

December, 2017

3M™ Adhesive Transfer Tape 467MP

Product Description

Finite Element Analysis (FEA) data is available for this product at: 3m.com/FEA

3M™ High Performance Acrylic Adhesive 200MP is a popular choice 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.

Product Features

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



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Technical Information Note

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

Typical Physical Properties

| Property | Values | | Method | Test Name |
|----------------------|----------------------------------|---------|------------|-----------|
| Total Tape Thickness | 0.06 mm | 2.3 mil | ASTM D3652 | |
| Adhesive Type | Acrylic | | | |
| Liner | 58# Polycoated Kraft Paper (PCK) | | | |
| Liner Print | 467MP | | | |
| Liner Color | Tan | | | Primary |
| Liner Thickness | 0.11 mm | 4.2 mil | | |

Typical Performance Characteristics

| 90° Peel Adhesion | | Dwell/Cure Time | Dwell Time Units | Temp C | Temp F | Substrate | Backing | Notes |
|-------------------|-----------|-----------------|------------------|--------|--------|--------------------------|---------------------|------------------------|
| 5.4 N/cm | | 15 | min | 23C | 72F | Stainless Steel | 2 mil Aluminum Foil | |
| 49 oz/in | 10 N/cm | 15 | min | 23C | 72F | Stainless Steel | 2 mil Aluminum Foil | 12 in/min (300 mm/min) |
| 92 oz/in | | 72 | hr | 23C | 72F | Stainless Steel | 2 mil Aluminum Foil | 12 in/min (300 mm/min) |
| 16.7 N/cm | 153 oz/in | 72 | hr | 70C | 158F | Stainless Steel | 2 mil Aluminum Foil | 12 in/min (300 mm/min) |
| 7 N/cm | 64 oz/in | 72 | hr | 23C | 72F | Aluminum | 2 mil Aluminum Foil | 12 in/min (300 mm/min) |
| 2.4 N/cm | 22 oz/in | 72 | hr | 23C | 72F | ABS | 2 mil Aluminum Foil | 12 in/min (300 mm/min) |
| 7 N/cm | 64 oz/in | 72 | hr | 23C | 72F | Acrylic (PMMA) | Aluminum Foil | |
| 9.9 N/cm | 90 oz/in | 72 | hr | 23C | 72F | Glass | 2 mil Aluminum Foil | 12 in/min (300 mm/min) |
| 4.4 N/cm | 40 oz/in | 72 | hr | 23C | 72F | Polyvinyl chloride (PVC) | Aluminum Foil | |

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Typical Performance Characteristics (continued)

| 90° Peel Adhesion | | Dwell/Cure Time | Dwell Time Units | Temp C | Temp F | Substrate | Backing | Notes |
|-------------------|----------|-----------------|------------------|--------|--------|--------------------|---------------------|------------------------|
| 7.8 N/cm | 71 oz/in | 72 | hr | 23C | 72F | Polycarbonate (PC) | 2 mil Aluminum Foil | 12 in/min (300 mm/min) |

Property: 90° Peel Adhesion
Method: ASTM D3330
Environmental Condition: 50%RH

| Static Shear | Test Condition |
|--------------|----------------------------|
| 10000+ min | 1000 g @ Room Temperature |
| 10000+ min | 1000 g @ 70°C (158°F) |
| 10000+ min | 1000 g @ 93°C (200°F) |
| 10000+ min | 500 g @ 177°C (350°F) |
| 2284 min | 400 g @ 232°C (450°F) |
| 10000+ min | 200 g load @ 232°C (450°F) |

Property: Static Shear
notes: 1in x 1in size; test terminated after 10,000 minutes

| Environmental Resistance | | Dwell/Cure Time | Dwell Time Units | Temp C | Temp F | Environmental Condition |
|--------------------------|-----------|-----------------|------------------|--------|--------|------------------------------------|
| 9.5 N/cm | 87 oz/in | 24 | hr | 23C | 72F | Control |
| 7.9 N/cm | 72 oz/in | 1 | hr | 23C | 72F | Gasoline |
| 7.7 N/cm | 70 oz/in | 1 | hr | 23C | 72F | MEK |
| 7.7 N/cm | 70 oz/in | 1 | hr | 23C | 72F | Weak Acid (pH 4) |
| 7.2 N/cm | 66 oz/in | 1 | hr | 23C | 72F | Weak Base (pH 10) |
| 13.9 N/cm | 127 oz/in | 72 | hr | 49C | 120F | Oil 10W30 |
| 9.5 N/cm | 87 oz/in | 100 | hr | 23C | 72F | Water |
| 9.5 N/cm | 87 oz/in | 72 | hr | 49C | 120F | Salt water (5 wt% in water) |
| 11.9 N/cm | 109 oz/in | 7 | day | 32C | 90F | 90%RH |
| 11.4 N/cm | 104 oz/in | 2000 | hr | | | UV Conditions - ASTM G-154 Cycle 1 |

