



Adhesive Transfer Tapes with Adhesive 200MP

467MP • 468MP • 467MPF • 468MPF • 7952MP

7955MP • 7962MP • 7965MP • 9172MP • 9185MP

9667MP • 9668MP

Technical Data

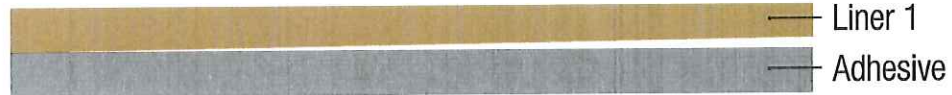
March, 2014

Product Description

3M™ High Performance Acrylic Adhesive 200MP is a popular choice, and industry standard, for graphic attachment and general industrial joining applications. It provides outstanding adhesion to metal and high surface energy plastics. This adhesive provides some initial repositionability for placement accuracy when bonding to plastics. It also performs well after exposure to humidity and hot/cold cycles.

- **Up to 400°F short-term heat resistance**
- **Excellent solvent resistance**
- **Excellent shear strength to resist slippage and edge lifting**

Construction Information



| Product | Adhesive Thickness mils (mm) | Liner Type Liner Thickness mils (mm) | Liner Color |
|---------|------------------------------------|---|-------------|
| 467MP | 2.3 mils (0.06 mm) | 58# Polycoated Kraft Paper (PCK) 4.2 mils (0.11 mm) | |
| 468MP | 5.2 mils (0.13 mm) | 58# Polycoated Kraft Paper (PCK) 4.2 mils (0.11 mm) | |
| 467MPF | 2.3 mils (0.06 mm) | Polyester Film (PET) 2.0 mils (0.05 mm) | |
| 468MPF | 5.2 mils (0.13 mm) | Polyester Film (PET) 2.0 mils (0.05 mm) | |

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Construction Information (continued)

| Product | Adhesive Thickness mils (mm) | Liner Type Liner Thickness mils (mm) | Liner Color |
|---------|------------------------------------|---|-------------|
| 9667MP | 2.3 mils (0.06 mm) | 83# Polycoated Kraft Paper (PCK) 6.2 mils (0.16 mm) | |
| 9668MP | 5.2 mils (0.13 mm) | 83# Polycoated Kraft Paper (PCK) 6.2 mils (0.16 mm) | |



| Product | Adhesive Thickness mils (mm) | Liner 1 Type Liner 1 Thickness mils (mm) | Liner 1 Color | Liner 2 Type Liner 2 Thickness mils (mm) | Liner 2 Color |
|---------|------------------------------------|--|---------------|---|---------------|
| 7952MP | 2.3 mils (0.06 mm) | 58# Polycoated Kraft Paper (PCK) 4.2 mils (0.11 mm) | | 58# Polycoated Kraft Paper (PCK) 4.2 mils (0.11 mm) | |
| 7955MP | 5.2 mils (0.13 mm) | 58# Polycoated Kraft Paper (PCK) 4.2 mils (0.11 mm) | | 58# Polycoated Kraft Paper (PCK) 4.2 mils (0.11 mm) | |
| 7962MP | 2.3 mils (0.06 mm) | 83# Polycoated Kraft Paper (PCK) 6.2 mils (0.16 mm) | | 58# Polycoated Kraft Paper (PCK) 4.2 mils (0.11 mm) | |
| 7965MP | 5.2 mils (0.13 mm) | 83# Polycoated Kraft Paper (PCK) 6.2 mils (0.16 mm) | | 58# Polycoated Kraft Paper (PCK) 4.2 mils (0.11 mm) | |
| 9172MP | 2.3 mils (0.06 mm) | High Density Polyethylene Film (HDPE) 3.0 mils (0.08 mm) | | 58# Polycoated Kraft Paper (PCK) 4.2 mils (0.11 mm) | |
| 9185MP | 5.2 mils (0.13 mm) | High Density Polyethylene Film (HDPE) 3.0 mils (0.08 mm) | | 58# Polycoated Kraft Paper (PCK) 4.2 mils (0.11 mm) | |

Note: The thickness 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 thicknesses, the coat weight (and theoretical caliper) has not changed.

