3M

Adhesive Transfer Tapes with Adhesive 350

9442 • 9445 • 9482PC • 9485PC • 9485EK • 9675

Technical Data **September, 2002**

Product Description

These 3M™ Adhesive Transfer Tapes with 3M™ Adhesive 350 are a modified acrylic adhesive ideal for very high-bond strength to many surfaces. They have excellent chemical resistance and bold strength even at elevated temperatures. These tapes are offered with a fiber reinforced adhesive which is important for roll stability in narrow widths. Tapes using adhesive 350 are designed for temperature exposure to 450°F (232°C) for short periods of time and up to 300°F (149°C) over long time frames. This adhesive is a good choice for applications which require adhesion to Low Surface Energy plastics, powder coatings and oily metals.

Construction

Product Number	Adhesive Thickness (mils)	Liner material - thickness
9442	2.0 (.05 mm)	55# Densified Kraft - 3.2 mils thick
9445	5.0 (.127 mm)	55# Densified Kraft - 3.2 mils thick
9482PC	2.0 (.05 mm)	62# Polycoated Kraft - 4.2 mils thick
9485PC	5.0 (.127 mm)	62# Polycoated Kraft - 4.2 mils thick
9485EK	5.0 (.127 mm)	78# Extensible Polycoated Kraft - 5.7 mils thick
9675	5.0 (.127 mm)	83# Polycoated Kraft lay flat - 6.2 mils thick

Note: These thicknesses are nominal values calculated from the adhesive areal density, the actual control value, used in manufacturing. Please note that temperature performance reflects liner off, completed bonds. The poly coated kraft liners melt at lower temperatures and silicone contamination may occur if exposed to high temperature with the liner attached.

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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.

Peel Adhesion:

ASTM D-3330 (modified)
(180 degree peel, 72°F [22°C]) (72 hr. dwell)

Product Number	9442, 9482PC		9445, 9485PC, 9485EK, 9675	
Surface	**Oz/in**	**(N/100 mm)**	**Oz/in**	**(N/100 mm)**
Stainless Steel	80	(87)	150	(164)
Aluminum	50	(55)	95	(104)
Painted Metal	60	(65)	145	(158)
Glass	90	(98)	145	(158)
Polycarbonate	65	(71)	145	(158)
Acrylic	60	(65)	125	(136)
Epoxy	65	(71)	120	(131)
ABS	65	(71)	85	(93)
Rigid PVC	50	(55)	90	(98)
Polypropylene	60	(65)	80	(87)
L.D. Polyethylene	35	(38)	40	(44)
H.D. Polyethylene	30	(33)	35	(38)

Adhesive Static Shear:

Static Shear Adhesion (ASTM D3654)
Typical values for adhesive 350 tapes on stainless steel (1 x 1 inch test sample)

Temperature	Load	Minutes to Failure
72°F (22°C)	1,000 gms	(No failures – test discontinued
158°F (70°C)	500 gms	after 10,000 min.)
200°F (93°C)	400 gms	
250°F (121°C)	300 gms	
300°F (149°C)	300 gms	
350°F (177°C)	300 gms	
450°F (232°C)	200 gms	

Typical Liner Release Values

Note: Liner release values may vary from lot to lot. Values stated are only typical or average values based on lots tested.

9442	55 gms/inch
9445	55 gms/inch
9482PC	40 gms/inch
9485PC	44 gms/inch
9485EK	37 gms/inch

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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 350 increases as a function of time and temperature.

Humidity Resistance: High humidity has a 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 outdoor exposure.

Water Resistance: Immersion in water has no appreciable effect on the bond strength. After 100 hours in room temperature water 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 room temperature

Chemical Resistance: When properly applied, nameplate and decorate trim parts will hold securely after exposure to numerous chemicals including gasoline, oil, Freon™ TF, sodium chloride solution, mild acids and alkalis.

Heat Resistance: The Adhesive 350 is usable for short periods (minutes, hours) at temperatures up to 350°F (177°C) and for intermittent longer periods (days, weeks) up to 250°F (121°C).

Low Temperature Service: -40°F (-40°C). Parts should be tested for low temperature shock service.

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

Available Sizes

Core Size: The above tapes are offered on a 3.0 inch (76.2 mm) paper core.

