

# Avery Dennison® HV1200 High Visibility Series

Permanent Easy Apply™ RS StaFlat™

Revision: 5 Dated: 04/06/17

## Uses:

Avery Dennison HV 1200 Easy Apply RS retro-reflective high performance vinyl films are premium quality, enclosed lens, retro-reflective films which meet or exceed the applicable requirements ASTM® D-4956 for reflectivity. Specifically designed for screen printing as well as use on computer sign cutting equipment, Avery Dennison HV 1200 Easy Apply RS Reflective films provide excellent cutting, weeding, transferring, and conforming characteristics. The Easy Apply RS feature offers the benefits of reduced wrinkling and air entrapment inherent in the application of decals and graphics as well as repositionability and slideability for exact positioning.



**Face:** 4.5 mil (112 microns) high gloss cast film (+/-10%)



**Adhesive:** Permanent Clear Acrylic



**Liner:** 90# StaFlat



**Durability:** Up to 7 years Vertical exposure ONLY

## Application Surfaces:

Flat, Simple Curves, Flat with Rivets, Rivets & Corrugations.

## Features:

- Long-Term durability and outdoor performance
- Air egress technology helps eliminate wrinkles and bubbles
- Slideability allows for easy positioning
- Repositionability allows for repositioning of graphic without great force
- High gloss finish
- Excellent conversion on CAD plotters
- Screen Printable
- Easy cutting & weeding
- Good dimensional stability
- Good UV, temperature, humidity, and salt-spray resistance
- Meets ASTM® D4956, Type I

## Conversion:

- Thermal Die-Cutting (test before use)
- Flat Bed Sign-Cut
- Drum Roller Sign-Cut
- Steel Rule Die-Cutting
- Thermal Transfer
- Screen Printing

## Common Applications: (vertical only)

- Fleet
- Vehicle
- Railroad Cars
- Bus Graphics
- Indoor Signage
- Outdoor Signage
- Striping

Use of liquid clear coats (UV, solvent) or protective laminates may extend the performance of reflective films in non-vertical applications, but does not alter the warranty of the product.

## Product Data Sheet

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## Physical Characteristics:

Property	Typical Value	
Caliper, face	4.5 mil (112 microns)	
Caliper, adhesive	1.3 mil (32 µm)	
Dimensional stability	Less than 0.03 in. (0.76 mm) shrinkage. (1000 hours Atlas Twin Arc Weatherometer, EH)	
Tensile at Yield	4.0 -8.0 lb/in (0.7 – 1.5 kg/cm)	
Elongation	70% min.	
Gloss	Measured @ 60°	90 GU ± 10
Adhesion: 15 min.	Aluminum	1.3 lbs/in (228 N/m)
	Stainless	2.3 lbs/in (403 N/m)
	FRP	1.9 lbs/in (333 N/m)
	Painted Al.	2.3 lbs/in (403 N/m)
Flammability	Self Extinguishing	
Shelf-Life	2 years from date of manufacture when stored at the following temperatures and humidity conditions 68°-77° F (20° - 25° C) and 50±5% R. H.	
Durability	Vertical Exposure Only	Up to 7 years (Some color fade may occur in severe environmental areas. Reference IB #1.30 for durability guidelines.
	Min. Application Temperature	50° F (10° C) for flat surfaces 55° F (13° C) for flat with rivets, rivets, corrugations, curved surfaces.
Service Temperature	-40° to +180 °F (-40° to +82° C) (Reasonable range of temperatures which would be expected under normal environmental conditions, with intermittent exposure to temps over 150° F (65° C)	
Chemical resistance	Resistant to most mild acids, alkalis, and salt solutions.	

Data represents average values where applicable, and is not intended for specification purposes.

### Warranty:

This Warranty applies to the Product listed in this Data Sheet. All statements, technical information (including physical and chemical characteristics) 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 subject to the Purchaser's assent and agreement that Purchaser is responsible for, and has independently determined, the suitability of such products for its purposes or its customer's purposes. Avery Dennison graphics products are warranted to be free from defects in material and workmanship for two years from the date of manufacture. When the product is properly applied, the warranty period is as stated in the product's specific Product Data Sheet in effect at the time of shipment to Avery Dennison's customer.

Such time periods are subject in either case to the proper storing and application of said product, and the failure to properly store or apply the product, including without limitation the failure to follow any applicable Instructional Bulletin, negates any warranty. 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 exclusively to: (a) repair or replacement of defective product without charge at Avery Dennison's plant or at the location of the product (at Avery Dennison's election), or (b) in the event repair or replacement are not commercially practical, a credit amount up to the price of the product taking into account the defect in the product in Avery Dennison's sole discretion.

THE WARRANTY EXPRESSLY SET FORTH ABOVE IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR USE AND/OR NON-INFRINGEMENT. SELLER 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.

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.

All sales and contracts for sale of Products are subject to Purchaser's assent and agreement to this Warranty. Avery Dennison hereby objects to any terms or conditions contained in any purchase order or other communication of any kind from the Purchaser that is conflicting, inconsistent or additional to this Agreement.

