Shieldzone Technology

Waterproof Venting
Acoustic Protection
Pressure Equalization

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01

Company Overview



Shieldzone Technology is based in Yibin, Sichuan, and focuses on high-performance membrane applications. We provide waterproofing, pressure equalization and acoustic protection solutions for customers across global industries.



Company Overview

Established in February 2024 and ISO 9001 certified.



Shieldzone works with Sichuan University to develop ePTFE waterproof venting and acoustic membranes for **small appliances, consumer electronics, security and outdoor lighting.**

Employees
25

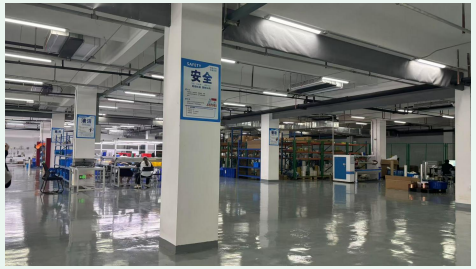
Equipment
20

Customers Served
100+

Company Overview





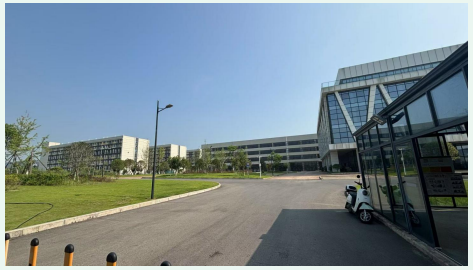




Yibin Operations Base

Qidi Science Park, Cuiping District, Yibin









Hangzhou ePTFE Plant

Tianma Industrial Park, Linping District, Hangzhou

全球业务分布



02

Product Introduction

Centered on ePTFE film technology, Shieldzone has developed a portfolio including adhesive waterproof venting membranes, adhesive waterproof acoustic membranes, threaded vents, snap-in vents and explosion-proof vents.



