Single-Coated Foam Tapes

4100 • 4300 • 4500 • 4700 Series

Technical Data **May, 2008**

Product Description

3M™ Single-Coated Foam Tapes will adhere to a variety of substrates, including latex-painted wood, lacquered wood, enameled steel, glass, aluminum, stainless steel, acrylic, ABS, and PVC (non-plasticized) as tape adhesion is typically satisfactory within 20 minutes and continues to build with additional time.

Products

Note: The user is responsible for determining whether the tape is fit for a particular purpose and suitable for user's method of application.

3M™ Urethane Foam Tape Series 4100

3M™ Urethane Foam Tape 4104	1/4 in.	(6.4 mm) thick
3M™ Urethane Foam Tape 4108	1/8 in.	(3.2 mm) thick
3M™ Urethane Foam Tape 4116	1/16 in.	(1.6 mm) thick

3M™ Urethane Foam Tape Series 4300

3M™ Urethane Foam Tape 4314	1/4 in.	(6.4 mm) thick
3M™ Urethane Foam Tape 4317	3/8 in.	(9.5 mm) thick
3M™ Urethane Foam Tape 4318	1/8 in.	(3.2 mm) thick

3M™ Vinyl Foam Tape Series 4500

3M™ Vinyl Foam Tape 4504	1/4 in.	(6.4 mm) thick
3M™ Vinyl Foam Tape 4508	1/8 in.	(3.2 mm) thick
3M™ Vinyl Foam Tape 4516	1/16 in.	(1.6 mm) thick

3M™ Vinyl Foam Tape Series 4700

3M™ Vinyl Foam Tape 4714	1/4 in.	(6.4 mm) thick
3M™ Vinyl Foam Tape 4718	1/8 in.	(3.2 mm) thick
3M™ Vinyl Foam Tape 4726	1/16 in.	(1.6 mm) thick

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Product Features

3M™ Urethane Foam Tapes Series 4100 are a natural-white, firm, high-density, open-cell foam with pressure-sensitive adhesive on one side. The acrylic adhesive offers high initial quick stick to many types of surfaces along with excellent shear strength and high temperature performance. The adhesive is protected by a 0.003 inch (0.08 mm) thick white, silicone treated paper liner and has a firm rigid open cell urethane that offers excellent cushioning characteristics while allowing air or gas vapors to pass through the open cells. This product is placed on a 1.5 in. wide common core when the tape is 3/4 in. or less in width. Skip slitting is also used for roll stability on these narrow sizes. **Note:** 3M urethane foam tape series 4100 may turn yellow when exposed to light. Such yellowing affects only the appearance and not the physical performance of the tapes.

3M™ Urethane Foam Tapes Series 4300 are a conformable, grey, low-density, open-cell foam with pressure-sensitive acrylic adhesive on one side. The adhesive is protected by a 0.003 inch (0.08 mm) thick tan, silicone treated paper liner and has a very soft, conformable low density foam which can help seal out air, dust and light when compressed 50%. Application ideas include: recessed lighting, door, window and cabinet seals. It also can be used to help cushion, damp sound and absorb vibration in electronics such as printers, keyboards, computers, aircraft lights and automotive dash boards. This tape is available on individual cores and in blocks of 1.5 inches when the tape is 3/4 inch or less in width. **Note:** Extra care should be taken when handling these delicate rolls of tape to avoid damaging tape.

3M™ Vinyl Foam Tapes Series 4500 are a flexible, black, high-density, closed-cell foam with pressure-sensitive acrylic adhesive on one side. A 0.003 inch (0.08 mm) thick white, silicone treated paper liner is applied to the non-adhesive side of the foam so that the PVC can be cut to length and applied while leaving the liner in place.

3M™ Vinyl Foam Tapes Series 4700 are a flexible, black, medium-density, closed-cell foam with a pressure-sensitive acrylic adhesive on one side. The adhesive is protected by a 0.004 inch (0.1 mm) thick white, silicone treated paper liner which allows for die cutting without having to laminate another liner to the foam.

