Product Specification - GEOWEB® GW20V Geocells

GENERAL

The GEOWEB geocell product is manufactured from textured, perforated strips of high density polyethylene that are bonded together to create a network of interconnected cells. The GEOWEB cells can be filled with topsoil, aggregate, concrete, recycled materials, or other infill material for geotechnical applications such as: 1) load support for unpaved and paved roads, railways, ports, heavy-duty pavements, container yard, and pads; 2) gravity and reinforced walls, reinforced slopes and fascia walls; and, 3) slope, channel, and geomembrane protection.

DIMENSIONS

Parameter	Units	Value
Cell Depth (Available in 4 Depths)	Inches (mm)	3 (75), 4 (100), 6 (150), 8 (200)
Cell Size (Length x Width +/- 10%)	Inches (mm)	8.8 x 10.2 (224 x 259)
Expanded Section Width	Cells	10
	Feet (m)	Varies: 7.7 to 9.2 (2.3 to 2.8)
Expanded Section Length	Cells	18, 21, 25, 29, or 34
	Feet (m)	Varies: 12 to 27.3 (3.7 to 8.3)

STRUCTURAL INTEGRITY AND SYSTEM PERFORMANCE

Parameter	Units	Value
Minimum Short Term Seam Peel Strength	lbf/in (N/cm)	≥ 80 (142)
Long-Term Seam Peel Strength (standard 4-inch sample width)[1]	lb (N)	160 (710)
Internal Junction Efficiency[2]	%	≥ 100
Mechanical Junction Efficiency (ATRA Key Connection)[2]	%	≥ 100
Peak Friction Angle Ratio (δ/Ø)[3]	Unitless	0.95

MATERIAL PROPERTIES

Parameter	Test Method	Units	Value
Polymer Density	ASTM D1505 or D792	lbs/ft^3 (g/cm^3)	58.4 - 60.2 (0.935 - 0.965)
Flexural Storage Modulus	ISO 6721	Mpa	≥ 800
Carbon Black Content[4]	ASTM D1603	%	1.5 - 2.0
Sheet Thickness Prior to Texture	ASTM D5199	mil (mm)	50 (1.27), -5% +10%
Sheet Thickness After Texture	ASTM D5199	mil (mm)	60 (1.52), -5% +10%
Texture Density (Texture Type/Shape: Rhomboidal)	--	per/in^2 (per/cm^2)	140 -200 (22 - 31)

DURABILITY

Parameter	Test Method	Units	Value
Environmental Stress Crack Resistance	ASTM D1693	hrs	> 5,000
Environmental Stress Crack Resistance (Accelerated Test)	ASTM D5397	hrs	> 400
Resistance to Oxidation[5]	EN ISO 13438	yrs	≥ 100
Resistance to Weathering[6]	EN 12224	%	100

Notes:

1) A 4.0 in. (100 mm) wide seam sample shall support a 160 lb (72.5 kg) load for a period of 7 days minimum in a temperature-controlled environment undergoing a temperature change on a 10 hour cycle from ambient room to 130° F (54° C). Ambient room temperature is per ASTM E 41.

2) Junction efficiency (shear, peeling and splitting) determined as a percentage of junction performance (EN ISO 13426-1) to perforated strip performance (EN ISO 10319).

3) Typical design value for granular infill material. Consult with manufacturer to confirm value for other types of infill materials.

4) Standard black HDPE strips. For tan/green GEOWEB, hindered amine light stabilizer (HALS) content will be 2.0% by weight of carrier.

5) Predicted to be durable for a minimum of 100 years in natural soil with a pH between 4 and 9 and at a soil temperature ≤ 25°C.

6) 100% of original tensile strength retained following exposure to intense UV radiation and accelerated weathering in accordance with EN 12224.

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Product Specification - GEOWEB® GW30V Geocells

GENERAL

The GEOWEB® geocell product is manufactured from textured, perforated strips of high density polyethylene that are bonded together to create a network of interconnected cells. The GEOWEB® cells can be filled with topsoil, aggregate, concrete, recycled materials, or other infill material for geotechnical applications such as: 1) load support for unpaved and paved roads, railways, ports, heavy-duty pavements, container yard, and pads; 2) gravity and reinforced walls, reinforced slopes and fascia walls; and, 3) slope, channel, and geomembrane protection.