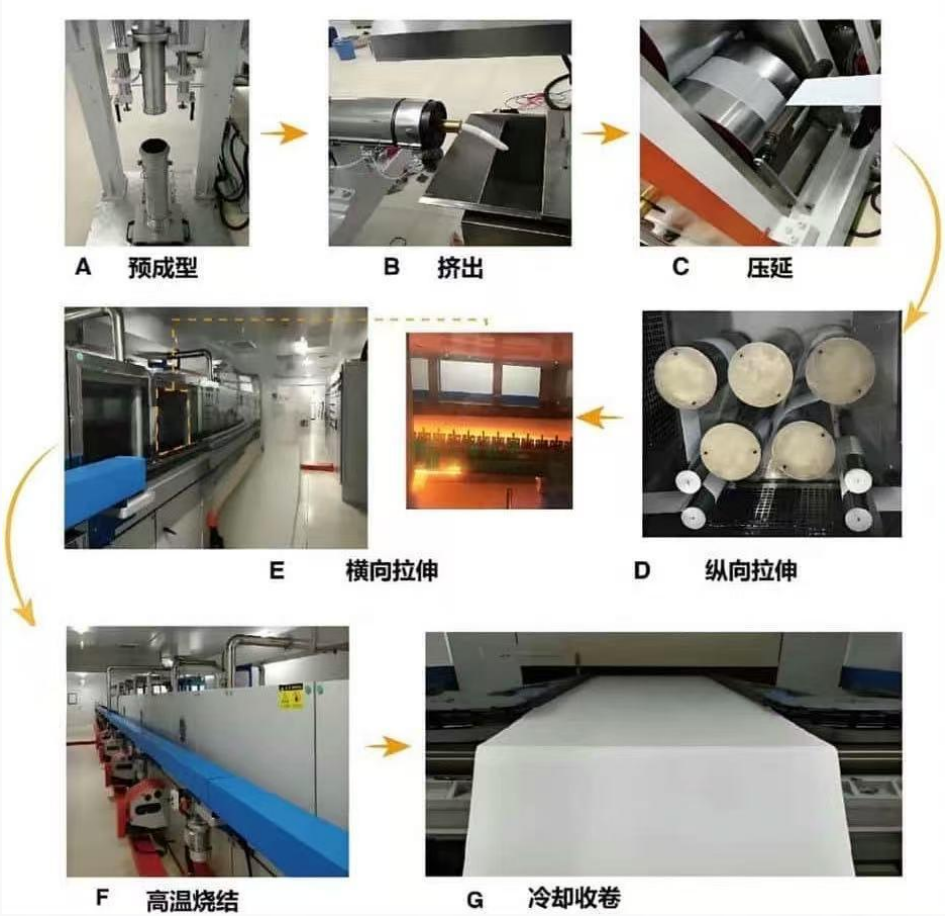
Product Introduction

ePTFE Membrane Production

PTFE is biaxially stretched into a microporous ePTFE membrane. Resin formulation, stretch ratio and temperature profile tailor its fibrillar structure and performance.

Membrane Stretching Lines: 2

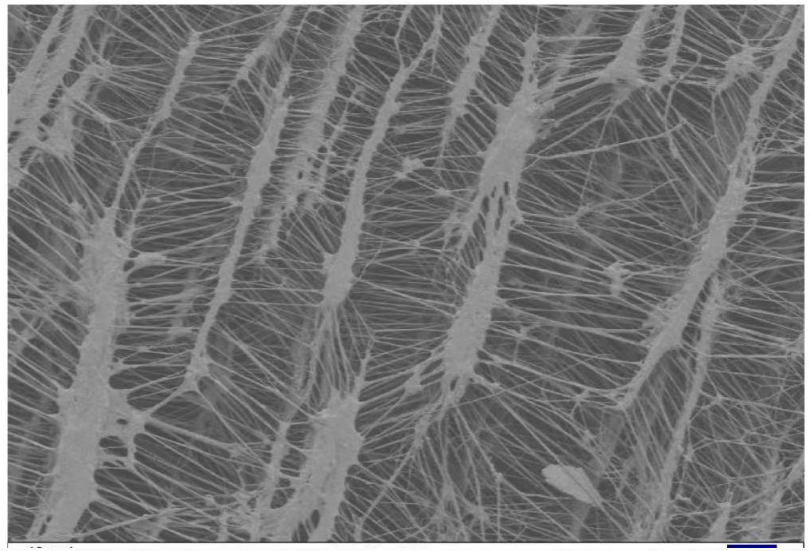
Capacity: 16,000 m²/day

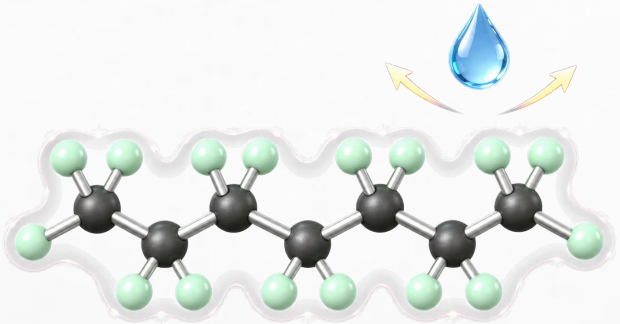


Product Introduction

ePTFE Performance

High-energy C-F bonds and a fluorine-rich surface give ePTFE low surface energy, chemical resistance and thermal stability. It retains waterproof venting and acoustic performance in harsh environments.





Low Surface Energy

High Porosity

C-F Bond Stability

Product Introduction

Waterproof Venting

ePTFE pores are smaller than water droplets but larger than gas molecules.

Its low surface energy resists wetting and capillary penetration.

