

Production Process Flow



Raw Material Mixing

The virgin polymer resin is thoroughly mixed with a foaming agent, stabilizers, and other additives in preparation for the foaming process.



Extrusion

The mixed raw materials are heated and extruded through an extruder to form the micro-foamed SPC material.



Cooling and Shaping

The extruded material is rapidly cooled to stabilize its microcellular structure and ensure consistent material structural thickness.

Key Points of Our Micro-Foaming technology

Z-FLOORS Proprietary Foaming & Formula management

Selecting the appropriate foaming agent and precisely controlling its dosage are crucial for producing Micro-Foaming materials, as they influence the material's porosity and strength. Z-FLOORS possesses the most advanced and safest proprietary formulations in the industry; Can exceed 20% foaming.

Extruder Temperature Control

The temperature settings of the extruder are critical to the foaming performance of Micro-Foaming LSPC materials. Precise and stable control across different heating zones ensures uniform foaming and a fine, consistent microcellular structure, which enhances overall stability and mechanical properties. Proper temperature management also helps prevent over-foaming or insufficient foaming, ensuring consistent quality and reliable product performance.

Cooling Rate and Control

The cooling rate is key to maintaining a stable and uniform pore structure in Micro-Foaming LSPC materials. Proper control prevents cell collapse or deformation and ensures consistent quality, strength, and dimensional stability.

Z-FLOORS has spent over 24 months on R&D and optimization, developing strong expertise to achieve reliable and high-quality results.



Core technology of the Micro-Foaming from Z-FLOORS

Traditional foaming processes usually rely on a single technology, which can easily lead to insufficient material stability during extrusion. As a result, the final product quality is also susceptible to fluctuations in production parameters such as temperature and speed, resulting in unpredictable performance changes.

In contrast, the Micro-Foaming Tech three-in-one composite process currently adopted by Z-FLOORS can maintain a stable material output during long-term continuous extrusion, thereby ensuring that the finished products have more excellent and consistent quality stability after being launched on the market.

Formula

Our exclusive formula foaming agent method generates gas through chemical reactions to form a microcellular structure.



Physical foaming assistance

The equipment with vacuum negative pressure in the extrusion system injects high-pressure gas into the material during the extrusion process, thereby introducing a microcellular foamed structure into the material.



Equipment

A cooling device is installed at the extrusion equipment's exit end to cool the material properly and rapidly at high temperatures, thus securing the internal foamed structure.



Luxurious Appearance

Aesthetic benefits by Micro-Foaming Materials to Products

Our Micro-Foaming SPC (Stone Plastic Composite) can undergo direct press beveling and offers exceptional stability. Through long-term dynamic temperature testing, the press beveled edges of Micro-Foaming floor exhibit only a minimal percentage of spring back. This performance has also been validated in the North American market.

Additionally, products with press-beveled edges require exceptionally high precision during subsequent lock profiling and ripping. To achieve this, we utilize specialized precision equipment that ensures consistent accuracy in profile milling.

Pressed Bevel



Micro-Foaming Floor

The Next-Generation Micro-Foamed Core

1800x228mm

www.z-youngfloor.com

SPC | WPC | LVT | rPET

Jiangsu Zhengyoung Flooring Decoration Material Co.,Ltd
Add: 32 Cuibei Road, Henglin Town, Wujin District, Changzhou City, Jiangsu Province, China. 213103

Vietnam Navigatec New Materials Co.,Ltd
Add: Factory A1,A2,A3 at Lot CN5,6D Dinh Vu Industrial Park, Dinh Vu- CatHai Economic Zone, Dong Hai 2 Ward, Hai An District, Hai Phong City, Vietnam.

- ▶ **Less weight**
 - ▶ **Less material**
 - ▶ **Less waste**
- Better stability** ◀
Better performance ◀
Better sustainability ◀

Micro-Foam — Less, Better



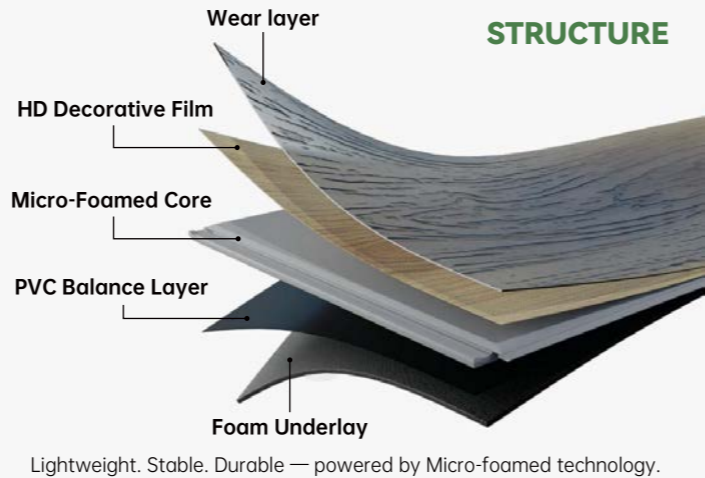
Micro-Foam flooring is the next evolution in resilient flooring—lightweight, ultra-stable, and high-performance. Powered by advanced micro-foaming technology, it delivers exceptional strength, impact resistance, and dimensional stability while reducing material usage. Built to perform in high-traffic and high-humidity environments, Micro-Foam resists indentation, wear, and deformation with ease. Its innovative core enhances comfort underfoot and improves installation efficiency, all while supporting a more sustainable, low-emission design. Combining durability, innovation, and modern aesthetics, Micro-Foam flooring sets a new benchmark for the future of flooring.

