

**GEOSYNTHETIC RETAINING WALL  
Classes 1 and 2 Non-aggressive Environments**

**Note 1:** May be used for Class 1 and 2 walls and slopes in non-aggressive environments. Acceptability of the product for a specific contract bid item requires that the approved long-term geosynthetic strength as listed in Table 1 below meet or exceed the required long-term strength specified in the contract. The ultimate tensile strength listed in Table 1 is to be used for lot specific acceptance once the product arrives at the project site. (See Acceptance Code 1022)

**Table 1. Long-term and ultimate strengths of geosynthetic products qualified for use in Classes 1 and 2 walls and reinforced slopes, non-aggressive environments.**

Product	Ref. No.	T <sub>ult</sub> (lb/ft)	Test Procedure for T <sub>ult</sub>	Long-Term Strength Reduction Factors			<sup>1</sup> Long-Term Tensile Strength, T <sub>al</sub> (lb/ft)
				RF <sub>ID</sub>	RF <sub>CR</sub>	RF <sub>D</sub>	
Miragrid 2XT, Machine Direction	1993-921	2000	ASTM D6637	1.12	1.56	1.3	881
Miragrid 3XT, Machine Direction	1993-921	3151	ASTM D6637	1.12	1.56	1.3	1387
Miragrid 5XT, Machine Direction	1993-921	4295	ASTM D6637	1.12	1.56	1.3	1891
Miragrid 7XT, Machine Direction	1993-921	5699	ASTM D6637	1.12	1.56	1.3	2509
Miragrid 8XT, Machine Direction	1993-921	6994	ASTM D6637	1.12	1.56	1.3	3079
Miragrid 10XT, Machine Direction	1993-921	9694	ASTM D6637	1.12	1.56	1.3	4180
Miragrid 18XT, Machine Direction	1993-921	9357	ASTM D6637	1.12	1.56	1.3	4120
Miragrid 20XT, Machine Direction	1993-921	12412	ASTM D6637	1.12	1.56	1.3	5465
Miragrid 22XT, Machine Direction	1993-921	17748	ASTM D6637	1.12	1.56	1.3	7814
Miragrid 24XT, Machine Direction	1993-921	25366	ASTM D6637	1.12	1.56	1.3	11168
Tensar UX1400SB Machine Direction	1994-038	3700	ASTM D6637	1.1	3.1	1.1	987
Tensar UX1500SB Machine Direction	1994-038	6300	ASTM D6637	1.1	3.3	1.1	1580
Tensar UX1600SB Machine Direction	1994-038	7540	ASTM D6637	1.1	3.0	1.1	2100
Tensar UX110070 (HS), Machine Direction	2005-087	3970	ASTM D6637	1.12	2.55	1.1	1260
Tensar UX140070 (HS), Machine Direction	2005-087	4800	ASTM D6637	1.12	2.55	1.1	1530
Tensar UX150070 (HS), Machine Direction	2005-087	7810	ASTM D6637	1.1	2.55	1.1	2530
Tensar UX160070 (HS), Machine Direction	2005-087	9870	ASTM D6637	1.1	2.55	1.1	3190
Tensar UX170070 (HS), Machine Direction	2005-087	11990	ASTM D6637	1.1	2.55	1.1	3880
Tensar UX1100MSE, Machine Direction	2005-087	3970	ASTM D6637	1.12	2.55	1.1	1260
Tensar UX1400MSE, Machine Direction	2005-087	4800	ASTM D6637	1.12	2.55	1.1	1530
Tensar UX1500MSE, Machine Direction	2005-087	7810	ASTM D6637	1.1	2.55	1.1	2530
Tensar UX1600MSE, Machine Direction	2005-087	9870	ASTM D6637	1.1	2.55	1.1	3190
Tensar UX1700MSE, Machine Direction	2005-087	11990	ASTM D6637	1.1	2.55	1.1	3880
Tensar BX1100, Machine Direction	1994-038	850	ASTM D6637	1.15	5.0	1.3	113
Tensar BX1100, X-Machine Direction	1994-038	1300	ASTM D6637	1.15	5.0	1.3	175
Tensar BX1120, Machine Direction	1994-038	850	ASTM D6637	1.15	5.0	1.3	113
Tensar BX1120, X-Machine Direction	1994-038	1300	ASTM D6637	1.15	5.0	1.3	175
Tensar BX1200, Machine Direction	1994-038	1200	ASTM D6637	1.1	5.0	1.3	168
Tensar BX1200, X-Machine Direction	1994-038	1970	ASTM D6637	1.1	5.0	1.3	274
Raugrid 2/2-20, Machine Direction	1999-042	1310	ASTM D6637	1.2	1.52	1.3	548
Raugrid 2/3-30, Machine Direction	1999-042	1420	ASTM D6637	1.2	1.52	1.3	589
Raugrid 3/2-15, Machine Direction	1999-042	2510	ASTM D6637	1.2	1.52	1.3	1050
Raugrid 3/3-20, Machine Direction	1999-042	2250	ASTM D6637	1.2	1.52	1.3	939
Raugrid 4/2-15, Machine Direction	1999-042	2920	ASTM D6637	1.2	1.52	1.3	1220
Raugrid 6/3-15, Machine Direction	1999-042	3990	ASTM D6637	1.2	1.52	1.3	1670
Raugrid 6/6-15, Machine Direction	1999-042	4010	ASTM D6637	1.2	1.52	1.3	1670
Raugrid 8/3-20, Machine Direction	1999-042	5380	ASTM D6637	1.2	1.52	1.3	2240
Raugrid 10/3-20, Machine Direction	1999-042	6650	ASTM D6637	1.2	1.52	1.3	2770
Stratagrid 100, Machine Direction	1999-030	1200	ASTM D6637	1.15	1.61	1.3	500
Stratagrid 100, X-Machine Direction	1999-030	699	ASTM D6637	1.15	1.61	1.3	295

