Adhesive Transfer Tapes with Adhesive 300

9458 • 9471 • 9471PC • 9472 • 9671 • 9672 • 9673 • 9674

Technical Data **April, 2013**

Product Description

3M™ Adhesive Transfer Tapes with 3M™ Adhesive 300 offer excellent adhesion to a wide variety of surfaces, including low surface energy plastics and foam. This pressure sensitive acrylic adhesive family is available in several thicknesses for a wide variety of surface bonding and provides a variety of liner configurations to help ensure excellent process flexibility.

Product Construction

Product Number	Adhesive Type	Adhesive Thickness	Liner Color, Type, Print	Liner Caliper
3M™ Adhesive Transfer Tape 9458	300	1.0 mils (0.03 mm)	55# Densified Kraft "Hi Strength Adhesive"	3.2 mils (0.08 mm)
3M™ Adhesive Transfer Tape 9471	300	2.0 mils (0.05 mm)	Tan, 60# Densified Kraft "Hi Strength Adhesive"	3.5 mils (0.09 mm)
3M™ Adhesive Transfer Tape 9471PC	300	2.0 mils (0.05 mm)	Tan, 60# Polycoated Kraft with no print	4.5 mils (0.11 mm)
3M™ Adhesive Transfer Tape 9472	300	5.0 mils (0.13 mm)	Tan, 60# Densified Kraft "Hi Strength Adhesive"	3.5 mils (0.09 mm)
3M™ Adhesive Transfer Tape 9671	300	2.0 mils (0.05 mm)	Tan, 83# Polycoated Kraft with Laminating Adhesive	6.0 mils (0.15 mm)
3M™ Adhesive Transfer Tape 9672	300	5.0 mils (0.13 mm)	Tan, 83# Polycoated Kraft with Laminating Adhesive	6.0 mils (0.15 mm)
3M™ Adhesive Transfer Tape 9673	300	2.0 mils (0.05 mm)	Tan, 83# Polycoated Kraft with no print	6.0 mils (0.15 mm)
3M™ Adhesive Transfer Tape 9674	300	5.0 mils (0.13 mm)	Tan, 83# Polycoated Kraft with no print	6.0 mils (0.15 mm)

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Typical Physical Properties and Performance Characteristics

Note: This data is not for specification purposes. Because of inherent process variability, results may be slightly higher or lower than the typical results listed.

ASTM D-3330 (modified) 15 minute dwell
(90 degree peel, 12"/min. 305 mm/min.)
2 mil aluminum foil to stainless steel

3M™ Adhesive Transfer Tapes	Oz./In.	N/100 mm
9458/9471/9471PC/9671/9673	36	39
9472/9672/9674	66	72

ASTM D-3330 (modified)
(90 degree peel, 12"/min. 305 mm/min.)
2 mil aluminum to various surfaces

	3M™ Adhesive Transfer Tapes	72 Hour Room Temp.		72 Hour 158°F (70°C)	
		Oz./In.	N/100mm	Oz./In.	N/100mm
Metal (Stainless Steel)	9458	47	51	50	55
	9471/PC/9671/9673	51	56	85	93
	9472/9672/9674	98	107	114	125
High Surface Energy Plastic (Polycarbonate)	9458	43	47	14	15
	9471/PC/9671/9673	51	56	75	83
	9472/9672/9674	82	90	114	125
Low Surface Energy Plastic (Polypropylene)	9458	37	40	34	37
	9471/PC/9671/9673	36	39	32	35
	9472/9672/9674	55	60	61	67

Environmental Performance

The properties defined are based on the attachment of impervious faceplate materials (such as aluminum) to an aluminum test surface.

Bond Build-up: The bond strength of 3M™ Adhesive 300 increased as a function of time and temperature and has very high initial adhesion.

Humidity Resistance: High humidity has minimal effect on adhesive performance. Bond strengths are generally higher after exposure for 7 days at 90°F (32°C) and 90% relative humidity.

