

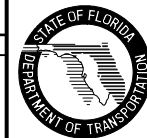
TABLE OF WOVEN GEOTEXTILE VALUES

| PROPERTY | | REQUIRED TEST METHOD | MIRAFI GEOLON HP 370 | MIRAFI GEOLON HP 570 | MIRAFI GEOLON HP 665 | MIRAFI GEOLON HP 770 | MIRAFI GEOLON HS 400 | MIRAFI GEOLON HS 600 | MIRAFI GEOLON HS 800 | MIRAFI GEOLON HS 1150 | MIRAFI MIRAMESH GR | |
|--|------------------------------|------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|--------------------|----|
| Permittivity (0.05 sec ⁻¹ Min.) | | ASTM D 4491 | 0.52 | 0.40 | 0.26 | 0.23 | 0.1 | 0.32 | 0.20 | 0.32 | — | |
| UV Stability (Min. Retained Strength @ 500 hr.) | | ASTM D 4355 | 70% | 70% | 70% | 70% | 50% | 50% | 50% | 50% | 90% | |
| Burst Strength (psi) | | ASTM D 6241 | 800 | 1,200 | 1,200 | 1,200 | — | — | — | — | — | |
| Grab Strength (lb.) | | ASTM D 4632 | 400 x 250 | 475 x 440 | 600 x 700 | 550 x 450 | — | — | — | — | — | |
| A.D.S. (in.) | | ASTM D 4751 | 0.0236 | 0.0236 | 0.0167 | 0.0236 | 0.0167 | 0.0335 | 0.0335 | 0.0236 | 0.120 x 0.120 | |
| Tensile Strength (lb./ft.) | | ASTM D 4595 | | | | | | | | | | |
| Machine Direction | Ultimate (T _{ult}) | | 3,240 | 4,800 | 4,800 | 7,200 | 4,800 | 7,200 | 9,600 | 13,800 | 1,440 | |
| | 2% Strain | | 540 | 960 | — | 780 | — | — | — | — | — | |
| | 5% Strain | | 1,356 | 2,400 | 1,200 | 3,600 | 1,080 | 2,400 | 3,600 | 4,800 | — | |
| Cross Direction | Ultimate | | 2,700 | 4,800 | 6,600 | 4,800 | 4,800 | 3,600 | 3,600 | 3,600 | 1,733 | |
| | 2% Strain | | 540 | 1,320 | — | 1,320 | — | — | — | — | — | |
| | 5% Strain | | 1,560 | 2,604 | 4,200 | 3,600 | 2,400 | — | — | — | — | |
| Strain @ Ultimate Tensile Strength | | | | 14% | 10% | 12% | 12% | 15% | 15% | 10% | 12% | 6% |
| Secant Modulus (lb./ft.) | 2% Strain | | ASTM D 4595 | 27,000 | 48,000 | — | 39,000 | — | — | — | — | — |
| | 5% Strain | | 27,120 | 48,000 | 24,000 | 72,000 | 21,600 | 48,000 | 72,000 | 96,000 | — | |
| | 10% Strain | | 24,000 | 48,000 | 30,000 | 66,000 | 33,600 | 57,600 | 96,000 | 120,000 | — | |
| Seam Breaking Strength (lb./ft.) | | ASTM D 4884 | 1,688 | 3,000 | 3,600 | 3,000 | 2,400 | 2,400 | 2,400 | 2,400 | — | |
| Puncture Resistance (lb.) | | ASTM D 4833 | 180 | 195 | 280 | 160 | — | — | — | — | — | |
| Tear Strength (lb.) | Machine Direction | ASTM D 4833 | 170 | 180 | 180 | 250 | — | — | — | — | — | |
| | Cross Direction | ASTM D 4833 | 110 | 180 | 275 | 300 | — | — | — | — | — | |
| Soil-Geosynthetic Friction | | ASTM D 6706 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | |
| Creep Resistance-T _{creep} (lb./ft.) | | ASTM D 5262 | — | — | — | — | 2,880 | 4,320 | 5,760 | 8,280 | 471 x 566 | |
| Creep Reduction Factor (T _{ult} /T _{creep}) | | | 3.5 | 3.5 | 3.5 | 3.5 | 1.67 | 1.67 | 1.67 | 1.67 | 3.0 | |
| Installation Damage (RF _C) | Sand | GRI : GG4 & GT7 | 1.10 | 1.10 | 1.10 | 1.10 | 1.15 | 1.15 | 1.10 | 1.10 | 1.05 | |
| | Limestone | | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.20 | 1.20 | 1.10 | |
| Durability (RF _D) | Chemical | ASTM D 5322 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.10 | |
| | Biological | ASTM D1987, D3083, G21 & G22 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | |
| Joint Strength (RF _J) | Mechanical | ASTM D 4595, GRI : GG4 & GT7 | — | — | — | — | — | — | — | — | — | |
| | Overlap * | ASTM D 6706 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | |
| Approved Application Usage | | | 3, 4 | 3, 4 | 3, 4 | 3, 4 | 3, 4 | 3, 4 | 3, 4 | 3, 4 | 1, 4 | |

