Product Specification - Structural Geogrid BX1100

Tensar Earth Technologies, Inc. reserves the right to change its product specifications at any time. It is the responsibility of the specifier and purchaser to ensure that product specifications used for design and procurement purposes are current and consistent with the products used in each instance. Please contact Tensar Earth Technologies, Inc. at 800-836-7271 for assistance

The structural geogrid shall be an integrally formed grid structure manufactured of a stress resistant polypropylene material with molecular weight and molecular characteristics which impart: (a) high resistance to loss of load capacity or structural integrity when the geogrid is subjected to mechanical stress in installation; (b) high resistance to deformation when the geogrid is subjected to applied force in use; and (c) high resistance to loss of load capacity or structural integrity when the geogrid is subjected to long-term environmental stress.

The structural geogrid shall accept applied force in use by positive mechanical interlock (i.e. by direct mechanical keying) with: (a) compacted soil or construction fill materials; (b) contiguous sections of itself when overlapped and embedded in compacted soil or construction fill materials; and (c) rigid mechanical connectors such as bodkins, pins or hooks. The structural geogrid shall possess sufficient cross sectional profile to present a substantial abutment interface to compacted soil or particulate construction fill materials and to resist movement relative to such materials when subject to applied force. The structural geogrid shall possess sufficient true initial modulus to cause applied force to be transferred to the geogrid at low strain levels without material deformation of the reinforced structure. The structural geogrid shall possess complete continuity of all properties throughout its structure and shall be suitable for reinforcement of compacted soil or particulate construction fill materials to improve their long term stability in structural load bearing applications such as earth retention systems. The structural geogrid shall otherwise have the following characteristics:

Product Type: **Integrally Formed Structural Geogrid**
Load Transfer Mechanism: **Positive Mechanical Interlock**

Product Properties

Index Properties	**Units**	**MD Values[1]**	**XMD Values[1]**
▪ Aperture Dimensions[2]	mm (in)	25 (1.0)	33 (1.3)
▪ Minimum Rib Thickness[2]	mm (in)	0.76 (0.03)	0.76 (0.03)
Load Capacity			
▪ True Initial Modulus in Use[3]	kN/m(lb/ft)	250 (17,140)	400 (27,420)
▪ True Tensile Strength @2% Strain[3]	kN/m(lb/ft)	4.1 (280)	6.6 (450)
▪ True Tensile Strength @5% Strain[3]	kN/m(lb/ft)	8.5 (580)	13.4 (920)
Structural Integrity			
▪ Junction Efficiency[4]	%	93	
▪ Flexural Stiffness[5]	mg-cm	250,000	
▪ Aperture Stability[6]	kg-cm/deg	3.2	
Durability			
▪ Resistance to Installation Damage[7]	%SC / %SW / %GP	90 / 83 / 70	
▪ Resistance to Long Term Degradation[8]	%	100	

Dimensions and Delivery

The structural geogrid shall be delivered to the jobsite in roll form with each roll individually identified and nominally measuring 3.0 meters (9.8 feet) or 4.0 meters (13.1 feet) in width and 50.0 meters (164 feet) or 75.0 meters (246 feet) in length. A typical truckload quantity is 260 to 350 rolls. On special request, the structural geogrid may also be custom cut to specific lengths or widths to suit site specific engineering designs.

Notes

1. Unless indicated otherwise, values shown are minimum average roll values determined in accordance with ASTM D-4759. Brief descriptions of test procedures are given in the following notes. Complete descriptions of test procedures are available on request from Tensar Earth Technologies, Inc.
2. Nominal Dimensions.
3. True resistance to elongation when initially subjected to a load measured via ASTM D6637 without deforming test materials under load before measuring such resistance or employing "secant" or "offset" tangent methods of measurement so as to overstate tensile properties.
4. Load transfer capability measured via GRI-GG2-87. Expressed as a percentage of ultimate tensile strength.
5. Resistance to bending force measured via ASTM D-5732-95, using specimens of width two ribs wide, with transverse ribs cut flush with exterior edges of longitudinal ribs (as a “ladder”), and of length sufficiently long to enable measurement of the overhang dimension. The overall Flexural Stiffness is calculated as the square root of the product of machine-and cross-machine-direction Flexural Stiffness values.
6. Resistance to in-plane rotational movement measured by applying a 20 kg-cm moment to the central junction of a 9 inch x 9 inch specimen restrained at its perimeter (U.S. Army Corps of Engineers Methodology for measurement of Torsional Rigidity).
7. Resistance to loss of load capacity or structural integrity when subjected to mechanical installation stress in clayey sand (SC), well graded sand (SW), and crushed stone classified as poorly graded gravel (GP). The geogrid shall be sampled in accordance with ASTM D5818 and load capacity shall be measured in accordance with ASTM D6637.
8. Resistance to loss of load capacity or structural integrity when subjected to chemically aggressive environments measured via EPA 9090 immersion testing.

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February 1, 2004
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Product Specification - Structural Geogrid BX1120

Tensar Earth Technologies, Inc. reserves the right to change its product specifications at any time. It is the responsibility of the specifier and purchaser to ensure that product specifications used for design and procurement purposes are current and consistent with the products used in each instance. Please contact Tensar Earth Technologies, Inc. at 800-836-7271 for assistance

The structural geogrid shall be an integrally formed grid structure manufactured of a stress resistant polypropylene material with molecular weight and molecular characteristics which impart: (a) high resistance to loss of load capacity or structural integrity when the geogrid is subjected to mechanical stress in installation; (b) high resistance to deformation when the geogrid is subjected to applied force in use; and (c) high resistance to loss of load capacity or structural integrity when the geogrid is subjected to long-term environmental stress.