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## Limitation of End Uses:

Certain applications are not recommended or warranted by Avery Dennison. Unsuitable applications or exposure conditions include:

- Stainless Steel
- Wood (painted or unpainted)
- Urethane substrates
- Walls
- Compound curves
- 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
- Graphics for automotive OEM applications
- Continual exposure to temperatures greater than 150° F (65° C)
- **Non-Vertical applications** (durability is for vertical exposure ONLY, defined as ±10° from vertical)
- **Material may tent when applied over rivets and this is not considered a material failure.**
- **As this is a pressure sensitive adhesive, once pressure is applied by squeegee, hand, or application tool the film immediately bonds to the substrate. When this bond occurs, all slideability and repositionability is lost, and the material cannot be lifted without damage.**
- **Removability- Use of heat during removal will facilitate the process, and make for easier removal with less adhesive residue, but does not constitute a removal warranty.**

## Standard Colors:

<b>Avery Dennison 1200 High Visibility Permanent EZ RS</b>
HV 1200-101-R White

## Typical Coefficient of Retro-Reflectivity:

Product Number & Color	Value
HV 1200-101-R White*	100

COMMENTS: (based on averages of production runs, NOT for specification purposes)

(Tested per ASTM® E810 at -4° EA/0.2° OA)

- \* These products meet the requirements for color and reflectivity of ASTM® D4956, Type I; The coefficient of retro-reflection as defined is measured at a -4° entrance angle, and a 0.2° observation angle. It is expressed in candlepower per foot-candle per square foot (candela/lux/square meter).
- The entrance angle is formed by a beam of light striking the surface at a point and a line drawn perpendicular to the surface of that point.
- The observation angle is formed by the beam of light bouncing off the reflective surface and returning to the viewer. From 800 feet (249 m) an observer usually views the material at a 0.2° angle.
- All other colors are tested per ASTM® E810 methods, but are not recognized colors under ASTM® D4956.

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## NFPA® 1901: Standard for Automotive Fire Apparatus 2009 Edition

Based on section 15.9.3.3 of the NFPA® Standard 1901, retro-reflective films required by sections 15.9.3.1 and 15.9.3.2 shall meet the minimum reflectivity requirements of ASTM® D4956, Type I. If a color is not listed in the ASTM® D4956 standard, then reflectivity must have a minimum value of 10, when measured at an observation angle of 0.2 and an entrance angle of -4°.

Colors meeting the NFPA® Standard 1901 Section 15.9.3.1 (Front & Sides)

<b>AVERY DENNISON® 1200 HIGH VISIBILITY PERMANENT EZ RS</b>
<b>HV 1200-101-R White</b>

## 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 Dennison® Product Data Sheet.
- **Printing and Ink Defects.** Artifacts or misprints that occur when printing on specified Avery Dennison® 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 Dennison® 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 Dennison® ICS Warranty Program for fleet applications. Certification may be required. Please contact your Avery Dennison® sales representative for details. The Product must be properly stored and applied within the shelf-life as stated in the applicable Avery Dennison® Product Data Sheet. All ICS Qualified 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 Dennison® Product Data Sheets, Instructional Bulletins and ICS Performance Guarantee Durability Bulletin. 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 Dennison® 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 ICS Qualified Processing Materials in accordance with the OEM and Avery Dennison® recommended written processing instructions, and being applied to properly prepared surfaces and cleaned and maintained in accordance with recommended OEM and Avery Dennison® 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 Dennison® and/or its authorized agent or distributor of any Product, ICS Qualified Processing Materials and/or finished graphic discovered to be (or reasonably capable of being discovered to be) defective.
- **Misuse and Force Majeure.** Avery Dennison® 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.

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- **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 vinyl film.

### Related Literature:

SUBJECT	NUMBER
Substrate Cleaning and Preparation	IB 1.10
Storage, Maintenance and Cleaning of PVC Films	IB 1.20
Warranty of Films	IB 1.30
Converting Tips for Sign Films	IB 2.10
Ink recommendations for Cast, Reflective, Calendered, and Specialty Products	IB 3.00
Sericol TMI II Screen Inks: Metallics	IB 3.20
Sericol TMI II Screen Inks: Four Color Process	IB 3.21
Sericol TMI Screen Inks: Opaques, Transluents, and Transparents	IB 3.22
Sericol UTMI II Overprint Clear Coat	IB 3.23
Sericol TMI II 1000 Overprint Clear Coat	IB 3.24
Nazdar 3500 UV Fleet	IB 3.30
Application Instructions for Avery Dennison Films	IB 4.00
Removal Instructions for Avery Dennison® Cast, Calendered, Reflective, and Polyester Films	IB 4.10
Thermal Transfer Printing, Converting, Operating, and Product Instructions	IB 5.10
Tips for Overlaminating, Premasking & Packaging Graphics	IB 5.50
Reflective Films on Stainless Steel	IB 6.11

Revisions are italicized

Avery Dennison is a registered trademark of Avery Dennison Corporation  
ASTM is a registered trademark of American Society for Testing and Materials  
NFPA is a registered trademark of National Fire Protection Association  
Tedlar is a registered trademark of DuPont™

Patent Info: May be covered by one or more patents US6,630,049, US7,060,351, US7,344,618, US7,332,205, EP1276605, EP1282472 and other US and foreign patents pending and others used under license.

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