Approved Application Usage: 1 = Steepened Slopes
 2 = Reinforcement of Foundations over Soft Soils
 3 = Both Steepened Slopes & Reinforcement of Foundations over Soft Soils
 4 = Reinforced Embankment
 * Minimum 3' Overlap 5 = Construction Expedient

APPROVED GEOSYNTHETIC PRODUCTS
 (WOVEN GEOTEXTILE)
 APPLICATION AND PROPERTIES

| | | | | | | | | | |
|-----------|----|--|------|------------------------------|-------------|----------|--|------------------|-----------|
| REVISIONS | | | | 2008 Interim Design Standard | | | | Interim Date | Sheet No. |
| DATE | BY | DESCRIPTION | DATE | BY | DESCRIPTION | 07/01/08 | | 3 of 9 | |
| 07/01/08 | LJ | Changed Required Test Method for Burst Strength, Soil-Geosynthetic Friction, Creep Reduction Factor, and Overlap Joint Strength. | | | | | | Index No. 501 | |



GEOSYNTHETIC REINFORCED SOILS

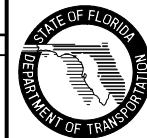
TABLE OF WOVEN GEOTEXTILE VALUES

| PROPERTY | | REQUIRED TEST METHOD | MIRAFI BXG11 | MIRAFI BXG12 | MIRAFI GEOLON HS 2400 | MIRAFI GEOLON HS 3000 | MIRAFI GEOLON HS 3600 | AMDCD 2006 | AMDCD 2016 | AMDCD 2044 | COMTRAC 70.70 | |
|--|------------------------------|------------------------------|--------------|--------------|-----------------------|-----------------------|-----------------------|------------|------------|------------|---------------|-----|
| Permittivity (0.05 sec ⁻¹ Min.) | | ASTM D 4491 | — | — | 0.02 | 0.02 | 0.02 | 0.05 | 0.70 | 0.15 | 0.20 | |
| UV Stability (Min. Retained Strength @ 500 hr.) | | ASTM D 4355 | 70% | 70% | 70% | 70% | 70% | 70% | 70% | 70% | 70% | |
| Burst Strength (psi) | | ASTM D 6241 | — | — | — | — | — | 1,000 | 1,100 | 1,500 | — | |
| Grab Strength (lb.) | | ASTM D 4632 | — | — | — | — | — | 315 | 315 | 600/500 | — | |
| A.D.S. (in.) | | ASTM D 4751 | 1.0 x 1.0 | 1.0 x 1.0 | 0.0118 | 0.0118 | 0.0118 | 0.0167 | 0.0167 | 0.0236 | 0.0181 | |
| Tensile Strength (lb./ft.) | | ASTM D 4595 | | | | | | | | | | |
| Machine Direction | Ultimate (T _{ult}) | | 2,000 | 2,000 | 28,800 | 36,000 | 43,200 | 2,100 | 2,400 | 4,800 | 4,800 | |
| | 2% Strain | | 500 | 500 | — | — | — | 156 | 276 | 456 | — | |
| | 5% Strain | | 920 | 920 | 14,400 | 18,000 | 21,600 | 564 | 744 | 1,452 | 2,196 | |
| Cross Direction | Ultimate | | 2,000 | 4,000 | 3,600 | 3,600 | 3,600 | 2,100 | 2,400 | 4,800 | 3,600 | |
| | 2% Strain | | 500 | 750 | — | — | — | 576 | 660 | 1,380 | — | |
| | 5% Strain | | 920 | 1,350 | — | — | — | 1,104 | 1,404 | 2,604 | — | |
| Strain @ Ultimate Tensile Strength | | | | 12% | 12% | 10% | 10% | 10% | 8% | 8% | 8% | 9% |