The structural geogrid shall accept applied force in use by positive mechanical interlock (i.e. by direct mechanical keying) with: (a) compacted soil or construction fill materials; (b) contiguous sections of itself when overlapped and embedded in compacted soil or construction fill materials; and (c) rigid mechanical connectors such as bodkins, pins or hooks. The structural geogrid shall possess sufficient flexural stiffness to enable efficient installation over weak or wet in situ soils and sufficient torsional stiffness to resist in-plane movement of compacted soil or construction fill materials when these are subject to rotating lateral displacement forces such (i.e. what a moving vehicle causes in a roadway foundation). The structural geogrid shall possess complete continuity of all properties throughout its structure and shall be suitable for internal reinforcement of compacted soil or particulate construction fill materials to improve their load bearing capacity in structural load bearing applications such as foundation improvement systems. The structural geogrid shall otherwise have the following characteristics:

Product Type: **Integrally Formed Structural Geogrid**
Load Transfer Mechanism: **Positive Mechanical Interlock**

Product Properties

Index Properties	**Units**	**MD Values[1]**	**XMD Values[1]**
▪ Aperture Dimensions[2]	mm (in)	25 (1.0)	33 (1.3)
▪ Minimum Rib Thickness[2]	mm (in)	0.76 (0.03)	0.76 (0.03)
Load Capacity			
▪ True Initial Modulus in Use[3]	kN/m(lb/ft)	250 (17,140)	400 (27,420)
▪ True Tensile Strength @2% Strain[3]	kN/m(lb/ft)	4.1 (280)	6.6 (450)
▪ True Tensile Strength @5% Strain[3]	kN/m(lb/ft)	8.5 (580)	13.4 (920)
Structural Integrity			
▪ Junction Efficiency[4]	%	93	
▪ Flexural Stiffness[5]	mg-cm	250,000	
▪ Aperture Stability[6]	kg-cm/deg	3.2	
Durability			
▪ Resistance to Installation Damage[7]	%SC / %SW / %GP	90 / 83 / 70	
▪ Resistance to Long Term Degradation[8]	%	100	
▪ Carbon Black Content	%	2.0	

Dimensions and Delivery

The structural geogrid shall be delivered to the jobsite in roll form with each roll individually identified and nominally measuring 3.0 meters (9.8 feet) or 4.0 meters (13.1 feet) in width and 50.0 meters (164 feet) or 75.0 meters (246 feet) in length. A typical truckload quantity is 260 to 350 rolls. On special request, the structural geogrid may also be custom cut to specific lengths or widths to suit site specific engineering designs.

Notes

1. Unless indicated otherwise, values shown are minimum average roll values determined in accordance with ASTM D-4759. Brief descriptions of test procedures are given in the following notes. Complete descriptions of test procedures are available on request from Tensar Earth Technologies, Inc.
2. Nominal Dimensions.
3. True resistance to elongation when initially subjected to a load measured via ASTM D6637 without deforming test materials under load before measuring such resistance or employing "secant" or "offset" tangent methods of measurement so as to overstate tensile properties.
4. Load transfer capability measured via GRI-GG2-87. Expressed as a percentage of ultimate tensile strength.
5. Resistance to bending force measured via ASTM D-5732-95, using specimens of width two ribs wide, with transverse ribs cut flush with exterior edges of longitudinal ribs (as a “ladder”), and of length sufficiently long to enable measurement of the overhang dimension. The overall Flexural Stiffness is calculated as the square root of the product of machine-and cross-machine-direction Flexural Stiffness values.
6. Resistance to in-plane rotational movement measured by applying a 20 kg-cm moment to the central junction of a 9 inch x 9 inch specimen restrained at its perimeter (U.S. Army Corps of Engineers Methodology for measurement of Torsional Rigidity).
7. Resistance to loss of load capacity or structural integrity when subjected to mechanical installation stress in clayey sand (SC), well graded sand (SW), and crushed stone classified as poorly graded gravel (GP). The geogrid shall be sampled in accordance with ASTM D5818 and load capacity shall be measured in accordance with ASTM D6637.
8. Resistance to loss of load capacity or structural integrity when subjected to chemically aggressive environments measured via EPA 9090 immersion testing.

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February 1, 2004
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Product Specification - Structural Geogrid BX1200

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The structural geogrid shall be an integrally formed grid structure manufactured of a stress resistant polypropylene material with molecular weight and molecular characteristics which impart: (a) high resistance to loss of load capacity or structural integrity when the geogrid is subjected to mechanical stress in installation; (b) high resistance to deformation when the geogrid is subjected to applied force in use; and (c) high resistance to loss of load capacity or structural integrity when the geogrid is subjected to long-term environmental stress.