3M vinyl foam tape series 4500 and 4700 are durable, flexible closed cell vinyls which can help seal out dust, light and moisture when placed under 30% compression. These vinyl tapes offer excellent aging characteristics and will remain flexible when exposed to elevated temperatures and UV light. Application ideas include: dust and moisture seal for appliances, computers, copiers and other electronic and transportation equipment.

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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.

	Test Methods	Units	3M™ Urethane Foam Tape 4104	4108	4116
Adhesive Type:*			350	350	350
Approximate Thickness:		inch (mm)	0.250 (6.4)	0.125 (3.2)	0.062 (1.6)
Thickness Tolerance:		%	15	15	20
Color:			Natural-white	Natural-white	Natural-white
Release Liner:		inch (mm)	0.003 (0.08)	0.003 (0.08)	0.003 (0.08)
Liner Color:			White	White	White
Standard Length:		yard (meter)	18 (16.5)	36 (32.9)	36 (32.9)
Maximum Length:		yard (meter)	25 (22.9)	50 (45.7)	100 (91.4)
Standard Roll Diameter:		inch (mm)	15 (380)	15 (380)	11 (280)
Available Widths: (Min.-Max.)		inch (mm)	1/4-36 (6-914)	1/4-46 (6-1168)	1/4-46 (6-1168)
Normal Slitting Tolerance:		inch (mm)	± 1/32 (± .8)	± 1/32 (± .8)	± 1/32 (± .8)
Density: Foam with adhesive	ASTM D-3574	lb/cu ft (kg/cu m)	12 (192)	16 (256)	18 (288)
Hardness: Foam with adhesive	ASTM D-2240	Shore 00	75	75	75
Compression Deflection: Compress 25%	ASTM D-3574	psi (kPa)	4 (27.6)	6 (41.4)	12 (82.8)
Compress Set:	ASTM D-1667	% loss	8	8	12
Tensile Strength: Die "A"	ASTM D-3574	psi (kPa)	115 (795)	130 (895)	115 (795)
Elongation: Die "A"	ASTM D-3574	%	100	80	80
Thermal Conductivity:	ASTM C-518	BTU/hr/°F/sq ft/ inch (W/m-K)	0.5 (0.066)	0.5 (0.066)	0.5 (0.066)
Dielectric Strength:	ASTM D-149	volts/mil	50	70	90
Surface Resistivity: Non-adhesive side	ASTM D-257	ohms/sq	1×10^{15}	6×10^{14}	1×10^{14}
Surface Resistivity: Adhesive side	ASTM D-257	ohms/sq	1×10^{15}	1×10^{15}	3×10^{15}
Water Absorption: 30% Compression	ASTM D-1056	% by Volume	open cell - NA	open cell - NA	open cell - NA
Flammability Recognition: Foam with adhesive	UL 94HBF File #E76581	meets requirements	yes	no	no
Flammability Recognition: Foam with adhesive	F.M.V.S.S. 302	meets requirements	yes	yes	yes
Flammability Recognition: Foam with adhesive	F.A.R. 25.853 B-2	meets requirements	yes	yes	no
Flammability Recognition: Foam with adhesive	F.A.R. 25.853 B-3	meets requirements	yes	yes	yes
Mold Resistance: Foam with adhesive	ASTM G21-70	Growth after 28 days	none	none	none

*****3M™ Adhesive 350 is a medium-firm acrylic adhesive that provides a continuation of high wet grab and initial adhesion.

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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.