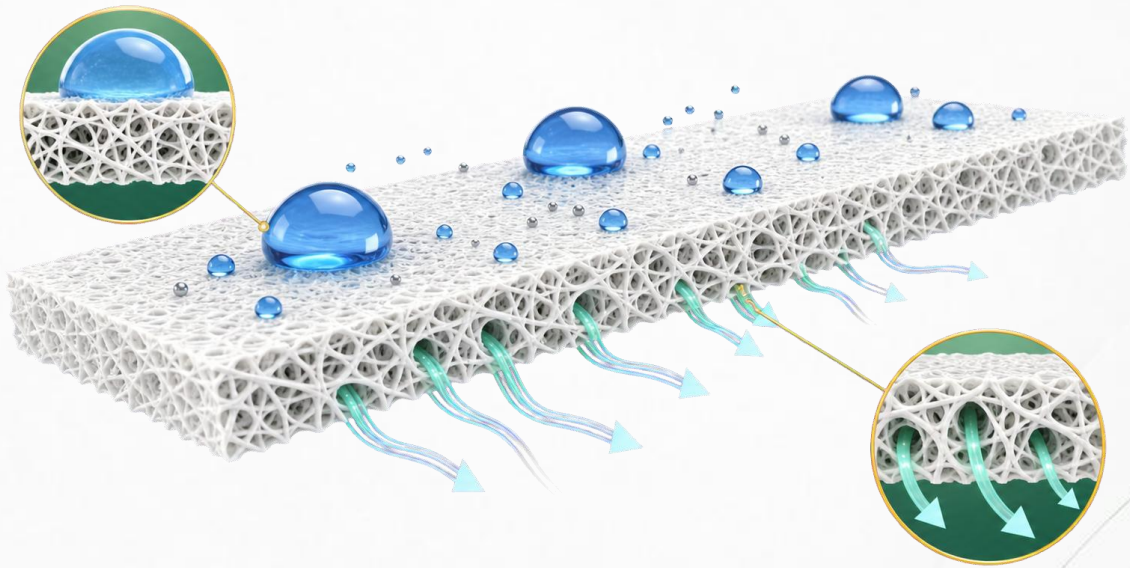


表 1　各种形态下水的直径

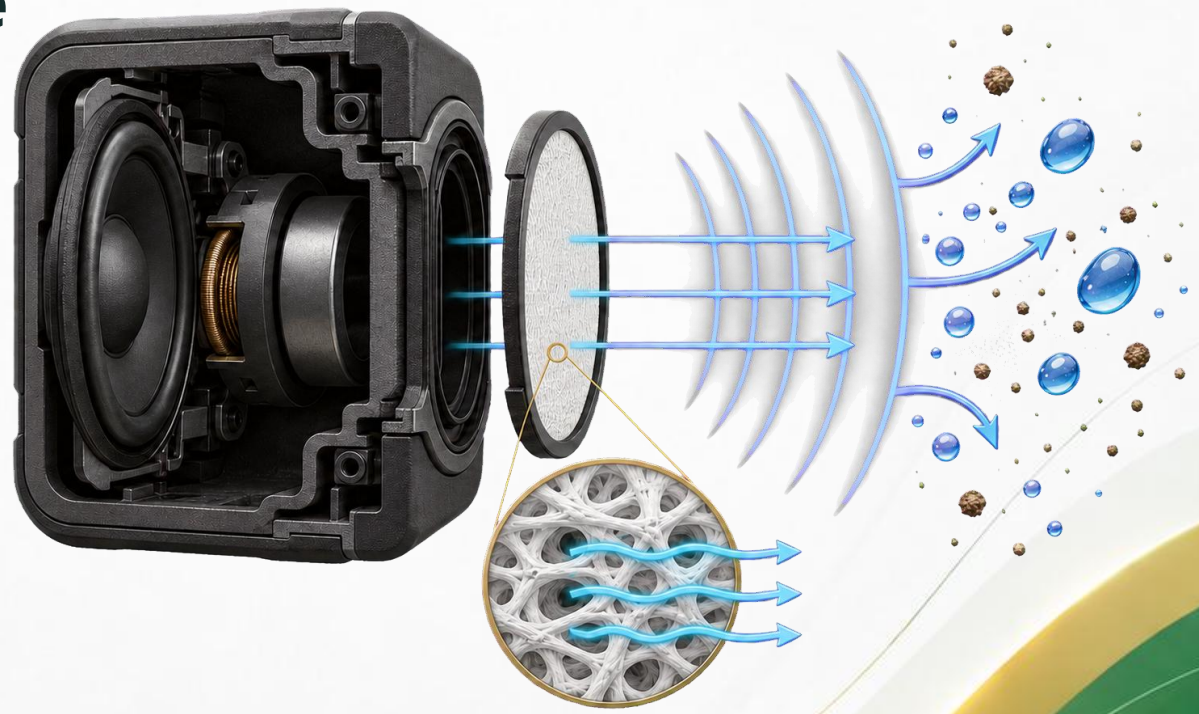
Tab.1　Diameter of water in various forms

水的形态	直径/μm
空气分子	0.000 36
水蒸气分子	0.000 47
露水	100
毛毛雨	500
普通中雨	2 000
雷雨	3 000

Product Introduction

Waterproof Acoustic Membrane

Interconnected micropores and a lightweight membrane transmit sound while hydrophobic pores block water and particles. Optimized area and cavity impedance help reduce insertion loss.



