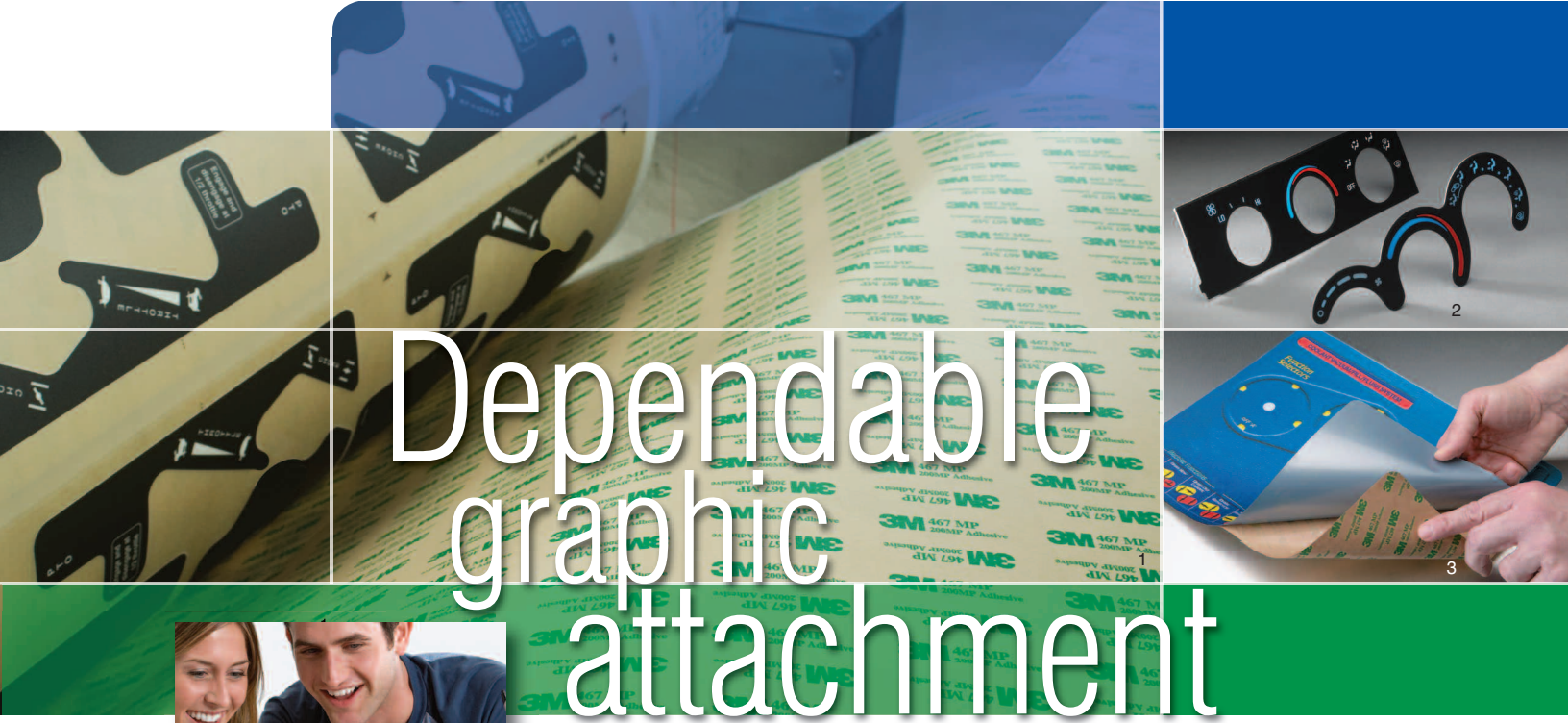


3M™ Laminating Adhesives



Dependable graphic attachment



Converting technology into successful appliance, electronic, industrial, and transportation applications



With our name behind your nameplate, graphic overlay, or membrane switch, you look good in tough places for a long time

3M™ Laminating Adhesives are reputation protection for you and your company.

Streamlined selection

All of the many 3M™ Laminating Adhesives are pressure sensitive for fast, long-term bonding and easy application for productivity. This guide is to help you conveniently move from markets, applications, and substrates to one or a few “go to” products that you’ll want to evaluate for application success.

Nameplates

If your company’s reputation is on the front of a nameplate, the 3M name on the back is assurance that you’ve made the right selection for keeping reputations intact.

