

# Avery Dennison® HV1000 High Visibility Series

Polyester Face, Permanent adhesive, Printable Liner

(formerly: NV350 series)

Revision: 0 Dated: 04/30/14

## Uses:

Avery Dennison® HV 1000 Reflective Printable Polyester film is an economical, enclosed lens, retro-reflective film that features a 90# printable liner for back printed applications and a permanent adhesive.



**Face:** 5.0 mil (127 microns) high gloss printable PET



**Adhesive:** Permanent Clear Acrylic



**Liner:** 90#, Back printable



**Durability:** Up to 2 years

**Application Surfaces:** Flat.

## Features:

- High gloss finish
- Good dimensional stability
- Good UV, temperature, humidity, and salt-spray resistance
- Economical retro-reflective
- Day & Night visibility
- Back printable liner

## Conversion:

- Screen Printing
- Offset Printing
- Flexographic Printing
- Lithographic Printing
- Steel Rule Die-Cutting
- Drum Roller
- Guillotine Cutting

## Common Applications:

- Point of Purchase Signage
- Bumper Stickers
- House Number & Letters
- Outdoor advertising
- Flat Short Term Applications

## Product Data Sheet

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## Limitation of End Uses:

Certain applications are not recommended or warranted by Avery Graphics. Unsuitable applications include:

- Stainless Steel
- Wood (painted or unpainted)
- Urethane substrates
- Walls
- Compound curves
- Corrugations
- Flexible substrates
- Low surface energy substrates (i.e. Tedlar coatings)
- Unclean or textured surfaces
- Wet method of application not recommended on HV Reflective Series reflective films. Use of wet method of application invalidates standard warranty on this product
- Long term exposure to temperatures over 140°F
- Non-Vertical applications (durability is for vertical exposure ONLY, defined as ±10° from vertical)

## Physical Characteristics:

Property	Value
Typical Film Caliper With Adhesive	6.0 mil (152 microns)
Reflectivity (Typical)	40 Tested per ASTM E810 at -4° EA/0.2° OA
Dimensional stability	Good to excellent. Determined by measuring shrinkage of unprinted film applied to a 36 in <sup>2</sup> (232 cm <sup>2</sup> ) aluminum test panel after 72 hours aging at 73° F (23° C) 50±5% RH Followed by 48 hours at 150° F (65° C)
Tensile at Yield	4.0 -8.0 lb/in (0.7 – 1.5 kg/cm)
Flammability	Self Extinguishing
Shelf-Life	2 years from date on label (up to 2 years unprocessed, OR process within one year and apply within 1 year of processing)
Durability	Vertical Exposure 2 years when properly processed and applied (vertical exposure, unprinted film)
Min. Application Temperature	50° F (10°C)
Service Temperature	-40° to 180° F (-40° to 82° C) (Reasonable range of temperatures which would be expected under normal environmental conditions).

### Important:

Information on physical and chemical characteristics are based on tests believed to be reliable. The values are intended only as a source of information. This information is given without guaranty and do not constitute a warranty. The purchaser should independently determine, prior to use, the suitability of any material for their specific purpose. (Data represents average values where applicable, and is not intended for specification purposes)

### Warranty:

All statements, technical information and recommendations about Avery Dennison products are based upon tests believed to be reliable but do not constitute a guarantee or warranty. All Avery Dennison products are sold with the understanding that Purchaser has independently determined the suitability of such products for its purposes. Avery Dennison products are warranted to be free from defects in material and workmanship for either two years (or the period stated on the specific product information literature in effect at time of delivery, if longer) from date of shipment if said product is properly stored and applied. It is expressly agreed and understood that Avery Dennison's sole obligation and Purchaser's exclusive remedy under this warranty, under any other warranty, express or implied, or otherwise, shall be limited to repair or replacement of defective product without charge at Avery Dennison's plant or at the location of product (at Avery Dennison's election), or in the event replacement or repairs is not commercially practical, to Avery Dennison's issuing Purchaser a credit reasonable in light of the defect in the product.

Avery Dennison's liability for defective products shall not exceed the purchase price paid therefore by Purchaser and in no event shall Avery Dennison be responsible for any incidental or consequential damages whether foreseeable or not, caused by defects in such product, whether such damage occurs or is discovered before or after replacement or credit, and whether or not such damage is caused by Avery Dennison's negligence.

