

MASTAGRID™ Poly

Polypropylene Geogrid 30/30

GGPB3030

TECHNICAL SPECIFICATIONS



DESCRIPTION

mastaGRID™ Poly is an engineered polypropylene geogrid designed for soil stabilisation, separation & reinforcement applications. This is done through the process of extruding, polypropylene sheets then both stretching in both longitudinal and transverse directions. mastaGRID™ Poly rigid biaxial geogrids perform best in granular, angular fills and are used under roads, railways, loading platforms for sub-base soil reinforcement & stabilisation.

APPLICATION

+ Base Reinforcement + Subgrade Reinforcement + Embankment Stabilisation + Subgrade Separation

SPECIFICATIONS

| mastaGRID™ Poly | | | | |
|------------------------------|-------------|--------------|-------------|------------|
| INDEX PROPERTIES | TEST METHOD | UNITS | GGPB3030 | |
| | | | MD VALUES | TD VALUES |
| Polymer | | - | PP | - |
| Minimum Carbon Black | ASTM D 4218 | % | 2 | - |
| Tensile Strength @ 2% strain | ASTM D 6637 | kN/m (lb/ft) | 10.5 (720) | 10.5 (720) |
| Tensile Strength @ 5% strain | ASTM D 6637 | kN/m (lb/ft) | 21 (1,440) | 21 (1,440) |
| Ultimate Tensile Strength | ASTM D 6637 | kN/m (lb/ft) | 30 (2,050) | 30 (2,050) |
| Strain @ Ultimate Strength | ASTM D 6637 | % | 13 | 13 |
| Junction Efficiency | GRI GG2 | % | 93 | 93 |
| Flexural Rigidity | ASTM D 7748 | mg-cm | 2,000,000 | - |
| Aperture Stability | ASTM D 7864 | m-N/deg | 0.75 | - |
| DIMENSIONS | | | | |
| Aperture Dimensions | - | mm (in) | 34 (1.3) | 34 (1.3) |
| Minimum Rib Thickness | ASTM D1777 | mm (in) | 2.5 (0.10) | 2.5 (0.10) |
| Roll Width | - | m (ft) | 3.95 (12.9) | - |
| Roll Length | - | m (ft) | 50 (164) | - |
| RECOMMENDED OVERLAP | | | | |
| Standard Soil | - | mm | 200 | - |
| Soft / Unstable Soil | - | mm | 500 | - |

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STANDARD TEST METHODS

| mastaGRID™ Poly | | |
|---|--|---|
| GEOGRID PROPERTY TO BE TESTED | TEST METHOD* | TEST NAME |
| Ultimate Tensile Strength/ Tensile Strength at 2% Strain | ASTM D6637-11 or EN ISO 10319 | Standard Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Tensile Method |
| Wide Width Tensile Tests (@ 2% and 5% strain) | ASTM D4595 or EN ISO 10319 | Standard Test Method for Tensile Properties of Geotextile by the Wide-Width Strip Method |
| Installation Damage | ASTM D5818-11 | Standard Practice for Exposure and Retrieval of Samples to Evaluate Installation Damage of Geosynthetics |
| Junction Strength | ASTM D7737-11 (Method B – Confined) | Individual Geogrid Junction Strength |
| Resistance to UV | ASTM D4355-07 | Standard Test Method for Determination of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus |
| Coefficient of Direct Shear ^{Note 1} | ASTM D5321/D5321M-14 | Standard Test Method for Determining the Shear Strength of Soil-Geosynthetic and Geosynthetic-Geosynthetic Interfaces by Direct Shear |

NOTE
1 Direct shear test shall apply vertical stress of 50kPa, 100kPa and 150kPa. Base layer shall consist of granular material with friction angle of 30 degree of a soil sample.