Product Introduction

Precision Die-Cutting

Shieldzone laminates high-performance ePTFE film with adhesive and release liners, then precision die-cuts ready-to-assemble circular, annular and custom membrane parts.

Die-Cutting Lines: 3

Capacity: 300,000 pcs/day





03

Technical Capabilities

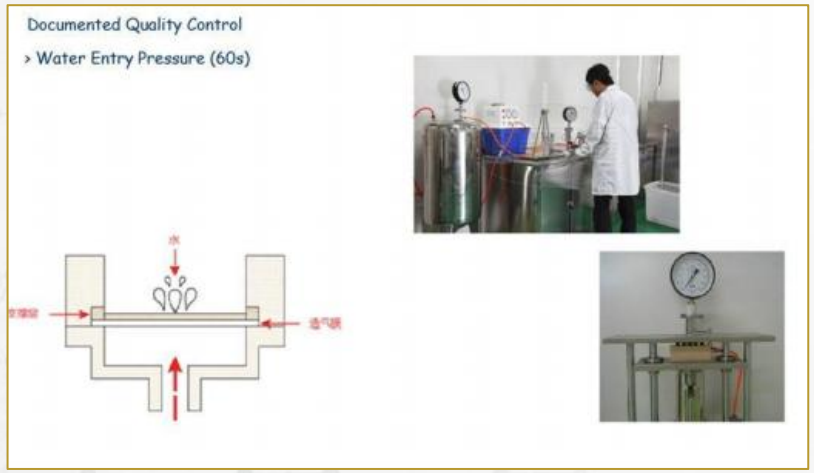
Shieldzone provides customized waterproof membrane die-cut components, supported by waterproof testing, air-flow testing, acoustic testing and simulation, and reliability testing.

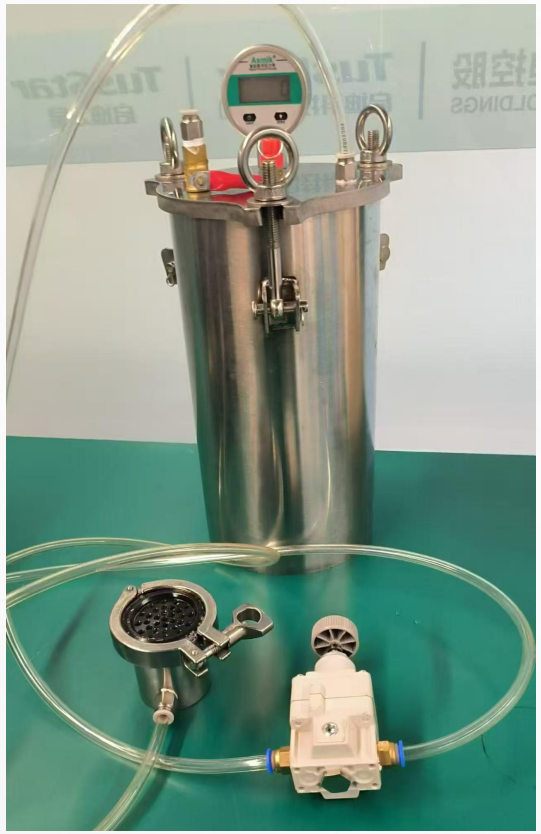


Technical Capabilities

Waterproof Testing

Shieldzone provides waterproof testing for base films and die-cut parts, covering **IPX1–IPX8**.







Technical Capabilities

Air Flow Testing

Shieldzone provides air-flow testing at different pressures and active areas. The standard unit is mL/min/cm² at 7 kPa.

