

# Micro Spike® Textured Geomembrane



Applications for HDPE and LLDPE Micro Spike®, textured geomembranes include projects where slope stability is critical. Micro Spike® is the only HDPE or LLDPE geomembrane that exhibits reproducible texture and friction angle values with the highest interface surface friction values in the industry. Micro Spike® is a patented product.

Agru America's structured Geomembranes are produced on state-of-the-art equipment using a flat die-cast extrusion manufacturing process as opposed to blown film extrusion. Agru America is the only manufacturer of structured and embossed Geomembranes in North America.

*Micro Spike® surface texture*



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

## *Comparative properties for Design Consideration*

*Blown film co-extruded textured surfaces vs. Micro Spike® structured textured surfaces*

<b>Design Consideration</b>	<b>Blown film co-extruded</b>	<b>Micro Spike® structured</b>
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



The calendared structured liner manufacturing process allows production of the only textured liner with a consistent core thickness, resulting in unchanged mechanical properties from that of smooth sheet. The consistent surface structuring or texture gives Micro Spike® Geomembranes reproducible friction angle values with efficiencies of over 95%.

***Representative Large Scale Interface Shear Values – ASTM 5321  
landfill cap loading conditions***

<b>Soil/Micro Spike® Surface</b>	<b>P</b>	<b>LD</b>
Coarse Sand	34°	34°
Glacial Till	37°	32°
Silty Sand	32°	28°
Non Woven GT	32°	17°

Micro Spike® 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. Micro Spike® textured Geomembranes have smooth edges to allow for high quality thermal fusion welding between adjacent sheets. All Agru Geomembrane material is rolled on solid plastic pipe cores to ensure ease of installation without damage to the rolled material.

Micro Spike® textured HDPE and LLDPE geomembrane has a decided advantage over blown film textured geomembrane:

**Reliability:** Micro Spike's® reproducible friction angles gives the design engineer the confidence that he has designed a system that will be built to meet or exceed the project design requirements.

**Cost Savings:** Micro Spike® is competitively priced with value added advantages including consistent core thickness and texture which reduces installation costs, on-site quality control and third party quality assurance costs.

**Consistent Material:** The structured “Micro Spikes” are totally integrated with the Geomembrane.

**Highest Tensile Values:** Agru's LLDPE Micro Spike® has a 400% Elongation at Break (HD 350%), in an industry where the standard is only 250%\* (HD 100%\*). 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 & 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.



## ***Why specify or use anything else!***

Agru Worldwide has over 20 years experience with Geomembranes and 50 years experience with Thermoplastic Extrusion. Agru offers a wide range of concrete protective liners (Sure Grip), pipe, fittings, sheet stock, billet and solid rod.