Graphic Overlays

With 3M pressure sensitive adhesive technology, graphic overlays stick fast and stay stuck to virtually any surface even in tough-use environments such as a factory.

Membrane Switches

3M adhesives resist slippage, oozing, lifting, channeling, and buckling for long-term resistance to the stresses of switch activation.

1-800-223-7427
www.3M.com/converter

Markets and Applications

Appliance



- Range, oven, dishwasher, and other appliance control panels and membrane switches which must stand up to water, humidity, high temperatures, and detergents
- Nameplates, branding, and rating plates that resist shear and peel for reliability on many substrates

4

Transportation and Automotive



- Interior applications from decorative fascia to instrument panels and rating plates
- Under the hood and in the trunk ratings, warnings, and directions
- Exterior nameplates, graphics, and trim with UV resistance for recreational vehicles

5

Electronics



- Computer and peripheral nameplates, rating plates, branding, and other graphics
- Electronic medical device graphics, membrane switches, keyboards, and touch pads
- Hand-held device nameplates, keypads, graphics, and decorative panels

General Industrial



- Instrument control panels and membrane switches that resist edge lifting and stand up to daily hands-on use in harsh production and shipping environments
- Nameplates and rating plates that resist shear and peel for reliable attachment to many substrates

6

Substrates

Key Adhesive Platform Tiers

HSE

High Surface Energy Substrates

On an HSE substrate, adhesive spreads out to “wet” the surface to be bonded. The higher the surface energy, the better the bond performance.

Metal

Copper
Aluminum
Zinc
Tin
Stainless Steel

Glass

Plastics

Phenolic
Nylon
Alkyd Enamel
Polyester
Epoxy Paint
Polyurethane Paint
ABS
Polycarbonate
PVC Rigid
Acrylic



LSE

Low Surface Energy Substrates

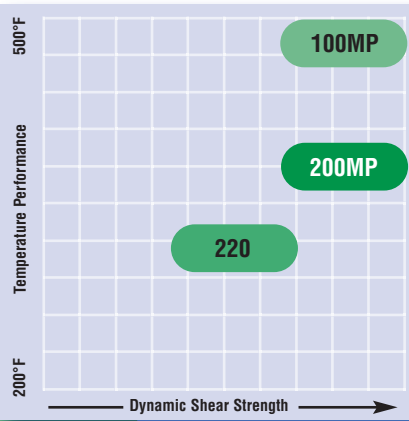
LSE substrates are considered “hard-to-bond” since the adhesive “beads up” and does not readily “wet” the surface.

Plastics

PVA
Polystyrene
Acetal
EVA
Polyethylene
Polypropylene
Polyvinyl
Fluoride Film
PTFE
Fluoropolymer



Powder coat painted metal surfaces are also LSE.

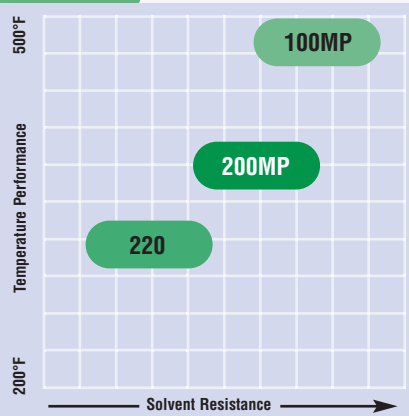


☆ 200MP High Performance Acrylic

Found in many of 3M's most popular products for graphic attachment to HSE substrates. High shear strength for less oozing, edge lifting and slippage. Excellent resistance to water, solvent, humidity, and up to 400°F. See more details on back cover.

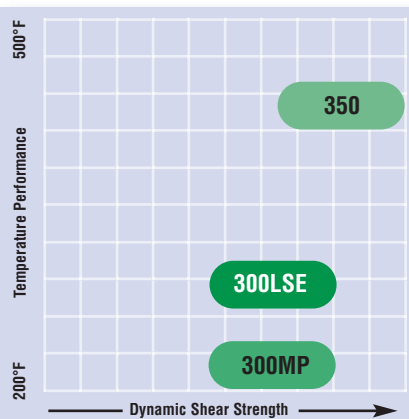
100MP Acrylic

Highest performing 3M pressure sensitive adhesive with resistance to solvents and up to 500°F.



220 Industrial Acrylic

Good resistance to chemicals and up to 350°F. Economical alternative to 200MP.