	Test Methods	Units	3M™ Urethane Foam Tape 4314	4317	4318
Adhesive Type:*			430	430	430
Approximate Thickness:		inch (mm)	0.250 (6.4)	0.375 (9.5)	0.125 (3.2)
Thickness Tolerance:		%	15	10	30
Color:			Charcoal grey	Charcoal grey	Charcoal grey
Release Liner:		inch (mm)	0.003 (0.08)	0.003 (0.08)	0.003 (0.08)
Liner Color:			Tan	Tan	Tan
Standard Length:		yard (meter)	18 (16.5)	9 (8.2)	36 (32.9)
Maximum Length:		yard (meter)	18 (16.5)	9 (8.2)	36 (32.9)
Standard Roll Diameter:		inch (mm)	15 (380)	20 (508)	15 (380)
Available Widths: (Min.-Max.)		inch (mm)	1/4-46 (6-1168)	3/8-46 (9-1168)	1/4-46 (6-1168)
Normal Slitting Tolerance:		inch (mm)	± 1/32 (± .8)	± 1/32 (± .8)	± 1/32 (± .8)
Density: Foam with adhesive	ASTM D-3574	lb/cu ft (kg/cu m)	2 (32)	2 (32)	2 (32)
Hardness: Foam with adhesive	ASTM D-2240	Shore 00	8	6	10
Compression Deflection: Compress 25%	ASTM D-3574	psi (kPa)	0.3 (2.1)	0.3 (2.1)	0.3 (2.1)
Compress Set:	ASTM D-1667	% loss	5	5	5
Tensile Strength: Die “A”	ASTM D-3574	psi (kPa)	25 (170)	25 (170)	25 (170)
Elongation: Die “A”	ASTM D-3574	%	125	125	125
Thermal Conductivity:	ASTM C-518	BTU/hr/°F/sq ft/ inch (W/m-K)	0.3 (0.043)	0.3 (0.043)	0.3 (0.043)
Dielectric Strength:	ASTM D-149	volts/mil	40	40	20
Surface Resistivity: Non-adhesive side	ASTM D-257	ohms/sq	2×12^{12}	3×10^{12}	6×10^{12}
Surface Resistivity: Adhesive side	ASTM D-257	ohms/sq	6×10^{12}	5×10^{12}	1×10^{13}
Water Absorption: 30% Compression	ASTM D-1056	% by Volume	open cell - NA	open cell - NA	open cell - NA
Flammability Recognition: Foam with adhesive	UL 94HBF File #E76581	meets requirements	yes	no	no
Flammability Recognition: Foam with adhesive	F.M.V.S.S. 302	meets requirements	yes	yes	no
Flammability Recognition: Foam with adhesive	F.A.R. 25.853 B-2	meets requirements	yes	yes	no
Flammability Recognition: Foam with adhesive	F.A.R. 25.853 B-3	meets requirements	yes	yes	yes
Mold Resistance: Foam with adhesive	ASTM G21-70	Growth after 28 days	none	none	none

*****3M™ Adhesive 430 is a medium soft adhesive system that offers good quick stick to many types of surfaces along with excellent aging and UV resistance.

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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.

	Test Methods	Units	3M™ Vinyl Foam Tape 4504	4508	4516
Adhesive Type:*			430	430	430
Approximate Thickness:		inch (mm)	0.250 (6.4)	0.125 (3.2)	0.062 (1.6)
Thickness Tolerance:		%	15	15	20
Color:			Black	Black	Black
Release Liner:		inch (mm)	0.003 (0.08)	0.003 (0.08)	0.003 (0.08)
Liner Color:			White	White	White
Standard Length:		yard (meter)	18 (16.5)	36 (32.9)	36 (32.9)
Maximum Length:		yard (meter)	25 (22.9)	50 (45.7)	100 (91.4)
Standard Roll Diameter:		inch (mm)	15 (380)	15 (380)	11 (280)
Available Widths: (Min.-Max.)		inch (mm)	1/4-44 (6-1118)	1/4-44 (6-1118)	1/8-44 (3-1118)
Normal Slitting Tolerance:		inch (mm)	± 1/32 (± .8)	± 1/32 (± .8)	± 1/32 (± .8)
Density: Foam with adhesive	ASTM D-3574	lb/cu ft (kg/cu m)	20 (320)	20 (320)	25 (400)
Hardness: Foam with adhesive	ASTM D-2240	Shore 00	50	50	55
Compression Deflection: Compress 25%	ASTM D-3574	psi (kPa)	4 (27.6)	4 (27.6)	4 (27.6)
Compress Set:	ASTM D-1667	% loss	15	15	15
Tensile Strength: Die “A”	ASTM D-3574	psi (kPa)	90 (620)	100 (690)	130 (895)
Elongation: Die “A”	ASTM D-3574	%	200	200	200
Thermal Conductivity:	ASTM C-518	BTU/hr/°F/sq ft/ inch (W/m-K)	0.3 (0.043)	0.3 (0.043)	0.3 (0.043)
Dielectric Strength:	ASTM D-149	volts/mil	50	100	140
Surface Resistivity: Non-adhesive side	ASTM D-257	ohms/sq	1×10^{11}	4×10^{10}	1×10^{10}
Surface Resistivity: Adhesive side	ASTM D-257	ohms/sq	2×10^{11}	1×10^{11}	2×10^{11}
Water Absorption: 30% Compression	ASTM D-1056	% by Volume	5	5	5
Flammability Recognition: Foam with adhesive	UL 94HBF File #E76581	meets requirements	yes	yes	yes
Flammability Recognition: Foam with adhesive	F.M.V.S.S. 302	meets requirements	yes	yes	yes
Flammability Recognition: Foam with adhesive	F.A.R. 25.853 B-2	meets requirements	yes	yes	yes
Flammability Recognition: Foam with adhesive	F.A.R. 25.853 B-3	meets requirements	yes	yes	yes
Mold Resistance: Foam with adhesive	ASTM G21-70	Growth after 28 days	none	none	none

