



# Flexomount™ and Cushion-Mount™ Solid Printing Tapes

Flexographic Systems

Technical Data

March, 2006

## Product Description

3M™ Flexomount™ and Cushion-Mount™ Solid Printing Tapes are double coated tapes designed for mounting photopolymer and rubber printing plates to flexographic printing cylinders or sleeve systems. The adhesive systems are specially formulated for clean removability from both the plate and the print cylinder.

Flexomount tapes have a solid vinyl carrier which is designed for printing solids and line work. Cushion-Mount tapes have an elastomeric foam carrier which is designed for solid and line printing.

Product	Thickness		Description
<b>3M™ Flexomount™ Solid Printing Foam Tapes</b>			
*447DL	0.010 in.	0.25 mm	Gray double coated tape with a soft rubber adhesive on each side of a vinyl carrier. Available in double or single liner.
*411DL	0.015 in.	0.38 mm	
*412DL	0.020 in.	0.50 mm	
	0.020 in.	0.50 mm	
*413DL	0.015 in.	0.38 mm	Black double coated tape with a firm rubber adhesive on each side of a vinyl carrier. Available in double or single liner.
*414DL	0.020 in.	0.50 mm	
<b>3M™ Cushion-Mount Solid Printing Tapes</b>			
929	0.060 in.	1.52 mm	Rubber adhesive on each side of a tan high density elastomeric foam.
933	0.015 in.	0.38 mm	
939	0.020 in.	0.50 mm	
949	0.020 in.	0.50 mm	Differential adhesive system on a tan high density elastomeric foam. Non-liner side: rubber resin adhesive. Liner side: acrylic adhesive.

All thicknesses are nominal performance thicknesses for which the products are targeted to perform during the flexographic printing operation.

\*These products comply with RoHS (Restriction of Hazardous Substances): EU Directive 2002/95/EC. RoHS compliant means that the product does not contain any of the substances in excess of the maximum concentration values as amended by Commission Decision 2005/618/EC.

# Flexomount™ and Cushion-Mount™ Solid Printing Tapes

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## Typical Physical Properties

**Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.**

Product	3M™ Flexomount™ Solid Printing Tapes					3M™ Cushion-Mount™ Solid Printing Tapes				
	411DL	412DL	413DL	414DL	447DL	929	933	939	949	
Adhesive	Rubber Soft	Rubber Soft	Rubber Firm	Rubber Firm	Rubber Soft	Rubber	Rubber	Rubber	Rubber/Acrylic	
Carrier	Solid Vinyl (Gray)	Solid Vinyl (Gray)	Solid Vinyl (Black)	Solid Vinyl (Black)	Solid Vinyl (Gray)	Elastomeric Foam (Tan)	Elastomeric Foam (Tan)	Elastomeric Foam (Tan)	Elastomeric Foam (Tan)	
Type of Printing	Solid and Line	Solid and Line	Solid and Line	Solid and Line	Solid and Line	Solid and Line	Solid and Line	Solid and Line	Solid and Line	
Type of Plate	Rubber & Photopolymer	Rubber & Photopolymer	Rubber & Photopolymer	Rubber & Photopolymer	Rubber & Photopolymer	Photopolymer	Photopolymer	Photopolymer	Rubber	
Thickness Tape	in. (mm)	0.015 (0.381)	0.020 (0.508)	0.015 (0.381)	0.020 (0.508)	0.010 (0.254)	0.062 (1.575)	0.017 (0.432)	0.022 (0.599)	0.022 (0.599)
Paper Liner	in. (mm)	0.004 (0.102)	0.004 (0.102)	0.004 (0.102)	0.004 (0.102)	0.004 (0.102)	0.004 (0.102)	0.004 (0.102)	0.004 (0.102)	0.004 (0.102)
Poly Liner	in. (mm)	0.004 (0.102)	0.004 (0.102)	0.004 (0.102)	0.004 (0.102)	0.004 (0.102)	N/A	N/A	N/A	N/A
Lot to Lot Tolerance	in. (mm)	± 0.0015 (± 0.038)	± 0.0015 (± 0.038)	± 0.0015 (± 0.038)	± 0.0015 (± 0.038)	± 0.0015 (± 0.038)	± 0.0015 (± 0.038)	± 0.0015 (± 0.038)	± 0.0015 (± 0.038)	± 0.0015 (± 0.038)
Typical Application Area Caliper Variation*	in. (mm)	± 0.0006 (± 0.015)	± 0.0006 (± 0.015)	± 0.0006 (± 0.015)	± 0.0006 (± 0.015)	± 0.0006 (± 0.015)	± 0.0008 (± 0.021)	± 0.0007 (± 0.018)	± 0.0007 (± 0.018)	± 0.0007 (± 0.018)
Roll Length	yd. (m)	36 (32.9)	36 (32.9)	36 (32.9)	36 (32.9)	36 (32.9)	50 ft. (15.2)	25 (22.9)	25 (22.9)	25 (22.9)
Master Width	in. (mm)	36 (914.4)	36 (914.4)	36 (914.4)	36 (914.4)	36 (914.4)	36 (914.4)	36 (914.4)	36 (914.4)	36 (914.4)
Slitting Tolerance	in. (mm)	± 1/32 (± 0.795)	± 1/32 (± 0.795)	± 1/32 (± 0.795)	± 1/32 (± 0.795)	± 1/32 (± 0.795)	± 1/32 (± 0.795)	± 1/32 (± 0.795)	± 1/32 (± 0.795)	± 1/32 (± 0.795)
Shelf Life (months)		12	12	12	12	12	12	12	12	12

