

A close-up photograph of a dark, textured geomembrane material. The surface is covered with numerous small, dark, conical spikes. The material is shown in a perspective view, with a diagonal line separating the top and bottom sections. The background is a clear blue sky.

MicroSpike® Textured Geomembrane



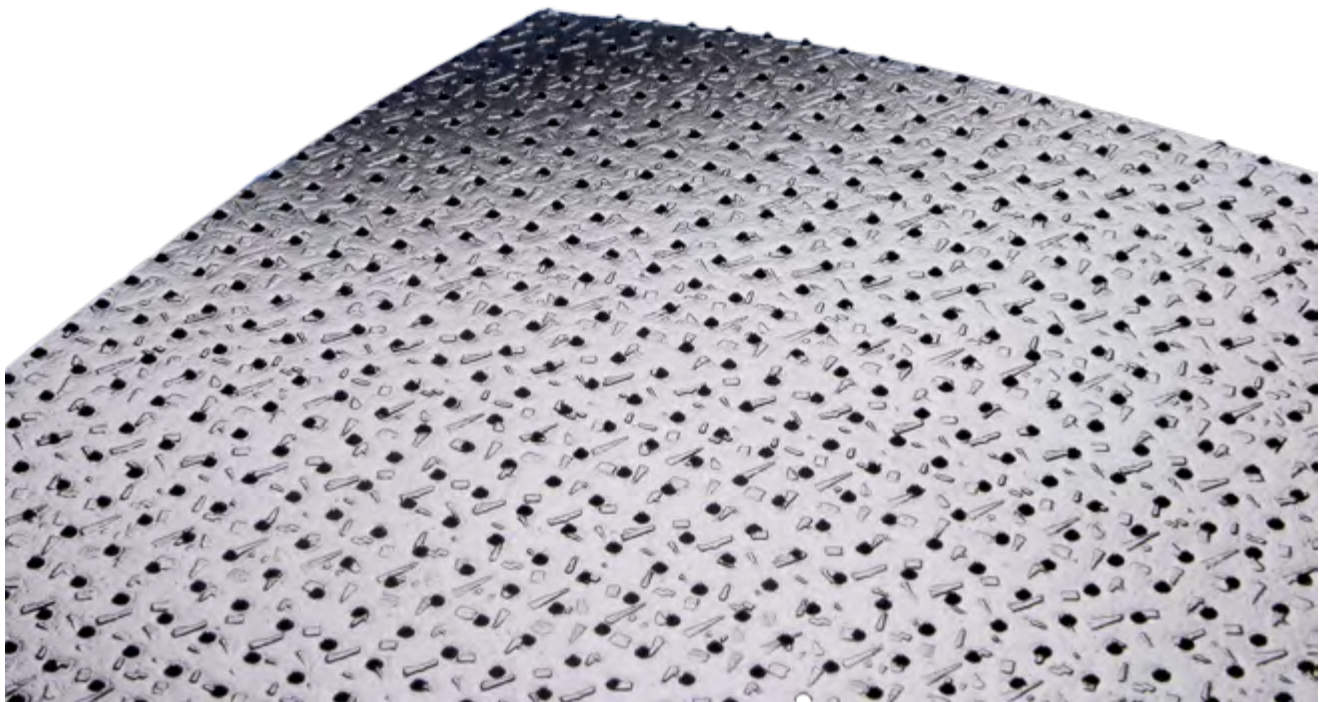
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HDPE and LLDPE MicroSpike® Liner

The only HDPE and LLDPE liner featuring consistent texture and friction angle values, Agru America's patented MicroSpike® textured geomembrane is the material of choice in containment applications where slope stability is critical.

As the only North American manufacturer of structured and embossed geomembranes, we use a patented manufacturing process called flat die-cast extrusion, which produces the most consistent smooth or textured geomembranes.



MicroSpike® Surface Texture

US Patent No. 6,203,741 and 6,132,845

Product Supply Range

- Available in thicknesses of 30-100 millimeter
- Available in HDPE or LLDPE
- Available in black/white, green or natural
- Available in single- or double-sided



Figure 1: Municipal Solid Waste LF Site #2

Comparative Properties for Design Consideration

Blown film co-extruded textured surface vs. MicroSpike® structured texture surfaces

Design Consideration	Blown Film Co-Extruded	MicroSpike® Structured
Consistent Core Thickness	No	Yes
Consistent Surface Texture	No	Yes
Consistent Asperity Height	No	Yes
Consistent Interface Friction	No	Yes
Affect on Mechanical Properties	Yes	No
Affect on Stress Crack Potential	Yes	No
Reduction in CQA program costs (less testing required)	No	Yes



Flat Die-Cast Extrusion Process

Agru America's calendared structured liner manufacturing process produces the only textured liner with a consistent core thickness and texturing. This consistent core thickness and texturing gives MicroSpike® geomembranes reproducible friction angle values with efficiencies of more than 95 percent.

By extruding our materials in-house, we are able to manufacture one-layer products with unique surface structures such as spikes or drain studs. All of our geomembranes feature uniform structure and appearance throughout and consistently receive rave reviews from the field for ease of installation, durability and highest quality.

MicroSpike® geomembranes are manufactured to meet or exceed current industry standards including GRI GM 13 (HDPE) and GRI GM 17 (LLDPE) test values, frequency of testing and functional requirements. The MicroSpike® textured geomembrane has smooth edges to allow for high-quality thermal fusion welding between adjacent sheets. All Agru America geomembrane material is rolled on solid plastic pipe cores to ensure ease of installation without damage to the rolled material.

Figure 2: Municipal Solid Waste LF Site #2





Representative Large Scale Interface Shear Values

Landfill Cap Loading Conditions Based on ASTM 5321

Soil/MicroSpike® Surface	P	LD
Coarse Sand	34°	34°
Glacial Till	37°	32°
Silty Sand	32°	28°
Non-Woven GT	32°	17°

MicroSpike® textured HDPE and LLDPE geomembranes have a decided advantage over blown film textured geomembranes, including:

Reliability: MicroSpike®'s reproducible friction angles give design engineers confidence that they have designed a system that will meet or exceed project design requirements.

Cost Savings: MicroSpike® is competitively priced with value-added advantages, including the absence of VELCRO® effect, which reduces installation costs, on-site quality control expenses and third party quality assurance costs.

Consistent Material: The structured “micro spikes” are totally integrated within the geomembrane.

Highest Tensile Values: Agru America's LLDPE MicroSpike® geomembrane has a 400 percent Elongation at Break (HD 350 percent), in an industry where the standard is only 250 percent* (HD 100 percent*). Our calendared structured manufacturing process produces a consistent core thickness, resulting in the highest tensile values available in the industry. *Tensile elongation values from GRI GM 13 and 17

High Interface Shear: Exceptional shear resistance between soil and geotextile components allows flexibility and stability during protective cover material placement. The textured asperity height is not only consistent but higher than competitive textured products.

For more information on MicroSpike® and other Agru products, please reach out to us.



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