| Secant Modulus (lb./ft.) | 2% Strain | | ASTM D 4595 | 25,000 | 25,000 | — | — | — | 7,800 | 13,800 | 22,800 | — |
| | 5% Strain | | 18,400 | 18,400 | 288,000 | 360,000 | 432,000 | 11,280 | 14,880 | 29,040 | 24,400 | |
| | 10% Strain | | — | — | 288,000 | 360,000 | 432,000 | 10,440 | 12,480 | 31,200 | 24,400 | |
| Seam Breaking Strength (lb./ft.) | | ASTM D 4884 | — | — | 3,600 | 3,600 | 3,600 | — | — | — | 2,400 | |
| Puncture Resistance (lb.) | | ASTM D 4833 | — | — | — | — | — | 120 | 120 | 170 | — | |
| Tear Strength (lb.) | Machine Direction | ASTM D 4833 | — | — | — | — | — | 120 | 120 | 250 | — | |
| | Cross Direction | ASTM D 4833 | — | — | — | — | — | 120 | 120 | 250 | — | |
| Soil-Geosynthetic Friction | | ASTM D 6706 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.65 | 0.65 | 0.65 | 0.9 | |
| Creep Resistance-T _{creep} (lb./ft.) | | ASTM D 5262 | — | — | 17,280 | 21,600 | 21,600 | 600 | 685 | 1,371 | — | |
| Creep Reduction Factor (T _{ult} /T _{creep}) | | | 1.6 | 1.6 | 1.67 | 1.67 | 1.67 | 3.5 | 3.5 | 3.5 | 1.67 | |
| Installation Damage (RF _c) | Sand | GRI : GG4 & GT7 | 1.05 | 1.05 | 1.1 | 1.1 | 1.1 | 1.10 | 1.05 | 1.05 | 1.2 | |
| | Limestone | | 1.10 | 1.10 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.10 | 1.5 | |
| Durability (RF _d) | Chemical | ASTM D 5322 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | |
| | Biological | ASTM D1987, D3083, G21 & G22 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | | | | 1.0 | 1.0 |
| Joint Strength (RF _j) | Mechanical | ASTM D 4595, GRI : GG4 & GT7 | — | — | — | — | — | — | — | — | — | |
| | Overlap * | ASTM D 6706 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.2 | 1.2 | 1.2 | 1.0 | |
| Approved Application Usage | | | 3, 4 | 3, 4 | 3, 4 | 3, 4 | 3, 4 | 3 | 3 | 3 | 3 | |

Approved Application Usage: 1 = Steepened Slopes
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 3 = Both Steepened Slopes & Reinforcement of Foundations over Soft Soils
 4 = Reinforced Embankment
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APPROVED GEOSYNTHETIC PRODUCTS
 (WOVEN GEOTEXTILE)
 APPLICATION AND PROPERTIES

| | | | | | | | | | |
|-----------|----|--|------|------------------------------|-------------|----------|--|------------------|-----------|
| REVISIONS | | | | 2008 Interim Design Standard | | | | Interim Date | Sheet No. |
| DATE | BY | DESCRIPTION | DATE | BY | DESCRIPTION | 07/01/08 | | 4 of 9 | |
| 07/01/08 | LJ | Changed Required Test Method for Burst Strength, Soil-Geosynthetic Friction, Creep Reduction Factor, and Overlap Joint Strength. Changed Properties for Comtrac 70.70. | | | | | | Index No. 501 | |