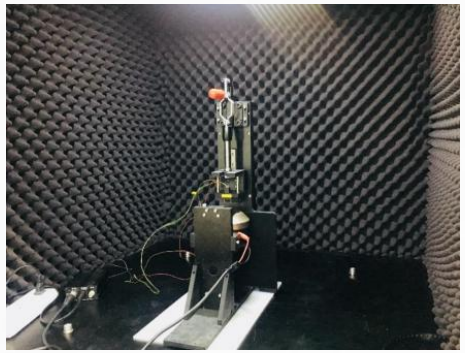


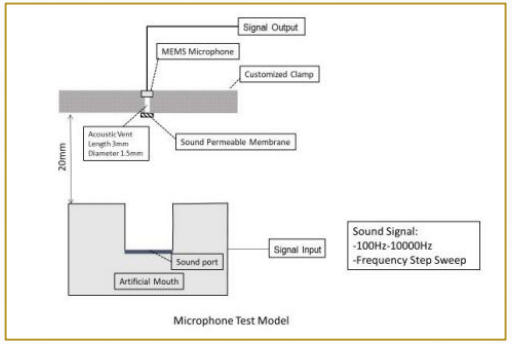
Technical Capability

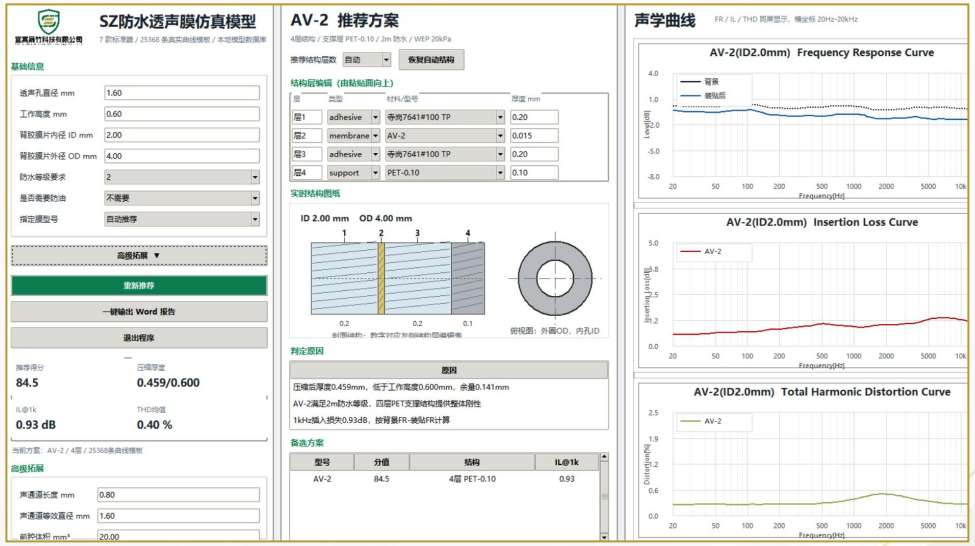


Acoustic Test & Simulation

Shieldzone works with Sichuan University to operate an acoustic lab with impedance tubes and audio analyzers. We test **acoustic impedance, frequency response, insertion loss and THD**, providing data-based membrane and acoustic-channel recommendations.







