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3M™ 9453LE, 9471LE, 9472LE Laminating Adhesives

Features:

- High-strength 3M™ 300LSE Acrylic Adhesive 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 range of 2.0 mils, 3.5 mils and 5.0 mils for use on smooth, rough and textured surfaces.
- Extremely smooth adhesive for excellent graphics appearance.
- Polycoated kraft liner for die-cutting end tabs and waste removed nameplates on a common carrier.

Applications:

- Plastic nameplates or graphic overlays for use on low surface energy plastics.
- Waste removed nameplates on a common sheet for ease of application.
- Graphic overlays with end tabs for easy liner removal.
- Attaching membrane switch assemblies to powder coating surfaces and low surface energy plastics.
- Graphic application to surfaces such as wood, fabric, plastic, where very high bond strength is required.
- Attaching identification material to lightly oily surfaces typical of machine parts.

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Table 1. **Product Construction:**

3M™ Laminating Adhesive	Adhesive (Solvent Free)	Liner
9471LE	2.0 mils (51 microns) 3M 300LSE High-strength Acrylic Adhesive	4.0 mils (100 microns) 58# Polycoated kraft
9453LE	3.5 mils (88 microns) 3M 300LSE High-strength Acrylic Adhesive	4.0 mils (100 microns) 58# Polycoated kraft
9472LE	5.0 mils (127 microns) 3M 300LSE High-strength Acrylic Adhesive	4.0 mils (100 microns) 58# Polycoated kraft

Table 2. **Typical Adhesion Chart:**

	3M™ Laminating Adhesive	15 Minute Room Temperature Oz./In.	15 Minute Room Temperature N/100 mm	72 Hour Room Temperature Oz./In.	72 Hour Room Temperature N/100 mm
Stainless Steel	9471LE	71	78	75	82
	9453LE	90	98	100	109
	9472LE	109	119	140	153
ABS	9471LE	70	77	79	86
	9453LE	80	88	113	124
	9472LE	102	112	128	140
Poly-propylene	9471LE	69	75	74	81
	9453LE	89	97	103	113
	9472LE	115	126	136	149

Typical Adhesion Properties:
NOTE: The above technical information and data should be considered representative or typical only and should not be used for specification purposes.

Peel Adhesion - ounces/inch (Newtons/100 mm) ASTM D3330, modified: 90 degree peel, 2 mil aluminum backing

Environmental Performance:
The properties defined are based on the attachment of impervious faceplate materials (such as aluminum) to a stainless steel test surface.

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

Humidity Resistance: High humidity has 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.

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 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.

Temperature Resistance: The 3M 300LSE High-Strength Acrylic Adhesive is usable for short periods (minutes, hours) at room temperatures up to 300˚F (148˚C) and for intermittent longer periods of time (days, weeks) up to 200˚F (93˚C).

Low Service Temperature: -40˚F (-40˚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.

Processing:
Slitting and die-cutting: This adhesive is very aggressive and may be difficult to die-cut. Chilling the adhesive between 35˚F 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 Lubri-Blade 907 from Ceramic Technologies Inc. (800-258-8495).

Roll Laminating: A combination of metal and rubber rollers with moderate pressure is recommended.

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

Special Considerations/ Application Tips:
For maximum bond strength the surface should be thoroughly cleaned and dried. Typical cleaning solvents are heptane or isopropyl alcohol. Consult solvent 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, from 100˚F (38˚C) to 130˚F (54˚C), causing the adhesive to develop intimate contact with the bonding surface.

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.

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For Customer Service and Product Information, call **1-800-328-1681**.

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