GEOSYNTHETIC REINFORCED SOILS

TABLE OF WOVEN GEOGRID VALUES

| PROPERTY | | REQUIRED TEST METHOD | MARAFI MG 2XT | MARAFI MG 3XT | MARAFI MG 5XT (Matrex 30) | MARAFI MG 7XT | MARAFI MG 8XT | MARAFI MG 10XT (Matrex 60) | MARAFI MG 18XT (Matrex 90) | MARAFI MG 20XT (Matrex 120) | MARAFI MG 22XT (Matrex 180) | MARAFI MG 24XT (Matrex 240) | |
|---|------------------------|------------------------------|---------------|---------------|------------------------------|---------------|---------------|-------------------------------|-------------------------------|--------------------------------|--------------------------------|--------------------------------|---|
| UV Stability (Min. Retained Strength @ 500 hr.) | | ASTM D 4355 | 70% | 70% | 70% | 70% | 70% | 70% | 70% | 70% | 70% | 70% | |
| Tensile Strength (lb./ft.) | | ASTM D 6637 | | | | | | | | | | | |
| Machine Direction | Ultimate (T_{ult}) | | 2,000 | 3,150 | 4,300 | 5,700 | 7,000 | 9,500 | 9,360 | 12,420 | 17,760 | 25,380 | |
| | 2% Strain | | — | — | — | — | — | — | — | — | — | — | |
| | 5% Strain | | 1,000 | 1,056 | 1,740 | 2,160 | 2,520 | 3,120 | 3,250 | 5,340 | 6,700 | 7,000 | |
| Cross Direction | Ultimate | | 2,000 | — | — | — | — | — | — | — | — | — | — |
| | 2% Strain | | — | — | — | — | — | — | — | — | — | — | — |
| | 5% Strain | — | — | — | — | — | — | — | — | — | — | — | |
| Strain @ Ultimate Tensile Strength | | ASTM D 6637 | 10% | 10% | 10% | 10% | 10% | 10% | 10% | 10% | 10% | 10% | |
| Secant Modulus (lb./ft.) | 2% Strain | | — | — | — | — | — | — | — | — | — | — | |
| | 5% Strain | | 20,000 | 21,120 | 34,800 | 43,200 | 50,400 | 62,400 | 65,000 | 106,800 | 134,000 | 140,000 | |
| | 10% Strain | | — | — | — | — | — | — | — | — | — | — | |
| Junction Strength (lb./ft.) | | GRI : GG2 | — | — | — | — | — | — | — | — | — | — | |
| Soil-Geosynthetic Friction | | ASTM D 6706 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | |
| Creep Resistance- T_{creep} (lb./ft.) | | ASTM D 5262 | 1,250 | 1,969 | 2,688 | 3,563 | 4,375 | 5,938 | 5,850 | 7,221 | 10,326 | 14,756 | |
| Creep Reduction Factor (T_{ult}/T_{creep}) | | | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.72 | 1.72 | 1.72 | |
| Installation Damage (RF _C) | Sand | GRI : GG4 & GT7 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | 1.05 | |
| | Limestone | | 1.5 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | |
| Durability (RF _D) | Chemical | ASTM D 5322 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | |
| | Biological | ASTM D1987, D3083, G21 & G22 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | |
| Joint Strength (RF _J) | Mechanical | ASTM D 6637, GRI : GG4 & GT7 | — | — | — | — | — | — | — | — | — | — | |
| | Overlap * | ASTM D 6706 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | |
| Approved Application Usage | | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |

Approved Application Usage:

- 1 = Steepened Slopes
- 2 = Reinforcement of Foundations over Soft Soils
- 3 = Both Steepened Slopes & Reinforcement of Foundations over Soft Soils
- 4 = Reinforced Embankment
- 5 = Construction Expedient
- * Minimum 3' Overlap

APPROVED GEOSYNTHETIC PRODUCTS
(WOVEN GEOGRID)
APPLICATION AND PROPERTIES


| <p>REVISIONS</p> <table border="1"> <thead> <tr> <th>DATE</th> <th>BY</th> <th>DESCRIPTION</th> <th>DATE</th> <th>BY</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>07/01/08</td> <td>LJ</td> <td>Changed Required Test Method for Burst Strength, Soil-Geosynthetic Friction, Creep Reduction Factor, and Overlap Joint Strength.</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | | | | DATE | BY | DESCRIPTION | DATE | BY | DESCRIPTION | 07/01/08 | LJ | Changed Required Test Method for Burst Strength, Soil-Geosynthetic Friction, Creep Reduction Factor, and Overlap Joint Strength. | | | |  | | | | <p>2008 Interim Design Standard</p> | | <p>Interim Date 07/01/08</p> | <p>Sheet No. 5 of 9</p> |
|--|----|--|------|------|-------------|-------------|------|--------------------------|-------------|----------|----|--|--|--|--|---|--|--|--|-------------------------------------|--|----------------------------------|-----------------------------|
| DATE | BY | DESCRIPTION | DATE | BY | DESCRIPTION | | | | | | | | | | | | | | | | | | |
| 07/01/08 | LJ | Changed Required Test Method for Burst Strength, Soil-Geosynthetic Friction, Creep Reduction Factor, and Overlap Joint Strength. | | | | | | | | | | | | | | | | | | | | | |
| <p>GEOSYNTHETIC REINFORCED SOILS</p> | | | | | | | | <p>Index No. 501</p> | | | | | | | | | | | | | | | |