Technical Capabilities

Reliability Testing

Oil Resistance Testing

Artificial Sweat Testing

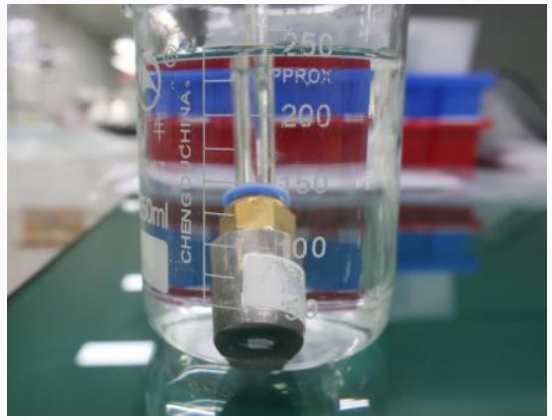
Thermal Shock Testing

85°C/85% RH Testing

Salt Spray Testing

RoHS Testing

Halogen Testing





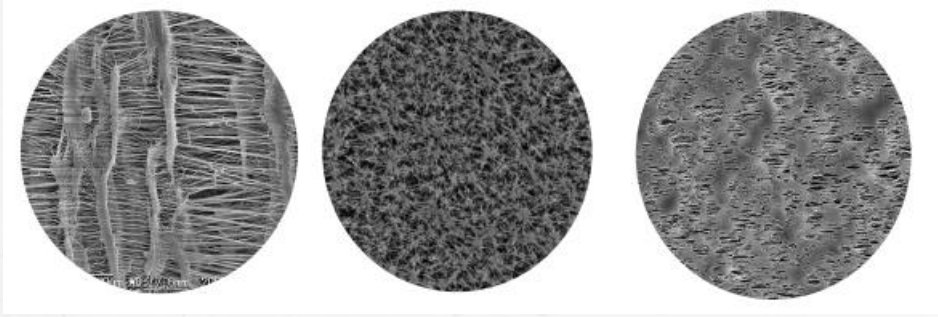




Technical Capabilities

SEM Analysis

Shieldzone and Sichuan University jointly operate Zeiss SEM equipment.





Business Process

01

Requirement Confirmation

- IP protection rating
- Air-flow requirement
- Acoustic performance requirement
- Reliability requirement
- Dimensional design requirement

02

Membrane Selection

- Membrane structure
- Membrane thickness
- Pore size
- Membrane consistency
- Membrane strength

03

Structural Design

- Select appropriate adhesive
- Select appropriate release liner
- Define optimal ID & OD
- Design laminate stack-up
- Optimize membrane layout

04

Sample Delivery

- Tooling and sample production
- Samples available in as little as 5 days

04

Standard Product Selection Guide



Shieldzone waterproof venting and acoustic membranes cover the full range of IP protection levels, supporting water resistance to 100 m, air flow up to 25,000 mL/min/cm² at 7 kPa, and sound loss below 1 dB at 1 kHz. PFAS-free, fluorine-free custom options are also available.

Waterproof Venting Membrane Selection Guide

Model	23150-T	23050-T	23030	25010
IP Rating, 2 mm ID	IP67, IP68[A]	IP67, IP68[A]	IP67, IP68[B]	IP67, IP68[C]
Typical Air Flow (mL/min/cm² @7 kPa)	5,000	5,000	3,000	1,500
Reference Thickness (µm)	140	140	180	130
Adhesive Type	Acrylic	Acrylic	Acrylic	Acrylic
Membrane Type	ePTFE	ePTFE	ePTFE	ePTFE
Membrane Characteristic	Oleophobic	Hydrophobic	Hydrophobic	Hydrophobic
Membrane Color	White	White	White	White
Support Material	PE/PP	PE/PP	PE/PP	PET
Installation Orientation	Internal Mount	Internal Mount	Internal Mount	Internal Mount
Adhesive Service Temperature	-40 to 120°C	-40 to 120°C	-40 to 120°C	-40 to 120°C
RoHS Compliance	Yes	Yes	Yes	Yes

Characteristics	25002	232002	25070-E	AVB-1
IP Rating	IP67, IP68[C]	IP67, IP68[D]	IPX7, IP68	IP67
Typical Air Flow (mL/min/cm² @7 kPa)	350	100	700	25,000
Reference Thickness (µm)	130	150	100	20
Adhesive Type	Acrylic	Acrylic	Acrylic	Acrylic
Membrane Type	ePTFE	ePTFE	PES (PFAS Free)	ePTFE
Membrane Characteristic	Hydrophobic	Hydrophobic	Hydrophobic	Hydrophobic
Membrane Color	White	White	White	Gray
Support Material	PET	PE/PP	N/A	N/A
Installation Orientation	Internal Mount	Internal Mount	Internal Mount	Internal Mount
Adhesive Service Temperature	-40 to 120°C	-40 to 120°C	-40 to 120°C	-40 to 120°C
RoHS Compliance	Yes	Yes	Yes	Yes

