

# Avery Dennison® MPI 2509 PWF

## Perforated Window Film 50/50 Perforation

### Features

- Perforated film with white print face, black on adhesive side for one way vision graphics
- Very good printability on eco-solvent, solvent and latex inkjet printers
- 2 mm holes with 50% open area
- Meets minimum Visual Light Transmission (VLT) requirement of 35%<sup>1</sup>
- Very good outdoor durability and dimensional stability
- Very good adhesion on glass and transparent substrates
- One side PE coated StaFlat liner for excellent printing and handling
- Removable with heat up to 1 year with little or no adhesive residue

### Conversion\*

- |   |  |
|---|--|
| <input type="checkbox"/> Flat bed cutters     | <input type="checkbox"/> Cold overlaminating           |
| <input type="checkbox"/> Friction fed cutters | <input type="checkbox"/> Electrostatic printing        |
| <input type="checkbox"/> Die cutting          | <input checked="" type="checkbox"/> Latex inkjet       |
| <input type="checkbox"/> Thermal transfer     | <input checked="" type="checkbox"/> Eco solvent inkjet |
| <input type="checkbox"/> Screen printing      | <input checked="" type="checkbox"/> Solvent inkjet     |
| <input type="checkbox"/> Offset printing      | <input type="checkbox"/> UV curable inkjet             |

\*Always test with your combination of printer and inks prior to commercial use.  
Note: For solvent or eco solvent printed graphics, it is recommended to cure the ink for 5 days before applying an overlaminate.

### Application

For external use where material is exposed to rain and contamination, the use of an optically clear, compatible overlaminate is recommended to prevent the holes from filling with water and/or dirt to ensure clear vision. Avery Dennison DOL 1060Z Gloss is recommended for 100% flat windows and Avery Dennison DOL 6460 High Gloss can be used for either flat or slightly curved windows.

Note: For solvent or eco solvent printed graphics, it is recommended to cure the ink for 5 days before applying an overlaminate.

### Uses

Avery Dennison MPI 2509 PWF is a digital printable white/black perforated calendered vinyl film for use in a wide range of promotional window graphics applications where one way vision, removability and value for money is required. Used on passenger vehicles<sup>1</sup> for continuous, uninterrupted vehicle graphics covering painted and window areas, and large size graphics on building windows that still provide sufficient interior daylight and exterior viewing capabilities.

### Description



**Film:** 150 micron white/black perforated polymeric calendered vinyl



**Adhesive:** Removable acrylic  
**Removability:** up to 1 year



**Liner:** One side PE coated non-perforated kraft paper, 168g/m<sup>2</sup>



**Outdoor Life\*\*:** Up to 3 years (unprinted)

Application surface: Flat, simple curves

### Common Applications

- Window graphics
- Vehicle & bus window graphics
- Building wraps
- Retail & commercial signage
- Bus shelters
- POP displays
- Other transparent surfaces

**Physical characteristics**

**General**

Caliper, face film	ISO 534	150 micron
Caliper, face film & adhesive	ISO 534	***
Open area		50% (approx.)
Perforation diameter		2 mm
Visual Light Transmission (VLT) <sup>1</sup>	MPI 2509	37.5%
	MPI 2509 + DOL 6460	35.5%
	MPI 2509 + DOL 1060Z	35.4%
Dimensional stability	DIN 30646, on glass	1 mm max
Adhesion, ultimate, perforated	FINAT FTM-1, glass	160 N/m
Adhesion, ultimate, unperforated	FINAT FTM-1, glass	320 N/m
Removability <sup>^</sup>	Smooth OEM painted surfaces	up to 1 year
Shelf life	Stored at 22° C/50-55 % RH	1 year
Durability **	Vertical exposure	up to 3 years unprinted

<sup>^</sup> Not when applied to: Nitrocellulose paint, ABS, Polystyrene, screen printing inks (fresh), certain types of PVC, Polycarbonate or PMMA.

<sup>1</sup> Samples applied to 4mm AS2 factory tinted glass. VLT % measurement will change depending on the glass and/or if overlaminated is used. It's the responsibility of the installer and vehicle owner to ensure the applied graphics comply with their specific state or territories traffic and transport regulations.

