



# 6 REASONS

To Specify a VI Barrier Offering  
the Highest Level of Chemical  
Resistance

## Why Choose a Vapor Intrusion Barrier With the Highest Chemical Resistance on the Market?

For properties where there is underlying contamination that cannot be removed and represents a serious risk to human health, it is important to have a solution that can effectively mitigate that risk and provide both building occupants and owners assurances that they are shielded from physical and financial harm.

TerraShield offers a higher level of protection compared to any vapor barrier system available today. With industry-leading standards for installation along with robust warranty options, there is simply no better option on the market for industrial, commercial, or residential vapor intrusion mitigation.

TerraShield is a significant step forward for vapor intrusion barriers. Employing an innovative dual-metallized film technology in combination with a versatile spray-applied nitrile core, TerraShield provides superior chemical resistance over any existing vapor barrier currently on the market. It is the ideal vapor mitigation solution for residential, industrial, and commercial developments with volatile contaminant impacts that represent significant health hazards and economic liabilities.



## Demand Unparalleled Chemical Resistance



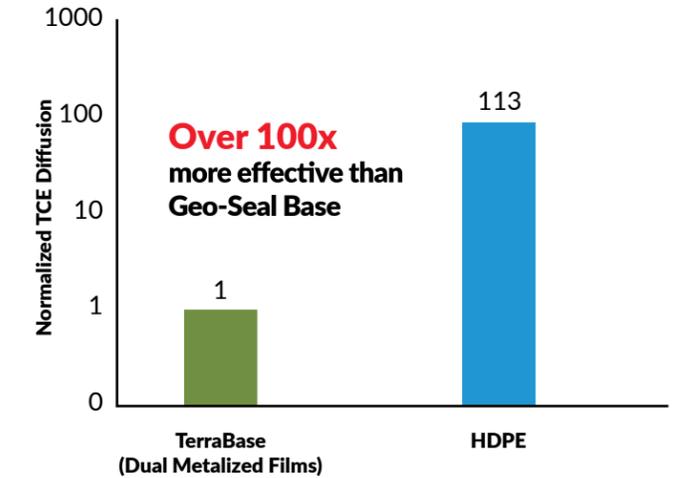
“Laboratory results indicate that the base layer for TerraShield offers 100x more protection...”

### Years of Research and Lab Testing Result in the Highest Level of Chemical Resistance Available

Years of research and development have resulted in a vapor barrier that leads the industry in chemical resistance. TerraShield is composed of dual-metallized film technology coupled with a highly chemically resistant spray-applied, asphalt and nitrile-based core material.

Lab results indicate that the base layer for TerraShield offers 100x more protection against trichloroethylene (TCE) vapors, a solvent commonly found on former industrial sites, compared to a high-density polyethylene (HDPE) base layer. Studies also showed that the spray-applied nitrile core offers up to 10x improved performance in TCE vapor resistance versus a comparable styrene butadiene-based core.

Using the spray-applied asphalt to cover the base layer, including seams, penetrations, and terminations, provides orders of magnitude improvement in protection when compared to tape-based or heat-welded systems and



makes TerraShield virtually impenetrable to contaminants typically found at sites with environmental impacts (i.e. perchloroethylene, benzene, methane).

Between the innovative metallized film and the versatile spray-applied core, the level of chemical resistance that TerraShield offers is unmatched by any other product currently on the market.



## 6 Reasons to Consider TerraShield VIM Barrier to Protect Your Property Investment

# #2

## Choose a Solution that is Lab-Tested to Perform



### Lab-Tested and Proven Effective Against TCE

When choosing a vapor barrier, it is important to ensure that it has excellent chemical resistance as that is one of the primary characteristics that will determine its efficacy. A vapor barrier with low chemical resistance will simply allow vapors to pass through into occupied spaces, potentially causing harm to any occupants who are exposed. Each component of a vapor barrier will contribute to its overall effectiveness. Therefore, considering the design, construction materials, and results of lab testing to evaluate its ability to protect human health against harmful vapors is paramount.

For example, TerraBase, the dual-metallized base layer of TerraShield, was tested against a 10 mil HDPE barrier to determine relative chemical resistance. A vapor-diffusion testing apparatus comprised of two separate glass chambers in a vertical configuration was used for this experiment.

**“ Comparing the relative TCE flux through the two barriers indicated that over 100x less TCE diffused through the TerraBase layer... ”**

The bottom chamber contained water and TCE at equilibrium, with the concentration of TCE held at either a constant 10 mg/L or 100 mg/L (corresponding to 700 ppmV and 7,000 ppmV respectively). This is higher than what would normally be found underneath a building but it allowed for the experiment to be completed in a short period of time while offering an understanding of relative chemical resistance between tested materials.

