

3M™ Paint Replacement Tape (appliqué) 5004

Technical Data Sheet

Product Description

3M™ Paint Replacement Tape 5004 is a revolutionary material designed to replace top coat paint on a variety of aircraft, marine, and other surfaces. 3M 5004 Tape has a 99.99% water vapor transmission rate and is Skydrol® hydraulic fluid. It is formulated to withstand the harsh service environments associated with these applications. 3M 5004 Tape will conform and adhere to standard surface features such as rivet heads, or overlapping doublers, and weld seams. It can be applied easily by hand with common plastic squeegees and can be removed without the use of strippers or other caustic chemicals. 3M 5004 Tape consists of a fluoropolymer film coated with a pressure sensitive adhesive, and is packaged in roll form with a removable liner on the adhesive side of the tape. The tape is supplied in miscellaneous custom sizes and is available in a grey finish.

Typical Physical Properties and Performance Characteristics

The following technical information and data should be considered representative or typical only and should not be used for specification purposes. Metric values are listed in parenthesis.

Note: ASTM = American Society for Testing and Materials,
FAR = Federal Aviation Regulations,
BSS = Boeing Specification Support Standard,
NFPA = National Fire Protection Association.

I. Dimensions:

Approximate Applied Thickness*:	0.0055 inch (0.14 mm)
Polymer Film Thickness:	0.0035 inch (0.09 mm)
Approximate Tape Weight/Area:	0.045 lbs/ft ² (0.22 kg/m ²)

*Excludes the polyethylene liner that is removed from the tape prior to application.

II. Typical Physical Properties and Performance Characteristics

Property	Test Method	Units US (SI)	Typical Value
Tensile Strength @ Break	ASTM D882	psi (Mpa)	2900 (20)
Elongation % @ Break	ASTM D882	%	580
Dielectric Strength	ASTM D149	Volts/mil (kV/mm)	1430 (56)
Surface Resistivity	ASTM D257	Ohms/sq	2 x 10 ¹⁰
Dielectric Constant @ 1 kHz	ASTM D150	None	5.7
Dissipation Factor @ 1 kHz	ASTM D150	None	0.025
Oxygen Transmission Rate	ASTM D3895 ^[1]	cm ³ /m ² /day (mol/m ² /s)	1210 (6.2 x 10 ⁻⁷)
Oxygen Permeance	ASTM D3895 ^[1]	cm ³ /m ² /day/atm (mol/m ² /s/Pa)	1210 (6.1 x 10 ⁻¹²)
Water Vapor Transmission Rate	ASTM F1249 ^[2]	g/100 in ² /day (g/m ² /day)	0.46 (7.2)
Peel Adhesion @ 70°F (21°C) to: Stainless Steel To Primer: Mil-P 23377E	ASTM D3330 – Method A ^[3]	oz/in (N/100 mm)	81 (89) 76 (84)
Impact@100 in-lbs measured at: -60°F (-51°C); 0°F (-18°C); 75°F (24°C); 180°F (82°C); 275°F (135°C)	ASTM D2794	No tearing, cracking or lifting	
Low Temperature Flexibility @ -75°F 1/4 inch (6.4 mm) mandrel bend	ASTM D522	Pass (no cracking)	
Max. Service Temperature		°F (°C)	325°F (163°C)

1. Fluoropolymer film tested without adhesive; Sample area 10.0 cm², 25.0°C, 40% relative humidity; 100% O₂.

2. Fluoropolymer film tested without adhesive; Sample area 10.0 cm², 37.8°C, 90% relative humidity.

3. Sample tab was reinforced with Scotch® Filament Tape 898.

III. Fluid and Environmental Resistance

Environmental Conditions	Exposure	Result	
Aircraft Interior Fire Protection: FAR 25.853(a) Appendix F Part I (a) (1) (i)^[4]	12 Second Vertical Exposure	Self Extinguish Time (sec) < 1 No flaming drips	
Flame Spread Index	ASTM E162 ^[5]	0.2 No ignition Film drips from panel without flaming	
Optical Density of Smoke	ASTM E662 ^[5] @ 1.5 minutes @ 4.0 minutes Maximum Observations	Radiant Heat Only 0.0 0.1 45.1 @ 20 minutes No ignition after 20 minutes	With Ignition Source 0.0 2.6 45.3 @ 14 minutes Ignition after 6 minutes
Toxic Gas Generated by Combustion	BSS 7239 ^[5]	Carbon monoxide Sulphur dioxide HCl HCN NO _x HF	122.5 ppm None detected None detected None detected 0.75 ppm None detected
Heat of Combustion	NFPA 259	5.2 MJ/m ²	
Critical Radiant Flux of Ignition	ASTM E1354 ^[5]		
UV Aging: ASTM G 154, Cycle 3	500 hours	No visible change in dimensions No loss of adhesion: ASTM D3330 Method A ^[3] Color change < ΔE: ASTM D2244 Gloss change < ΔE: ASTM D523 ^[6]	
Salt Spray: ASTM B117	30 days		
De-Icing Fluid: SAE/AMS 1424B Type 1	7 days @ 70°F (21°C)		
Turbine Wash: Mil-PRF-85704C	24 hours @ 100°F (38°C)		
Tap Water Immersion	24 hours @ 70°F (21°C)		
De-ionized Water: ASTM D2247 @ 100% RH	7 days @ 100°F (38°C)		
JP-4 Jet Fuel	14 days @ 70°F (21°C)		
JP-8 Jet Fuel	14 days @ 70°F (21°C)		
Hydraulic Fluid: Mil-H-5606G	30 days @ 70°F (21°C)		
High Temperature: 325°F (163°C)	1 hour		

3. Sample tab was reinforced with Scotch® Filament Tape 898.

4. Test conducted with tape applied to fiberglass/epoxy/honeycomb core floor panel.

5. Test conducted with tape applied to 0.125 inch (3.2 mm) thick untreated aluminum plate.

6. Tape applied to completely cover the surface of aluminum panels treated per Mil-C5541C Class 1a Method B and primed with Mil-P-23377E. The primed panels were lightly scuff sanded with Scotch-Brite™ General Purpose Hand Pad 7447 and water, rinsed with isopropyl alcohol and wiped dry with cheesecloth prior to applying tape. Panels were exposed to the listed environmental conditions; then brought back to ambient conditions, cleaned with isopropyl alcohol and dried before testing.

General Information

- 3M™ Paint Replacement Tape 5004 has excellent environmental resistance properties and has been used to isolate and protect substrates from corrosive and other environmental elements.
- 3M 5004 Tape passes FAR 25.853 flame resistance performance requirement for aircraft interiors.
- 3M 5004 Tape will adhere and conform to a variety of smooth and contoured surfaces.
- 3M 5004 Tape can be used to provide a UV resistant surface coating for indoor and outdoor applications.

Shipping and Storage

Material is not regulated for transportation. Therefore, no special/hazardous labeling or packaging is required for air, ground, or water shipment for this product.

Apply all film within two years of receipt. Keep film in a clean area, away from excessive moisture and out of direct sunlight. Store rolls in the shipping carton. Return partially used rolls to the shipping carton.

Shelf Life: Two (2) years from the date of manufacture or as expressly certified by 3M.

Additional Information

In the U.S. call toll free 1-800-235-2376, or fax 1-800-435-3082 or 651-737-2171. For U.S. Military, call 1-866-556-5714. If you are outside of the U.S., please contact your nearest 3M representative.

These products were manufacture under a 3M Quality Management System registered to the AS9100 standard

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