

MASTAGRID™ *Poly*

Polypropylene Geogrid 40/40

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	GGPB4040	
			MD VALUES	TD VALUES
Polymer		-	PP	-
Minimum Carbon Black	ASTM D 4218	%	2	-
Tensile Strength @ 2% strain	ASTM D 6637	kN/m (lb/ft)	14 (960)	14 (960)
Tensile Strength @ 5% strain	ASTM D 6637	kN/m (lb/ft)	28 (1,920)	28 (1,920)
Ultimate Tensile Strength	ASTM D 6637	kN/m (lb/ft)	40 (2,740)	40 (2,740)
Strain @ Ultimate Strength	ASTM D 6637	%	13	13
Junction Efficiency	GRI GG2	%	93	93
Flexural Rigidity	ASTM D 7748	mg-cm	4,800,000	-
Aperture Stability	ASTM D 7864	m-N/deg	0.98	-
DIMENSIONS				
Aperture Dimensions	-	mm (in)	33 (1.3)	33 (1.3)
Minimum Rib Thickness	ASTM D1777	mm (in)	3.4 (0.13)	3.4 (0.13)
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

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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

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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).

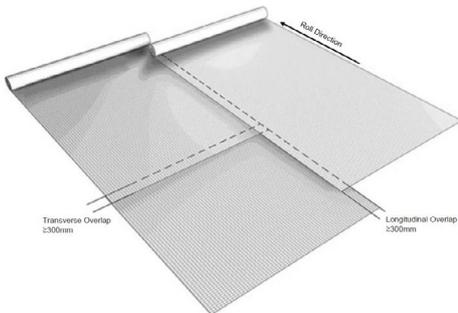
$T_s @ 2\% \leq UTS \times R_d \times R_{uv} \times R_c \times R_m$. Other recognised laboratories can be considered provided they are recognised by NATA or NATA MRA (Mutual Recognition Arrangements) or GAI-LAP (USA). Refer to Clause 5.1.

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.



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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 of the sampled pavement geosynthetics shall be tested by the Contractor:

Identification information including the pavement geosynthetic supplier, type, batch identification, and details of the order represented by sample, sample date and roll directional markings shall be shown on or attached to the test reports.

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.

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SUBGRADE CBR	MINIMUM	
	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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