*****3M™ Adhesive 430 is a medium soft adhesive system that offers good quick stick to many types of surfaces along with excellent aging and UV resistance.

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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.

	Test Methods	Units	3M™ Vinyl Foam Tape 4714	4718	4726
Adhesive Type:*			430	430	430
Approximate Thickness:		inch (mm)	0.250 (6.4)	0.125 (3.2)	0.062 (1.6)
Thickness Tolerance:		%	15	20	30
Color:			Black	Black	Black
Release Liner:		inch (mm)	0.004 (0.10)	0.004 (0.10)	0.004 (0.10)
Liner Color:			White	White	White
Standard Length:		yard (meter)	18 (16.5)	36 (32.9)	36 (32.9)
Maximum Length:		yard (meter)	25 (22.9)	50 (45.7)	100 (91.4)
Standard Roll Diameter:		inch (mm)	15 (380)	15 (380)	11 (280)
Available Widths: (Min.-Max.)		inch (mm)	1/4-46 (6-1168)	1/4-46 (6-1168)	1/8-46 (3-1168)
Normal Slitting Tolerance:		inch (mm)	± 1/32 (± .8)	± 1/32 (± .8)	± 1/32 (± .8)
Density: Foam with adhesive	ASTM D-3574	lb/cu ft (kg/cu m)	14 (225)	18 (288)	20 (230)
Hardness: Foam with adhesive	ASTM D-2240	Shore 00	40	50	50
Compression Deflection: Compress 25%	ASTM D-3574	psi (kPa)	2 (13.8)	2 (13.8)	3 (20.7)
Compress Set:	ASTM D-1667	% loss	5	5	15
Tensile Strength: Die “A”	ASTM D-3574	psi (kPa)	75 (515)	95 (650)	130 (895)
Elongation: Die “A”	ASTM D-3574	%	200	200	200
Thermal Conductivity:	ASTM C-518	BTU/hr/°F/sq ft/ inch (W/m-K)	0.3 (0.043)	0.3 (0.043)	0.3 (0.043)
Dielectric Strength:	ASTM D-149	volts/mil	50	60	80
Surface Resistivity: Non-adhesive side	ASTM D-257	ohms/sq	3×10^{10}	5×10^{10}	2×10^{11}
Surface Resistivity: Adhesive side	ASTM D-257	ohms/sq	2×10^{11}	2×10^{11}	4×10^{11}
Water Absorption: 30% Compression	ASTM D-1056	% by Volume	10	10	10
Flammability Recognition: Foam with adhesive	UL 94HBF File #E76581	meets requirements	yes	yes	yes
Flammability Recognition: Foam with adhesive	F.M.V.S.S. 302	meets requirements	yes	yes	yes
Flammability Recognition: Foam with adhesive	F.A.R. 25.853 B-2	meets requirements	yes	yes	yes
Flammability Recognition: Foam with adhesive	F.A.R. 25.853 B-3	meets requirements	yes	yes	yes
Mold Resistance: Foam with adhesive	ASTM G21-70	Growth after 28 days	none	none	none