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Typical Physical Properties and Performance Characteristics

I. Adhesion Peel: ASTM D-3330 (Modified)

a. Stainless Steel and 2 mil Aluminum Foil Backing

| Product | 15 minute dwell (± 5 minutes) | 72 hour dwell RT | | 72 hour dwell 158F |
|---|----------------------------------|-------------------------|-------------------------|-------------------------|
| | 90° | 90° | 180° | 90° |
| 2.3 mil products (467MP, 467MPF, 7952MP, 7962MP, 9172MP, 9667MP) | 47 oz/in 13 N/25 mm | 82 oz/in 23 N/25 mm | 77 oz/in 21 N/25 mm | 168 oz/in 46 N/25 mm |
| 5.2 mil products (468MP, 468MPF, 7955MP, 7965MP, 9185MP, 9668MP) | 66 oz/in 18 N/25 mm | 118 oz/in 32 N/25 mm | 133 oz/in 37 N/25 mm | 181 oz/in. 50 N/25mm |

b. Adhesion to Other Surfaces: ASTM D3330 modified (90° peel, 2 mil aluminum foil backing with 72 hour dwell)

| Substrate | 2.3 mil products (467MP, 467MPF, 7952MP, 7962MP, 9172MP, 9667MP) | | 5.2 mil products (468MP, 468MPF, 7955MP, 7965MP, 9185MP, 9668MP) | |
|------------------------------|---|---------|---|--------|
| | oz/in | N/25 mm | oz/in | N/25mm |
| Aluminum | 77 | 21 | 115 | 32 |
| ABS | 62 | 17 | 68 | 19 |
| Acrylic | 61 | 17 | 67 | 19 |
| Glass | 80 | 22 | 92 | 25 |
| Polycarbonate | 58 | 16 | 65 | 18 |
| Rigid PVC (unplasticized) | 62 | 17 | 69 | 19 |

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Typical Physical Properties and Performance Characteristics (continued)

II. Static Shear Strength

| Temperature | Size | Weight | Minutes |
|-------------------------|---------|------------|---------|
| 72° (23°C) 50%RH | 1" x 1" | 1000 grams | 10,000+ |
| 158°F (70°C) 50% RH | 1" x 1" | 1000 grams | 10,000+ |
| 200°F (93°C) 50% RH | 1" x 1" | 1000 | 10,000+ |
| 350°F (177°C) 50% RH | 1" x 1" | 500 | 10,000+ |
| 450°F (232°C) 50% RH | 1" x 1" | 400 | 60 |
| 450°F (232°C) 50% RH | 1" x 1" | 200 | 10,000+ |

*Test terminated at 10,000 minutes

III. Adhesion Retention after Immersion and Exposure (percent retention) Control is 24 hour RT swell on stainless steel, 2 mil foil backing, 90° peel, 12 ipm

| | 2.3 mil products (467MP, 467MPF, 7952MP, 7962MP, 9172MP, 9667MP) | 5.2 mil products (468MP, 468MPF, 7955MP, 7965MP, 9185MP, 9668MP) |
|--|---|---|
| Control adhesion value (oz/in) | 101 | 149 |
| Gasoline – 1 hour RT immersion | 89% | 83% |
| MEK – 1 hour RT immersion | 64% | 66% |
| Weak Acid – 4 hour RT immersion | 86% | 86% |
| Weak Base – 4 hour RT immersion | 84% | 83% |
| Oil (10W30) – 72 hour, 120°F (49°C) immersion | 146% | 141% |
| Water – 100 hours, 70°F (21°C) | 105% | 116% |
| Salt Water (5%) – 72 hours, 70°F (21°C) | 105% | 93% |
| Warm/Humid – 7 days, 90°F (32°C) and 90% relative humidity | 131% | 101% |
| UV Cabinet – 30 days, 70°F (21°C) | 147% | 93% |
| Temperature Cycle – 4 hours, 158°F (70°C); 4 hours, -20°F (-29°C); 16 hours, 70°F (21°C) | 148% | 158% |

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Environmental Performance

Humidity Resistance – High humidity has a minimal effect on adhesive performance. Bond strength shows no significant reduction after exposure for 7 days at 90°F (32°C) and 90% relative humidity.

UV Resistance – When properly applied, nameplates and decorative trim parts are not adversely affected by outdoor exposure.

Water Resistance – Immersion in water has no appreciable effect on the bond strength. After 100 hours at room temperature, the high bond strength is maintained.

Temperature Cycling Resistance – High bond strength is maintained after cycling four times through:

4 hours at 158°F (70°C)

4 hours at -20°F (-29°C)

4 hours at 73°F (22°C)

Chemical Resistance – When properly applied, nameplate and decorative trim parts will hold securely after exposure to numerous chemicals including oil, mild acids and alkalis.

Bond Build-up: The bond strength of 3M™ High Performance Acrylic Adhesive 200MP increases as a function of time and temperature

Temperature/Heat Resistance: 3M™ High Performance Acrylic Adhesive 200MP is usable for short periods (minutes, hours) at temperatures up to 400°F (204°C) and for intermittent longer periods (days, weeks) up to 300°F (149°C).

Lower Temperature Service Limit: The glass transition temperature for 3M™ High Performance Acrylic Adhesive 200MP is -31°F (-35°C). Many applications survive below this temperature (factors affecting successful applications include: materials being bonded, dwell at RT before cold exposure, and stress below the TG [i.e. expansion/contraction stresses, impact]). Optimum conditions are: bonding high surface energy materials, longer time at RT before cold exposure, and little or no stress below the TG. The lowest service temperature is -40°F (-40°C).

