

Prefabricated liner provides a more effective layer of protection



Independent lab results prove GROUNDGUARD liner technology outperforms the leading competitor

Executive summary

Businesses of every type face ever-increasing pressures for environmental and financial responsibility. Leaks or spills of hazardous fluids from pipes, storage vessels, vehicles and equipment pose a threat on sites involved in manufacturing, oil and gas, agriculture, utilities, municipal works and other industries.

To protect the environment and comply with stringent regulations, companies have turned to a variety of liners to cover the ground and prevent liquids from contaminating the soil or groundwater. In the quest for cost-effective solutions, liners have been made of materials ranging from simple plastic sheeting to sophisticated multi-layer barriers.

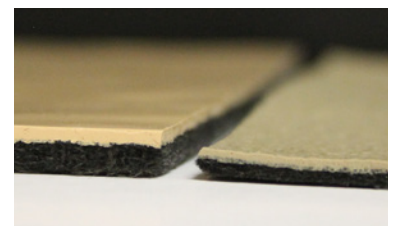
Engineered for more durability than HDPE and competing liners

Years of industry experience have demonstrated that liners made of geotextile material coated with durable polyurea provide superior protection and value compared to HDPE sheeting and polyurethane liners.

However, polyurea liners from various manufacturers have been found to differ significantly in critical performance areas, even among those prefabricated with automated spray application processes. TRI, a global testing, research and consulting firm, conducted laboratory tests to compare GROUNDGUARD liner technology to the leading competitor. Independent testing confirmed GROUNDGUARD advantages in the most important attributes:

- State-of-the-art, automated application process ensures the most consistent layer of polyurea coverage, providing impermeable protection from harsh chemicals
- Thicker geotextile layer provides superior resistance to tears and punctures
- Engineered construction is more durable under heavy truck traffic
- Maintenance-free surface is easily cleaned and reused on multiple sites

Site environmental protection has primarily consisted of three types of material: high-density polyethylene (HDPE) sheeting, polyurethane liners and polyurea liners. In use, the advantages of polyurea liners are overwhelming, but only the GROUNDGUARD liner has been proven to provide consistent protection from tears and punctures.



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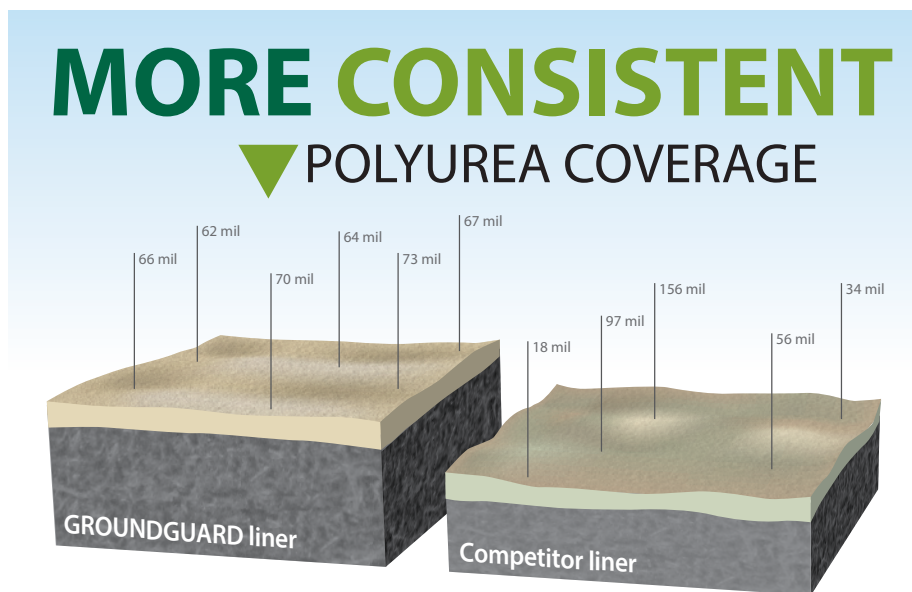
A more consistent coating of polyurea provides superior protection

The single most important characteristic of a polyurea liner is a consistent coating of sufficient thickness to provide protection from leaks and spills of hazardous fluids. An inconsistent coating is vulnerable to puncturing and tearing in areas with thinner coverage.

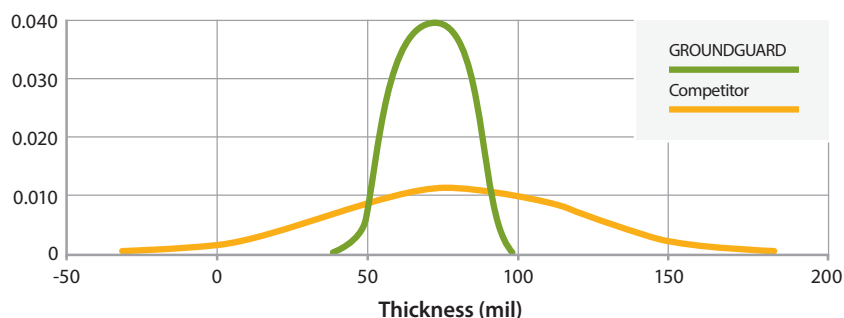
The polyurea coating of the GROUNDGUARD liner, applied with a state-of-the-art automated process to ensure the highest level of consistency and coverage per square foot, demonstrated extremely low variance in thickness.

In contrast, the competitor's liner, also claimed to use an automated application process, showed dramatic variation in thickness.

Measurements of the thickness of the polyurea coating of both products were taken by an independent NACE II inspector certified by the National Association of Corrosion Engineers. The coating thickness was measured in accordance with the Society for Protective Coatings Paint Application Standard Number 2 (SSPC-PA 2).



