



Adhesive Transfer Tapes with Adhesive 220

9502 • 9505 • 9552 • 9555

Technical Data

April, 2013

Product Description

3M™ Adhesive Transfer Tapes with 3M™ Industrial Acrylic Adhesive 220 is an economical choice for general industrial bonding of metals, painted metals and high surface energy plastics.

Construction Information

| Product Number | Adhesive Caliper ¹ Thickness | Liner 1 Color / Type Print / Caliper | Adhesive Type | Liner 2 Color / Type Print / Caliper |
|---------------------------------|---|--|---------------|---|
| 3M™ Adhesive Transfer Tape 9502 | 2.3 mils (0.06 mm) | Tan 58# Polycoated Kraft with green "3M" logo 4.2 mils | 220 | N/A |
| 3M™ Adhesive Transfer Tape 9505 | 4.9 mils (0.12 mm) | Tan 58# Polycoated Kraft with green "3M" logo 4.2 mils | 220 | N/A |
| 3M™ Adhesive Transfer Tape 9552 | 2.3 mils (0.06 mm) | Tan 58# Polycoated Kraft with green "3M" logo 4.2 mils | 220 | Tan 58# Polycoated Kraft unprinted 4.2 mils |
| 3M™ Adhesive Transfer Tape 9555 | 4.9 mils (0.12 mm) | Tan 58# Polycoated Kraft with green "3M" logo 4.2 mils | 220 | Tan 58# Polycoated Kraft unprinted 4.2 mils |

Note 1: The caliper listed is based on a calculation from manufacturing controlled adhesive coat weights using a density of 1.012 g/cc. While past data pages have listed nominal calipers of 2 and 5 mils, the coat weight (and theoretical caliper) has not changed.

When bonding a thin, smooth, flexible material to a smooth surface, it is generally acceptable to use 2 mils of adhesive. If a texture is visible on one or both surfaces, the 5 mil adhesive would be suggested. If both materials are rigid, it may be necessary to use a thicker adhesive to successfully bond the components. 3M™ VHB™ Acrylic Foam Tapes may be required (please refer to the data page 70-0709-3830-6).

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Typical Physical Properties and Performance Characteristics

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

| I. Adhesion to stainless steel ASTM D3330 modified (90 degree peel, 2 mil aluminum foil backing) | | | | |
|---|------------------------|--------------------|------------------------|----------|
| Dwell on stainless steel: | 2.3 mil (.0023 inches) | | 4.9 mil (.0049 inches) | |
| | Oz./In. | N/100 mm | Oz./In. | N/100 mm |
| 15 minute room temperature (RT) | 40 | 44 | 53 | 58 |
| 72 hour RT | 74 | 80 | 98 | 107 |
| 72 hour 158°F (70°C) | 131 | 143 | 173 | 189 |
| II. Adhesion to Other Surfaces² ASTM D3330 modified (90 degree peel, 2 mil aluminum foil backing) | | | | |
| Dwell/substrate: | 2.3 mil (.0023 inches) | | 4.9 mil (.0049 inches) | |
| | Oz./In. | N/100 mm | Oz./In. | N/100 mm |
| 72 hour RT ABS | 55 | 60 | 65 | 71 |
| 72 hour RT glass | 70 | 77 | 89 | 97 |
| 72 hour RT polycarbonate | 55 | 60 | 63 | 69 |
| III. Relative High Temperature Operating Ranges | | | | |
| Short term (minutes/hours) | | 350°F (177°C) | | |
| Long term (days/weeks) | | 250°F (121°C) | | |
| IV. Static Shear - ASTM D3654 - 1" x 1" sample area - aluminum foil to stainless steel | | | | |
| Temperature | Load | Minutes to Failure | | |
| | | 2 mil | 5 mil | |
| 70°F (21°C) | 2000 grams | 5,000 | 5,000 | |
| 158°F (70°C) | 1000 grams | 4,000 | 4,000 | |
| V. Environmental Performance | | | | |
| The 3M™ Adhesive 220 family is resistant to occasional splashes of organic materials including MEK, automotive oil, weak acid and base solutions and gasoline. These adhesives are also resistant to humidity and intermittent water exposure. | | | | |
| VI. Low Service Temperature | | | | |
| The glass transition temperature, T _g , for 3M™ Adhesive 220 is -31°F (-35°C). Many applications survive below this temperature. Factors to consider are: the materials being bonded, the dwell at RT before cold exposure and the stresses below the T _g (ie. expansion/contraction stresses, impact). Optimum conditions are: bonding HSE materials, longer time at RT before cold exposure and little or no stress below the glass transition temperature. | | | | |

Note 2: 3M™ Adhesive 220 is not recommended for low energy plastics (polypropylene, polyethylene, powder coated paints). For these surfaces please refer to the 3M™ Adhesive 300, 350, 300 LSE and 300MP product families.

