

V-Rod HM straight bars only, there are no HM bent bars

		#3 GFRP	#4 GFRP	#5 GFRP	#6 GFRP	#7 GFRP	#8 GFRP	#10 GFRP
		V•ROD HM	V•ROD HM	V•ROD HM	V•ROD HM	V•ROD HM	V•ROD HM	V•ROD HM
Minimum guaranteed tensile strength * <i>(ASTM D7205)</i>	MPa	1372	1312	1184	1105	1059	1000	1093
	ksi	199	190	172	160	153	145	158
Nominal tensile modulus <i>(ASTM D7205)</i>	GPa	65,1 ±2,5	65,6 ±2,5	62,6 ±2,5	63,7 ±2,5	62,6 ±2,5	66,4 ±2,5	65,1 ±2,5
	ksi	9435 ±363	9507 ±363	9072 ±363	9232 ±363	9072 ±363	9623 ±363	9435 ±363
Tensile strain	%	2,11	2,00	1,89	1,73	1,69	1,51	1,68
Poisson's ratio	(-)	0,25	0,26	0,25	0,25	0,26	0,28	0,28
Nominal Flexural strength <i>(ASTM D790)</i>	MPa	1734	1377	1239	1196	1005	1064	1105
	ksi	251	200	180	173	146	154	160
Nominal Flexural modulus <i>(ASTM D790)</i>	GPa	65,5	64,9	63,5	60,2	60,0	65,4	65,8
	ksi	9493	9406	9203	8725	8696	9478	9536
Flexural strain	%	2,65	2,12	1,95	1,99	1,68	1,63	1,68
Transverse shear capacity <i>(ACI 440.3R B4 two cross sections)</i>	kN	41	67	94	127	156	187	232
	lbs	9217	15062	21131	28550	35069	42038	52154
Nominal Bond strength <i>(ACI 440.3R B3)</i>	MPa	14						
	psi	2029						
Bond dependent coefficient	(-)	0,8						
Longitudinal coefficient of thermal expansion <i>(ASTM E831)</i>	xE-6/C	6,2						
	xE-6/F	3,5						
Transverse coefficient of thermal expansion <i>(ASTM E831)</i>	xE-6/C	23,8						
	xE-6/F	13,2						
Moisture absorption <i>(ASTM D570)</i>	%	0,25	0,38	0,44	0,38	0,21	0,29	0,29
Glass content <i>(ASTM D3171)</i>	% vol	65						
	% weight	83						
Weight	g/m	243	380	558	811	1156	1524	2488
	lb/ft	0,163	0,255	0,375	0,545	0,777	1,024	1,672
Effective cross-sectional area (including sand coating) ** <i>(CSA S806 Annex A)</i>	mm ²	170,0	197,0	291,0	394,0	550,0	674,0	1028,0
	inch ²	0,2635	0,3054	0,4511	0,6107	0,8525	1,0447	1,5934
Nominal cross-sectional area	mm ²	71,3	126,7	197,9	285,0	388,0	506,7	791,7
	inch ²	0,1105	0,1963	0,3068	0,4418	0,6013	0,7854	1,2272

* the minimum guaranteed tensile strength must not be used to calculate the strength of the bent portion of a bent bar. Instead use the minimum guaranteed tensile strength found in the technical data sheet of bent V-Rod bars.

** Please contact the manufacturer for dowelling applications.

Development and splice lengths are available upon request but should be properly calculated by a design engineer.

Please refer to the bent bar data sheet for designs using bent V-Rod bars.

It is the responsibility of the design engineers to contact the bar manufacturer to get the latest updates of this technical data sheet (also available at www.pultrall.com).