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Electrical and Thermal Performance

| Property | 2.3 mil products (467MP, 467MPF, 7952MP, 7962MP, 9172MP, 9667MP) | 5.2 mil products (468MP, 468MPF, 7955MP, 7965MP, 9185MP, 9668MP) |
|---|---|---|
| Insulation Resistance (test voltage = 100 VDC) Mil-I-46058C | $>1 \times 10^{10}$ ohms | $>1 \times 10^{10}$ ohms |
| Dielectric Strength – (500 vac, rms[60 hz/sec]) ASTM D149-92 | 880 volts/mil | 600 volts/mil |
| Breakdown Voltage | 1760 volts | 3000 volts |
| Dielectric Constant (at 1kHz) ASTM D150-92 | 3.40 | 4.06 |
| Dissipation Factor | 0.021 | 0.022 |
| Tensile Lap Shear – Peak Load ASTM D1002-72 (0.5 sq. in. on #6061 aluminum) | - | 55 lbs. |
| Tensile Lap Shear – Peak Stress ASTM D1002-72 | - | 109 PSI |
| Tensile Strength and Elongation ASTM D2360-82 | = | 51 PSI 1951% |
| Thermal Conductivity – ASTM C 518, results listed are at 109°F | 0.098 BTU-ft/ft ² -hr-F 0.17 watt/m-K | 0.101 BTU-ft/ft ² -hr-F 0.18 watt/m-K |
| Coefficient of Thermal Expansion ASTM D696 | | |
| First Heat | 28×10^{-5} m/m/C | -6×10^{-5} m/m/C |
| Second Heat | 72×10^{-5} m/m/C | 92×10^{-5} m/m/C |

Application Ideas

- Long term bonding of graphic nameplates and overlays (“subsurface” printed polycarbonate or polyester) to metal and high surface energy plastics in the aerospace, medical and industrial equipment, automotive, appliance and electronics markets.
- Bonding metal nameplates and rating plates in the aerospace, medical and industrial equipment, automotive, appliance and electronics markets.
- Bonding graphic overlays for membrane switches and for bonding the complete switch to the equipment surface.
- High speed processing of parts in the medical, telecommunications and electronics markets (medical components, durable labels, and flexible circuits).
- Lamination to industrial foams for rotary die-cutting of small gaskets for industrial and electronics markets

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Master Width

| Product | Master Width |
|---------|-----------------------------|
| 467MP | 48" or 60" (1.22 or 1.52 m) |
| 468MP | |
| 467MPF | 54" (1.37 m) |
| 468MPF | |
| 7952MP | 48" (1.22 m) |
| 7955MP | |
| 7962MP | |
| 7965MP | |
| 9172MP | |
| 9185MP | 54" (1.37 m) |
| 9667MP | |
| 9668MP | |

More sizes may be available. Please call 800-223-7427 or talk to your local 3M representative for more information.

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 and can interfere with the performance of a pressure-sensitive adhesive.

***Note:** Carefully read and follow the manufacturer's precautions and directions for use when working with solvents. These cleaning recommendations may not be in compliance with the rules of certain air quality management districts in California; consult applicable rules before use.

It is necessary to provide pressure during lamination (1.5-20 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 60°F (15.6°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).

When bonding a thin, smooth, flexible material to a smooth surface, it is generally acceptable to use 2 mils of 3M™ Adhesive 200MP. If a texture is visible on one or both surfaces, the 5 mil 3M adhesive 200MP 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

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| | |
|----------------------------------|---|
| Application Equipment | Tapes may be required (please refer to the data page 70-0709-3830-6). 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. |
| Storage | It is suggested that products are stored 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 | <p>TSCA: This product is defined as an article under the Toxic Substances Control Act and therefore, it is exempt from inventory listing requirements</p> <p>MSDS: 3M has not prepared a MSDS for this product which is not subjected 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, this product should not present a health and safety hazard. However, use or processing of the product in a manner not in accordance with the directions for use may affect its performance and present potential health and safety hazards.</p> <p>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 website at http://www.3M.com/converter, select UL Recognized Materials, then select the specific product area.</p> <p>Military: Meets MIL-P-19834</p> <p>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, USCPSTI, FDA, California Proposition 65, READY and RoHS, can be found at 3M.com/regs.</p> |
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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 evaluation 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 & Tapes Division product was manufactured under a 3M quality system registered to ISO 9001 standards.



For more information contact your local 3M representative or call 800-223-7427



Industrial Adhesives & Tapes Division
Converter Markets
3M Center, Building 225-3S-06
St. Paul, MN 55144-1000
800-223-7427 651-778-4244 (fax)
www.3M.com/converter

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