The top chamber was filled only with air but continuous airflow (2.5 mL/min) was maintained in the chamber to mimic the activity of an HVAC unit within an inhabited building.

The material to be tested (TerraBase or HDPE) was secured between the bottom and top chambers, separating the chambers so that the only path for TCE vapors was to diffuse through the barrier.

Comparing the relative TCE flux through the two barriers indicated that over 100 times less TCE diffused through the TerraBase layer as compared to the HDPE layer. Similar testing was done on the nitrile-modified asphalt (Nitra-Core) and demonstrated a 10-fold increase in chemical resistance over other spray-applied asphalts.

Incorporating new barrier materials and innovative design, TerraShield has proven to be very effective at resisting diffusion of TCE, even at concentrations far above those normally encountered in buildings. The individual components of TerraShield work together to ensure that it is not only effective but also represents a significant leap forward in performance relative to alternative vapor barrier systems.

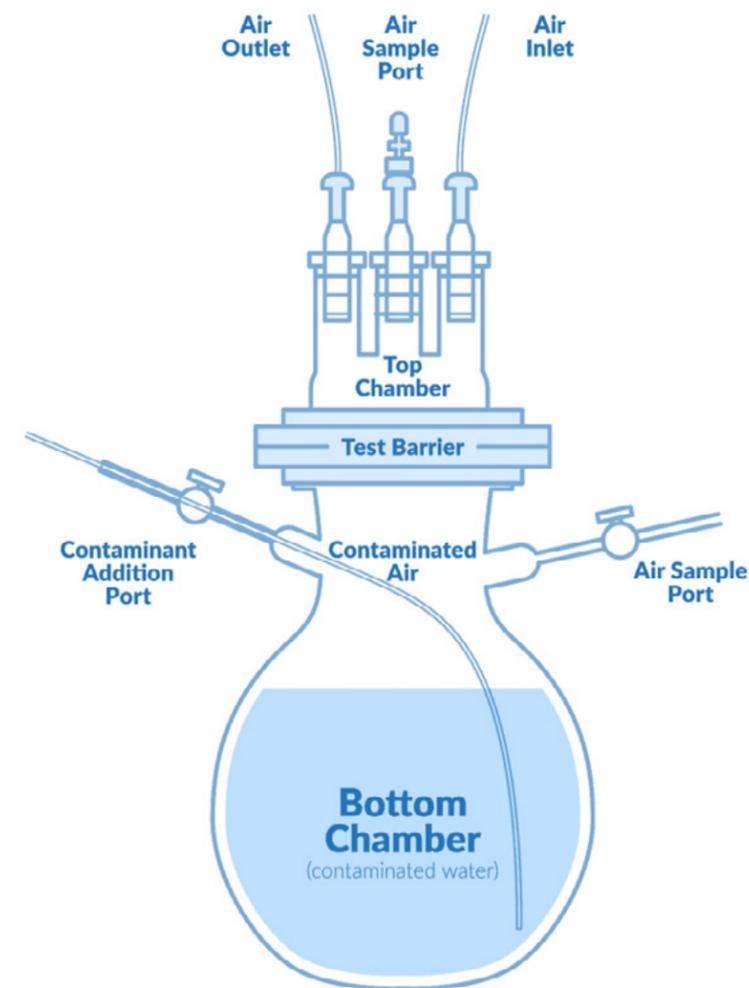


Figure shown represents the Vapor Barrier Testing Apparatus used in evaluating chemical resistance

# #3

## Incorporates Venting Technology



### Cost-Effective Venting System Makes a Viable Alternative to Perforated Piping

Beyond just creating a barrier that is impermeable to vapors, TerraShield also incorporates TerraVent, a low-profile, trenchless, flexible, sub-slab vapor collection system in lieu of perforated piping that can passively or actively vent vapors. It consists of a heavy duty 3-dimensional, high flow, polypropylene dimpled core. The core is then wrapped and bonded with a non-woven geotextile to prevent the intrusion of soil, sand, or gravel.

TerraVent diverts vapors and prevents them from entering occupied spaces, providing an additional layer of protection against potential health hazards and further reducing risk.



## A Puncture-Resistant Vapor Barrier Removes Worry

# #4



### Layers of Protection Makes this System the Most Robust VI Barrier Available Today

TerraShield is constructed of several layers, each adding to the physical robustness of the overall system. Composed of a metallized film laminated to a geotextile, a co-polymer polyethylene, and a tear resistant PET reinforced grid structure that provides superior durability, TerraShield is designed to withstand the stresses of a typical construction site.

This means, unlike other available vapor barrier systems, TerraShield is less likely to incur damage during construction avoiding time-consuming repair work and maintaining the

**“ Nitra-Core offers up to 10x the Chemical Resistance and is Puncture Resistant... ”**

integrity of the system. This will serve to reduce construction time and associated costs. Additionally, in the long run, the building will be kept secure against the intrusion of harmful vapors by resisting future damage.