TABLE OF WOVEN GEOGRID VALUES

| PROPERTY | | REQUIRED TEST METHOD | SYNTEEN SF 11 | SYNTEEN SF 12 | SYNTEEN SF 20 | SYNTEEN SF 35 | SYNTEEN SF 40 | SYNTEEN SF 50 | SYNTEEN SF 55 | SYNTEEN SF 80 | SYNTEEN SF 110 |
|---|------------------------|------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|
| UV Stability (Min. Retained Strength @ 500 hr.) | | ASTM D 4355 | 70% | 70% | 70% | 70% | 70% | 70% | 70% | 70% | 70% |
| Tensile Strength (lb./ft.) | | ASTM D 6637 | | | | | | | | | |
| Machine Direction | Ultimate (T_{ult}) | | 2,388 | 2,388 | 1,672 | 2,627 | 3,050 | 3,731 | 3,774 | 5,583 | 7,462 |
| | 2% Strain | | 526 | 526 | 370 | 462 | 488 | 791 | 736 | 1,016 | 1,186 |
| | 5% Strain | | 990 | 1,042 | 670 | 725 | 970 | 922 | 1,159 | 1,273 | 1,684 |
| Cross Direction | Ultimate | | 3,870 | 5,268 | 1,630 | 2,556 | 3,050 | 3,933 | 2,499 | 2,206 | 2,179 |
| | 2% Strain | | 578 | 797 | 370 | 399 | 430 | 630 | 604 | 882 | 1,274 |
| | 5% Strain | 792 | 1,129 | 670 | 583 | 765 | 815 | 796 | 1,563 | 1,581 | |
| Strain @ Ultimate Tensile Strength | | ASTM D 6637 | 12.6% | 13.0% | 9.4% | 14.1% | 9.9% | 14.2% | 11.5% | 13.9% | 18.8% |
| Secant Modulus (lb./ft.) | 2% Strain | | 26,300 | 26,300 | 18,494 | 23,114 | 24,408 | 39,551 | 36,799 | 50,807 | 59,298 |
| | 5% Strain | | 15,840 | 20,840 | 13,397 | 14,499 | 19,404 | 18,432 | 23,174 | 25,459 | 33,712 |
| | 10% Strain | | — | — | 15,206 | 15,234 | 22,089 | 18,432 | 27,137 | 37,910 | 27,380 |
| Junction Strength (lb./ft.) | | GRI : GG2 | 354 | 320 | — | — | — | — | — | — | — |
| Soil-Geosynthetic Friction | | ASTM D 6706 | 1.0 | 1.0 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| Creep Resistance- T_{creep} (lb./ft.) | | ASTM D 5262 | — | — | 1,005 | 1,523 | 1,525 | 2,201 | 2,265 | 3,182 | 4,029 |
| Creep Reduction Factor (T_{ult}/T_{creep}) | | | — | — | 1.66 | 1.73 | 2.00 | 1.70 | 1.67 | 1.75 | 2.02 |
| Installation Damage (RF _C) | Sand | GRI : GG4 & GT7 | 1.18 | 1.06 | 1.05 | 1.15 | 1.15 | 1.08 | 1.08 | 1.08 | 1.08 |
| | Limestone | | 1.31 | 1.20 | 1.75 | 1.70 | 1.60 | 1.55 | 1.55 | 1.55 | 1.35 |
| Durability (RF _D) | Chemical | ASTM D 5322 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| | Biological | ASTM D1987, D3083, G21 & G22 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| Joint Strength (RF _J) | Mechanical | ASTM D 6637, GRI : GG4 & GT7 | — | — | — | — | — | — | — | — | — |
| | Overlap * | ASTM D 6706 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| Approved Application Usage | | | 3, 4, 5 | 3, 4, 5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |

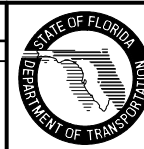
Approved Application Usage:

