

Geocell Testing and Properties

1. BaseCore

- **1.1 General**

The geocell system to be used for ground stabilization

- **1.2 Applicable Codes and Standards**

- A. GRI Standard GS-15, test method, test properties and testing frequency for Geocells made from High Density Polyethylene (HDPE) strips.
- B. GRI Standard GS-14, average thickness of an embossed or textured Geocell wall.
- C. GRI Standard GS-13, Geocell seam strength and its efficiency with respect to perforated sheet strength.
- D. ASTM D1505, standard test method for Density of plastics by the density-gradient technique.
- E. ASTM D1603, standard test for Carbon Black Content.
- F. ASTM D1693, standard test for Environmental Stress Crack Resistance.
- G. ASTM D5199, standard test method for Measuring the Nominal Thickness of Geosynthetics.
- H. ASTM D638, standard test method for Tensile Properties of Plastics.
- I. ASTM D1004, standard test method for Tear Resistance or plastic film and sheeting.
- J. ASTM D4833, standard test method for Puncture Resistance of Geomembranes and Related Products.

2. Properties 2.1

- **Base Material**

Test Description	Test Method	Frequency	Unit	Value
Density	ASTM D1505	1 per 90,000 kg	g/cm ³	0.940-0.960
Environmental Stress Crack Resistance (ESCR)	ASTM D1693	1 per 90,000 kg	hours	7,000
Environmental Stress Carbon Black Content	ASTM D1603	1 per 9,000 kg	%	> 1.5

- **2.2 Strip Properties**

Test Description	Test Method	Frequency	Unit	Value
Textured Thickness	ASTM D5199	1 per 9,000 kg	mm	1.50 [±5%]
Indentation Surface Density	/	1 per 90,000 kg	per cm ²	22-31
Perforation Size	/	1 per 90,000 kg	mm	10
Tear Resistance	ASTM D1004	1 per 20,000 kg	N	155
Puncture Resistance	ASTM D4833	1 per 20,000 kg	N	330

- **2.3 Seam Properties**

Test Description	Test Method	Frequency	Unit	Value
Seam Efficiency	GRI-GS13	1 per 9,000 kg	%	100
Short-term Peeling Strength	EN ISO13426-1 Method B	1 per delivery	N	> 1,088
Short-term Splitting Strength	EN ISO13426-1 Method C	1 per delivery	%	> 2,176
Long-term seam peel strength	USACE GL-86-2019	1 per delivery	hours	> 168

- **2.4 Cell Dimensions**

Test Description	Test Method	Frequency	Unit	Value
Cell Depth	/	1 per 1,000 m ²	mm	75 [±1%]
Nominal Width	/	1 per 1,000 m ²	mm	315
Nominal Length	/	1 per 1,000 m ²	mm	300

- **2.5 Section Dimensions**

Test Description	Test Method	Frequency	Unit	Value
Nominal Section Width	/	1 per 1,000 m ²	m	2.52 [8 cells]
Nominal Section Length	/	1 per 1,000 m ²	m	9.00 [30 cells]
Nominal Section Area	/	1 per 1,000 m ²	m ²	22.68 [±5%]