A: 2 m immersion for 1 hour

B: 4 m immersion for 1 hour

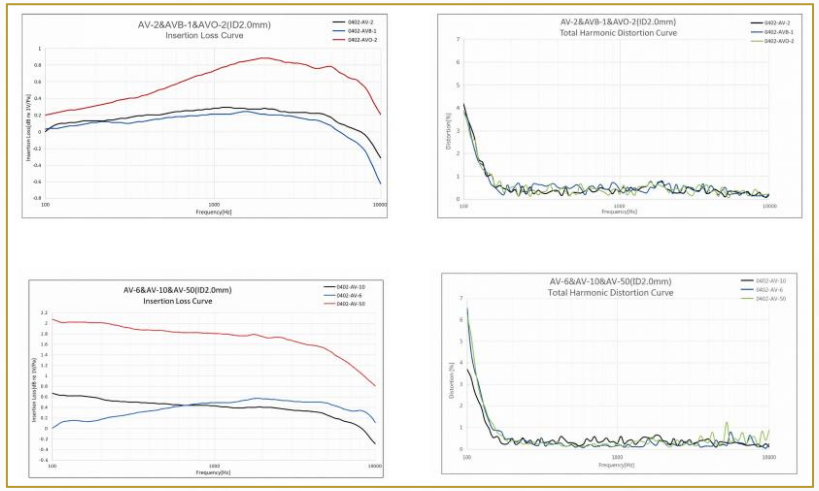
C: 6 m immersion for 1 hour

D: 50 m immersion for 10 minutes

Waterproof Acoustic Membrane Selection Guide

Model	AVB-1	AV-2	AVO-2
Reference Thickness (μm)	10	10	13
IP Rating, 2 mm ID	IP67, IP68[A]	IP67, IP68[A]	IP67, IP68[A]
Water Entry Pressure, WEP (60 s)	60kPa	50kPa	80kPa
Adhesive Type	Acrylic	Acrylic	Acrylic
Membrane Type	ePTFE	ePTFE	ePTFE
Membrane Characteristic	Hydrophobic	Hydrophobic	Oleophobic
Membrane Color	Gray	White	White
Transmission Loss (@1 mm ID @1 kHz)	0.5	0.5	1.0
Installation Orientation	Internal Mount	Internal Mount	Internal Mount
Adhesive Service Temperature	-40 to 120°C	-40 to 120°C	-40 to 120°C
RoHS Compliance	Yes	Yes	Yes

Model	AV-6	AV-10	AV-50
Reference Thickness (μm)	9	8	10
IP Rating, 2 mm ID	IP67, IP68[B]	IP67, IP68[C]	IP67, IP68[D]
Water Entry Pressure, WEP (60 s)	200kPa	300kPa	> 550kPa
Adhesive Type	Acrylic	Acrylic	Acrylic
Membrane Type	ePTFE	ePTFE	ePTFE
Membrane Characteristic	Hydrophobic	Hydrophobic	Hydrophobic
Membrane Color	White	White	White
Transmission Loss (@1 mm ID @1 kHz)	1.0	1.0	3.0
Installation Orientation	Internal Mount	Internal Mount	Internal Mount
Adhesive Service Temperature	-40 to 120°C	-40 to 120°C	-40 to 120°C
RoHS Compliance	Yes	Yes	Yes



A: 2 m immersion for 1 hour

B: 4 m immersion for 1 hour

C: 6 m immersion for 1 hour

D: 50 m immersion for 10 minutes

05

Application Cases

Shieldzone waterproof venting and acoustic membranes are widely used in small appliances, consumer electronics, security and outdoor lighting applications.

Application Cases

Insulated Tumbler

Shieldzone pressure vent releases steam pressure, balances internal and external pressure, reduces splash-back and blocks liquid water for a safer, easier-to-use tumbler.