<sup>1</sup>T<sub>al</sub> is determined at a design life of 75 years.

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Product	Ref. No.	T <sub>ult</sub> (lb/ft)	Test Procedure for T <sub>ult</sub>	Long-Term Strength Reduction Factors			<sup>1</sup> Long-Term Tensile Strength, T <sub>al</sub> (lb/ft)
				RF <sub>ID</sub>	RF <sub>CR</sub>	RF <sub>D</sub>	
Stratagrid 200, Machine Direction	1999-030	2720	ASTM D6637	1.15	1.61	1.3	1130
Stratagrid 200, X-Machine Direction	1999-030	1600	ASTM D6637	1.15	1.61	1.3	665
Stratagrid 300, Machine Direction	1999-030	3000	ASTM D6637	1.15	1.61	1.3	1250
Stratagrid 300, X-Machine Direction	1999-030	1000	ASTM D6637	1.15	1.61	1.3	418
Stratagrid 500, Machine Direction	1999-030	4600	ASTM D6637	1.15	1.61	1.3	1920
Stratagrid 500, X-Machine Direction	1999-030	1800	ASTM D6637	1.15	1.61	1.3	747
Stratagrid 550, Machine Direction	1999-030	6240	ASTM D6637	1.15	1.61	1.3	2600
Stratagrid 550, X-Machine Direction	1999-030	1800	ASTM D6637	1.15	1.61	1.3	747
Stratagrid 600, Machine Direction	1999-030	7400	ASTM D6637	1.15	1.61	1.3	3080
Stratagrid 600, X-Machine Direction	1999-030	1800	ASTM D6637	1.15	1.61	1.3	747
Geotex 4X4, Machine Direction	1999-051	4800	ASTMD4595	1.15	5.6	1.3	569
Geotex 4X4, X-Machine Direction	1999-051	4800	ASTMD4595	1.10	3.4	1.3	980
SF35, Machine Direction	2000-058	3060	ASTM D6637	1.2	1.59	1.3	1220
SF55, Machine Direction	2000-058	4200	ASTM D6637	1.15	1.59	1.3	1750
SF80, Machine Direction	2000-058	5950	ASTM D6637	1.15	1.59	1.3	2480
SF110, Machine Direction	2000-058	10200	ASTM D6637	1.15	1.59	1.3	4250
ParaGrid 30/15 Machine Direction	2001-063	2060	ASTM D6637	1.10	1.48	1.25	1000
ParaGrid 50/15 Machine Direction	2001-063	4110	ASTM D6637	1.10	1.48	1.25	1670
ParaGrid 80/15 Machine Direction	2001-063	5480	ASTM D6637	1.10	1.48	1.25	2670
ParaGrid 100/15 Machine Direction	2001-063	6850	ASTM D6637	1.10	1.48	1.25	3340
ParaGrid 150/15 Machine Direction	2001-063	10300	ASTM D6637	1.10	1.48	1.25	5020
ParaGrid 200/15 Machine Direction	2001-063	13700	ASTM D6637	1.10	1.48	1.25	6690
Fortrac 20 Machine Direction	2002-073	1500	ASTM D6637	1.15	1.59	1.15	713
Fortrac 35 Machine Direction	2002-073	2400	ASTM D6637	1.1	1.59	1.15	1200
Fortrac 55 Machine Direction	2002-073	3710	ASTM D6637	1.1	1.59	1.15	1860
Fortrac 80 Machine Direction	2002-073	5380	ASTM D6637	1.1	1.59	1.15	2690
Fortrac 110 Machine Direction	2002-073	7410	ASTM D6637	1.1	1.59	1.15	3710
SF 20/20-20, Machine Direction	2006-006	1310	ASTM D6637	?	?	?	548
SF 30/30-20, Machine Direction	2006-006	2250	ASTM D6637	?	?	?	939
SF 40/20-15, Machine Direction	2006-006	2920	ASTM D6637	?	?	?	1220
SF 60/30-15, Machine Direction	2006-006	3990	ASTM D6637	?	?	?	1670
SF 80/30-20, Machine Direction	2006-006	5380	ASTM D6637	?	?	?	2240
SF 100/30-20, Machine Direction	2006-006	6650	ASTM D6637	?	?	?	2770

<sup>1</sup>T<sub>al</sub> is determined at a design life of 75 years.

RF<sub>ID</sub> = installation damage reduction factor, RF<sub>CR</sub> = creep reduction factor, RF<sub>D</sub> = durability reduction factor.