☆ 300LSE High Strength Acrylic

Found in many of 3M's most popular products for graphic attachment to LSE substrates. Outstanding adhesion to LSE plastics, powder coated paints, and oily metals with resistance up to 300°F. Good chemical and humidity resistance.

300MP High Strength Acrylic

Up to 250°F heat resistance for LSE automotive applications. Economical attachment of graphics.



350 High Holding Acrylic

Up to 450°F heat resistance with adhesion to powder coated surfaces and most plastics.

Adhesive Platform Selection Based on Surface and Service Conditions

These charts are based on relative adhesion within each given surface energy category. 1-10 scale is low to high.

Metals	Surface Energy Dynes/cm
Copper	1103
Aluminum	840
Zinc	753
Tin	526
Stainless Steel	700-1100

Adhesive	1	2	3	4	5	6	7	8	9	10
100MP										
200MP										
220										
300LSE										
300MP										
350										

HSE Plastics	Surface Energy Dynes/cm
Phenolic	47
Nylon	46
Alkyd Enamel	45
Polyester	43
Epoxy Paint	43
Polyurethane	43
ABS	42
Polycarbonate	42
PVC Rigid	39
Acrylic	38

Adhesive	1	2	3	4	5	6	7	8	9	10
100MP										
200MP										
220										
300LSE										
300MP										
350										

LSE Plastics	Surface Energy Dynes/cm
PVA	37
Polystyrene	36
Acetal	36
EVA	33
Polyethylene	31
Polypropylene	29
Polyvinyl Fluoride Film	28
PTFE Fluoropolymer	18
Powder Coatings	Broad range

Adhesive	1	2	3	4	5	6	7	8	9	10
100MP										
200MP										
220										
300LSE										
300MP										
350										

Shear Strength at Room Temperature	1	2	3	4	5	6	7	8	9	10
100MP										
200MP										
220										
300LSE										
300MP										
350										

Ultimate Peel Strength	1	2	3	4	5	6	7	8	9	10
100MP										
200MP										
220										
300LSE										
300MP										
350										

Chemical Resistance	1	2	3	4	5	6	7	8	9	10
100MP										
200MP										
220										
300LSE										
300MP										
350										

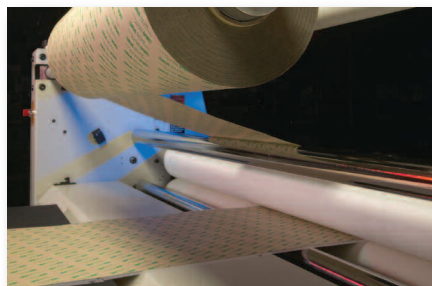
UV Resistance	1	2	3	4	5	6	7	8	9	10
100MP										
200MP										
220										
300LSE										
300MP										
350										

Humidity Resistance	1	2	3	4	5	6	7	8	9	10
100MP										
200MP										
220										
300LSE										
300MP										
350										

Short Term Temperature Resistance °F/°C*	180/82	200/93	250/121	300/149	350/177	400/204	450/232	500/260	550/288
100MP									
200MP									
220									
300LSE									
300MP									
350									

Note: Technical information and data should be considered representative or typical only and should not be used for specification purposes.

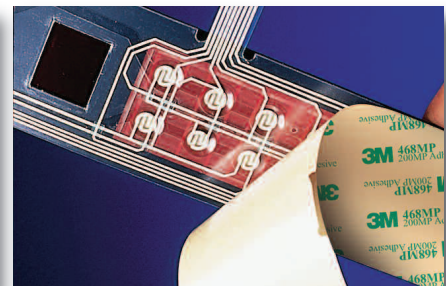
* Low temperature resistance is -40°F (-40°C) for all adhesives except 1000 Series at -20°F(-29°C).



Metal nameplate production with 3M™ High Performance Acrylic Adhesive 200MP. High shear for less oozing (see back cover for more details).



Die-cut plastic graphics for attachment to an LSE plastic surface with 3M™ High Strength Acrylic Adhesive 300LSE. Solvent-free adhesive.



Depending on specific formulation, 3M™ Laminating Adhesives securely attach membrane switches to high or low energy surfaces, smooth or textured.