U.V. Resistance: When properly applied, nameplates and decorative trim parts are not adversely affected by exposure.

Water Resistance: Immersion in water has no appreciable effect on the bond strength. After 100 hours at room temperature, the bond actually shows an increase in strength.

Temperature Cycling Resistance: Bond strength generally increases after cycling four times through: 4 hours at 158°F (70°C)
4 hours at -20°F (-29°C)
16 hours at 73°F (22°C)

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Environmental Performance ***(continued)***

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

Heat Resistance: The 3M™ Adhesive 300 is usable for short periods (minutes, hours) at temperatures up to 250°F (121°C) and for intermittent longer periods of time (days, weeks) up to 150°F (66°C).

Shelf Life: Product retains its performance and properties for two years from date of manufacture if properly stored at room temperature conditions of 72°F (22°C) and 50% relative humidity. Storage in plastic bag is recommended.

Electrical, Mechanical and Thermal Properties

Note: This data is not for specification purposes. Because of inherent process variability, results may be slightly higher or lower than the typical results listed.

Property		2 mil, 300 (9471 was tested)
Dielectric Strength – (500 vac, rms [60 hz/sec]) ASTM D149-92		340 volts/mil
Dielectric Constant (at 1 KHz) ASTM D 150-92		3.21
Dissipation Factor		0.040
Coefficient of Thermal Expansion ASTM D696	- first heat - second heat	20×10^{-5} m/m/°C 58×10^{-5} m/m/°C

Specifications

Note 1: The amount of adhesive supplied, for pressure-sensitive adhesives, is controlled by the adhesive coat weight, not the adhesive caliper. Pressure-sensitive adhesives are compressible which results in high error for caliper measurements. The caliper listed in the constructions chart (page 1) has been calculated using a density of 1.012 g/cc (testing caliper is not part of the standard release testing because of the error described).

Note 2: ASTM D3330, 15 minute dwell on stainless steel. For this adhesive family, the adhesion will be much higher with longer dwells on stainless steel and other high surface energy materials (please refer to the Typical Physical Properties section in this document to see performance on other materials after longer dwells).

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Available Sizes

3M™ Adhesive Transfer Tapes	Master Size	Slit Width (minimum)	Roll Length	Core Size	Slit Tolerance
9458	48"	1 1/2-1" - 180 yds. 1-2 7/8" - 360 yds. over 2 7/8" - 1000 yds.	60 - 360 yards	3"	± 1/32"
9471 9471PC	48"	1" - 180 yds. over 1" - 360 yds.	60 - 360 yards	3"	± 1/32"
9472	48"	1" - 180 yds. over 1" - 360 yds.	60 - 360 yards	3"	± 1/32"
9671	48"	1" - 180 yds. over 1" - 360 yds.	60 - 360 yards	3"	± 1/32"
9672	48"	1" - 180 yds. over 1" - 360 yds.	60 - 360 yards	3"	± 1/32"
9673 9674	48"	1" - 180 yds. over 1" - 360 yds.	60 - 360 yards	3"	± 1/32"

Note: Roll lengths vary by product slit width (the customer service department has more detailed information, 1-800-328-1681).

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. Consult solvent manufacturers MSDS for proper handling and storage instructions. Also, use disposable wipes that do not contain oils, to remove the cleaning solvents.

It is necessary to provide pressure during lamination (1.5-20 PLI recommended) and during final part installation (10-15 PLI) to allow to adhesive the 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 the Typical Physical Properties and Performance Characteristics section).

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 data page 70-0709-3863-7).

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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

- Long term bonding of graphic nameplates and overlays to surfaces such as metal and low surface energy plastics in the aerospace, medical and industrial equipment, automotive, appliance and electronic markets.
- Bonding metal nameplates and rating plates in the aerospace, medical and industrial equipment, automotive, appliance and electronic markets.
- Lamination to foam for gasketing 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: Many of 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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