3M™ Acrylic *Plus* Tape Series EX4500

Technical Data Sheet

General Description

3M™ Acrylic Plus Tape Series EX4500 is a series of deep black, double-coated acrylic foam tapes designed for the attachment of automotive exterior trim parts – without the use of adhesion promoter. 3M series EX4500 tapes offer an advanced adhesive system – on both sides of the product – that adheres well to traditional, medium surface energy, and scratch- and mar-resistant automotive paint and polymer systems. The product is available in 1.1 mm (45 mil) and 1.52 mm (60 mil) calipers.

Typical applications for 3M series EX4500 tapes include pillars, garnishes, nested components and window visors, and other aftermarket accessories.

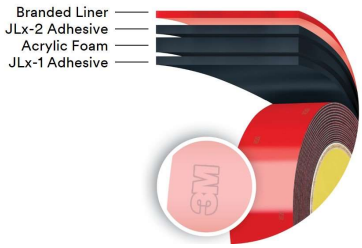
Product Features

- Primerless adhesion capability – allowing for adhesion to medium surface energy plastics without the use of adhesion promoter on both liner and non-liner sides of the product.
- Excellent adhesion to traditional, low surface energy, and scratch and mar resistant automotive paints
- Unique foam core that provides stress relaxation when high application loads are encountered, while maintaining tight bond-line aesthetics under normal conditions.
- Deep black color which provides excellent bond-line appearance.

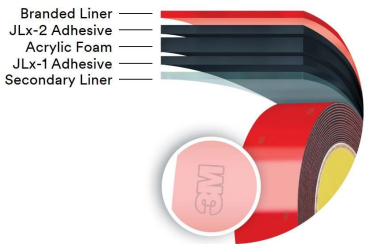
General 3M™ Acrylic *Plus* Tape Benefits

- **Viscoelastic Flexibility:** unique formula for excellent adhesion and stress relaxation qualities that deliver conformability during thermal expansion and in periods of high stress
- **Ease of Use:** tape can be die-cut into intricate shapes allowing for easy peel and stick bonding - enabling attachment in areas where mechanical attachment is difficult or impossible
- **Design Freedom:** enables easy differentiation of vehicle models by providing flexibility to respond quickly to changes in design and materials, allowing for easy installation of dealer installed accessories

Product Construction



EX4500



EX4500T

Physical Properties

	EX4508	EX4511	EX4515
Thickness Range	N/A	1.14 mm (0.045 in) +/- 0.13 mm (0.005 in)	1.52 mm (0.060 in) +/- 0.13 mm (0.005 in)
Density Range	N/A	592 kg/m3 (37 lb/ft3) +/- 56 kg/m3 (3.5 lb/ft3)	576 kg/m3 (36 lb.ft3) +/- 56 kg/m3 (3.5 lb/ft3)
Roll Widths	• Available in the following standard widths: o Millimeter widths rounded to the nearest whole number and 1/8 inch increments starting with 1/4 inch o Minimum widths: 4 mm Levelwound, 5 mm Planetary (Standard versions) • Width tolerance: o +/- 0.4 mm for planetary rolls up to 18 mm wide and level wound rolls +/- 0.8 mm for planetary rolls wider than 18 mm		
Core	Black, Acrylic Foam		
Adhesive	• JLx-2 on the liner-side of the tape for robust adhesion to MSE plastics without use of primer • JLx-1 on the non-liner side of the tape for adhesion to medium surface energy, and scratch- and mar-resistant automotive paint systems		
Liner	• EX4500: 3M Branded, red polyethylene, 2-sided silicone-coated on both sides for easy release • EX4500T: 3M Branded, red polyethylene, 1-sided silicone-coated liner on Levelwound Rolls to enable heat-bond tabbing		
Tabbing	• An extended liner tab is recommended • Tape available with tabbable liner option: 3M™ Acrylic *Plus* Tape EX4500T • Heat-bond tabbing: 3M™ Tabbing Tapes 5081 and 5400 for T-liner versions • PSA Tabbing: 3M™ Tabbing and Splicing Tape 5699 for silicone liners, 3M™ Tabbing Tape 5300 for non-silicone liners		
Splices	• Number of splices depends on order quantity or roll length • Level wound rolls have an average of 3 to 4 splices • Smaller order quantities (smaller than one jumbo) rolls could contain up to 14 splices		

Performance Properties

Typical performance of 3M™ Acrylic *Plus* Tape EX4511 is shown below. Peel values depend on plastic substrate characteristics and/or paint composition. These values are for reference only.