M.A.P. Adhesive Finder...Navigate by Market and Application to Product

Markets		Appliance	Transportation and Automotive	Electronics	General Industrial	
Application/ Substrate/ Adhesive Platform		3M™ “Go To” Product(s)				
Nameplates	HSE	100MP	F9460PC, F9469PC, F9473PC	F9460PC, F9469PC, F9473PC	F9460PC, F9469PC, F9473PC	F9460PC, F9469PC, F9473PC
		200MP	467MP, 468MP 7952MP, 7955MP	467MP, 468MP 7952MP, 7955MP	467MP, 468MP 7952MP, 7955MP	467MP, 468MP 7952MP, 7955MP
		220	9502, 9505, 9552, 9555	9502, 9505, 9552, 9555	9502, 9505, 9552, 9555	9502, 9505, 9552, 9555
	LSE	300MP	7951, 9784, 9772WL, 9775WL	7951, 9784, 9772WL, 9775WL, 6035PC, 6038PC	7951, 9784, 9772WL, 9775WL	7951, 9784, 9772WL, 9775WL
		300LSE	9453LE, 9471LE, 9472LE, 9495LE	9453LE, 9471LE, 9472LE, 9495LE	9453LE, 9471LE, 9472LE, 9495LE	9453LE, 9471LE, 9472LE, 9495LE
		350	9482PC, 9485PC	9482PC, 9485PC	9482PC, 9485PC	9482PC, 9485PC
Graphic Overlays	HSE	100MP	F9460PC, F9469PC, F9473PC	F9460PC, F9469PC, F9473PC	F9460PC, F9469PC, F9473PC	F9460PC, F9469PC, F9473PC
		200MP	467MP, 468MP 7952MP, 7955MP	467MP, 468MP 7952MP, 7955MP	467MP, 468MP 7952MP, 7955MP	467MP, 468MP 7952MP, 7955MP
		220	9502, 9505, 9552, 9555	9502, 9505, 9552, 9555	9502, 9505, 9552, 9555	9502, 9505, 9552, 9555
	LSE	300MP	7951, 9784, 9772WL, 9775WL	7951, 9784, 9772WL, 9775WL, 6035PC, 6038PC	7951, 9784, 9772WL, 9775WL	7951, 9784, 9772WL, 9775WL
		300LSE	9453LE, 9471LE, 9472LE, 9495LE	9453LE, 9471LE, 9472LE, 9495LE	9453LE, 9471LE, 9472LE, 9495LE	9453LE, 9471LE, 9472LE, 9495LE
		350	9482PC, 9485PC	9482PC, 9485PC	9482PC, 9485PC	9482PC, 9485PC
Membrane Switches	HSE	100MP	N/A	N/A	N/A	N/A
		200MP	7945MP, 7956MP, 7957MP 7959MP, 7961MP	7945MP, 7956MP, 7957MP 7959MP, 7961MP	7945MP, 7956MP, 7957MP 7959MP, 7961MP	7945MP, 7956MP, 7957MP 7959MP, 7961MP
		220	N/A	N/A	N/A	N/A
	LSE	300MP	7951	7951	7951	7951
		300LSE	N/A	N/A	N/A	N/A
		350	N/A	N/A	N/A	N/A

Note: Technical information and data should be considered representative or typical only and should not be used for specification purposes.



R3 Custom Program

- Rapid
- Responsive
- Reliable

Through the R3 Custom Program, 3M can help you rapidly respond with reliable custom solutions for jobs ranging from gasketing and durable graphic attachment to laminating in high temperature electronics applications. For more information: 1-800-223-7427.