The structural geogrid shall accept applied force in use by positive mechanical interlock (i.e. by direct mechanical keying) with: (a) compacted soil or construction fill materials; (b) contiguous sections of itself when overlapped and embedded in compacted soil or construction fill materials; and (c) rigid mechanical connectors such as bodkins, pins or hooks. The structural geogrid shall possess sufficient cross sectional profile to present a substantial abutment interface to compacted soil or particulate construction fill materials and to resist movement relative to such materials when subject to applied force. The structural geogrid shall possess sufficient true initial modulus to cause applied force to be transferred to the geogrid at low strain levels without material deformation of the reinforced structure. The structural geogrid shall possess complete continuity of all properties throughout its structure and shall be suitable for reinforcement of compacted soil or particulate construction fill materials to improve their long term stability in structural load bearing applications such as earth retention systems. The structural geogrid shall otherwise have the following characteristics:

Product Type: **Integrally Formed Structural Geogrid**
Load Transfer Mechanism: **Positive Mechanical Interlock**

Product Properties **Index Properties**	**Units**	**MD Values[1]**	**XMD Values[1]**
▪ Aperture Dimensions[2]	mm (in)	25 (1.0)	33 (1.3)
▪ Minimum Rib Thickness[2]	mm (in)	1.27 (0.05)	1.27 (0.05)
Load Capacity			
▪ True Initial Modulus in Use[3]	kN/m(lb/ft)	400 (27,420)	650 (44,550)
▪ True Tensile Strength @2% Strain[3]	kN/m(lb/ft)	6.0 (410)	9.0 (620)
▪ True Tensile Strength @5% Strain[3]	kN/m(lb/ft)	11.8 (810)	19.6 (1,340)
Structural Integrity			
▪ Junction Efficiency[4]	%	93	
▪ Flexural Stiffness[5]	mg-cm	750,000	
▪ Aperture Stability[6]	kg-cm/deg	6.5	
Durability			
▪ Resistance to Installation Damage[7]	%SC / %SW / %GP	95 / 89 / 86	
▪ Resistance to Long Term Degradation[8]	%	100	

Dimensions and Delivery

The structural geogrid shall be delivered to the jobsite in roll form with each roll individually identified and nominally measuring 3.0 meters (9.8 feet) or 4.0 meters (13.1 feet) in width and 50.0 meters (164 feet) in length. A typical truckload quantity is 165 to 220 rolls. On special request, the structural geogrid may also be custom cut to specific lengths or widths to suit site specific engineering designs.

Notes

1. Unless indicated otherwise, values shown are minimum average roll values determined in accordance with ASTM D-4759. Brief descriptions of test procedures are given in the following notes. Complete descriptions of test procedures are available on request from Tensar Earth Technologies, Inc.
2. Nominal Dimensions.
3. True resistance to elongation when initially subjected to a load measured via ASTM D6637 without deforming test materials under load before measuring such resistance or employing "secant" or "offset" tangent methods of measurement so as to overstate tensile properties.
4. Load transfer capability measured via GRI-GG2-87. Expressed as a percentage of ultimate tensile strength.
5. Resistance to bending force measured via ASTM D-5732-95, using specimens of width two ribs wide, with transverse ribs cut flush with exterior edges of longitudinal ribs (as a “ladder”), and of length sufficiently long to enable measurement of the overhang dimension. The overall Flexural Stiffness is calculated as the square root of the product of machine-and cross-machine-direction Flexural Stiffness values.
6. Resistance to in-plane rotational movement measured by applying a 20 kg-cm moment to the central junction of a 9 inch x 9 inch specimen restrained at its perimeter (U.S. Army Corps of Engineers Methodology for measurement of Torsional Rigidity).
7. Resistance to loss of load capacity or structural integrity when subjected to mechanical installation stress in clayey sand (SC), well graded sand (SW), and crushed stone classified as poorly graded gravel (GP). The geogrid shall be sampled in accordance with ASTM D5818 and load capacity shall be measured in accordance with ASTM D6637.
8. Resistance to loss of load capacity or structural integrity when subjected to chemically aggressive environments measured via EPA 9090 immersion testing.

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February 1, 2004
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Product Specification - Structural Geogrid BX1220

The structural geogrid shall be an integrally formed grid structure manufactured of a stress resistant polypropylene material with molecular weight and molecular characteristics which impart: (a) high resistance to loss of load capacity or structural integrity when the geogrid is subjected to mechanical stress in installation; (b) high resistance to deformation when the geogrid is subjected to applied force in use; and (c) high resistance to loss of load capacity or structural integrity when the geogrid is subjected to long-term environmental stress.

The structural geogrid shall accept applied force in use by positive mechanical interlock (i.e. by direct mechanical keying) with: (a) compacted soil or construction fill materials; (b) contiguous sections of itself when overlapped and embedded in compacted soil or construction fill materials; and (c) rigid mechanical connectors such as bodkins, pins or hooks. The structural geogrid shall possess sufficient flexural stiffness to enable efficient installation over weak or wet in situ soils and sufficient torsional stiffness to resist in-plane movement of compacted soil or construction fill materials when these are subject to rotating lateral displacement forces such (i.e. what a moving vehicle causes in a roadway foundation). The structural geogrid shall possess complete continuity of all properties throughout its structure and shall be suitable for internal reinforcement of compacted soil or particulate construction fill materials to improve their load bearing capacity in structural load bearing applications such as foundation improvement systems. The structural geogrid shall otherwise have the following characteristics:

Product Type: **Integrally Formed Structural Geogrid**
Load Transfer Mechanism: **Positive Mechanical Interlock**

Product Properties

Index Properties	**Units**	**MD Values[1]**	**XMD Values[1]**
▪ Aperture Dimensions[2]	mm (in)	25 (1.0)	33 (1.3)
▪ Minimum Rib Thickness[2]	mm (in)	1.27 (0.05)	1.27 (0.05)
Load Capacity			
▪ True Initial Modulus in Use[3]	kN/m(lb/ft)	400 (27,420)	650 (44,500)
▪ True Tensile Strength @2% Strain[3]	kN/m(lb/ft)	6.0 (410)	9.0 (620)
▪ True Tensile Strength @5% Strain[3]	kN/m(lb/ft)	11.8 (810)	19.6 (1,340)
Structural Integrity			
▪ Junction Efficiency[4]	%	93	
▪ Flexural Stiffness[5]	mg-cm	750,000	
▪ Aperture Stability[6]	kg-cm/deg	6.5	
Durability			
▪ Resistance to Installation Damage[7]	%SC / %SW / %GP	95 / 89 / 86	
▪ Resistance to Long Term Degradation[8]	%	100	
▪ Carbon Black Content	%	2.0	