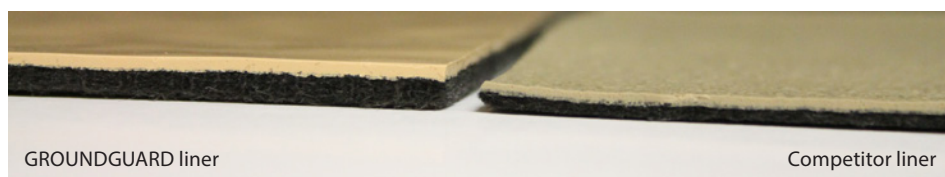
Thickness deviation comparison



A graphic representation of consistency

Plotting the normal distribution bell curve plainly illustrates the tighter tolerances of polyurea application on the GROUNDGUARD liner compared to the competitor.

The measured thickness of the GROUNDGUARD liner yielded a standard deviation of only 9.99 mil. In stark contrast, the variance in the thickness of polyurea on the competitive liner produced a standard deviation nearly four times greater at 36.38 mil.



Engineered to provide superior puncture resistance

In any type of industrial environment, a prefabricated liner will be subjected to stresses from above and below that could potentially cause punctures, resulting in breaches in protection. Stress from above can range from foot traffic to placement of equipment to heavy truck traffic. Stress from below can be caused by rocks, broken pavement or other surface irregularities.



The proprietary polyurea formulation used in the GROUNDGUARD liner was engineered and developed for one of the most demanding applications in the world: sealing the inside of tanks and vessels in the petroleum industry, protecting against constant exposure to a broad range of harsh, corrosive chemicals. Even under these extreme conditions, the liner has a proven useful life of 20+ years.

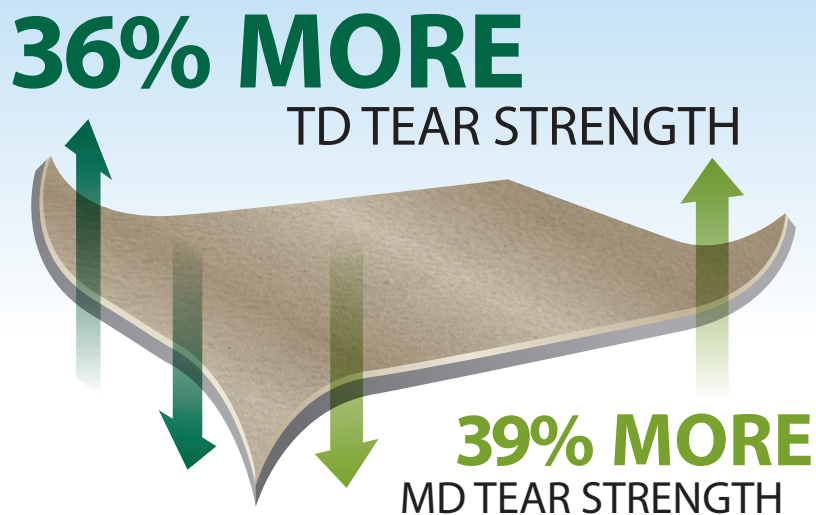
The more consistent coverage of polyurea on the GROUNDGUARD liner means that every square inch of the liner is covered with durable coating, providing greater resistance to punctures from above.

In addition, the GROUNDGUARD liner has a visibly thicker geotextile base that absorbs impacts and significantly reduces the likelihood of underside punctures compared to the competitor's liner.

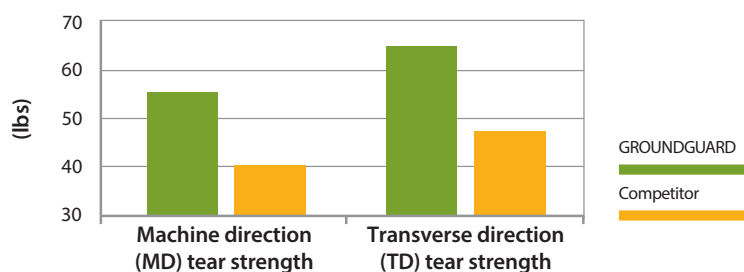
Superior puncture resistance can mean the difference between complete protection or numerous failures.

Engineered construction improves tear resistance

Prefabricated site liners are also subjected to tearing forces caused by the movement of equipment, vehicles turning, or simply the physical movement and relocation of the liner. The composition of the geotextile base and the consistent adhesion of the polyurea coating combine to give the GROUNDGUARD liner considerably greater resistance to tearing than the competitor's liner.



Tear strength comparison



Conclusions

Rigorous testing by a respected independent lab quantified the advantages of the GROUNDGUARD liner over its competition.

- The polyurea coating of the GROUNDGUARD liner is applied with much greater consistency, providing an impermeable layer of protection.
- The GROUNDGUARD liner is significantly more resistant to punctures and tears, assuring that its superior level of protection will remain uncompromised even under demanding field conditions.
- The engineered construction and durability of the GROUNDGUARD liner ensure a long, maintenance-free product life with greater versatility for reuse and reconfiguration, further enhancing its value.

In every key attribute of quality, performance and value, the GROUNDGUARD liner is demonstrably superior.

The durability and performance of the GROUNDGUARD liner have been proven in more than 36,000 installations in a wide range of industrial applications and climatic conditions.

The GROUNDGUARD liner can be easily cleaned, moved and trimmed to smaller sizes for subsequent applications. It contains no VOCs and is chemically inert, making it completely safe and fully recyclable.

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