

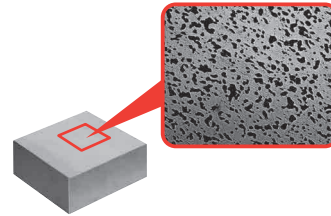
POROUS VENT® (Porous Metal Blank) Overview

New

POROUS VENT® (Porous Metal Blank)

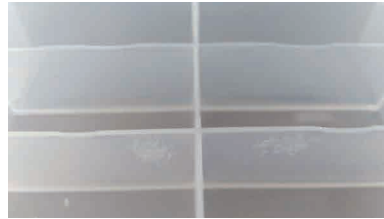
Features

- A porous metal block insert blank developed for gas release applications.
- The product has a porous structure made from sintered stainless steel (SUS430 equivalent).
- Effective for improving the molded products surface.
- Gas can be released from any direction, making the product suitable for molded articles with complex shapes, or for evenly releasing gas from wide-area parts.
- Mechanical machining and laser machining can be performed as necessary for the shape of the molded product.



Examples of Molding

<Before use>



<After use>



- Product: Plastic case
- Resin: PP
- Application effects:
Eliminates short shots between ribs and vertical walls

Examples of Machining Conditions

[Table 1] shows an NC milling example while [Table 2] shows a laser machining example.

Check your specific equipment, as other machining methods differ depending on the equipment.

- Make sure to use water-based working fluid during NC milling.

[Table 1] Example of NC milling conditions

Cutting speed (m/min)	150
Revolution (rpm)	3000
Axial cutting depth (mm)	0.1
Radial cutting depth (mm)	0.25
Feed (mm/revolution)	0.16

Required tools

- Material: Carbide + AlTiN coating
- Type: 4-flute radius R3
- Applicable work material: Stainless steel (M grade)

[Table 2] Example of laser machining conditions (depth 0.01 mm)

Laser output (W)	9
Pulse frequency (kHz)	30
Feed speed (mm/sec)	800
Wavelength (nm)	1064
Offset (mm)	0.01

- Note that if the output is too strong, the elements evaporate from the surface layer and the corrosion resistance decreases.

[Table 3] Ventilation by machining method (example)

Final machining method	Ventilation (ℓ/min-cm ²)	
	No oil drainage	With oil drainage
Electric discharge / wire cutting	1.24 ~ 1.30	3.30 ~ 3.60
NC milling	0.55 ~ 0.61	0.70 ~ 0.75
Laser	3.30 ~ 3.60 * Oil drainage not required	

Machining conditions NC milling: [Table 1] Laser: [Table 2]
Measurement conditions • Test piece size: φ20 x 10 mm • Air pressure: 0.3 MPa

Post-Machining Treatment

Oil draining

Always drain the oil for discharge machining, wire cutting, NC milling, etc., as impregnation with machining fluid can cause ventilation failure and rust. Refer to [Table 3] for differences in ventilation with and without oil drainage.

Polished finishing

Finish according to the following procedure.

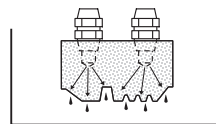
- (1) Polish once with a fine (#800 recommended) oil stone, then rotate 90° and polish a second time.
- (2) Polish with an ultra-fine (#1200 recommended) oil stone.
- (3) Buff using a paste-type polishing agent (0.5 to 1 μm particle size recommended). If necessary, use even finer sandpaper (#2500) to polish further.

Oil Drainage Method

(1) Air blowing

Make air blowing holes(※) on the side opposite the molded part surface, to enable compressed air (factory air equivalent) at about 0.5 MPa to be blown for 5 to 10 minutes, prior to wiping off dirt from the molded part surface with a rag.

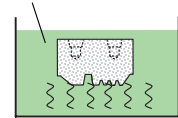
※ Substitution is possible if the POROUS VENT has gas release holes.



(2) Ultrasonic cleaning (as required)

Use ultrasonic cleaning for about 30 minutes to 1 hour while heating to 50 to 60°C, using a water-soluble detergent for metals.

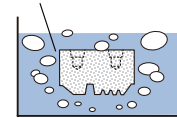
50 to 60°C
Water soluble metal detergent



(3) Hot water washing

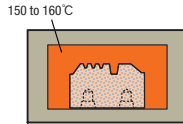
Perform ultrasonic cleaning for five minutes in hot water (50 ~ 60°C) before performing (1). Repeat until the water is no longer cloudy.

50 to 60°C hot water



(4) Drying

Dry in a drying oven kept at 150 to 160°C for 1 to 2 hours. If a drying oven is unavailable, perform (1) until moisture is no longer released. (Approximately 1 to 2 hours)



Maintenance Method

Daily maintenance (in molding machinery)

This method eliminates mild resin clogging. It is recommended at the completion of molding (or before beginning) every day.