Dimensions and Delivery

The structural geogrid shall be delivered to the jobsite in roll form with each roll individually identified and nominally measuring 3.0 meters (9.8 feet) or 4.0 meters (13.1 feet) in width and 50.0 meters (164 feet) in length. A typical truckload quantity is 165 to 220 rolls. On special request, the structural geogrid may also be custom cut to specific lengths or widths to suit site specific engineering designs.

Notes

1. Unless indicated otherwise, values shown are minimum average roll values determined in accordance with ASTM D-4759. Brief descriptions of test procedures are given in the following notes. Complete descriptions of test procedures are available on request from Tensar Earth Technologies, Inc.
2. Nominal Dimensions.
3. True resistance to elongation when initially subjected to a load measured via ASTM D6637 without deforming test materials under load before measuring such resistance or employing "secant" or "offset" tangent methods of measurement so as to overstate tensile properties.
4. Load transfer capability measured via GRI-GG2-87. Expressed as a percentage of ultimate tensile strength.
5. Resistance to bending force measured via ASTM D-5732-95, using specimens of width two ribs wide, with transverse ribs cut flush with exterior edges of longitudinal ribs (as a “ladder”), and of length sufficiently long to enable measurement of the overhang dimension. The overall Flexural Stiffness is calculated as the square root of the product of machine-and cross-machine-direction Flexural Stiffness values.
6. Resistance to in-plane rotational movement measured by applying a 20 kg-cm moment to the central junction of a 9 inch x 9 inch specimen restrained at its perimeter (U.S. Army Corps of Engineers Methodology for measurement of Torsional Rigidity).
7. Resistance to loss of load capacity or structural integrity when subjected to mechanical installation stress in clayey sand (SC), well graded sand (SW), and crushed stone classified as poorly graded gravel (GP). The geogrid shall be sampled in accordance with ASTM D5818 and load capacity shall be measured in accordance with ASTM D6637.
8. Resistance to loss of load capacity or structural integrity when subjected to chemically aggressive environments measured via EPA 9090 immersion testing.

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February 1, 2004
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Product Specification - Structural Geogrid BX1300

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The structural geogrid shall be an integrally formed grid structure manufactured of a stress resistant polypropylene material with molecular weight and molecular characteristics which impart: (a) high resistance to loss of load capacity or structural integrity when the geogrid is subjected to mechanical stress in installation; (b) high resistance to deformation when the geogrid is subjected to applied force in use; and (c) high resistance to loss of load capacity or structural integrity when the geogrid is subjected to long-term environmental stress.

The structural geogrid shall accept applied force in use by positive mechanical interlock (i.e. by direct mechanical keying) with: (a) compacted soil or construction fill materials; (b) contiguous sections of itself when overlapped and embedded in compacted soil or construction fill materials; and (c) rigid mechanical connectors such as bodkins, pins or hooks. The structural geogrid shall possess sufficient cross sectional profile to present a substantial abutment interface to compacted soil or particulate construction fill materials and to resist movement relative to such materials when subject to applied force. The structural geogrid shall possess sufficient true initial modulus to cause applied force to be transferred to the geogrid at low strain levels without material deformation of the reinforced structure. The structural geogrid shall possess complete continuity of all properties throughout its structure and shall be suitable for reinforcement of compacted soil or particulate construction fill materials to improve their long term stability in structural load bearing applications such as earth retention systems. The structural geogrid shall otherwise have the following characteristics:

Product Type: **Integrally Formed Structural Geogrid**
Load Transfer Mechanism: **Positive Mechanical Interlock**

Product Properties

Index Properties	**Units**	**MD Values[1]**	**XMD Values[1]**
▪ Aperture Dimensions[2]	mm (in)	46 (1.8)	64 (2.5)
▪ Minimum Rib Thickness[2]	mm (in)	1.27 (0.05)	1.27 (0.05)
Load Capacity			
▪ True Initial Modulus in Use[3]	kN/m(lb/ft)	350 (24,000)	500 (34,270)
▪ True Tensile Strength @2% Strain[3]	kN/m(lb/ft)	5.5 (380)	9.5 (650)
▪ True Tensile Strength @5% Strain[3]	kN/m(lb/ft)	10.5 (720)	17.5 (1,200)
Structural Integrity			
▪ Junction Efficiency[4]	%	93	
▪ Flexural Stiffness[5]	mg-cm	450,000	
▪ Aperture Stability[6]	kg-cm/deg	5.8	
Durability			
▪ Resistance to Installation Damage[7]	%SC / %SW / %GP	91 / 83 / 72	
▪ Resistance to Long Term Degradation[8]	%	100	

Dimensions and Delivery

The structural geogrid shall be delivered to the jobsite in roll form with each roll individually identified and nominally measuring 4.0 meters (13.1 feet) in width and 50.0 meters (164 feet) in length. A typical truckload quantity is 180 rolls. On special request, the structural geogrid may also be custom cut to specific lengths or widths to suit site specific engineering designs.