- 1 = Steepened Slopes
- 2 = Reinforcement of Foundations over Soft Soils
- 3 = Both Steepened Slopes & Reinforcement of Foundations over Soft Soils
- 4 = Reinforced Embankment
- 5 = Construction Expedient
- * Minimum 3' Overlap

APPROVED GEOSYNTHETIC PRODUCTS
(WOVEN GEOGRID)
APPLICATION AND PROPERTIES

REVISIONS

| DATE | BY | DESCRIPTION | DATE | BY | DESCRIPTION |
|----------|----|--|------|----|-------------|
| 07/01/08 | LJ | Changed Required Test Method for Burst Strength, Soil-Geosynthetic Friction, Creep Reduction Factor, and Overlap Joint Strength. | | | |



2008 Interim Design Standard

GEOSYNTHETIC REINFORCED SOILS

Interim Date: 07/01/08
Sheet No. 6 of 9
Index No. 501

| TABLE OF WOVEN GEOGRID VALUES | | | | | | | |
|---|------------------------|------------------------------|-------------|-------------|-------------|-------------|--------------|
| PROPERTY | | REQUIRED TEST METHOD | RAUGRID 3/3 | RAUGRID 4/2 | RAUGRID 6/3 | RAUGRID 8/3 | RAUGRID 10/3 |
| UV Stability (Min. Retained Strength @ 500 hr.) | | ASTM D 4355 | 95% | 95% | 95% | 95% | 95% |
| Tensile Strength (lb./ft.) | | ASTM D 6637 | | | | | |
| Machine Direction | Ultimate (T_{ult}) | | 2,233 | 2,843 | 4,350 | 5,288 | 6,590 |
| | 2% Strain | | — | — | — | — | — |
| | 5% Strain | | 712 | 767 | 1,144 | 1,165 | 1,582 |
| Cross Direction | Ultimate | | 2,213 | 1,459 | 1,959 | 2,089 | 2,192 |
| | 2% Strain | | — | — | — | — | — |
| | 5% Strain | 541 | 356 | 452 | 507 | 521 | |
| Strain @ Ultimate Tensile Strength | | ASTM D 6637 | 10.8% | 11.8% | 13.1% | 12.2% | 11.5% |
| Secant Modulus (lb./ft.) | 2% Strain | | — | — | — | — | — |
| | 5% Strain | | — | — | — | — | — |
| | 10% Strain | — | — | — | — | — | |
| Junction Strength (lb./ft.) | | GRI : GG2 | N/A | 100% | 100% | 100% | 100% |
| Soil-Geosynthetic Friction | | ASTM D 6706 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| Creep Resistance- T_{creep} (lb./ft.) | | ASTM D 5262 | 1,466 | 1,870 | 2,862 | 3,479 | 4,335 |
| Creep Reduction Factor (T_{ult}/T_{creep}) | | | 1.52 | 1.52 | 1.52 | 1.52 | 1.52 |
| Installation Damage (RF _c) | Sand | GRI : GG4 & GT7 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| | Limestone | | 1.17 | 1.17 | 1.17 | 1.17 | 1.17 |
| Durability (RF _d) | Chemical | ASTM D 5322 | 1.15 | 1.15 | 1.15 | 1.15 | 1.15 |
| | Biological | ASTM D1987, D3083, G21 & G22 | 1.15 | 1.15 | 1.15 | 1.15 | 1.15 |
| Joint Strength (RF _j) | Mechanical | ASTM D 6637, GRI : GG4 & GT7 | — | — | — | — | — |
| | Overlap * | ASTM D 6706 | — | — | — | — | — |
| Approved Application Usage | | | 2, 5 | 2, 5 | 2, 5 | 2, 5 | 2, 5 |

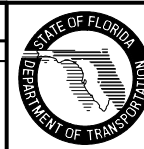
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- 5 = Construction Expedient
- * Minimum 3' Overlap

**APPROVED GEOSYNTHETIC PRODUCTS
(WOVEN GEOGRID)
APPLICATION AND PROPERTIES**

REVISIONS

| DATE | BY | DESCRIPTION | DATE | BY | DESCRIPTION |
|----------|----|--|------|----|-------------|
| 07/01/08 | LJ | Changed Required Test Method for Burst Strength, Soil-Geosynthetic Friction, Creep Reduction Factor, and Overlap Joint Strength. | | | |