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Typical Performance Characteristics (continued)

| Environmental Resistance | | Dwell/Cure Time | Dwell Time Units | Temp C | Temp F | Environmental Condition |
|--------------------------|-----------|-----------------|------------------|--------|--------|--|
| 12.3 N/cm | 112 oz/in | 72 | hr | | | Temperature Cycling: 4 Hours at 158°F (70°C). 4 Hours at -20°F (-29°C). 16 Hours at Room Temperature. Repeat three times |

Property: Environmental Resistance
 Test Name: 90° Peel Adhesion
 Substrate: Stainless Steel
 Backing: 2 mil Aluminum Foil
 notes: 12 in/min (300 mm/min)

| Property | Values | | Method | Substrate | Notes | Test Condition | Dwell Time | Dwell Units | Temp C | Temp F | Environmental Condition | Backing |
|-----------------------------------|----------|----------|------------|-----------------|------------------------|----------------------------|------------|-------------|--------|--------|-------------------------|---------------|
| Tensile Lap Shear – Peak Load | 164 lb | | ASTM D1002 | Aluminum | 0.5 in² sample size | | | | | | | |
| Short Term Temperature Resistance | 204 °C | 400 °F | | | | Short Term (minutes, hour) | | | | | | |
| Long Term Temperature Resistance | 149 °C | 300 °F | | | | Long Term (day, weeks) | | | | | | |
| 180° Peel Adhesion | 8.4 N/cm | 77 oz/in | ASTM D3330 | Stainless Steel | 12 in/min (300 mm/min) | | 72 | hr | 23C | 72F | 50%RH | Aluminum Foil |

Electrical and Thermal Properties

| Property | Values | | Method | Test Condition | Temp C | Temp F | Notes |
|-----------------------|---------------------------|--|--------------|------------------------|--------|--------|-------|
| Breakdown Voltage | 1760 V | | | | | | |
| Insulation Resistance | >2.5 × 10 ¹⁶ Ω | | Mil-I-46058C | test voltage = 100 VDC | | | |

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Electrical and Thermal Properties (continued)

| Property | Values | | Method | Test Condition | Temp C | Temp F | Notes |
|----------------------------------|------------|---------------------------------------|-----------|-------------------------|--------|--------|-----------------------------|
| Dielectric Constant 1KHz | 2.72 | | ASTM D150 | 1 KHz | 23C | 72F | |
| Dissipation Factor | 0.017 | | | | | | |
| Dielectric Strength | 690 V/mil | | ASTM D149 | 500 vac, rms[60 hz/sec] | | | |
| Thermal Conductivity | 0.18 W/m/K | 1.21 (btu-in)/(h-ft ² -°F) | ASTM C518 | 109°F(43°C) | | | results listed are at 109°F |
| Coefficient of Thermal Expansion | 618 ppm/°C | | | | | | |

Typical Environmental Performance

Environmental Resistance

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).

Handling/Application Information

Application Examples

- 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.

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 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 and Shelf Life

It is suggested that products are stored at room temperature conditions of 70°F (21°C) and 50% relative humidity. If stored properly, product retains its performance and properties for 24 months from date of manufacture.

Trademarks

3M is a trademark of 3M Company.

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References

| Property | Values |
|-----------------------|---|
| 3m.com Product Page | https://www.3m.com/3M/en_US/company-us/all-3m-products/-/3M-Adhesive-Transfer-Tape-467MPX/?N=5002385+3293242532&rt=rud |
| Safety Data Sheet SDS | https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&msdsLocale=en_US&co=ptn&q=467MP |

Family Group

| | 467MP | 468MP | 467MPF | 468MPF |
|--|----------------------------------|----------------------------------|----------------------|----------------------|
| Short Term Temperature Resistance (°C) Test Condition: Short Term (minutes, hour) | 204 | 204 | 204 | 204 |
| Liner Color Test Name: Primary | Tan | Tan | Clear | Clear |
| Long Term Temperature Resistance (°C) Test Condition: Long Term (day, weeks) | 149 | 149 | 149 | 149 |
| Total Tape Thickness (mm) | 0.06 | 0.13 | 0.06 | 0.13 |
| Adhesive Type | Acrylic | Acrylic | Acrylic | Acrylic |
| Liner | 58# Polycoated Kraft Paper (PCK) | 58# Polycoated Kraft Paper (PCK) | Polyester Film (PET) | Polyester Film (PET) |
| Liner Thickness (mm) | 0.11 | 0.11 | 0.05 | 0.05 |

ISO Statement

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

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Recognition/Certification

TSCA: This product is defined as an article under the Toxic Substances Control Act and therefore, it is exempt from inventory listing requirements

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.

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.
Military: Meets MIL-P-19834

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Information

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