NO EXPRESS WARRANTIES AND NO IMPLIED WARRANTIES, WHETHER OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE, OR OTHERWISE (EXCEPT AS TO TITLE), OTHER THAN THOSE EXPRESSLY SET FORTH ABOVE WHICH ARE MADE EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, SHALL APPLY TO PRODUCTS SOLD BY AVERY DENNISON. AVERY DENNISON SPECIFICALLY DISCLAIMS AND EXCLUDES ALL OTHER SUCH WARRANTIES. NO WAIVER, ALTERATION, ADDITION OR MODIFICATION OF THE FOREGOING CONDITIONS SHALL BE VALID UNLESS MADE IN WRITING AND MANUALLY SIGNED BY AN OFFICER OF AVERY DENNISON.

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## Defects Coverage:

- **Manufacturing & Workmanship Defects.** A failure of the Product to materially conform to the written specifications for the Product as described in the applicable Avery Graphics Product Data Sheet.
- **Printing and Ink Defects.** Artifacts or misprints that occur when printing on specified Avery Graphics Product using ICS Qualified Processing Materials, due solely to a defect in the Product in manufacturing or workmanship.
- **Cutting Defects.** A failure of clean cutting and weeding characteristics when cut as recommended in the applicable Avery Graphics Product Data Sheet and Instructional Bulletins, due solely to a defect in the Product in manufacturing or workmanship.
- **Finished Graphic Appearance Defects.** Defects, not including those attributed to the ink, such as excessive fading, discoloration, cracking, crazing, blistering, gloss changes, excessive dimensional change or loss of adhesion or reflectivity (for retro-reflective films) that makes the graphic visually unsuitable for its intended purpose when viewed with the intended lighting, angle and distance for such a graphic, as determined by customary industry standards.

## Warranty Limitations:

This product is covered under the Avery Standard Material Warranty. The Product must be properly stored and applied within the shelf-life as stated in the applicable Avery Graphics Product Data Sheet. All Recommended Processing Materials must be properly stored and applied in accordance with OEM instructions.

- **Unintended Use.** This warranty only applies to Product that is used by professional converters for the defined end uses and in the combinations described in the applicable Avery Graphics Product Data Sheets, Instructional Bulletins. For any other use, the user is responsible for determining the suitability of the Product, and for any and all risk or liability associated with that use or application, and the user agrees to indemnify, defend and hold harmless Avery Graphics for any claims, losses, damages, judgments, expenses and/or expenses, including attorneys fees, resulting from such use or application. This warranty is expressly conditioned on the Product being processed by professional converters using only Qualified Processing Materials in accordance with the OEM and Avery Graphics recommended written processing instructions, and being applied to properly prepared surfaces and cleaned and maintained in accordance with recommended OEM and Avery Graphics procedures. It is the converters or other users responsibility to perform incoming raw material quality inspections, to assure proper surface preparation and that approved application procedures are followed, to retain converted samples, and to immediately cease using and notify Avery Graphics and/or its authorized agent or distributor of any Product, Qualified Processing Materials and/or finished graphic discovered to be (or reasonably capable of being discovered to be) defective.
- **Misuse and Force Majeure.** Avery Graphics has no obligations or liability under this warranty with respect to Product that has been altered, modified, damaged, misused, abused, subject to accident, neglected or otherwise mishandled or improperly processed. Product is not warranted against premature failure caused by chemical, environmental or mechanical means such as, but not limited to, vandalism, cleaning solutions, paints, solvents, moisture, temperature, mechanical washing equipment, engine fuel spills, engine exhaust, steam, organic solvents or other spilled chemicals. Damage from fire, structural failure, lightning, and other force majeure events are not covered by this warranty.
- **Weathering Effects.** Some degradation of materials and graphics over time is considered normal wear. Slight color fading, chalking, edge lifting, "tenting" around rivets, or slight or gradual reduction in gloss (for cast and calendared films) or reflectivity (for retro-reflective films), and other natural weathering, environmental or other conditions or damage caused by tornadoes, hurricanes, wind or other acts of God, do not constitute a breach of warranty.
- **Printing, Curing and Ink Defects.** Ink contaminations, failures or other defects, or other failures due to improper printing conditions or settings including, but not limited to, unsuitable color calibration, incorrect ICC color profile or incompatible printing, do not constitute a breach of warranty. Product failure caused by ink over-saturation, excessive or under curing, or other treatment or processing errors are not warranted.
- **Adhesion to Application Surfaces.** This warranty does not cover the Product if the application surface is not properly prepared; nor does the warranty cover the Product or damage to the substrate because the layers of the substrate separate due to a lower bond between those layers than the bond between the Product and the top layer of the substrate, or surfaces which subsequently crack, peel, outgas, or become damaged beneath the Product.
- **Glass Breakage.** This warranty does not cover glass breakage. Glass is prone to break under the stresses caused by temperature changes across the surface, which could be amplified by the application of film.