# #5

## Installation Done Right: Certified by Experts



### Make Sure to Choose a Certified Applicator

A vapor barrier is only as effective as the quality of its installation. If installed incorrectly, a vapor barrier will likely fail, regardless of the underlying technology. Because of this, Land Science invests heavily in their applicators. All TerraShield contractors must pass a rigorous applicator certification and training program to ensure their work meets the demanding installation standards. There is a continuing education program available for all applicators to ensure they are up to date on the best practices for installation and inspection. TerraShield components are shipped to and installed on site. Final assembly on-site ensures tight seals between seams,

*“ Trust a Certified Applicator to Install Your Barrier to Exacting Standards...”*

around penetrations, and to terminations. Once installed, applicators perform a full smoke test beneath the barrier to confirm that all seals are secure and that the system will prevent vapor intrusion to the best of its ability. Any leaks are immediately repaired and testing is repeated until the system is shown to be completely secure.

Certified applicators are located throughout North America who can install TerraShield quickly and efficiently.

## Choose a VI System with an Industry Leading Warranty

# #6



*“ Land Science offers an industry leading warranty covering installations for up to 30 years ”*

### The World's Leading Vapor Barrier System Warranty

Land Science offers industry leading warranty options for its vapor barriers, including material and system warranties with durations from a 1-30 year material and system warranty. System warranties require site specific evaluations by Land Science prior to installation to determine if a system warranty can be offered. So you can rest assured that your investment in vapor intrusion mitigation is protected.



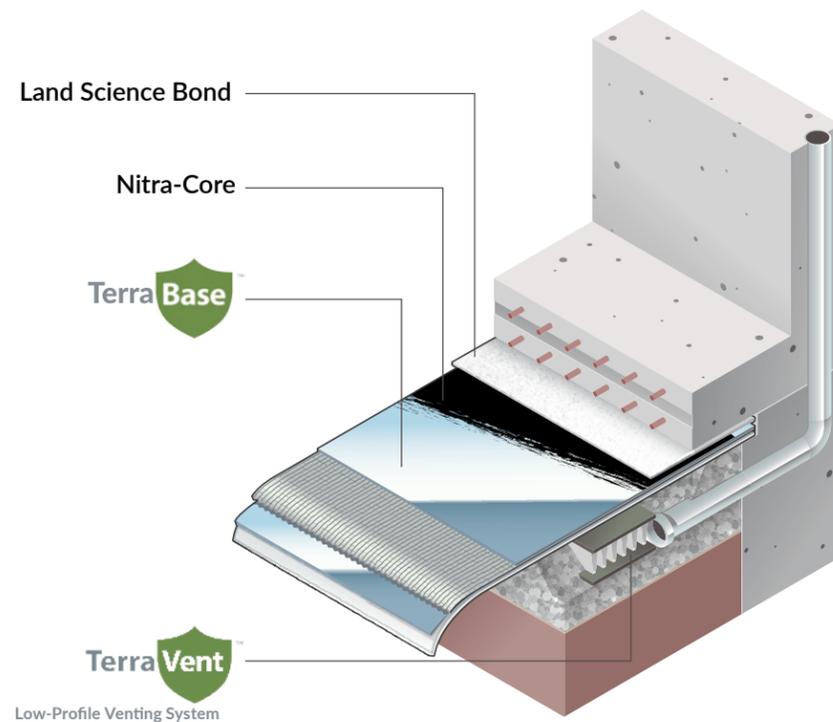
## Key Product Benefits

- ➔ **TERRABASE IS 100X MORE EFFECTIVE**  
 Lab tests indicate that TerraBase is 100x more effective against vapor intrusion.
- ➔ **NITRILE-MODIFIED CORE**  
 Nitra-Core nitrile-modified core is lab-tested to be up to 10x more effective than spray-applied asphalt latex core material.
- ➔ **HIGHEST CHEMICAL RESISTANCE**  
 Highest level of protection available in a vapor barrier system.
- ➔ **CERTIFIED APPLICATORS**  
 Land Science Certified Applicators ensure barriers are properly installed, reducing risk.