Notes

1. Unless indicated otherwise, values shown are minimum average roll values determined in accordance with ASTM D-4759. Brief descriptions of test procedures are given in the following notes. Complete descriptions of test procedures are available on request from Tensar Earth Technologies, Inc.
2. Nominal Dimensions.
3. True resistance to elongation when initially subjected to a load measured via ASTM D6637 without deforming test materials under load before measuring such resistance or employing "secant" or "offset" tangent methods of measurement so as to overstate tensile properties.
4. Load transfer capability measured via GRI-GG2-87. Expressed as a percentage of ultimate tensile strength.
5. Resistance to bending force measured via ASTM D-5732-95, using specimens of width two ribs wide, with transverse ribs cut flush with exterior edges of longitudinal ribs (as a “ladder”), and of length sufficiently long to enable measurement of the overhang dimension. The overall Flexural Stiffness is calculated as the square root of the product of machine-and cross-machine-direction Flexural Stiffness values.
6. Resistance to in-plane rotational movement measured by applying a 20 kg-cm moment to the central junction of a 9 inch x 9 inch specimen restrained at its perimeter (U.S. Army Corps of Engineers Methodology for measurement of Torsional Rigidity).
7. Resistance to loss of load capacity or structural integrity when subjected to mechanical installation stress in clayey sand (SC), well graded sand (SW), and crushed stone classified as poorly graded gravel (GP). The geogrid shall be sampled in accordance with ASTM D5818 and load capacity shall be measured in accordance with ASTM D6637.
8. Resistance to loss of load capacity or structural integrity when subjected to chemically aggressive environments measured via EPA 9090 immersion testing.

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February 1, 2004
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Product Specification - Structural Geogrid BX1500

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The structural geogrid shall be an integrally formed grid structure manufactured of a stress resistant polypropylene material with molecular weight and molecular characteristics which impart: (a) high resistance to loss of load capacity or structural integrity when the geogrid is subjected to mechanical stress in installation; (b) high resistance to deformation when the geogrid is subjected to applied force in use; and (c) high resistance to loss of load capacity or structural integrity when the geogrid is subjected to long-term environmental stress.

The structural geogrid shall accept applied force in use by positive mechanical interlock (i.e. by direct mechanical keying) with: (a) compacted soil or construction fill materials; (b) contiguous sections of itself when overlapped and embedded in compacted soil or construction fill materials; and (c) rigid mechanical connectors such as bodkins, pins or hooks. The structural geogrid shall possess sufficient cross sectional profile to present a substantial abutment interface to compacted soil or particulate construction fill materials and to resist movement relative to such materials when subject to applied force. The structural geogrid shall possess sufficient true initial modulus to cause applied force to be transferred to the geogrid at low strain levels without material deformation of the reinforced structure. The structural geogrid shall possess complete continuity of all properties throughout its structure and shall be suitable for reinforcement of compacted soil or particulate construction fill materials to improve their long term stability in structural load bearing applications such as earth retention systems. The structural geogrid shall otherwise have the following characteristics:

Product Type: **Integrally Formed Structural Geogrid**
Load Transfer Mechanism: **Positive Mechanical Interlock**

Product Properties

Index Properties	**Units**	**MD Values[1]**	**XMD Values[1]**
▪ Aperture Dimensions[2]	mm (in)	25 (1.0)	30.5 (1.2)
▪ Minimum Rib Thickness[2]	mm (in)	1.78 (0.07)	1.78 (0.07)
Load Capacity			
▪ True Initial Modulus in Use[3]	kN/m(lb/ft)	500 (34,270)	625 (42,840)
▪ True Tensile Strength @2% Strain[3]	kN/m(lb/ft)	8.5 (580)	10.0 (690)
▪ True Tensile Strength @5% Strain[3]	kN/m(lb/ft)	17.5 (1,200)	20.0 (1,370)
Structural Integrity			
▪ Junction Efficiency[4]	%	93	
▪ Flexural Stiffness[5]	mg-cm	2,000,000	
▪ Aperture Stability[6]	kg-cm/deg	7.5	
Durability			
▪ Resistance to Installation Damage[7]	%SC / %SW / %GP	91 / 91 / 85	
▪ Resistance to Long Term Degradation[8]	%	100	
▪ Carbon Black Content	%	2.0	

Dimensions and Delivery

The structural geogrid shall be delivered to the jobsite in roll form with each roll individually identified and nominally measuring 4.0 meters (13.1 feet) in width and 50.0 meters (164 feet) in length. A typical truckload quantity is 150 rolls. On special request, the structural geogrid may also be custom cut to specific lengths or widths to suit site specific engineering designs.

Notes

1. Unless indicated otherwise, values shown are minimum average roll values determined in accordance with ASTM D-4759. Brief descriptions of test procedures are given in the following notes. Complete descriptions of test procedures are available on request from Tensar Earth Technologies, Inc.
2. Nominal Dimensions.
3. True resistance to elongation when initially subjected to a load measured via ASTM D6637 without deforming test materials under load before measuring such resistance or employing "secant" or "offset" tangent methods of measurement so as to overstate tensile properties.
4. Load transfer capability measured via GRI-GG2-87. Expressed as a percentage of ultimate tensile strength.
5. Resistance to bending force measured via ASTM D-5732-95, using specimens of width two ribs wide, with transverse ribs cut flush with exterior edges of longitudinal ribs (as a “ladder”), and of length sufficiently long to enable measurement of the overhang dimension. The overall Flexural Stiffness is calculated as the square root of the product of machine-and cross-machine-direction Flexural Stiffness values.
6. Resistance to in-plane rotational movement measured by applying a 20 kg-cm moment to the central junction of a 9 inch x 9 inch specimen restrained at its perimeter (U.S. Army Corps of Engineers Methodology for measurement of Torsional Rigidity).
7. Resistance to loss of load capacity or structural integrity when subjected to mechanical installation stress in clayey sand (SC), well graded sand (SW), and crushed stone classified as poorly graded gravel (GP). The geogrid shall be sampled in accordance with ASTM D5818 and load capacity shall be measured in accordance with ASTM D6637.
8. Resistance to loss of load capacity or structural integrity when subjected to chemically aggressive environments measured via EPA 9090 immersion testing.