DIMENSIONS

Parameter	Units	Value
Cell Depth (Available in 5 Depths)[1]	Inches (mm)	3 (75), 4 (100), 6 (150), 8 (200), 12 (300)
Cell Size (Length x Width +/- 10%)	Inches (mm)	11.3 x 12.6 (287 x 320)
Expanded Section Width	Cells	8
	Feet (m)	Varies: 7.7 to 9.2 (2.3 to 2.8)
Expanded Section Length	Cells	18, 21, 25, 29, or 34
	Feet (m)	Varies: 15.4 to 35.1 (4.7 to 10.7)

STRUCTURAL INTEGRITY AND SYSTEM PERFORMANCE

Parameter	Units	Value
Minimum Short-Term Seam Peel Strength	lbf/in (N/cm)	≥ 80 (142)
Long-Term Seam Peel Strength (standard 4-inch sample width)[2]	lb (N)	160 (710)
Internal Junction Efficiency[3]	%	≥ 100
Mechanical Junction Efficiency (ATRA Key Connection)[3]	%	≥ 100
Peak Friction Angle Ratio (δ/Ø)[4]	Unitless	0.95

MATERIAL PROPERTIES

Parameter	Test Method	Units	Value
Polymer Density	ASTM D1505 or D792	lbs/ft^3 (g/cm^3)	58.4 - 60.2 (0.935 - 0.965)
Flexural Storage Modulus	ISO 6721	Mpa	≥ 800
Carbon Black Content[4]	ASTM D1603	%	1.5 - 2.0
Sheet Thickness Prior to Texture	ASTM D5199	mil (mm)	50 (1.27), -5% +10%
Sheet Thickness After Texture	ASTM D5199	mil (mm)	60 (1.52), -5% +10%
Texture Surface Density	--	per/in2 (per/cm^2)	140 -200 (22 - 31)

DURABILITY

Parameter	Test Method	Units	Value
Environmental Stress Crack Resistance	ASTM D1693	hrs	> 5,000
Environmental Stress Crack Resistance (Accelerated Test)	ASTM D5397	hrs	≥ 400
Resistance to Oxidation[6]	EN ISO 13438	yrs	≥ 100
Resistance to Weathering[7]	EN 12224	%	100

Notes:

1) 12-inch cell depth available in 21-cell panel length only.

2) A 4 in. (100-mm) wide seam sample shall support a 160 lb (72.5 kg) load for a period of 7 days minimum in a temperature-controlled environment undergoing a temperature change on a 10 hour cycle from ambient room to 130° F (54° C). Ambient room temperature is per ASTM E 41.

3) Junction efficiency (shear, peeling and splitting) determined as a percentage of junction performance (EN ISO 13426-1) to perforated strip performance (EN ISO 10319).

4) Typical design value for granular infill material. Consult with manufacturer to confirm value for other types of infill materials.

5) Standard black HDPE strips. For tan/green GEOWEB, hindered amine light stabilizer (HALS) content will be 2.0% by weight of carrier.

6) Predicted to be durable for a minimum of 100 years in natural soil with a pH between 4 and 9 and at a soil temperature ≤ 25°C.

7) 100% of original tensile strength retained following exposure to intense UV radiation and accelerated weathering in accordance with EN 12224.

Product Specification - GEOWEB® GW30V6 Walls

GENERAL

The GEOWEB® geocell wall sections are manufactured from textured, perforated strips of high density polyethylene that are bonded together to create a network of interconnected cells. Fascia strips are non-perforated, UV-stabilized for long-term durability and are available in green and tan colors. Fascia strips are also available with pre-punched I-slots for establishing consistent mechanical junctions across the face of the wall using ATRA Wall Key connectors. GEOWEB® walls can be used in a variety of earth retaining structure configurations including gravity and reinforced walls, reinforced slopes and fascia walls.

DIMENSIONS

Parameter	Units	Value
Cell Depth	Inches (mm)	6 (150)
Cell Size (Length x Width +/- 10%)	Inches (mm)	10.5 x 13.0 (267 x 330)
Expanded Section Width	Cells	8
	Feet (m)	Fixed: 8.67 (2.64)
Expanded Section Length	Cells	3, 4, 5, 6, 7
	Feet (m)	Varies: 2.63 to 6.13 (0.80 to 1.87)

STRUCTURAL INTEGRITY AND SYSTEM PERFORMANCE

Parameter	Units	Value
Minimum Short-Term Seam Peel Strength	lbf/in (N/cm)	≥ 80 (142)
Long-Term Seam Peel Strength (standard 4-inch sample width)[1]	lb (N)	160 (710)
Internal Junction Efficiency[2]	%	≥ 100
Mechanical Junction Efficiency (ATRA Wall Key)[2]	%	≥ 100
Peak Friction Angle Ratio (δ/Ø)[3]	Unitless	0.95