\*Typical application area is 18 in. x 6 ft. = 1 square yard, 457.2 mm x 1828.8 mm = 0.8361 m<sup>2</sup>. Caliper variation defined as ± 2 standard deviations.

# Flexomount™ and Cushion-Mount™ Solid Printing Tapes

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## Typical Physical Properties (continued)

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

Product		3M™ Flexomount™ Solid Printing Tapes					3M™ Cushion-Mount™ Solid Printing Tapes			
		411DL	412DL	413DL	414DL	447DL	929	933	939	949
Density	lb/ft <sup>3</sup> (kg/m <sup>3</sup> )	70 (1060)	70 (1060)	70 (1060)	70 (1060)	70 (1060)	50 (750)	50 (750)	50 (750)	50 (750)
Compression Deflection										
10% Compression	lb/in <sup>2</sup> (kPa)	N/A	N/A	N/A	N/A	N/A	40 (275)	40 (275)	40 (275)	40 (275)
25% Compression	lb/in <sup>2</sup> (kPa)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Peel Adhesion ASTM D-3330										
Stainless Steel	oz/in (N/100mm)	50 (55)	50 (55)	40 (44)	40 (44)	50 (55)	20 (22)	20 (22)	20 (22)	20 (22)
Composite Sleeve	oz/in (N/100mm)	30 (33)	30 (33)	25 (27)	25 (27)	30 (33)	15 (16)	15 (16)	15 (16)	15 (16)
Photopolymer	oz/in (N/100mm)	40 (44)	40 (44)	30 (33)	30 (33)	40 (44)	30 (33)	30 (33)	30 (33)	N/A
Rubber	oz/in (N/100mm)	50 (55)	50 (55)	50 (55)	50 (55)	50 (55)	N/A	N/A	N/A	30 (33)
Static Shear										
Room Temp	grams	1000	1000	1000	1000	1000	1000	1000	1000	1000
158°F (70°C)	grams	250	250	250	250	250	250	250	250	250
Value is weight that tape will hold for 10,000 minutes (ASTM D-3654)										
Solvent Resistance										
Water		Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Alkanes		Good	Good	Good	Good	Good	Good	Good	Good	Good
Alcohols		Fair	Fair	Good	Good	Fair	Fair	Fair	Fair	Fair
Acetates		Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor
Heat Resistance										
	°F	120	120	130	130	130	120	120	120	120
	°C	(49)	(49)	(54)	(54)	(54)	(49)	(49)	(49)	(49)

# Flexomount™ and Cushion-Mount™ Solid Printing Tapes

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## Product Selection Considerations

		Type of Printing		Type of Printing	
		Solids and Line printing where maximum ink density is critical		Solids and Line printing where crisp type and reverse are critical	
Plate Type	Thickness	High Plate Side Adhesion	Medium Plate Side Adhesion	High Plate Side Adhesion	Medium Plate Side Adhesion
Photopolymer	0.010 in. (0.25 mm)	447DL			
	0.015 in. (0.38 mm)	411DL	413DL		933
	0.020 in. (0.50 mm)	412DL	414DL		939
	0.60 in. (1.52 mm)				929
Rubber	0.010 in. (0.25 mm)	447DL			
	0.015 in. (0.38 mm)	411DL 413DL			
	0.020 in. (0.50 mm)	412DL 414DL			949

There are four general considerations for selecting the right mounting tape: the thickness of the tape, the type of printing plate, the adhesion properties and the type of printing.

- **Tape Thickness:**

3M™ Flexomount™ and Cushion-Mount™ Solid Printing Tape products range in thickness in order to meet undercut or pitch diameters that are common on flexographic printing presses. Tapes are available for 10, 15, 20 and 60 mil (0.25, 0.38, 0.50 and 1.52 mm) applications.

- **Type of Printing Plate:**

The adhesive systems on each tape have been developed for bonding to photopolymer or rubber printing plates. Some tapes are developed to be used specifically for photopolymer or rubber, since the composition and backside surface properties of these two plates are extremely different.

