

**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 7021)

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.	Year last Updated	¹ T _{ult} (lb/ft)	Long-Term Strength Reduction Factors			² Long-Term Tensile Strength, T _{al} (lb/ft)	³ Low Strain Creep Stiffness, J _{2%} (lbs/ft)
				RF _I _D	RF _{CR}	RF _D		
Miragrid 2XT, MD - TenCate	1993-921	2012	2000	1.12	1.45	1.3	947	11000
Miragrid 3XT, MD - TenCate	1993-921	2012	3500	1.12	1.45	1.3	1660	19200
Miragrid 5XT, MD - TenCate	1993-921	2012	4700	1.12	1.45	1.3	2230	25800
Miragrid 7XT, MD - TenCate	1993-921	2012	5900	1.12	1.45	1.3	2790	32400
Miragrid 8XT, MD - TenCate	1993-921	2012	7400	1.12	1.45	1.3	3510	40700
Miragrid 10XT, MD - TenCate	1993-921	2012	9500	1.12	1.45	1.3	4500	52200
Miragrid 20XT, MD - TenCate	1993-921	2012	13705	1.12	1.45	1.3	6490	75300
Miragrid 22XT, MD - TenCate	1993-921	2012	20559	1.12	1.45	1.3	9740	113000
Miragrid 24XT, MD - TenCate	1993-921	2012	27415	1.12	1.45	1.3	13000	151000
ParaGrid 30/05, MD - Linear Composites		2010	2055	1.1	1.39	1.3	1040	13400
ParaGrid 40/05, MD - Linear Composites		2010	2740	1.1	1.39	1.3	1380	16900
ParaGrid 50/05, MD - Linear Composites		2010	3425	1.1	1.39	1.3	1730	20200
ParaGrid 60/05, MD - Linear Composites		2010	4110	1.1	1.39	1.3	2070	23600
ParaGrid 65/05, MD - Linear Composites		2010	4452	1.1	1.39	1.3	2240	25300
ParaGrid 70/05, MD - Linear Composites		2010	4795	1.1	1.39	1.3	2420	27000
ParaGrid 80/05, MD - Linear Composites		2010	5479	1.1	1.39	1.3	2760	30400
ParaGrid 90/05, MD - Linear Composites		2010	6164	1.1	1.39	1.3	3110	33700
ParaGrid 100/05, MD - Linear Composites		2010	6849	1.1	1.39	1.3	3450	37100
ParaGrid 110/05, MD - Linear Composites		2010	7534	1.1	1.39	1.3	3800	40500
ParaGrid 125/05, MD - Linear Composites		2010	8562	1.1	1.39	1.3	4310	45600
ParaGrid 150/05, MD - Linear Composites		2010	10274	1.1	1.39	1.3	5170	54000
ParaGrid 175/05, MD - Linear Composites		2010	11986	1.1	1.39	1.3	6040	62500
ParaGrid 180/05, MD - Linear Composites		2010	12329	1.1	1.39	1.3	6210	64200
ParaGrid 200/05, MD - Linear Composites		2010	13699	1.1	1.39	1.3	6900	70900
SF20, MD - Synteen		2010	1939	1.18	1.58	1.3	800	8390
SF35, MD - Synteen		2010	3055	1.18	1.58	1.3	1260	11900
SF55, MD - Synteen		2010	4199	1.18	1.58	1.3	1732	15600
SF80, MD - Synteen		2010	7398	1.18	1.58	1.3	3052	29800
SF90, MD - Synteen		2010	8500	1.18	1.58	1.3	3507	30900
SF110, MD - Synteen		2010	10207	1.18	1.58	1.3	4211	37600
SF350, MD - Synteen		2010	27400	1.18	1.58	1.3	11305	124000
SG150, MD - Stratagrid		2010	1875	1.1	1.5	1.3	875	8530

¹T_{ult} is determined using ASTM D6637 for geogrids and ASTM D4595 for geotextiles. The value provided in the table represents the manufacturer's Minimum Average Roll Value (MARV) or minimum value for the product. WSDOT acceptance test results for the product as delivered to the project must be greater than or equal to this value.

²T_{al} is determined at a design life of 75 years and is based on the MARV or minimum value for T_{ult} provided in this table.

³J_{2%} is the creep stiffness determined at a strain level of 2% after 1,000 hours of loading, based on the MARV or minimum value for T_{ult} provided in this table.

RF_{ID} = installation damage reduction factor, RF_{CR} = creep reduction factor, RF_D = durability reduction factor.

MD = Machine Direction (longitudinal direction), XMD = Cross Machine Direction (transverse direction)

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				RF _I _D	RF _{CR}	RF _D		
SG200, MD - Stratagrid		2010	3600	1.1	1.5	1.3	1680	20500
SG350, MD - Stratagrid		2010	5000	1.1	1.5	1.3	2340	26600
SG500, MD - Stratagrid		2010	6400	1.1	1.5	1.3	2990	31100
SG550, MD - Stratagrid		2010	8150	1.1	1.5	1.3	3800	35600
SG600, MD - Stratagrid		2010	9100	1.1	1.5	1.3	4250	37600
SG700, MD - Stratagrid		2010	11800	1.1	1.5	1.3	5510	42400
Tensar UX1100MSE MD		2012	3970	1.25	2.68	1.1	1080	24500
Tensar UX1400MSE MD		2012	4800	1.25	2.68	1.1	1300	27000
Tensar UX1500MSE MD		2012	7810	1.25	2.54	1.1	2240	41000
Tensar UX1600MSE MD		2012	9870	1.25	2.54	1.1	2830	54700
Tensar UX1700MSE, MD		2012	11990	1.25	2.54	1.1	3430	72400
Tensar UX1100HS MD		2012	3970	1.25	2.68	1.1	1080	24500
Tensar UX1400HS MD		2012	4800	1.25	2.68	1.1	1300	27000
Tensar UX1500HS MD		2012	7810	1.25	2.54	1.1	2240	41000
Tensar UX1600HS MD		2012	9870	1.25	2.54	1.1	2830	54700
Tensar UX1700HS, MD		2012	11990	1.25	2.54	1.1	3430	72400

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