Application Cases

Consumer Electronics - Audio Ports

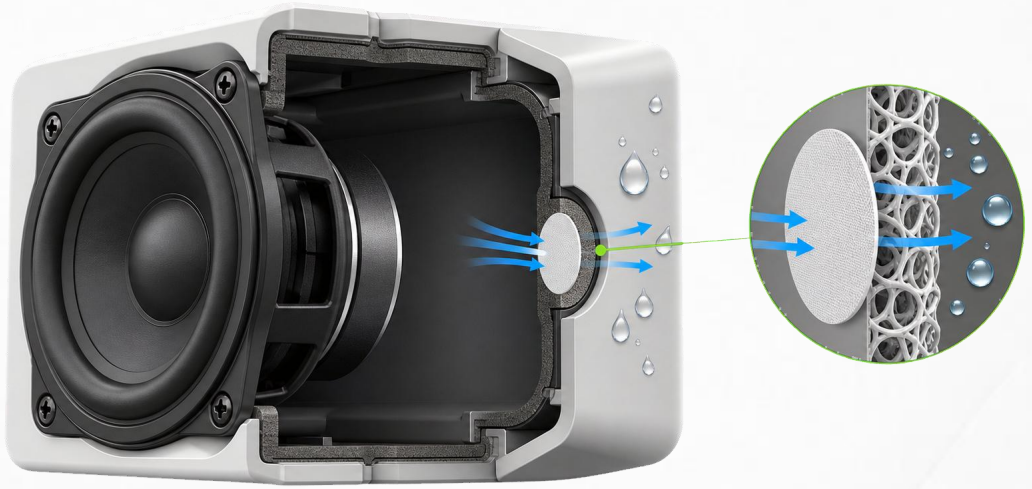
Shieldzone acoustic membranes protect microphone and speaker ports from moisture, sweat and dust while maintaining sound transmission and microphone sensitivity.



Application Cases

Speaker Pressure-Relief Port

Shieldzone venting membranes equalize speaker-cavity pressure, reducing diaphragm stress and distortion while blocking liquid water and dust.



Application Cases

Security – Smart Doorbell

Shieldzone waterproof solutions for security products are suitable for outdoor smart doorbells, video intercoms and cameras, helping customers raise protection levels while maintaining acoustic performance, venting performance and automated assembly efficiency.



Application Cases

Outdoor Lighting - Pressure Vent

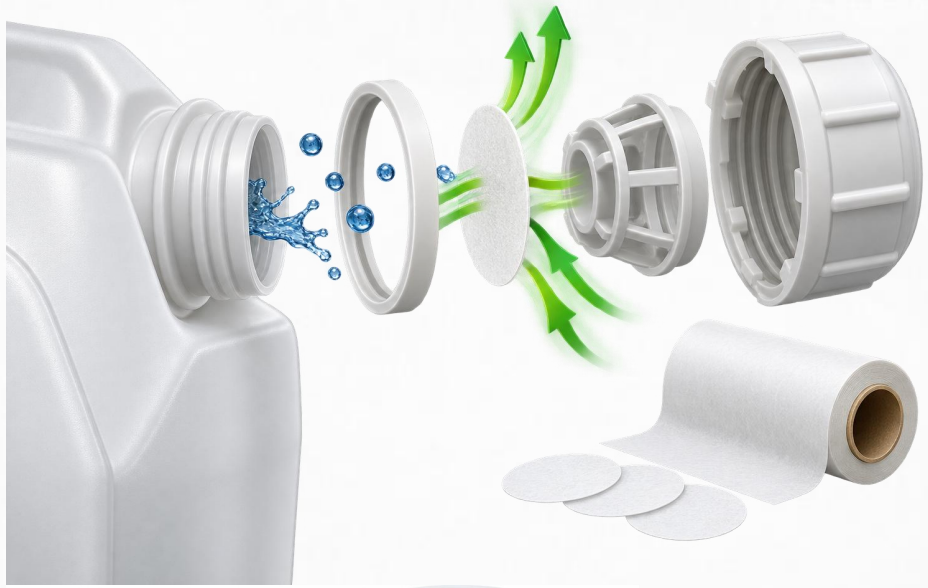
Installed in outdoor-lighting housings, **Shieldzone pressure vents** equalize pressure, reduce condensation and seal fatigue, and block rain, dust and contaminants.



Application Cases

Chemical Packaging – Membrane Venting

ShieldZone's hydrophobic and oleophobic membranes allow controlled pressure equalization in chemical containers, bottles and canisters while helping prevent liquid and particle ingress.
Available as membrane rolls or die-cut pieces, with membrane performance and support materials selected to suit the closure design and welding process.





Application Cases

Automotive Applications – Pressure Equalization and Enclosure Protection



ShieldZone's hydrophobic and oleophobic membranes can be integrated into headlights, cameras, sensors, electronic control units, pumps and battery-pack electronics enclosures. They help protect housing openings against water, dust and salt spray while allowing air to pass.

By equalizing pressure during temperature and altitude changes, the membranes can also reduce stress on enclosure seals. Membrane selection and final protection performance should be verified in the assembled device.

Thank You

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