge Sheet (RB 74 Hardness)

Screw Diameter	Bonded Washer Diameter	Hole Diameter in 26 Ga. Sheet	Average Pull Over in Lbs.
1/4"	5/8"	#1 (.228")	645
1/4"	35/64"	#1 (.228")	578
#12	1/2"	#7 (.201")	504

PULL OUT TESTS

To determine the tension required to pull a properly applied screw out of a structural member. For pull-out or pull-over test method, our Drawing 121770 is available on request. (All tests made by Herron Testing Laboratories - Cleveland.)

Thickness of Structural Steel	Hardness of Structural Steel Rockwell B	Drilled Hole Size	1/4 Type B	#14 Type A
18 Gauge (.052")	72	3/16" (.187")	659	676
16 Gauge (.064")	76	3/16"	881	885
14 Gauge (.079")	82	#9 (.196")	1215	1186
12 Gauge (.108")	80	#3 (.213")	1410	
11 Gauge (.123")	84	#3	1622	
3/16" (.187")	79	#3	3224	
1/4" (.250")	77	#1 (.228")	3429	