Product Selection

Product	Caliper**	Double coated	Liner Information									Features/Application ideas		
			Processing			Type				UL***				
			Class A	Sheet	Rotary	Polycoated Kraft	Film	DK	Double Liner	969	746C			
				Steel Rule	Cylinder									
100MP High Performance Acrylic														
F9460PC	2		•	•			58#				•	High performance industrial joining and metal fabrication.		
F9469PC	5		•	•			58#				•			
F9473PC	10		•	•			58#				•			
9437	2		•	•	•		58#	PET			•	Excellent rotary die-cutting.		
200MP High Performance Acrylic														
467MP*	2		•	•			58#				•	•	Plastic and metal nameplates for long-term aging on smooth surfaces.	
468MP*	5		•	•			58#				•	•	Plastic and metal nameplates on rough textured surfaces.	
467MPF	2		•	•	•			PET			•	•	High strength PET liner for greater clarity. Rotary die-cutting.	
468MPF	5		•	•	•			PET			•	•		
7952MP	2		•	•	•		58#/58#				•	•	•	Double liner for selective adhesive die-cutting. For window panels and membrane switch overlays.
7955MP	5		•	•			58#/58#				•	•	•	
7953MP	3.5	•	•	•			58#/58#				•	•	•	(1.5, 0.5, 1.5) Double-coated polyester for intricate die-cut parts and easy-to-handle membrane switch graphics.
7956MWS	6	•	•	•			58#				•	•	•	Opaque polyester layer helps eliminate graphic ink floodcoats. Used for graphic overlays.
7966MWS	9	•	•	•			58#				•	•	•	Thicker adhesive version of 7956MWS.
7962MP	2		•	•			58#/83#				•	•	•	Double liner (one lay-flat) for selective die-cutting as described above.
7965MP	5		•	•			58#/83#				•	•	•	Thick version for rough textured surfaces.
9172MP	2		•	•			58#	HDPE			•	•	•	Transparent for inspection of graphics in automotive instrument panel applications. Easy release film liner.
9185MP	5		•	•			58#	HDPE			•	•	•	
9495MP*	5.7	•	•	•			58#				•			(2.3, 0.5, 2.0) Double-coated polyester for improved handling and intricate die-cut parts typical of calculator nameplates.
9495B	5.7	•	•	•			58#				•			(2.3, 0.5, 2.0) Same as 9495MP with black polyester carrier.
9667MP	2		•	•			83#				•	•	•	Thicker lay-flat liner for improved kiss-cutting of end tabs and matrix removed nameplates.
9668MP	5		•	•			83#				•	•	•	
220 Industrial Acrylic														
9502*	2		•	•			58#				•			General purpose industrial graphic nameplate attachment to smooth and textured surfaces.
9505*	5		•	•			58#				•			
9552	2		•	•			58#/58#				•	•		Selective die-cutting and attachment of graphic overlays with windows for membrane switches.
9555	5		•	•			58#/58#				•	•		
300MP High Strength Acrylic														
7951	2		•	•			58#/58#				•	•		Double liner for selective die-cutting and application of graphics with windows for instrument or indicating lights.
9690B	5.6	•	•	•			83#							(2.8, 0.5, 2.3) Same as 9690 with black polyester carrier.
9690*	5.6	•	•	•			83#							(2.8, 0.5, 2.3) Double-coated polyester for ease of handling and added stability for non-graphic substrates.
9784	4		•	•			58#	HDPE						Film liner for graphic inspection in the automotive industry.
6035PC*	5		•	•			58#							Low to non-fogging adhesives in various calipers for graphic attachment requirements. Also available on 83# liner at (PL).
6038PC*	8		•	•			58#							
300LSE High Strength Acrylic														
9453LE*	3.5		•	•			58#				•			Various caliper adhesives for application of nameplates and decorative graphics to smooth or rough textured surfaces.
9453FL	3.5		•	•				PET			•			Film lined version of 9453LE for rotary processing.
9471LE*	2		•	•	•		58#				•			Bonds graphics to powder coatings, LSE plastics, and oily metals.
9471FL	2		•	•				PET			•			Film lined version of 9471FL for rotary processing.
9472LE*	5		•	•			58#				•			Thicker adhesive for textured LSE plastics and powder coatings.
9653LE	3.5		•	•			83#				•			Heavy lined adhesive for die-cutting end tabs, multiple nameplates on a common carrier and for ease of handling. Heavy lined version of 9453LE.
9671LE	2		•	•			83#				•			Heavy lined version of 9471LE.
9672LE	5		•	•			83#				•			Heavy lined version of 9472LE.
9490LE	6.7	•	•	•	•		58#				•			(2.8, 0.5, 3.4) Double-coated, face side 300MP for bonding to foam. Back side 300LSE for bond to plastic.

* Featured in the 4 Ways Greener program.

** Adhesives are coated to a targeted coat weight. The caliper listed is nominal.

*** UL Recognized 969 Marking and Labeling System Materials Component.

Note: Technical information and data should be considered representative or typical only and should not be used for specification purposes.