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February 1, 2004
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Product Specification - Structural Geogrid BX4100

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The structural geogrid shall be an integrally formed grid structure manufactured of a stress resistant polypropylene material with molecular weight and molecular characteristics which impart: (a) high resistance to loss of load capacity or structural integrity when the geogrid is subjected to mechanical stress in installation; (b) high resistance to deformation when the geogrid is subjected to applied force in use; and (c) high resistance to loss of load capacity or structural integrity when the geogrid is subjected to long-term environmental stress.

The structural geogrid shall accept applied force in use by positive mechanical interlock (i.e. by direct mechanical keying) with: (a) compacted soil or construction fill materials; (b) contiguous sections of itself when overlapped and embedded in compacted soil or construction fill materials; and (c) rigid mechanical connectors such as bodkins, pins or hooks. The structural geogrid shall possess sufficient cross sectional profile to present a substantial abutment interface to compacted soil or particulate construction fill materials and to resist movement relative to such materials when subject to applied force. The structural geogrid shall possess sufficient true initial modulus to cause applied force to be transferred to the geogrid at low strain levels without material deformation of the reinforced structure. The structural geogrid shall possess complete continuity of all properties throughout its structure and shall be suitable for reinforcement of compacted soil or particulate construction fill materials to improve their long term stability in structural load bearing applications such as earth retention systems. The structural geogrid shall otherwise have the following characteristics:

Product Type: **Integrally Formed Structural Geogrid**
Load Transfer Mechanism: **Positive Mechanical Interlock**

Product Properties

Index Properties	**Units**	**MD Values[1]**	**XMD Values[1]**
▪ Aperture Dimensions[2]	mm (in)	33 (1.3)	33 (1.3)
▪ Minimum Rib Thickness[2]	mm (in)	0.76 (0.03)	0.76 (0.03)
Load Capacity			
▪ True Initial Modulus in Use[3]	kN/m(lb/ft)	220 (15,080)	300 (20,560)
▪ True Tensile Strength @2% Strain[3]	kN/m(lb/ft)	4.0 (270)	5.5 (380)
▪ True Tensile Strength @5% Strain[3]	kN/m(lb/ft)	8.0 (550)	10.5 (720)
Structural Integrity			
▪ Junction Efficiency[4]	%	93	
▪ Flexural Stiffness[5]	mg-cm	250,000	
▪ Aperture Stability[6]	kg-cm/deg	2.8	
Durability			
▪ Resistance to Installation Damage[7]	%SC / %SW / %GP	90 / 83 / 70	
▪ Resistance to Long Term Degradation[8]	%	100	

Dimensions and Delivery

The structural geogrid shall be delivered to the jobsite in roll form with each roll individually identified and nominally measuring 3.0 meters (9.8 feet) or 4.0 meters (13.1 feet) in width and 50.0 meters (164 feet) or 75.0 meters (246 feet) in length. A typical truckload quantity is 285 to 380 rolls. On special request, the structural geogrid may also be custom cut to specific lengths or widths to suit site specific engineering designs.

Notes

1. Unless indicated otherwise, values shown are minimum average roll values determined in accordance with ASTM D-4759. Brief descriptions of test procedures are given in the following notes. Complete descriptions of test procedures are available on request from Tensar Earth Technologies, Inc.
2. Nominal Dimensions.
3. True resistance to elongation when initially subjected to a load measured via ASTM D6637 without deforming test materials under load before measuring such resistance or employing "secant" or "offset" tangent methods of measurement so as to overstate tensile properties.
4. Load transfer capability measured via GRI-GG2-87. Expressed as a percentage of ultimate tensile strength.
5. Resistance to bending force measured via ASTM D-5732-95, using specimens of width two ribs wide, with transverse ribs cut flush with exterior edges of longitudinal ribs (as a “ladder”), and of length sufficiently long to enable measurement of the overhang dimension. The overall Flexural Stiffness is calculated as the square root of the product of machine-and cross-machine-direction Flexural Stiffness values.
6. Resistance to in-plane rotational movement measured by applying a 20 kg-cm moment to the central junction of a 9 inch x 9 inch specimen restrained at its perimeter (U.S. Army Corps of Engineers Methodology for measurement of Torsional Rigidity).
7. Resistance to loss of load capacity or structural integrity when subjected to mechanical installation stress in clayey sand (SC), well graded sand (SW), and crushed stone classified as poorly graded gravel (GP). The geogrid shall be sampled in accordance with ASTM D5818 and load capacity shall be measured in accordance with ASTM D6637.
8. Resistance to loss of load capacity or structural integrity when subjected to chemically aggressive environments measured via EPA 9090 immersion testing.

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February 1, 2004
This product specification supersedes all prior specifications for the product described above and is not applicable to any products shipped prior to February 1, 2004.