PAVEMENT GEOSYNTHETIC PROPERTY REQUIREMENT

| mastaGRID™ Poly | | | | |
|---|--|------|------------------------------------|---|
| SUBGRADE REINFORCEMENT TYPE | | | TYPE 1 | TYPE 2 |
| Property | Test Method* | Unit | Subgrade Application (CBR > 3%) | Subgrade Application (CBR ≤ 3%) |
| Application | - | - | Reinforced subgrade with CBR > 3% | Reinforced subgrade with CBR ≤ 3% |
| Geogrid aperture size | - | mm | Min ≥ D50 ≈ 9.5 mm Max ≤ 2 x | Min ≥ D50 ≈ 9.5 mm Max ≤ 2 x D85 ≈ 38 mm |
| Geogrid junction strength at 2% strain | ASTM D7737-11 | kN/M | ≥ 9.5 | ≥ 12.5 |
| Tensile strength (Ts) at 2% strain in any direction of the MD and CMD ^{Note 1} | ASTM D6637-11 / ASTM D4595 or EN ISO 10319 | kN/M | ≥ 10.5 | ≥ 14 |
| Resistance to installation damage (Rd) ^{Note 1 & 2} | ASTM D5818-11 | % | ≥ 85 | ≥ 85 |
| Resistance to UV (Ruv) ^{Note 1} | ASTM D4355-07 | % | ≥ 90 | ≥ 90 |
| Coefficient of direct shear | ASTM D5321/ D5321M-14 | % | ≥ 75 | ≥ 75 |

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NOTE 1 For Tensile Strength (Ts) shall be at 2% strain taken from load vs strain curves obtained from a NATA approved laboratory to demonstrate the Ultimate Tensile Strength (UTS).

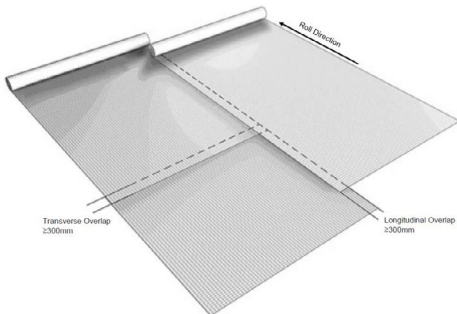
$T_s @ 2\% \leq UTS \times R_d \times R_{uv} \times R_c \times R_m$. Other recognised laboratories can be considered provided they are recognised by NATA or NATA MRA (Mutual Recognition Arrangements) or GAI-LAP (USA). Refer to Clause 5.1.

For biaxial product, minimum strength from both directions should satisfy the requirement of Table 6.2. For uniaxial product, minimum strength from the principal direction should satisfy the requirement of Table 6.2

NOTE 2 The particle grading used for the installation damage test result determined in accordance with ASTM D5818 shall use a particle grading consistent with grading C of Table 7.2.4-A as defined in MRTS05 Unbound Pavements.

NOTE 3 D50: The particle size represented by the “50 percent passing” point when conducting a sieve analysis of a soil sample. D85: The particle size represented by the “85 percent passing” point when conducting a sieve analysis of a soil sample.

NOTE 4 Pavement geosynthetic reinforcement to be used in natural subgrades with pH value between 4 and 9.



| mastaGRID™ | |
|-----------------------|---|
| SUBGRADE CBR | MINIMUM OVERLAP |
| > 2 | 300 - 450mm |
| 1 – 2 | 600 - 900mm |
| 0.5 – 1 | 900mm |
| < 0.5 | Advice from Engineering and Technology Branch to be obtained |
| All roll ends | 900mm |
| All woven geotextiles | Standard Test Method for Determining the Shear Strength of Soil-Geosynthetic and Geosynthetic-Geosynthetic Interfaces by Direct Shear |

OVERLAP

The recommended minimum overlap for woven geotextile is 1000 mm in all directions for all subgrade CBR values.

The recommended minimum geogrid/geocomposite overlaps are shown below:

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TESTING OF SITE SAMPLES

The tensile strength at 2% strain test results shall be calculated from the results of tests carried on a minimum number of five test specimens. For the appropriate test method refer Table 4.

The characteristic value of the strength properties listed in Table 9.3 shall be calculated in accordance with the requirements of Clause 12 of MRTS01 Introduction to Technical Specifications.

The tensile strength at 2% strain test results shall be calculated from the results of tests carried on a minimum number of five test specimens. For the appropriate test method refer Table 4.

The characteristic value of the strength properties listed in Table 9.3 shall be calculated in accordance with the requirements of Clause 12 of MRTS01 Introduction to Technical Specifications.

| mastaGRID™ Poly | | |
|---|---|---------------------------------|
| PROPERTY | CHARACTERISTIC VALUE REQUIREMENT FOR COMPLIANCE | |
| | TYPE 1 | TYPE 2 |
| Application | Subgrade Application (CBR > 3%) | Subgrade Application (CBR ≤ 3%) |
| Tensile strength (Ts) at 2% strain in any MD and CMD*(kN/m) | 10.5 | 14 |

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