Notes:

1. The following technical information and data is based upon limited 3M testing conditions and should not be used for specification purposes.
2. Care should be taken to make sure the surface is clean and dry prior to application of the tape and not to saturate the tape with strong polar solvents, like alcohols, after initial application.
3. After adhesion build, the JLx adhesive is durable to typical automotive environmental conditions and chemicals and provides a robust attachment solution. For questions regarding the application process, please contact your 3M technical representative.
4. When using solvents, extinguish all ignition sources, including pilot lights and follow the manufacturer's precautions and directions for use.

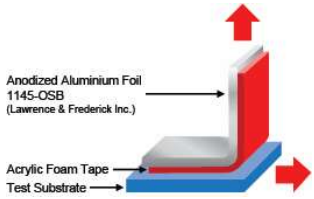
Performance Data

Test Substrates:

- Non-liner side of tape: ABS – Performance across full range of ABS, PC/ABS, ASA, PMMA dependent upon material grade, surface, etc.
- Liner-side of tape: ABS – Performance across full range of ABS, PC/ABS, ASA, PMMA dependent upon material grade, surface, etc. Can also be used on automotive paint surfaces- Performance across full range of clear coats is dependent upon clear coat chemistries
- Adhesion Promoter was not used

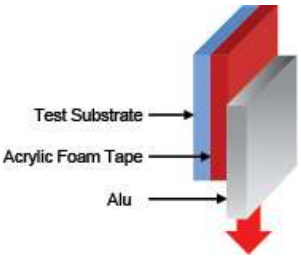
Performance Data (continued)

90° Peel



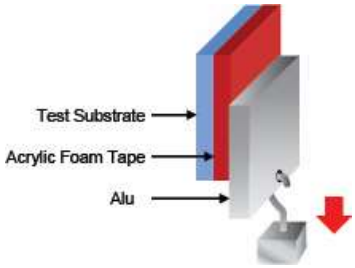
	3M A+ EX4500 Series Liner Side	
Sample Size	12.7 mm x 150 mm	
Dwell	20 Minutes @ 22C, 50% RH	24 hours @ 22C, 50% RH
Load/Conditions	300mm per minute	
Failure Mode	Cohesive	Cohesive

Dynamic Shear



	3M A+ EX4500 Series Liner Side	
Sample Size	25 mm x 25 mm	
Dwell	24 hours @ 22C, 50% RH	
Load/Conditions	50 mm/min @ 80C	
Failure Mode	Cohesive	Cohesive

Static Shear



	3M A+ EX4500 Series Liner Side	
Sample Size	25 mm x 25 mm	
Dwell	22C, 50% RH	
Load/Conditions	500 grams @ 80C for 10,000 minutes	
Failure Mode	Pass	Pass

Substrate Recommendations

Typical performance of 3M™ Acrylic *Plus* Tape EX4511 above is on Medium Surface Energy (MSE) substrates. Refer to the table for indications on most suitable substrates for use with 3M tape EX4511. Please speak with a 3M technical ~~service~~ representative when using very low surface energy substrates such as RIM, PP or TPO.

EX4500 Recommended Substrate Matrix		
Paints	Medium to High Surface Energy	
	Low Surface Energy	
Plastics	ABS	
	Acrylic	
	AES	
	ASA	
	Polycarbonate	
	PC/ABS	
	PMMA	
	RIM	
	Nylon	
	TPO, PP/EPDM, PP	

Recommended

Contact your 3M technical ~~service~~ representative

Shelf Life

Two years from date of manufacture when stored at 4°C - 38°C (40°F - 100°F) and 0-95% relative humidity (RH). The optimum storage conditions are 22°C (72°F) and 50% relative humidity.

Regulatory Information

Please refer to the product label and Safety Data Sheet (SDS) for health and safety information before using. Observe proper handling precautions as outlined in the SDS, which is available on request or at www.3M.com/msds.

The product is published as a material entry and is available for access on www.mdsystem.com. For product IMDS ID number, email requests to 3M-IMDSrequest@mmm.com.

Contact Information

The information provided in this technical document is intended as a guide for this product. For more information or help in selecting a 3M product for an application, please contact your 3M application engineer or call 1-800-328-1684.

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