What is Micro-Foaming Floor?

Micro-Foam is an advanced micro-foaming core technology engineered to create a new generation of high-performance flooring materials. Through a precisely controlled process, millions of microscopic air cells (1-10 μm) are evenly distributed throughout the core, forming a stable micro-cellular structure.



By combining physical and chemical foaming control, Micro-Foam optimizes the internal structure of the material—delivering a core that is lighter, stronger, and more efficient while maintaining exceptional durability and dimensional stability.



What is Mico-Foam Technology

What It Is
 Micro-Foam integrates millions of microscopic air cells (1-10μm) into a rigid polymer matrix, forming a uniform micro-cellular structure.

- How It Works**
- Precision Foaming: Physical and chemical foaming are tightly controlled.
 - Uniform Micro-Cells: Air cells are evenly distributed for consistent density.
 - Engineered Core: Fine-tuned cell size and structure deliver dimensional stability.
 - Advanced Shaping: Supports pressed bevels, complex profiles, and high-precision forms.

Technical Significance
 The micro-cellular structure creates a lightweight yet resilient core, enabling high-performance flooring while minimizing material use.

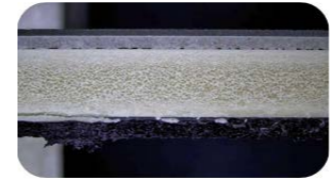


Comparison of Flooring Materials

Feature	Traditional SPC	WPC (2nd Gen)	Micro-Foam (3rd Gen)
Core Type	Rigid, high-density	Lightweight foamed	Millions of microbubbles
Surface	Non-foamed structure	Dense, rigid	Tiny "air springs"
Weight	Standard	Reduced	Ultra-light
Waterproof	100%	100%	100%
Comfort / Shock	Stable	Enhanced sound insulation	Enhanced comfort & superior shock absorption



Traditional SPC – Solid Extrusion
 Rigid, high-density core
 Non-foamed structure
 100% waterproof
 Excellent dimensional stability



WPC – Structural Foaming (2nd Gen)
 Dense, rigid surface layer
 Lightweight foamed core
 Reduced weight
 Enhanced sound insulation



Micro Foam Floor (3rd Generation)
 Millions of microbubbles
 Tiny "air springs"
 Enhanced comfort
 Superior shock absorptio

Key Benefits

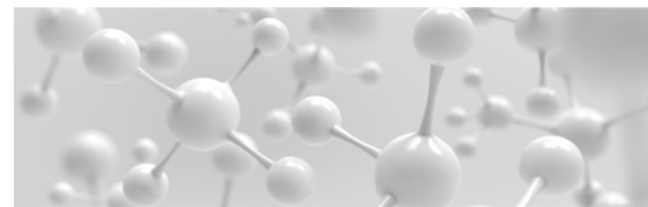
- 01 Structure**
Lightweight core with high structural stability.
- 02 Performance**
Enhanced comfort, impact resistance, and acoustic insulation.
- 03 Design**
Greater flexibility for refined details and modern finishes.
- 04 Sustainability**
Less material, lower weight, reduced environmental impact.

Physical Properties

Micro-foamed LSPC offers an ideal balance of **low density and high strength**, making it lightweight yet durable. Its stone-based core ensures excellent stability under temperature and humidity changes, while the micro-foamed structure improves sound insulation for a quieter environment. At the same time, it maintains strong impact resistance comparable to high-density materials, delivering reliable performance in demanding applications.

The international standard for thermal stability is 0.08% (ISO 23999) for conventional SPC and 0.25% for WPC. ZY micro-foamed LSPC achieves the same **0.08% level**, matching the performance of high-density SPC while maintaining a lighter structure. Compared with traditional foamed WPC, it offers significantly improved dimensional stability, making it more reliable in environments with temperature changes and long-term use.

The microcellular structure of Micro-foamed LSPC provides excellent sound insulation. Even without an underlayment, it can reduce noise by **10-15%** compared with conventional SPC. This enhanced acoustic performance creates a quieter and more comfortable indoor environment, making it ideal for residential, commercial, and high-traffic spaces.



Chemical Properties

Chemical Resistance
 Micro-Foaming flooring resists acids, alkalis, oils, and common household chemicals. Its stable microcellular core prevents penetration and surface damage, keeping colors vibrant and the floor durable even in high-traffic or spill-prone areas

Low Moisture Absorption
 ZY FLOORS' PVC balancing layer has low moisture absorption, preventing swelling, warping, or deformation. It ensures dimensional stability, protects the floor's structure, and maintains long-term performance in humid or wet environments.

Flame Retardant Performance
 Micro-Foaming flooring features a flame-retardant core that resists ignition and slows fire spread. It enhances safety without compromising durability or stability, making it suitable for both residential and commercial spaces.