Product Specification - Structural Geogrid BX4200

The structural geogrid shall be an integrally formed grid structure manufactured of a stress resistant polypropylene material with molecular weight and molecular characteristics which impart: (a) high resistance to loss of load capacity or structural integrity when the geogrid is subjected to mechanical stress in installation; (b) high resistance to deformation when the geogrid is subjected to applied force in use; and (c) high resistance to loss of load capacity or structural integrity when the geogrid is subjected to long-term environmental stress.

The structural geogrid shall accept applied force in use by positive mechanical interlock (i.e. by direct mechanical keying) with: (a) compacted soil or construction fill materials; (b) contiguous sections of itself when overlapped and embedded in compacted soil or construction fill materials; and (c) rigid mechanical connectors such as bodkins, pins or hooks. The structural geogrid shall possess sufficient cross sectional profile to present a substantial abutment interface to compacted soil or particulate construction fill materials and to resist movement relative to such materials when subject to applied force. The structural geogrid shall possess sufficient true initial modulus to cause applied force to be transferred to the geogrid at low strain levels without material deformation of the reinforced structure. The structural geogrid shall possess complete continuity of all properties throughout its structure and shall be suitable for reinforcement of compacted soil or particulate construction fill materials to improve their long term stability in structural load bearing applications such as earth retention systems. The structural geogrid shall otherwise have the following characteristics:

Product Type: **Integrally Formed Structural Geogrid**
Load Transfer Mechanism: **Positive Mechanical Interlock**

Product Properties

Index Properties	**Units**	**MD Values[1]**	**XMD Values[1]**
▪ Aperture Dimensions[2]	mm (in)	33 (1.3)	33 (1.3)
▪ Minimum Rib Thickness[2]	mm (in)	1.27 (0.05)	1.27 (0.05)
Load Capacity			
▪ True Initial Modulus in Use[3]	kN/m(lb/ft)	280 (19,190)	420 (28,790)
▪ True Tensile Strength @2% Strain[3]	kN/m(lb/ft)	5.5 (380)	7.4 (510)
▪ True Tensile Strength @5% Strain[3]	kN/m(lb/ft)	10.5 (720)	14.6 (1,000)
Structural Integrity			
▪ Junction Efficiency[4]	%	93	
▪ Flexural Stiffness[5]	mg-cm	750,000	
▪ Aperture Stability[6]	kg-cm/deg	4.8	
Durability			
▪ Resistance to Installation Damage[7]	%SC / %SW / %GP	90 / 83 / 75	
▪ Resistance to Long Term Degradation[8]	%	100	

Dimensions and Delivery

The structural geogrid shall be delivered to the jobsite in roll form with each roll individually identified and nominally measuring 3.0 meters (9.8 feet) or 4.0 meters (13.1 feet) in width and 50.0 meters (164 feet) in length. A typical truckload quantity is 260 rolls. On special request, the structural geogrid may also be custom cut to specific lengths or widths to suit site specific engineering designs.

Notes

1. Unless indicated otherwise, values shown are minimum average roll values determined in accordance with ASTM D-4759. Brief descriptions of test procedures are given in the following notes. Complete descriptions of test procedures are available on request from Tensar Earth Technologies, Inc.
2. Nominal Dimensions.
3. True resistance to elongation when initially subjected to a load measured via ASTM D6637 without deforming test materials under load before measuring such resistance or employing "secant" or "offset" tangent methods of measurement so as to overstate tensile properties.
4. Load transfer capability measured via GRI-GG2-87. Expressed as a percentage of ultimate tensile strength.
5. Resistance to bending force measured via ASTM D-5732-95, using specimens of width two ribs wide, with transverse ribs cut flush with exterior edges of longitudinal ribs (as a “ladder”), and of length sufficiently long to enable measurement of the overhang dimension. The overall Flexural Stiffness is calculated as the square root of the product of machine-and cross-machine-direction Flexural Stiffness values.
6. Resistance to in-plane rotational movement measured by applying a 20 kg-cm moment to the central junction of a 9 inch x 9 inch specimen restrained at its perimeter (U.S. Army Corps of Engineers Methodology for measurement of Torsional Rigidity).
7. Resistance to loss of load capacity or structural integrity when subjected to mechanical installation stress in clayey sand (SC), well graded sand (SW), and crushed stone classified as poorly graded gravel (GP). The geogrid shall be sampled in accordance with ASTM D5818 and load capacity shall be measured in accordance with ASTM D6637.
8. Resistance to loss of load capacity or structural integrity when subjected to chemically aggressive environments measured via EPA 9090 immersion testing.

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Product Specification - Structural Geogrid BX6100

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The structural geogrid shall be an integrally formed grid structure manufactured of a stress resistant polypropylene material with molecular weight and molecular characteristics which impart: (a) high resistance to loss of load capacity or structural integrity when the geogrid is subjected to mechanical stress in installation; (b) high resistance to deformation when the geogrid is subjected to applied force in use; and (c) high resistance to loss of load capacity or structural integrity when the geogrid is subjected to long-term environmental stress.