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| Available Sizes | Product Number | Master Size | Minimum Slit Width | Core Size | Available Sheet Size |
|-----------------|---------------------------------|------------------------|--------------------|-----------|----------------------|
| | 3M™ Adhesive Transfer Tape 9502 | 48" and 60" by 180 yds | 1/2" | 3" | N/A |
| | 3M™ Adhesive Transfer Tape 9505 | 48" and 60" by 180 yds | 1/2" | 3" | N/A |
| | 3M™ Adhesive Transfer Tape 9552 | 48" by 360 yds | 4" | 6" | 24" x 36" |
| | 3M™ Adhesive Transfer Tape 9555 | 48" by 360 yds | 4" | 6" | 24" x 36" |

Application Techniques

For maximum bond strength (during installation of the final part) the surface should be thoroughly cleaned and dried. Typical cleaning solvents are heptane (for oily surfaces) or isopropyl alcohol for plastics.* Use reagent grade solvents since common household materials like rubbing alcohol frequently contain oils to minimize the drying affect on skin. These oils can interfere with the performance of a pressure-sensitive adhesive. Also, use disposable wipes, that do not contain oils, to remove the cleaning solvents.

***Note:** Carefully read and follow cleaning solvent manufacturer’s precautions and directions for use. These cleaning recommendations may not be compliant with the rules of certain Air Quality Management Districts in California; consult applicable rules before use.

It is necessary to provide pressure during lamination (10-20 pli recommended) and during final part installation (10-15 psi) to allow the adhesive to come into direct contact with the substrate. Using a hard edged plastic tool, which is the full width of the laminated part, helps to provide the necessary pressure at the point of lamination. Heat can increase bond strength when bonding to metal parts (generally this same increase is observed at room temperature over longer times, weeks). For plastic parts, the bond strength is not enhanced with the addition of heat.

The ideal adhesive application temperature range is 70°F (21°C) to 100°F (38°C). Application is not recommended if the surface temperature is below 50°F (10°C) because the adhesive becomes too firm to adhere readily. Once properly applied, at the recommended application temperature, low temperature holding is generally satisfactory (please refer to section **VII** of the Typical Physical Properties and Performance Characteristics).

Application Equipment

To apply adhesives in a wide web format, lamination equipment is required to ensure acceptable quality. To learn more about working with pressure-sensitive adhesives please refer to technical bulletin, Lamination Techniques for Converters of Laminating Adhesives (70-0704-1430-8).

For additional dispenser information, contact your local 3M sales representative, or the toll free 3M sales assistance number at 1-800-362-3550.

Application Ideas

- Attachment of nameplates, appliques and decorative trim to metal and high surface energy plastics.
- Lamination to sub-surface printed polycarbonate or polyester graphic overlay materials.
- Used in the automotive, appliance and electronic industries for cost-effective, long-term bonding applications.

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Storage Store at room temperature conditions of 70°F (21°C) and 50% relative humidity.

Shelf Life If stored properly, product retains its performance and properties for 18 months from date of shipment.

**Recognition/
Certification**

TSCA: These products are defined as articles under the Toxic Substances Control Act and therefore, are exempt from inventory listing requirements.

MSDS: These products are not subject to the MSDS requirements of the Occupational Safety and Health Administration's Hazard Communication Standard, 29 C.F.R. 1910.1200(b)(6)(v). When used under reasonable conditions or in accordance with the 3M directions for use, the products should not present a health and safety hazard. However, use or processing of the products in a manner not in accordance with the directions for use may affect their performance and present potential health and safety hazards.

UL: These products have been recognized by Underwriters Laboratories Inc. under Standard UL 969, Marking and Labeling Systems Materials Component. For more information on the UL Certification, please visit the 3M website at <http://www.3m.com/converter>.

Note: One of 3M's core values is to respect our social and physical environment. 3M is committed to comply with ever-changing, global, regulatory and consumer environmental, health, and safety (EHS) requirements. As a service to our customers, 3M is providing information on the regulatory status of many 3M products. Further regulation information including that for OSHA, USCPSI, FDA, California Proposition 65, READY and RoHS, can be found at 3M.com/regs.

Technical Information The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

Product Use Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

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ISO 9001

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001 standards.



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