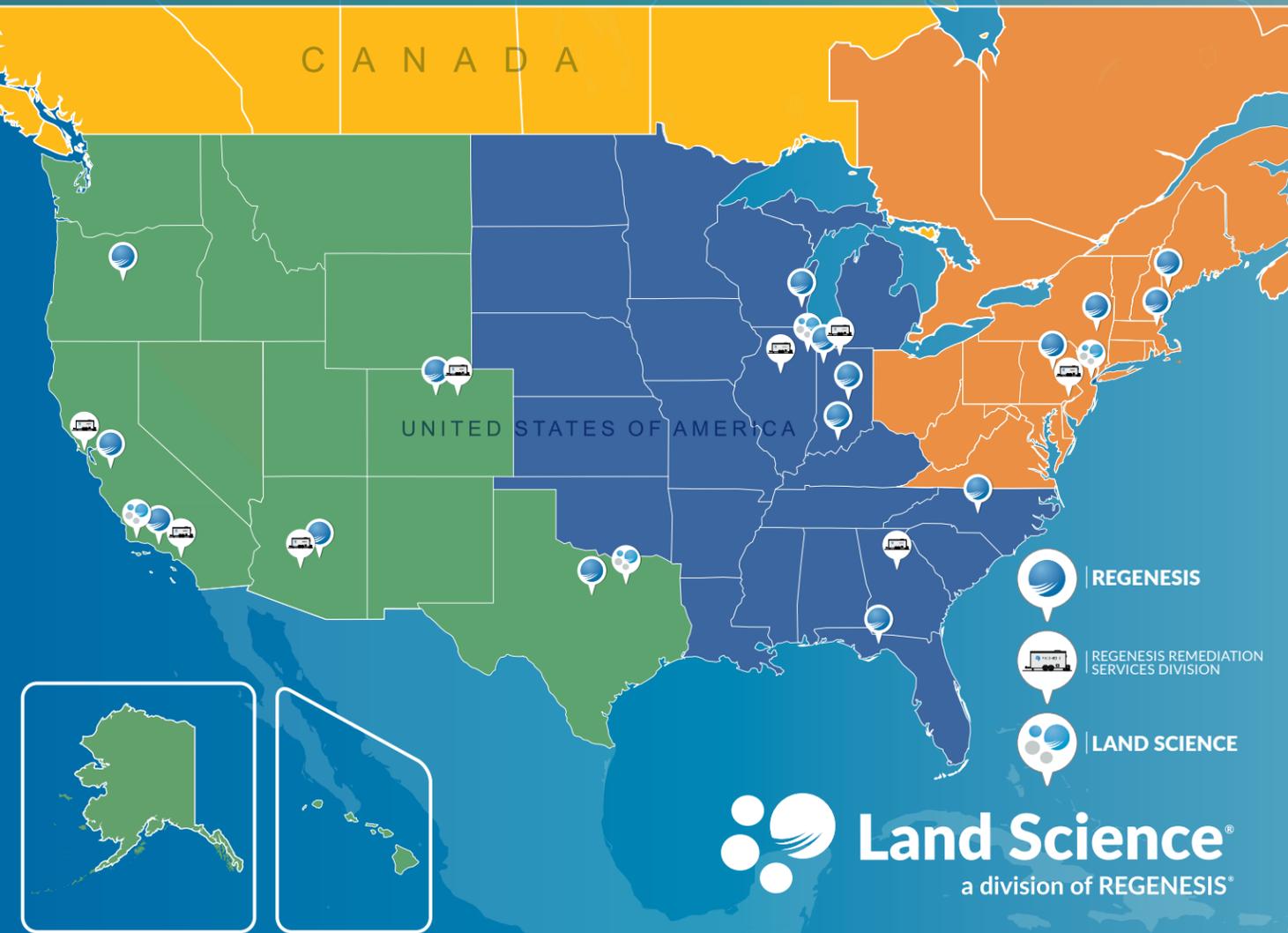
## About The TerraShield System

TerraShield is a significant step forward for vapor intrusion barriers. Employing an innovative dual-metallized film technology, TerraShield provides superior chemical resistance over any existing vapor barrier currently on the market. It is the ideal vapor mitigation solution for residential, industrial, and commercial developments with volatile contaminant impacts that represent significant health hazards and economic liabilities.

TerraShield incorporates major technological advancements over existing barrier technology to offer a reliable long-term solution for vapor intrusion concerns. The innovative use of two separate layers of aluminum combined within flexible polyethylene results in the TerraBase layer having >100x greater chemical resistance compared to HDPE (10mil). Tested against Geo-Seal, our original composite barrier system adapted from waterproofing materials, TerraShield provides up to 10x the performance using a nitrile-based core over a styrene butadiene-based core.



# WE'RE READY TO HELP YOU FIND THE RIGHT SOLUTION FOR YOUR SITE



### Global Headquarters

1011 Calle Sombra  
 San Clemente, CA 92673 USA  
 Ph: (949) 481-8118  
 Fax: (949) 366-8090

### Get Started Today

To receive a custom vapor intrusion solution, please call 949.481.8118 or e-mail [info@landsciencetech.com](mailto:info@landsciencetech.com). One of our Technical Solutions Managers will review your project details and provide you with a customized vapor intrusion solution designed to achieve your site goals.



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[Landsciencetech.com](http://Landsciencetech.com)

1011 Calle Sombra Suite 110, San Clemente, CA 92673 | T: 949-481-8118

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