The structural geogrid shall accept applied force in use by positive mechanical interlock (i.e. by direct mechanical keying) with: (a) compacted soil or construction fill materials; (b) contiguous sections of itself when overlapped and embedded in compacted soil or construction fill materials; and (c) rigid mechanical connectors such as bodkins, pins or hooks. The structural geogrid shall possess sufficient flexural stiffness to enable efficient installation over weak or wet in situ soils and sufficient torsional stiffness to resist in-plane movement of compacted soil or construction fill materials when these are subject to rotating lateral displacement forces such (i.e. what a moving vehicle causes in a roadway foundation). The structural geogrid shall possess complete continuity of all properties throughout its structure and shall be suitable for internal reinforcement of compacted soil or particulate construction fill materials to improve their load bearing capacity in structural load bearing applications such as foundation improvement systems. The structural geogrid shall otherwise have the following characteristics:

Product Type: **Integrally Formed Structural Geogrid**
Load Transfer Mechanism: **Positive Mechanical Interlock**

Product Properties	**Units**	**MD Values[1]**	**XMD Values[1]**
Load Capacity			
▪ True 1% Junction Tensile Modulus in Use[2]	kN/m(lb/ft)	250 (17,000)	290 (20,000)
▪ True 2% Junction Tensile Modulus in Use[2]	kN/m(lb/ft)	170 (11,750)	220 (15,000)
▪ True Junction Strength in Use @ 1% Strain[2]	kN/m(lb/ft)	2.5 (170)	2.9 (200)
▪ True Junction Strength in Use @ 2% Strain[2]	kN/m(lb/ft)	3.4 (240)	4.4 (300)
▪ Interaction Coefficient (Granular Soil)		1.0	
Structural Integrity			
▪ Flexural Stiffness[4]	mg-cm	250,000	
▪ Aperture Stability[5]	kg-cm/deg	2.8	
Durability			
▪ Resistance to Long Term Degradation[6]	%	100	

Dimensions and Delivery

The structural geogrid shall be delivered to the jobsite in roll form with each roll individually identified and nominally measuring 4.0 meters (13.1 feet) in width and 50.0 meters (164 feet) or 75.0 meters (246 feet) in length. A typical truckload quantity is 285 rolls. On special request, the structural geogrid may also be custom cut to specific lengths or widths to suit site specific engineering designs.

Notes

1. Unless indicated otherwise, values shown are minimum average roll values determined in accordance with ASTM D-4759. Brief descriptions of test procedures are given in the following notes. Complete descriptions of test procedures are available on request from Tensar Earth Technologies, Inc.
2. True resistance to elongation when initially subjected to a load measured via GRI-GG2-87 (tested at 10 percent per minute based on the greater of 2 aperture or 8-inch [200 millimeter] gauge length) without deforming test materials under load before measuring such resistance or employing “secant” or “offset” tangent methods of measurement so as to overstate tensile properties.
3. Load transfer capability measured via GRI-GG2-87.
4. Resistance to bending force measured via ASTM D-5732-95, using specimens of width two ribs wide, with transverse ribs cut flush with exterior edges of longitudinal ribs (as a “ladder”), and of length sufficiently long to enable measurement of the overhang dimension. The overall Flexural Stiffness is calculated as the square root of the product of machine-and cross-machine-direction Flexural Stiffness values.
5. Resistance to in-plane rotational movement measured by applying a 20 kg-cm moment to the central junction of a 9 inch x 9 inch specimen restrained at its perimeter (U.S. Army Corps of Engineers Methodology for measurement of Torsional Rigidity).
6. Resistance to loss of load capacity or structural integrity when subjected to chemically aggressive environments measured via EPA 9090 immersion testing.

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Product Specification - Structural Geogrid BX6200

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The structural geogrid shall accept applied force in use by positive mechanical interlock (i.e. by direct mechanical keying) with: (a) compacted soil or construction fill materials; (b) contiguous sections of itself when overlapped and embedded in compacted soil or construction fill materials; and (c) rigid mechanical connectors such as bodkins, pins or hooks. The structural geogrid shall possess sufficient flexural stiffness to enable efficient installation over weak or wet in situ soils and sufficient torsional stiffness to resist in-plane movement of compacted soil or construction fill materials when these are subject to rotating lateral displacement forces such (i.e. what a moving vehicle causes in a roadway foundation). The structural geogrid shall possess complete continuity of all properties throughout its structure and shall be suitable for internal reinforcement of compacted soil or particulate construction fill materials to improve their load bearing capacity in structural load bearing applications such as foundation improvement systems. The structural geogrid shall otherwise have the following characteristics:

Product Type: **Integrally Formed Structural Geogrid**
Load Transfer Mechanism: **Positive Mechanical Interlock**

Product Properties	**Units**	**MD Values[1]**	**XMD Values[1]**
Load Capacity			
▪ True 1% Junction Tensile Modulus in Use[2]	kN/m(lb/ft)	320 (22,000)	440 (30,000)
▪ True 2% Junction Tensile Modulus in Use[2]	kN/m(lb/ft)	270 (18,200)	370 (25,000)
▪ True Junction Strength in Use @ 1% Strain[2]	kN/m(lb/ft)	3.2 (220)	4.3 (300)
▪ True Junction Strength in Use @ 2% Strain[2]	kN/m(lb/ft)	5.3 (370)	7.3 (500)
▪ Interaction Coefficient (Granular Soil)		1.0	
Structural Integrity			
▪ Flexural Stiffness[4]	mg-cm	750,000	
▪ Aperture Stability[5]	kg-cm/deg	4.7	
Durability			
▪ Resistance to Long Term Degradation[6]	%	100	

Dimensions and Delivery

The structural geogrid shall be delivered to the jobsite in roll form with each roll individually identified and nominally measuring 4.0 meters (13.1 feet) in width and 50.0 meters (164 feet) in length. A typical truckload quantity is 260 rolls. On special request, the structural geogrid may also be custom cut to specific lengths or widths to suit site specific engineering designs.

Notes

1. Unless indicated otherwise, values shown are minimum average roll values determined in accordance with ASTM D-4759. Brief descriptions of test procedures are given in the following notes. Complete descriptions of test procedures are available on request from Tensar Earth Technologies, Inc.
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