

August, 2001

3M™ Adhesive Transfer Tape 9453FL

Product Description

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

- 3M™ High-Strength Acrylic Adhesive 300LSE provides very high bond strength to most surfaces
- Excellent bond to low surface energy plastics such as polypropylene and powder coatings.
- Excellent adhesion to lightly oiled surfaces typical of machine parts.
- Thickness of 2 mils, 3.5 mils, and 5 mils for use on smooth and textured surfaces.
- Extremely smooth adhesive for excellent graphic appearances.
- Polyester film liner is ideal for rotary die-cutting, high speed processing, automatic dispensing, and clean room environments.
- Polyester film liner resists breakage for one piece liner removal.
- Polyester film liner resists curling or wrinkling in high humidity.



General Information

Processing:

Slitting and die-cutting: This adhesive is very aggressive and may be difficult to convert depending on your application requirements. Chilling the adhesive between 35 and 50°F will improve the processability. In addition, dies can be lubricated with Laminoleum evaporative stamping oil, which is available from Metal Lubricants Company (708-333-8900) or with Lubri-Blade 907 from Ceramic Technologies Inc. (800-258-8495). You may also refer to our Guide to Converting 3M Laminating Adhesive 300LSE Technical Bulletin

Roll Laminating: A combination of metal and rubber rollers with moderate pressure (approx. 14 psi) is recommended.

Note: Please refer to the 3M Slitting/Die-cutting Technical Bulletin for further details.

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
Total Tape Thickness	0.088 mm	3.5 mil	ASTM D3652
Adhesive Type	3M 300LSE High Strength Acrylic Adhesive		
Liner	Polyester Film		
Liner Print	None		
Liner Thickness	0.05 mm	2 mil	

Typical Performance Characteristics

90° Peel Adhesion		Dwell/Cure Time	Dwell Time Units	Substrate	Notes
9.8 N/cm		15	min	Stainless Steel	
90 oz/in	10.9 N/cm	15	min	Stainless Steel	12 in/min (300 mm/min)
8.8 N/cm	80 oz/in	15	min	ABS	12 in/min (300 mm/min)
9.7 N/cm	89 oz/in	15	min	Polypropylene (PP)	12 in/min (300 mm/min)
100 oz/in		72	hr	Stainless Steel	12 in/min (300 mm/min)
12.4 N/cm	113 oz/in	72	hr	ABS	12 in/min (300 mm/min)
11.3 N/cm	103 oz/in	72	hr	Polypropylene (PP)	12 in/min (300 mm/min)

Property: 90° Peel Adhesion
 Method: ASTM D3330
 Temp C: 23C
 Temp F: 72F
 Environmental Condition: 50%RH
 Backing: 2 mil Aluminum Foil

Typical Performance Characteristics (continued)

Property	Values		Test Condition
Short Term Temperature Resistance	149 °C	300 °F	Short Term (minutes, hour)
Long Term Temperature Resistance	93 °C	200 °F	Long Term (day, weeks)
Minimum Long Term Temperature Resistance	-40 °C	-40 °F	Long Term (day, weeks)

Available Sizes

Property	Values		Test Name
Note	Subject to Minimum Order Requirements		
Normal Slitting Tolerance	± 0.8 mm	± 1/32 in	
Minimum Slit Width	12.7 mm	2021-01-02 00:00:00 in	
Maximum Slit Width	1372 mm	54 in	
Core Size	76.2 mm	3 in	ID

Maximum Length		Width
165 m	180 yd	1/2 in to 63/64 in
329 m	360 yd	1 in to 54 in

Property: Maximum Length

Typical Environmental Performance**Environmental Resistance**

Bond Build-up: The bond strength of 3MTM High-Strength Acrylic Adhesive 300LSE increases as a function of time and temperature, and has very high initial adhesion.

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

UV Resistance – When properly applied, adhesive bond is 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 high bond strength is maintained.

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

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, adhesive bond will hold securely after exposure to numerous chemicals including oil, mild acids and alkalis.

Handling/Application Information

Application Examples

- Nameplates and graphic overlays printed and die-cut by rotary processing techniques.
- Labels engineers for performance with protected graphics for environmental durability (e.g., automotive under hood labels).
- Gaskets and other die-cut parts for use on difficult to bond to surfaces.
- Graphics and die-cut parts for application to oily metals, powder coatings or low surface energy plastics.

Application Techniques

For maximum bond strength the surface should be thoroughly cleaned and dried. Typical cleaning solvents are heptane or isopropyl alcohol. Carefully read and follow manufacturer’s precautions and directions for use when using cleaning solvents. This cleaning recommendation may not be compliant with the rules for certain Air Quality Management Districts in California; consult applicable rules before use.

Bond strength can also be improved with firm application pressure and moderate heat, from 100°F (38°C) to 130°F (54°C) which causes the adhesive to develop improved contact with the bonding surface.

The ideal tape application temperature range is 70°F to 100°F (21°C to 38°C). Initial tape 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 generally satisfactory.

Storage and Shelf Life

Product retains its performance and properties for 24 months 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.

References

Property	Values
3m.com Product Page	https://www.3m.com/3M/en_US/company-us/all-3m-products/~/3M-Adhesive-Transfer-Tape-9453FL/?N=5002385+3293242514&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=9453FL

Family Group

	9453FL	9471FL	9472FL
Short Term Temperature Resistance (°C) Test Condition: Short Term (minutes, hour)	149	149	149
Long Term Temperature Resistance (°C) Test Condition: Long Term (day, weeks)	93	93	93
Minimum Long Term Temperature Resistance (°C) Test Condition: Long Term (day, weeks)	-40	-40	-40

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3M™ Adhesive Transfer Tape 9453FL

Family Group (continued)

	9453FL	9471FL	9472FL
Total Tape Thickness (mm)	0.088	0.05	0.127
Adhesive Type	3M 300LSE High Strength Acrylic Adhesive	3M 300LSE High Strength Acrylic Adhesive	3M 300LSE High Strength Acrylic Adhesive
Liner	Polyester Film	Polyester Film	Polyester Film
Liner Thickness (mm)	0.05	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.

For Additional Information

To request additional product information or to arrange for sales assistance, call toll free 1-800-362-3550 or visit www.3M.com/bonding. 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 an 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 the 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.

Information

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