2008 Interim Design Standard

GEOSYNTHETIC REINFORCED SOILS


| | |
|--------------|-----------|
| Interim Date | Sheet No. |
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| 501 | |

TABLE OF EXTRUDED GEOGRID VALUES

| PROPERTY | | REQUIRED TEST METHOD | TENSAR BX 4100 | TENSAR BX 4200 | TENSAR BX 1100 | TENSAR BX 1120 | TENSAR BX 1200 | TENSAR BX 1220 | TENSAR BX 1500 |
|---|------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| UV Stability (Min. Retained Strength @ 500 hr.) | | ASTM D 4355 | 90% | 90% | 90% | 100% | 90% | 100% | 90% |
| Tensile Strength (lb./ft.) | | ASTM D 6637 | | | | | | | |
| Machine Direction | Ultimate (T_{ult}) | | 860 | 1,270 | 850 | 850 | 1,315 | 1,315 | 1,790 |
| | 2% Strain | | 240 | 370 | 280 | 280 | 410 | 410 | 580 |
| | 5% Strain | | 480 | 705 | 580 | 580 | 810 | 810 | 1,200 |
| Cross Direction | Ultimate | | 875 | 1,370 | 1,300 | 1,300 | 1,975 | 1,975 | 2,055 |
| | 2% Strain | | 300 | 500 | 450 | 450 | 670 | 670 | 685 |
| | 5% Strain | 635 | 960 | 920 | 920 | 1,360 | 1,360 | 1,370 | |
| Strain @ Ultimate Tensile Strength | | ASTM D 6637 | 10% | 10% | 10% | 10% | 10% | 10% | 10% |
| Secant Modulus @ (lb./ft.) | 2% Strain | | 11,995 | 18,506 | 14,000 | 14,000 | 20,500 | 20,500 | 29,000 |
| | 5% Strain | | 9,596 | 14,092 | 11,600 | 11,600 | 16,200 | 16,200 | 27,400 |
| | 10% Strain | | — | — | — | — | — | — | — |
| Junction Strength (lb./ft.) | | GRI : GG2 | 90% | 90% | 93% | 93% | 93% | 93% | 93% |
| Soil-Geosynthetic Friction | | ASTM D 6706 | — | 0.95 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Creep Resistance- T_{creep} (lb./ft.) | | ASTM D 5262 | 250 | 420 | 180/280 | 180/280 | 255/555 | 255/555 | 470/575 |
| Creep Reduction Factor (T_{ult}/T_{creep}) | | | 3.5 | 3.27 | 2.07 | 2.07 | 1.61 | 1.61 | 2.09 |
| Installation Damage (RF _C) | Sand | GRI : GG4 & GT7 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| | Limestone | | 1.43 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 |
| Durability (RF _D) | Chemical | ASTM D 5322 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| | Biological | ASTM D1987, D3083, G21 & G22 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Joint Strength (RF _J) | Mechanical | ASTM D 6637, GRI : GG4 & GT7 | — | — | — | — | — | — | — |
| | Overlap * | ASTM D 6706 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Approved Application Usage | | | 3, 4, 5 | 3, 4, 5 | 3, 4, 5 | 3, 4, 5 | 3, 4, 5 | 3, 4, 5 | 3, 4, 5 |

Approved Application Usage:
 1 = Steepened Slopes
 2 = Reinforcement of Foundations over Soft Soils
 3 = Both Steepened Slopes & Reinforcement of Foundations over Soft Soils
 4 = Reinforced Embankment
 5 = Construction Expedient
 * Minimum 3' Overlap


APPROVED GEOSYNTHETIC PRODUCTS
 (EXTRUDED GEOGRID)
 APPLICATION AND PROPERTIES

| | | | | | | | | | | | | | | | |
|----------|--|----|--|--|--|------|--|----|--|-------------|--|---|--|---|-----------|
| DATE | | BY | | DESCRIPTION | | DATE | | BY | | DESCRIPTION | | 2008 Interim Design Standard | | Interim Date | Sheet No. |
| 07/01/08 | | LJ | | Changed Required Test Method for Burst Strength, Soil-Geosynthetic Friction, Creep Reduction Factor, and Overlap Joint Strength. | | | | | | | |  | | 07/01/08 | 8 of 9 |
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| | | | | | | | | | | | | | | <p style="text-align: center;">GEOSYNTHETIC REINFORCED SOILS</p> | |