Minimum widths and lengths:	1/8 in. to 3/8 in.	-	60 yds. (54.9 m) long
	3/8 in. to 1/2 in.	-	180 yds. (165 m)
	1/2 in. to 1 in.	-	360 yds. (329 m)
	1 inch and wider	-	360 yds. (329 m)

Maximum width: 48 inches

Normal slitting tolerance: ± 1/32 in. (0.8 mm)

Standard length: 60 yards

(For other than standard sizes contact your 3M sales representative.)

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General Information

- Excellent bond to metal and high surface energy plastics.
- Outstanding temperature and chemical resistance.
- Two adhesive thicknesses: 2 mil for thin profile labels and 5 mil for rougher surfaces.
- Available on various liners for specialized processing:
  - 55# Densified Kraft for rotary die-cutting
  - 62# Polycoated Kraft for steel rule die-cutting
  - 83# Polycoated Kraft for lay flat applications
  - 78# Extensible Kraft for conformable applications

Application Techniques

For maximum bond strength the surface should be thoroughly cleaned and dried. Typical cleaning solvents are heptane or isopropyl alcohol. Consult manufacturer's Material Safety Data Sheet for proper handling and storage instructions.

Bond strength can also be improved with firm application pressure and moderate heat (for metal surfaces only), from 100°F (38°C) to 130°F (54°C), causing the adhesive to develop intimate contact with the bonding surfaces.

Application Ideas

Ideal adhesive application temperature range is 70°F to 100°F (21°C to 38°C). Initial application to surfaces at temperatures below 50°F (10°C) is not recommended for most pressure sensitive adhesives because the adhesive becomes too firm to adhere readily. However, once properly applied, low temperature holding is satisfactory. For more specific information, contact our toll free 3M sales assistance number at 1-800-362-3550.

2 mil thick tapes may generally be used for joining materials that are relatively smooth, thin and have low residual stress. For materials with a rough or textured surface, the thicker adhesive film of the 5 mil tapes would be more appropriate for evaluation.

Dispenser Selection

For assistance in helping you determine the best dispenser for your application, contact your local 3M sales representative, or the toll free 3M sales assistance number at 1-800-362-3550.

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For Additional Information

To request additional product information or to arrange for sales assistance, call toll free 1-800-223-7427 or visit www.3M.com/converter. Address correspondence to: 3M Engineered Adhesives Division, 3M Center, Building 220-7E-01, St. Paul, MN 55144-1000. Our fax number is 651-733-9175. In Canada, phone: 1-800-364-3577. In Puerto Rico, phone: 1-787-750-3000. In Mexico, phone: 52-70-04-00.

Recognition/ Certification

MSDS: 3M has not prepared a MSDS for these products which 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, these products should not present a health and safety hazard. However, use or processing of these products in a manner not in accordance with the directions for use may affect their performance and present potential health and safety hazards.

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

UL: Tapes 9442 and 9445 have been recognized by Underwriters Laboratories Inc. under Standard UL 969 Marking and Labeling in File MH26206.

Tapes 9482PC and 9485PC have been recognized by Underwriters Laboratories Inc. under Standard UL 746C Polymeric Adhesives Systems, Electrical Equipment Component in File MH17478.

If you require official recognition of any 350 adhesive under either UL 969 or UL 746C, please contact 3M-customer service at 1-800-362-3550.

For more information on the UL Certification, please visit the website at http://www.3m.com/converter, select UL Recognized Materials, and then select the specific product area.

Important Notice

3M MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of application. Please remember that many factors can affect the use and performance of a 3M product in a particular application. The materials to be bonded with the product, the surface preparation of those materials, the product selected for use, the conditions in which the product is used, and the time and environmental conditions in which the product is expected to perform are among the many factors that can affect the use and performance of a 3M product. Given the variety of factors that can affect the use and performance of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method of application.

Limitation of Remedies and Liability

If the 3M product is proved to be defective, THE EXCLUSIVE REMEDY, AT 3M'S OPTION, SHALL BE TO REFUND THE PURCHASE PRICE OF OR TO REPAIR OR REPLACE THE DEFECTIVE 3M PRODUCT. 3M shall not otherwise be liable for loss or damages, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including, but not limited to, contract, negligence, warranty, or strict liability.

ISO 9002

This Engineered Adhesives Division product was manufactured under a 3M quality system registered to ISO 9002 standards.

3M

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40% pre-consumer
10% post-consumer

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