MATERIAL PROPERTIES

Parameter	Test Method	Units	Value
Polymer Density	ASTM D1505 or D792	lbs/ft^3 (g/cm^3)	58.4 - 60.2 (0.935 - 0.965)
Flexural Storage Modulus	ISO 6721	Mpa	≥ 800
Carbon Black Content[4]	ASTM D1603	%	1.5 - 2.0
Sheet Thickness Prior to Texture	ASTM D5199	mil (mm)	50 (1.27), -5% +10%
Sheet Thickness After Texture	ASTM D5199	mil (mm)	60 (1.52), -5% +10%
Texture Surface Density	--	per in^2 (per/cm^2)	140 -200 (22 - 31)

DURABILITY

Parameter	Test Method	Units	Value
Environmental Stress Crack Resistance	ASTM D1693	hrs	> 5,000
Environmental Stress Crack Resistance (Accelerated Test)	ASTM D5397	hrs	≥ 400
Resistance to Oxidation[5]	EN ISO 13438	yrs	≥ 100
Resistance to Weathering[6]	EN 12224	%	100

Notes:

1) A 4.0 in. (100 mm) wide seam sample shall support a 160 lb (72.5 kg) load for a period of 7 days minimum in a temperature-controlled environment undergoing a temperature change on a 10 hour cycle from ambient room to 130° F (54° C). Ambient room temperature is per ASTM E 41.

2) Junction efficiency (shear, peeling and splitting) determined as a percentage of junction performance (EN ISO 13426-1) to perforated strip performance (EN ISO 10319).

3) Typical design value for granular infill material. Consult with manufacturer to confirm value for other types of infill materials.

4) Standard black HDPE strips. For tan/green fascia strips, hindered amine light stabilizer (HALS) content will be 2.0% by weight of carrier.

5) Predicted to be durable for a minimum of 100 years in natural soil with a pH between 4 and 9 and at a soil temperature ≤ 25°C.

6) 100% of original tensile strength retained following exposure to intense UV radiation and accelerated weathering in accordance with EN 12224.

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Product Specification - GEOWEB® GW30V8 Walls

GENERAL

The GEOWEB® geocell wall sections are manufactured from textured, perforated strips of high density polyethylene that are bonded together to create a network of interconnected cells. Fascia strips are non-perforated, UV-stabilized for long-term durability and are available in green and tan colors. Fascia strips are also available with pre-punched I-slots for establishing consistent mechanical junctions across the face of the wall using ATRA Wall Key connectors. GEOWEB® walls can be used in a variety of earth retaining structure configurations including gravity and reinforced walls, reinforced slopes and fascia walls.

DIMENSIONS

Parameter	Units	Value
Cell Depth	Inches (mm)	8 (200)
Cell Size (Length x Width +/- 10%)	Inches (mm)	10.5 x 13.0 (267 x 330)
Expanded Section Width	Cells	8
	Feet (m)	Fixed: 8.67 (2.64)
Expanded Section Length	Cells	3, 4, 5, 6, 7
	Feet (m)	Varies: 2.63 to 6.13 (0.80 to 1.87)

STRUCTURAL INTEGRITY AND SYSTEM PERFORMANCE

Parameter	Units	Value
Minimum Short-Term Seam Peel Strength	lbf/in (N/cm)	≥ 80 (142)
Long-Term Seam Peel Strength (standard 4-inch sample width)[1]	lb (N)	160 (710)
Internal Junction Efficiency[2]	%	≥ 100
Mechanical Junction Efficiency (ATRA Wall Key)[2]	%	≥ 100
Peak Friction Angle Ratio (δ/Ø)[3]	Unitless	0.95

MATERIAL PROPERTIES

Parameter	Test Method	Units	Value
Polymer Density	ASTM D1505 or D792	lbs/ft^3 (g/cm^3)	58.4 - 60.2 (0.935 - 0.965)
Flexural Storage Modulus	ISO 6721	Mpa	≥ 800
Carbon Black Content[4]	ASTM D1603	%	1.5 - 2.0
Sheet Thickness Prior to Texture	ASTM D5199	mil (mm)	50 (1.27), -5% +10%
Sheet Thickness After Texture	ASTM D5199	mil (mm)	60 (1.52), -5% +10%
Texture Surface Density	--	per/in^2 (per/cm^2)	140 -200 (22 - 31)

DURABILITY

Parameter	Test Method	Units	Value
Environmental Stress Crack Resistance	ASTM D1693	hrs	> 5,000
Environmental Stress Crack Resistance (Accelerated Test)	ASTM D5397	hrs	≥ 400
Resistance to Oxidation[5]	EN ISO 13438	yrs	≥ 100
Resistance to Weathering[6]	EN 12224	%	100

Notes:

1) A 4 in. (100-mm) wide seam sample shall support a 160 lb (72.5 kg) load for a period of 7 days minimum in a temperature-controlled environment undergoing a temperature change on a 10 hour cycle from ambient room to 130° F (54° C). Ambient room temperature is per ASTM E 41.