| TABLE OF EXTRUDED GEOGRID VALUES | | | | | | | | |
|---|------------------------|------------------------------|---|---|---|---|--------------|--------------|
| PROPERTY | | REQUIRED TEST METHOD | TENSAR UX 1400 HS UX 1400 MSE UX MESA 3 | TENSAR UX 1500 HS UX 1500 MSE UX MESA 4 | TENSAR UX 1600 HS UX 1600 MSE UX MESA 5 | TENSAR UX 1700 HS UX 1700 MSE UX MESA 6 | TENAX MS 220 | TENAX MS 330 |
| UV Stability (Min. Retained Strength @ 500 hr.) | | ASTM D 4355 | 90% | 90% | 90% | 90% | 85% | 85% |
| Tensile Strength (lb./ft.) | | ASTM D 6637 | | | | | | |
| Machine Direction | Ultimate (T_{ult}) | | 4,790 | 7810 | 9,860 | 11,980 | 925 | 1,370 |
| | 2% Strain | | 1,100 | 1,850 | 2,330 | 2,740 | 300 | 418 |
| | 5% Strain | | 2,130 | 3,560 | 3,980 | 5,140 | 615 | 925 |
| Cross Direction | Ultimate | | — | — | — | — | 1,400 | 2,100 |
| | 2% Strain | | — | — | — | — | 445 | 616 |
| | 5% Strain | — | — | — | — | 890 | 1,340 | |
| Strain @ Ultimate Tensile Strength | | ASTM D 6637 | 10% | 10% | 10% | 10% | 12% | 12% |
| Secant Modulus @ (lb./ft.) | 2% Strain | | 55,000 | 92,500 | 116,500 | 137,000 | 15,000 | 20,900 |
| | 5% Strain | | 42,600 | 71,200 | 79,600 | 102,800 | 12,330 | 18,500 |
| | 10% Strain | | — | — | — | — | — | — |
| Junction Strength (lb./ft.) | | GRI : GG2 | 90% | 90% | 90% | 90% | 835 | 1,230 |
| Soil-Geosynthetic Friction | | ASTM D 6706 | 0.462 | 0.462 | 0.462 | 0.462 | — | — |
| Creep Resistance- T_{creep} (lb./ft.) | | ASTM D 5262 | 1,970 | 3,000 | 3,960 | 4,975 | — | — |
| Creep Reduction Factor (T_{ult}/T_{creep}) | | | 2.43 | 2.60 | 2.49 | 2.41 | 3.5 | 3.5 |
| Installation Damage (RF _C) | Sand | GRI : GG4 & GT7 | 1.10 | 1.10 | 1.10 | 1.10 | 1.1 | 1.1 |
| | Limestone | | 1.20 | 1.20 | 1.20 | 1.20 | 1.1 | 1.1 |
| Durability (RF _d) | Chemical | ASTM D 5322 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| | Biological | ASTM D1987, D3083, G21 & G22 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Joint Strength (RF _j) | Mechanical | ASTM D 6637, GRI : GG4 & GT7 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| | Overlap * | ASTM D 6706 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Approved Application Usage | | | 3 | 3 | 3 | 3 | 2, 5 | 2, 5 |

Approved Application Usage:
 1 = Steepened Slopes
 2 = Reinforcement of Foundations over Soft Soils
 3 = Both Steepened Slopes & Reinforcement of Foundations over Soft Soils
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**APPROVED GEOSYNTHETIC PRODUCTS
 (EXTRUDED GEOGRID)
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|------------------|----|---|------|------------------------------|-------------|---|--|--------------------------------------|-----------|
| REVISIONS | | | | 2008 Interim Design Standard | | | | Interim Date | Sheet No. |
| DATE | BY | DESCRIPTION | DATE | BY | DESCRIPTION | 2008 Interim Design Standard | | 07/01/08 | 9 of 9 |
| 07/01/08 | LJ | Changed Required Test Method for Burst Strength, Soil-Geosynthetic Friction, Creep Reduction Factor, and Overlap Joint Strength. Changed Properties for MS220 & TENAX MS 330. | | | |  | | Index No. | |
| | | | | | | | | GEOSYNTHETIC REINFORCED SOILS | |