*****3M™ Adhesive 430 is a medium soft adhesive system that offers good quick stick to many types of surfaces along with excellent aging and UV resistance.

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Environmental Exposure

Resistance to high temperature service conditions

3M™ Urethane Foam Tape Series 4100	– 200°F (93°C) continuous 350°F (177°C) - 30 minutes maximum time
3M™ Urethane Foam Tape Series 4300	– 150°F (66°C) continuous 250°F (121°C) - 30 minutes maximum time
3M™ Vinyl Foam Tape Series 4500	– 150°F (66°C) continuous 250°F (121°C) - 30 minutes maximum time
3M™ Vinyl Foam Tape Series 4700	– 150°F(66°C) continuous 250°F (121°C) - 30 minutes maximum time

Resistance to low temperature service conditions

3M urethane foam tape series 4100	– Cold flex at 0°F (-18°C) no cracks*
3M urethane foam tape series 4300	– Cold flex at -20°F (-29°C) no cracks*
3M viny foam tape series 4500	– Cold flex at 0°F (-18°C) no cracks*
3M vinyl foam tape series 4700	– Cold flex at 0°F (-18°C) no cracks*

*Tape slowly bent around a 1/4 in. diameter mandrel

Solvent/Fuel Resistance*

	3M urethane foam tape series 4100		3M urethane foam tape series 4300		3M vinyl foam tape series 4500		3M vinyl foam tape series 4700	
Solvent/Fuel	**Adhesive**	**Foam**	**Adhesive**	**Foam**	**Adhesive**	**Foam**	**Adhesive**	**Foam**
Acetone	Softens	Softens	No effect	No effect	Softens	Swells	Softens	Swells
Ammonia Cleaner	No effect	No effect	No effect	No effect	No effect	No effect	No effect	No effect
Engine Oil	No effect	No effect	No effect	No effect	No effect	No effect	No effect	No effect
Gasoline	Softens	Swells	Softens	No effect	No effect	No effect	No effect	No effect
JP-4 (jet fuel)	Softens	Swells	Softens	No effect	No effect	No effect	No effect	No effect
MEK	Softens	Softens	Softens	Swells	Softens	Swells	Softens	Swells
Mineral Spirits	No effect	Swells	Softens	No effect	No effect	No effect	No effect	No effect
Soapy Water	No effect	No effect	No effect	No effect	No effect	No effect	No effect	No effect

*Visual observations of tape bonded to steel panels and immersed totally in solvent/fuel for 24 hours.

Application Techniques

- Bond strength is dependent upon the amount of adhesive-to-surface contact. Firm application pressure develops better adhesive contact and helps improve bond strength.
- To obtain optimum adhesion, the bonding surface must be clean, dry, and well unified. Some typical surface cleaning solvents are isopropyl alcohol and heptane.*****

  *****Be sure to follow the solvent manufacturer's precautions and directions for use when handling solvents.
- 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 because the adhesive becomes too firm to adhere readily. However, once properly applied, low temperature holding is generally satisfactory.

Storage

Store in the original cartons at 60-80°F (15-27°C) and 50% relative humidity.

Shelf Life

18 months from date of manufacture.

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Product Use

All statements, technical information and recommendations contained in this document are based upon tests or experience that 3M believes are reliable. However, many factors beyond 3M's control can affect the use and performance of a 3M product in a particular application, including the conditions under which the product is used and the time and environmental conditions in which the product is expected to perform. Since these factors 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.

Warranty and Limited Remedy

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Limitation of Liability

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ISO 9001:2000

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001:2000 standards.

3M

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