**Temperature Range**

Minimum Application temperature	+10°C
Temperature range	- 20°C to + 65°C

**Chemical**

Avery Dennison perforated window films are resistant to water, humidity, solvents, most mild acids, alkalis and salt. Due to the open structure of the film, exposure must be limited to an absolute minimum. To avoid damage to the printed image, Avery Dennison recommends that prints be protected with an appropriate overlaminated. Overlaminated Avery Dennison Perforated Window Film has the same resistance to chemical substances as the overlaminated film.

Avery Dennison Perforated Window Films are also resistant to most commonly used cleaning detergents. Thorough rinsing and following the recommended use and exposure to the cleaning detergent is advised. Before use, always test to ensure that cleaning detergent will not damage un-laminated prints.

Note:

Materials have to be properly dried and cured before further processing, like laminating, trimming, contour cutting or application. The residual solvents can otherwise change the products' specific features and properties.

**Test Methods**

**Dimensional stability:**  
Is measured on a 150 x 150 mm aluminium panel to which a specimen has been applied; 72 hours after application the panel is exposed for 48 hours to + 70°C, after which the shrinkage is measured.

**Adhesion:**  
(FTM-1, FINAT) is measured by peeling a specimen at a 180° angle from a stainless steel or float glass panel, 24 hours after the specimen has been applied under standardised conditions. Initial adhesion is measured 20 minutes after application of the specimen.

**Flammability:**  
A specimen applied to aluminium is subjected to the flame of a gas burner for 15 seconds. The film should stop burning within 15 seconds after removal from the flame.

**Temperature range:**  
A specimen applied to stainless steel is exposed at high and low temperatures and brought back to room temperature. 1 hour after exposure the specimen is examined for any deterioration. Note: Prolonged exposure to high and low temperatures in the presence of chemicals such as solvents, acids, dyes, etc. may eventually cause deterioration.

**Important**

Information on physical characteristics is based upon tests we believe to be reliable. The values listed herein are typical values and are not for use in specifications. They are intended only as a source of information and are given without guarantee and do not constitute a warranty. Purchasers should independently determine, prior to use, the suitability of any material for their specific use.

All technical data is subject to change without prior notice.

**Warranty**

Avery Dennison® materials are manufactured under careful quality control and are warranted to be free from defect in material and workmanship. Any material shown to our satisfaction to be defective at the time of sale will be replaced without charge. Our aggregate liability to the purchaser shall in no circumstances exceed the cost of the defective materials supplied. No salesman, representative or agent is authorised to give guarantee, warranty, or make any representation contrary to the foregoing.

All Avery Dennison® materials are sold subject to the above conditions, being part of our standard conditions of sale, a copy of which is available on request.

**\*\*Expected Durability**

The expected durability of Avery Dennison films are defined as the expected performance life of the Avery Dennison graphic film(s) within Zone 1 of the Avery Dennison zone system, in outdoor vertical exposure conditions. The actual performance life will depend on a variety of factors, including selection and preparation of substrate, angle and direction of exposure, application methods, environmental conditions and cleaning/maintenance of the films. In case of films used in areas of high temperatures or humidity, high altitudes and industrially polluted areas the performance will be further reduced.

**Expected Durability and Warranted Period Definitions**

Expected durability is the expected period of time defined in the product data sheet, the product should, but is not warranted to, perform satisfactorily when applied in vertical exposure conditions as defined in Instructional Bulletin 1.30. The warranted period as defined in the appropriate ICS Performance Guarantee Bulletin, is the maximum period of time Avery Dennison will warrant the finished products performance in accordance with ICS Performance Guarantee Terms and Conditions 1.0, provided that the film is properly stored, converted and installed in accordance with Avery Dennison guidelines.

<sup>^</sup>Compatible with most printer and ink combinations. Test prior to use.

**Chemical Resistance:**

All chemical tests are conducted with test panels to which a specimen has been applied. 72 hours after application the panels are immersed in the test fluid for the given test period. 1 hour after removing the panel from the fluid, the specimen is examined for any deterioration.

**Corrosion Resistance:**

A specimen applied to aluminium is exposed to saline mist (5% salt) at 35°C. After exposure, the film is removed and the panel is examined for traces of corrosion.

