

**NIGHT VISIBLE NV-200 Series 2-yr. Reflective Urethane**

**Features a High Release Liner for Sign Cutting Applications and Permanent Adhesive**

**Issued: 04/18/05**

**Description:**

Avery Dennison® Night Visible NV-200 Series features a 90# Imprinted High Release Liner for Sign Cutting Applications and a Permanent Adhesive. The Night Visible NV-200 Utility Grade Urethane is an enclosed lens retroreflective film that has been primarily designed for use on non-engineer grade computer cut signage and markings.

**Construction:**

<b>Face Film</b>	High Gloss, Retroreflective Urethane Film
<b>Adhesive</b>	Permanent, Pressure-sensitive, Clear Acrylic
<b>Release Liner</b>	90# High Release Imprinted Liner
<b>Standard Colors</b>	White, Yellow, Red, Orange, Blue Green

**Physical Properties:**

The following information on physical and chemical characteristics is based upon tests believed to be reliable. The values are intended only as a source of information. They are given without guaranty and do not constitute a warranty. The purchaser should independently determine, prior to use, the suitability of this material for his/her specific purpose. (Data represents averages and is not intended for use as a specification.)

<b>Outdoor Durability</b>	2 years when properly processed and applied (vertical exposure, unprinted film)
<b>Minimum Surface/Ambient Air Application Temperature</b>	50° F (10° C)
<b>Application Surface</b>	Flat. Not recommended for unpainted stainless steel applications. NOTE: Wet method of application not recommended on NV-200 Series reflective film. Lamination of NV-200 over any NV product is not recommended. Use of wet method of application or application of an NV product over another NV product invalidates standard warranty.
<b>Typical Applications</b>	Architectural, Promotional
<b>Service Temperature Range</b>	-40° to 180° F (-40° to 82° C) Reasonable range of temperatures that would be expected under normal environmental time and temperature conditions.
<b>Typical Film Caliper w/Adhesive</b>	4.6 ± 0.5 mils (117 + 13 µm)

# PRODUCT DATA BULLETIN

<b>Typical Reflective Intensity</b>	White 70 Yellow 25 Red 10 Orange 13 Blue 4 Green 5  (Tested per ASTM E810 at -4° EA/0.2° OA )																		
<b>Typical Adhesion Values</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;"><b>90° Peel</b></th> </tr> <tr> <th style="text-align: left;"><b>Substrate</b></th> <th style="text-align: center;"><b>15 min</b></th> <th style="text-align: center;"><b>24 hr</b></th> </tr> </thead> <tbody> <tr> <td>Stainless Steel</td> <td style="text-align: center;">3.5 lb./in</td> <td style="text-align: center;">4.5 lb./in</td> </tr> <tr> <td>Painted Metal</td> <td style="text-align: center;">3.5 lb./in</td> <td style="text-align: center;">3.7 lb./in</td> </tr> <tr> <td>Glass</td> <td style="text-align: center;">2.7 lb./in</td> <td style="text-align: center;">4.1 lb./in</td> </tr> <tr> <td>ABS</td> <td style="text-align: center;">3.5 lb./in</td> <td style="text-align: center;">3.9 lb./in</td> </tr> </tbody> </table> NOTE: Tested per ASTM D1000. Always pre-test your specific substrate prior to actual application.	<b>90° Peel</b>			<b>Substrate</b>	<b>15 min</b>	<b>24 hr</b>	Stainless Steel	3.5 lb./in	4.5 lb./in	Painted Metal	3.5 lb./in	3.7 lb./in	Glass	2.7 lb./in	4.1 lb./in	ABS	3.5 lb./in	3.9 lb./in
<b>90° Peel</b>																			
<b>Substrate</b>	<b>15 min</b>	<b>24 hr</b>																	
Stainless Steel	3.5 lb./in	4.5 lb./in																	
Painted Metal	3.5 lb./in	3.7 lb./in																	
Glass	2.7 lb./in	4.1 lb./in																	
ABS	3.5 lb./in	3.9 lb./in																	
<b>Shelf Life</b>	One year when stored at the following temperatures and humidity conditions 68°-77° F (20° - 25° C) and 50±5% R. H.																		
<b>Dimensional Stability</b>	Less than 0.03 in. (0.76mm) 1000 hours Atlas Twin Arc Weatherometer, EH																		
<b>Color Consistency</b>	Due to the nature of retroreflective material, graphics comprised of multiple pieces of film may show the perception of a color shift depending on the viewing angle and light source. This is not considered a defect in the material. To minimize this effect, cut large letters from a continuous piece of material or use material from adjacent portions of the roll. Also, a small overlap (<.25") or no overlap of the reflective film is recommended to maintain a consistent viewing angle. Reference Instructional Bulletins 2.10 and 8.20.																		

### Typical Converting Methods:

<b>Screen</b>	Not recommended
<b>Thermal Die Cutting</b>	270° F to 300° F (132° C to 149° C) for 0.5-2.0 seconds Cutting temperatures and dwell times will vary with differences in die configuration and individual machines. Always test prior to production. Reference Instructional Bulletin 8.20.
<b>Guillotine Cutting</b>	Reference Instructional Bulletin 8.20
<b>Steel Rule Die-Cutting</b>	Reference Instructional Bulletin 8.20
<b>Sign Cutting</b>	Reference Instructional Bulletin 2.10 <sup>1</sup>

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 one year (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, 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

<sup>1</sup> Although the NV-200 Series is designed for the computer sign cutting equipment employing a knife-cutting system, it is unique due to its polyurethane topcoat. Due to the brittle nature of the polyurethane top coating, special care needs to be given to the blade angle, pressure and speed of cutting. For more information on sign cutting and plotter settings, please refer to Instructional Bulletin 2.10. Please evaluate sample material for optimal plotter setting prior to production converting.

# PRODUCT DATA BULLETIN

*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.*