1. Spray alcohol on the surface while still mounted to the mold and immediately wipe off with a cloth. Repeat this 1 or 2 times.
2. Wipe the surface with a cloth moistened with alcohol while blowing compressed air through the gas release hole.

Periodic maintenance (in molding machinery)

This method eliminates medium resin clogging. It is recommended weekly.

1. Spray organic solvent on the surface while still mounted to the mold and immediately wipe off with a cloth. Repeat this 1 or 2 times.
2. Wipe the surface with a cloth moistened with organic solvent while blowing compressed air through the gas release hole.

• Acetone is the recommended organic solvent, but the most suitable solvent depends on the specific resin. Contact the resin manufacturer for details.

Periodic maintenance (disassembled from molding machinery)

This method helps to loosen resin clogs that cannot be removed by daily or periodic maintenance. It is recommended while disassembled from the molding machinery.

1. Remove the POROUS VENT from the mold and immerse it in acetone (or another type of solvent appropriate for the resin used) for 12 to 24 hours.
2. Execute the "Oil draining method" steps (1), (3) and (4) in order.

RoHS10

PRVT (Blank Type)
PRVB (Free designation type)
PRVF (Free designation, 6F type)

Type	Finishing	A/B/T tolerance
PRVT	Six flats cutting	+2
PRVB		+1
PRVF	Six surface milling	+0.1
		0

Material: Stainless steel (SUS430 equivalent)
Hardness: 400 to 450 HV

Blank Type

Density (g/cm ³)	Tensile Strength (MPa)	Thermal Conductivity (W/m-K)	Linear Expansion Coefficient (10 ⁻⁶ /°C)	Part Number		A	B		T
				Type	Pore diameter (μm)				
6.1~6.4	450~480	10-11	12-12.5	PRVT	20	50	50	75	50
						100	50	75	100
						150		100	
						300		100	50

Free designation type

Density (g/cm ³)	Tensile Strength (MPa)	Thermal Conductivity (W/m-K)	Linear Expansion Coefficient (10 ⁻⁶ /°C)	Part Number		A (1mm increments)	B (1mm increments)	T (1mm increments)
				Type	Pore diameter (μm)			
6.1~6.4	450~480	10-11	12-12.5	PRVB PRVF	20	50~300	50~200	50~100

• A≥B≥T



Order

Part Number — A — B — T
PRVT20 — A50 — B75 — T50



Days to Ship

Quotation

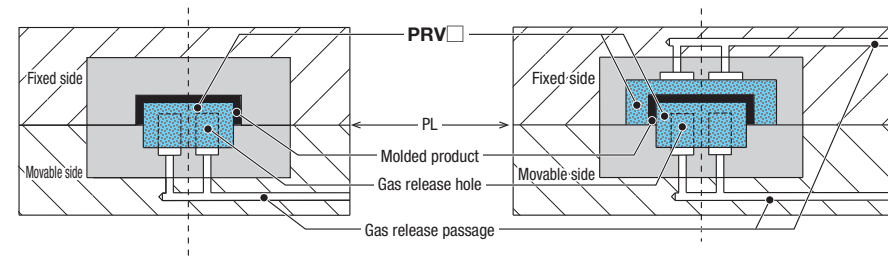


Example

Partial insertion

Full insertion

- Avoid using for the exterior parts of mirror finished products or transparent items.



How to Mount

1. Machine the POROUS VENT to match the shape of the molded part. Refer to the left page for treatment after machining.
2. Machine mounting holes and gas release passage into the mold. Be sure to clean with compressed air when finished to make sure that no particles remain, as they may cause clogging.
3. If you need to tap the POROUS VENT during installation, use a strike plate to ensure that the vents do not collapse.
4. When checking the ventilation, apply acetone or alcohol to the surface of the molded product and blow from the opposite side. If bubbles emerge from the entire surface, the product is normal.

For Use

- Ventilation recovery processing is necessary after shipment, as all surfaces are shipped in a state of low ventilation.
- Shave the rear surface to secure ventilation by making sure the POROUS VENT walls are not too thick.
- Grinding should be done so as to avoid ventilating the surface, other than for gas release.
- Periodic maintenance is required. Refer to the methods on the left page.
- For cooling, consider using a heat exchanger pipe (WHP) to avoid cooling water flowing directly through the water hole if water leaks. In that case, it is more effective to apply 0.05 to 0.1 mm heat conducting grease (MTJ) between the POROUS VENT and the cooling parts.
- When installing ejector pins in the POROUS VENT, sliding may cause the POROUS VENT to rub against the area around the end surface of the ejector pin, widening the mounting hole. Use caution as this will create burrs.
- This product is made from rust-resistant materials. However, to prevent rusting, do not store in high-temperature/high-humidity environments or those with fine dust.