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## Definitions:

- **“Adhesion”** (FTM-1, FINAT) is measured by peeling a specimen at a 180° angle from a stainless steel panel, 24 hours after the specimen has been applied under standardized conditions. Initial adhesion is measured 15 minutes after application of the specimen.
- **“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.
- **“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.
- **“Outdoor Durability”** means that the Product in a finished graphic situated outdoors, subject to the limitations herein and Avery Graphics Product Data Sheets and Instructional Bulletins, and applied to recommended surfaces, will not deteriorate excessively such that the finished graphic is ineffective for its advertising or identification purpose(s) when viewed under normal conditions from the intended viewing distance, due solely to a defect in the Product in manufacturing or workmanship. Outdoor Durability is based on normal middle European and central North American outdoor exposure conditions and application to recommended surfaces. Actual performance life will depend on a variety of factors, including but not limited to substrate preparation, exposure conditions and maintenance of the Product and finished graphic. In case of finished graphics in areas of high temperatures or humidity, in industrially polluted areas or other areas with air laden particulate matter, and/or in high altitudes, Outdoor Durability will be reduced and the warranty period will be decreased accordingly. Avery Graphics [Instructional Bulletin #1.30](#) Durability of Avery® Dennison Films sets forth the durability period in the regional service area of your graphics.
- **“Indoor Durability”** means that the Product in a finished graphic situated within the interior of a building without direct exposure to sunlight and applied to recommended surfaces, will not deteriorate excessively such that the finished graphic is ineffective for its advertising or identification purpose(s) when viewed under normal conditions from the intended viewing distance, due solely to a defect in the Product in manufacturing or workmanship. The warranty does not extend to the use of the Product or finished graphic as wood or fabric replacement films or safety and security window films.
- **“Vertical Exposure”** means that the face of the finished graphic is  $\pm 10^\circ$  from vertical. Please consult the Avery Graphics [Instructional Bulletin #1.30](#) Durability of Avery® Graphics Films for full details.
- **“Non-Vertical Exposure”** means that the face of the finished graphic is greater than  $10^\circ$  from vertical and greater than  $5^\circ$  from horizontal. Please consult the Avery Graphics [Instructional Bulletin #1.30](#) Durability of Avery® Graphics Films for full details. **This product will degrade quicker, and expected durability is only 1 year in these application conditions.**
- **“Horizontal Exposure”** means the face of the finished graphic is  $85^\circ$  to  $90^\circ$  from vertical. Please consult the Avery Graphics [Instructional Bulletin #1.30](#) Durability of Avery® Dennison Films for full details. **This product is NOT recommended for horizontal applications.**
- **“Flat surfaces”** means a two dimensional flat surface without protruding objects.
- **“Simple curves”** means surfaces that include a third dimension which does not require stretching of the film (for example, a cylinder).
- **“Rivets”** mean surfaces with protruding rivet heads. Slight “tenting” or film lifting around rivets does not constitute a breach of warranty.
- **“Compound Curves”** a surface that includes both, or either, concave or convex curves. It does not include surfaces with hard angles or corrugations that would require extensive stretching of the Product or finished graphic.
- **“Corrugations”** means corrugated or recessed areas that require stretching of the Product or finished graphic (for example, a false window recess on a commercial van).

Revisions are italicized

Avery Dennison is a registered trademark of Avery Dennison Corp.

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