Product Selection (continued)

Product	Caliper**	Double coated	Liner Information										Features/Application ideas		
			Processing			Type				UL***					
			Sheet		Rotary	Polycoated Kraft	Film	DK	Double Liner	969	746C				
			Class A	Steel Rule	Cylinder										
300LSE High Strength Acrylic (continued)															
9495LE	6.7	•		•		58#					•		(2.8, 0.5, 3.4) Double-coated for improved handling and intricate die-cut parts.		
8132LE	2.0		•	•		58#/83#					•	•	Double liner for selective adhesive die-cutting.		
8153LE	3.5		•	•		58#/83#					•	•	Thicker version for textured surfaces.		
350 High Holding Acrylic															
9442	2		•	•	•						55#	•	•	For rotary die-cuttable performance engineered labels for smooth or rough plastic or specialty surfaces.	
9445	5		•	•	•						55#		•		
9482PC	2		•	•		62#							•	•	For nameplate and decorative trim on plastics.
9485PC	5		•	•		62#							•	•	
9500PC	5.5	•	•	•		58#									(2.5, 0.5, 2.5) Industrial fabrication and joining.
Screen Printable Adhesives															
SP7514	****		•	•											UV curable, process dependent.
SP7533	****		•	•											Water-based, pressure sensitive, high heat resistance, excellent balance of peel and shear strength.
SP7555	****		•	•											UV curable, process dependent.
3M™ Membrane Switch Adhesives															
	Product Number	Adhesive Family	Tape or Spacer Thickness	Liner Type	Layer thickness (mils) Adhesive/Carrier/Adhesive	Description									
Double Coated Spacers	7945MP*	200MP	5 mils	58# PCK/58# PCK	2/1/2										
	7953MP*		3.5 mils	58# PCK/58# PCK	1.5/0.5/1.5	Same as 7945MP but with printed primary liner.									
	7953HL		3.5 mils	83# PCK	1.5/0.5/1.5	Same as 7953MS except with heavy liner.									
	7956MP*		6 mils	58# PCK/58# PCK	2/2/2	Meet requirements of most keyboards and flex circuit laminations.									
	7956MWS		6 mils	58# PCK	2/2/2	Metallized vapor coat and white color to eliminate floodcoats.									
	7956WDL		6 mils	58# PCK/58# PCK	2/2/2	Sheet form of 7956MWS.									
	7957MP*		7 mils	58# PCK/58# PCK	2/3/2	Meet requirements of most keyboards and flex circuit laminations.									
	7959MP*		9 mils	58# PCK/58# PCK	2/5/2	Meet requirements of most keyboards and flex circuit laminations.									
	7961MP*		11 mils	58# PCK/58# PCK	2/7/2										
	7966MWS		9 mils	58# PCK	2/2/5	Thicker version of 7956MWS.									
	7966WDL		9 mils	58# PCK/58# PCK	2/2/5	Sheet form of 7966MWS.									
	7986MP ¹		14 mils	58# PCK/58# PCK	2/10/2	Meets requirements of most keyboards and flex circuit laminations.									
	9045MP		5 mils	94# PCK/94# PCK	2/1/2	The 9000 series of products has a lay-flat liner on each side which improves die-cutting and handling of intricate die-cut parts.									
	9056MP		6 mils	94# PCK/94# PCK	2/2/2										
	9057MP		7 mils	94# PCK/94# PCK	2/3/2										
9059MP	9 mils	94# PCK/94# PCK	2/5/2												
9061MP	11 mils	94# PCK/94# PCK	2/7/2												
Single Coated Spacers	7991MPW	200MP	2 mils	94# PCK	1/1/0	Adhesive on one side; white polyester carrier for light management.									
	7992MP		4 mils	94# PCK	2/2/0	Adhesive on one side of clear polyester carrier.									
	7992MPW		4 mils	94# PCK	2/2/0	Thick version of 7991MPW.									
	7993MP		3 mils	94# PCK	2/1/0	Single side spacers aid in the construction of membranes with circuitry, i.e. to protect leads, hold domes in place, or build custom spacers.									
	7995MP		5 mils	94# PCK	2/3/0										
	7997MP		7 mils	94# PCK	2/5/0	Single side spacers aid in the construction of membranes with circuitry, i.e. to protect leads, hold domes in place, or build custom spacers.									

* Featured in the 4 Ways Greener program. ** Adhesives are coated to a targeted coat weight. The caliper listed is nominal. *** UL Recognized 969 Marking and Labeling System Materials Component.

**** Depends on screen mesh utilized. (Standard range is 0.75-4 mils thick). ¹ Custom product.

Note: Technical information and data should be considered representative or typical only and should not be used for specification purposes.