- **Adhesion Properties:**

Flexomount solid printing tapes come in two different adhesion levels: standard (gray) and repositionable (black).

3M™ Flexomount™ Tapes 411DL, 412DL and 447DL come with the standard adhesive. These products have excellent adhesion to both rubber and photopolymer plates. The high adhesion makes it a good choice for long runs and helps reduce the tendency for plate edge lifting. 3M™ Flexomount™ Tapes 413DL and 414DL come with a firmer adhesive which provides easier plate repositioning and higher temperature and solvent resistance.

3M™ Cushion-Mount™ Tapes have two different plate side adhesives available. 3M™ Cushion-Mount™ Tapes 933, 939 and 929 are designed for use with photopolymer plates with a medium level of adhesion. 3M™ Cushion-Mount™ Tape 949 is designed for use with rubber plates and also has a medium level of adhesion.

# Flexomount™ and Cushion-Mount™ Solid Printing Tapes

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**Product Selection Considerations**  
*(continued)*

- **Type of Printing:**  
3M™ Flexomount™ and Cushion-Mount™ Solid Printing Tapes use different vinyl or foam carriers which are designed for specific printing requirements and offer two different carrier types to meet print needs from solids and basic lines to high quality line work.

3M™ Flexomount™ Solid Printing Tapes 411DL, 412DL, 413DL, 414DL, 447DL

The solid vinyl Flexomount tape products are designed for solid and line work. The non-compressible vinyl carrier provides the consistent solid ink coverage required for this type of work.

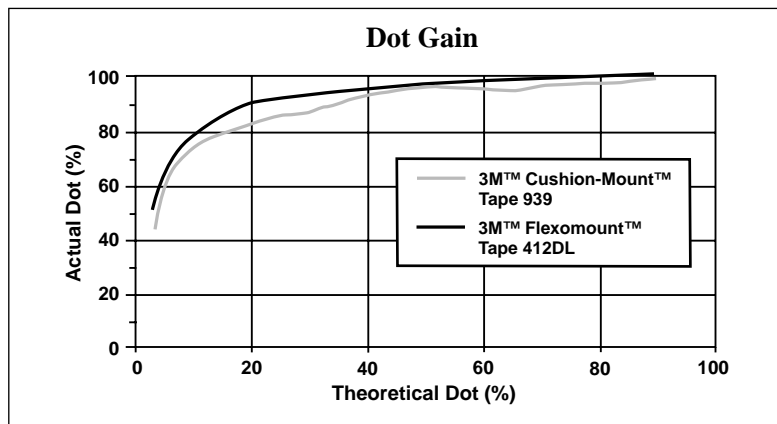
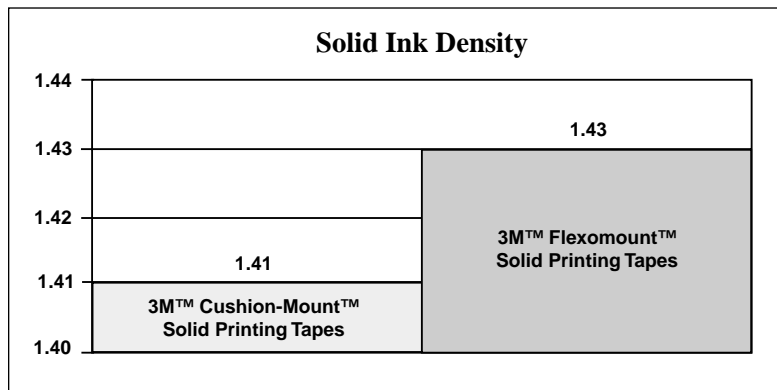
3M™ Cushion-Mount™ Solid Printing Tapes 929, 933, 939, 949

The high density Cushion-Mount tape products are designed for solids and high quality line work. The high density elastomeric foam carrier provides solid ink coverage similar to the Flexomount tape products, while offering the benefits of a cushioned tape. The compression properties of the high density foam help reduce cylinder bounce and offer improved performance in high quality line work and reverses with excellent solid ink density.

**Typical Performance Characteristics**

This data is from print trials using photopolymer plates and a magenta solvent based ink printed on a polyethylene substrate. Press settings were 400 fpm @ 2 mil impression, 600 line anilox roll.

**Data is based on limited evaluations and should not be used for specification purposes.**



# Flexomount™ and Cushion-Mount™ Solid Printing Tapes

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## Typical Performance Characteristics (continued)

Theoretical Dot (%)	ACTUAL DOT (%)	
	3M Cushion-Mount™ Solid Printing Tape 939	3M™ Flexomount™ Solid Printing Tape 412DL
3%	19	23
5%	28	35
10%	45	51
20%	55	67
30%	72	77
40%	84	90
50%	94	96
60%	96	97
70%	99	98
80%	100	100
90%	100	100

## Product Use

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