2) Junction efficiency (shear, peeling and splitting) determined as a percentage of junction performance (EN ISO 13426-1) to perforated strip performance (EN ISO 10319).

3) Typical design value for granular infill material. Consult with manufacturer to confirm value for other types of infill materials.

4) Standard black HDPE strips. For tan/green fascia strips, hindered amine light stabilizer (HALS) content will be 2.0% by weight of carrier.

5) Predicted to be durable for a minimum of 100 years in natural soil with a pH between 4 and 9 and at a soil temperature ≤ 25°C.

6) 100% of original tensile strength retained following exposure to intense UV radiation and accelerated weathering in accordance with EN 12224.

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Product Specification - GEOWEB® GW40V Geocells

GENERAL

The GEOWEB geocell product is manufactured from textured, perforated strips of high density polyethylene that are bonded together to create a network of interconnected cells. The GEOWEB cells can be filled with topsoil, aggregate, concrete, recycled materials, or other infill material for geotechnical applications such as: 1) load support for unpaved and paved roads, railways, ports, heavy-duty pavements, container yard, and pads; 2) gravity and reinforced walls, reinforced slopes and fascia walls; and, 3) slope, channel, and geomembrane protection.

DIMENSIONS

Parameter	Units	Value
Cell Depth (Available in 5 Depths)[1]	Inches (mm)	3 (75), 4 (100), 6 (150), 8 (200), 12 (300)
Cell Size (Length x Width +/- 10%)	Inches (mm)	18.7 x 20.0 (475 x 508)
Expanded Section Width	Cells	5
	Feet (m)	Varies: 7.7 to 9.2 (2.3 to 2.8)
Expanded Section Length	Cells	18, 21, 25, 29, or 34
	Feet (m)	Varies: 25.4 to 58.2 (7.7 to 17.8)

STRUCTURAL INTEGRITY AND SYSTEM PERFORMANCE

Parameter	Units	Value
Minimum Short Term Seam Peel Strength	lbf/in (N/cm)	≥ 80 (142)
Long-Term Seam Peel Strength (standard 4-inch sample width)[2]	lb (N)	160 (710)
Internal Junction Efficiency[3]	%	≥ 100
Mechanical Junction Efficiency (ATRA Key Connection)[3]	%	≥ 100
Peak Friction Angle Ratio (δ/Ø)[4]	Unitless	0.95

MATERIAL PROPERTIES

Parameter	Test Method	Units	Value
Polymer Density	ASTM D1505 or D792	lbs/ft^3 (g/cm^3)	58.4 - 60.2 (0.935 - 0.965)
Flexural Storage Modulus	ISO 6721	Mpa	≥ 800
Carbon Black Content[4]	ASTM D1603	%	1.5 - 2.0
Sheet Thickness Prior to Texture	ASTM D5199	mil (mm)	50 (1.27), -5% +10%
Sheet Thickness After Texture	ASTM D5199	mil (mm)	60 (1.52), -5% +10%
Texture Density (Texture Type/Shape: Rhomboidal)	--	per/in^2 (per/cm^2)	140 -200 (22 - 31)

DURABILITY

Parameter	Test Method	Units	Value
Environmental Stress Crack Resistance	ASTM D1693	hrs	> 5,000
Environmental Stress Crack Resistance (Accelerated Test)	ASTM D5397	hrs	≥ 400
Resistance to Oxidation[6]	EN ISO 13438	yrs	≥ 100
Resistance to Weathering[7]	EN 12224	%	100

Notes:

1) 12-inch cell depth available in 21-cell panel length only.

2) A 4.0 in. (100 mm) wide seam sample shall support a 160 lb (72.5 kg) load for a period of 7 days minimum in a temperature-controlled environment undergoing a temperature change on a 10 hour cycle from ambient room to 130° F (54° C). Ambient room temperature is per ASTM E 41.

3) Junction efficiency (shear, peeling and splitting) determined as a percentage of junction performance (EN ISO 13426-1) to perforated strip performance (EN ISO 10319).

4) Typical design value for granular infill material. Consult with manufacturer to confirm value for other types of infill materials.

5) Standard black HDPE strips. For tan/green GEOWEB, hindered amine light stabilizer (HALS) content will be 2.0% by weight of carrier.

6) Predicted to be durable for a minimum of 100 years in natural soil with a pH between 4 and 9 and at a soil temperature ≤ 25°C.

7) 100% of original tensile strength retained following exposure to intense UV radiation and accelerated weathering in accordance with EN 12224.