4 Ways Greener

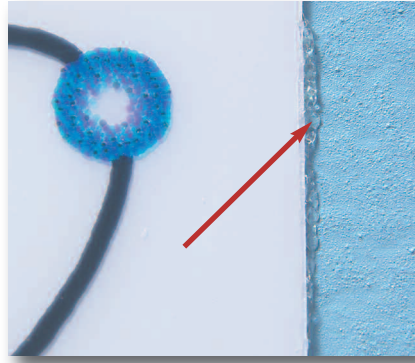
Building on its green history, 3M is expanding and accelerating the "greening" of product life cycles: **1. R&D, 2. Manufacturing, 3. End Use, and 4. Disposal.** As part of this initiative, many of

the 3M™ Laminating Adhesives in the chart are made with a solventless coating process. See product numbers identified with a single asterisk.

Trust your name to high shear, high performance

3M™ High Performance Acrylic Adhesive 200MP

Found in many of 3M's most popular products. High shear and peel strength, excellent resistance to water, solvent, humidity, and up to 400°F.



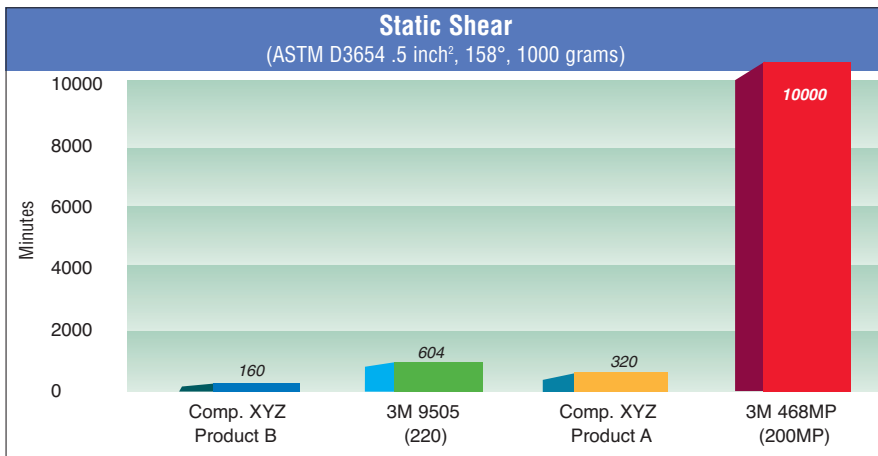
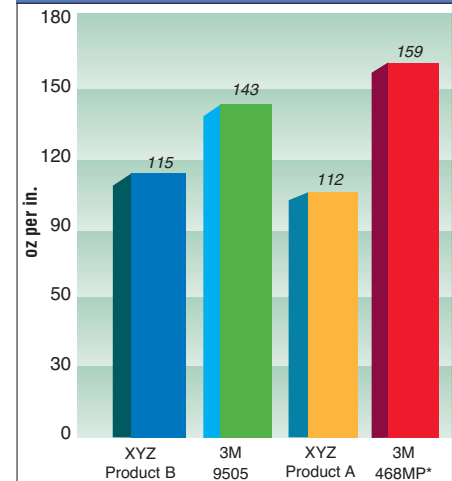
High shear adhesive 200MP – Less adhesive oozing at slitting and die-cutting helps improve rapid part processing with minimal waste. Finished graphic is neat and clean because edges are less likely to ooze and collect dirt.

Low shear alternative – More adhesive oozing can cause production delays and wasted parts due to adhesive on top of the graphic or between sheets before die-cutting. Oozing after installation collects dirt for poor appearance.

Other high shear benefits at a glance

Converters	OEMs
<ul style="list-style-type: none"> Better roll aging and storage stability minimizes edge picking Clean razor slitting Consistent die-cutting with clean edges 	<ul style="list-style-type: none"> Short term repositionability for placement accuracy Up to 400°F short term heat resistance Slippage resistance in warm environments for clean graphic edges Consistent liner release over time (unlike high tack products)

Peel (90° to SS) 72 hr. 158°F Dwell



Note: Technical information and data should be considered representative or typical only and should not be used for specification purposes.

* 3M™ High Performance Acrylic Adhesive 200MP

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.

Warranty, Limited Remedy, and Disclaimer: Unless an additional warranty is specifically stated on the applicable 3M product packaging or product literature, 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. If the 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price.

Limitation of Liability: Except where prohibited by law, 3M will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.



Converter Markets Industrial Adhesives and Tapes Division

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