

3M™ Self-Extinguishing Hot Melt Adhesive 3748 VO

Product Description

3M™ Hot Melt Adhesive 3748 VO is a tough, flexible, thermoplastic hot melt, 100% solids adhesive which exhibits good peel adhesion and thermal shock properties along with higher heat resistance. It features excellent electrical properties which make it ideal for use on printed wiring board and other electronic bonding applications.

Hot Melt Adhesive 3748 VO is self-extinguishing and has a UL 94 VO rating. In addition to electronic applications, it is also useful in many general industrial bonding and sealing applications where a self-extinguishing characteristic is required.

Product Features

- Excellent Adhesion
- Good Electrical Properties
- Non Corrosive to Metal



Technical Information Note

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

Typical Uncured Physical Properties

Property	Values
Color	Light Yellow
Base Resin	Polyolefin

Typical Cured Characteristics

Shore D Hardness: 26

Conditions

Test Condition : Room Temperature

Methods

ASTM D2240

Corrosion	Method	Environmental Condition	Notes
Pass – No electrolytic corrosion.	ASTM D3482	35°C (95°F)/96% R.H./45V d.c./15 days	
Pass – No electrolytic corrosion. Very minor surface oxidation of test wire.	3M C708	45°C(113°F)/96% R.H./250V d.c./5 days	Test involves placing two #36 AWG (.005") oxygen free bare copper wires on clean 1" x 4" glass slides in fixed position 1/4" apart. Adhesive is coated over the wires and over the area between the wires in a uniform manner and cured/set. The test specimen is then subjected to 45°C / 96% relative humidity / 250 volts d.c. for 5 days. The aged specimen is then visually examined for corrosion/attack of the copper surface
Pass – No aluminum, brass or steel corrosion or discoloration.	Mil S-46163	10 days Room Temperature	

Property: Corrosion

Typical Performance Characteristics

Typical Solvent Resistance	Environmental Condition
A	Immersed in Acetone one hour
B	Immersed in Acetone 30 days
A	Immersed in Isopropyl Alcohol one hour
B	Immersed in Isopropyl Alcohol 30 days
B	Immersed in Freon TF one hour
C	Immersed in Freon TF 30 days
B	Immersed in Freon TMC one hour
C	Immersed in Freon TMC 30 days
B	Immersed In 1, 1, 1 - Trichloroethane one hour

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Typical Performance Characteristics (continued)

Typical Solvent Resistance	Environmental Condition
C	Immersed In 1, 1, 1 - Trichloroethane 30 days
A	Immersed in RMA Flux one hour
B	Immersed in RMA Flux 30 days

Property: Typical Solvent Resistance
 notes: A = No attack B = Slight Surface Attack/Softness C = Severe Attack/Breakup

Overlap Shear Strength	Substrate
215 lb/in ²	FR-4 to FR-4
275 lb/in ²	Fir to Fir
250 lb/in ²	Polypropylene to Polypropylene
220 lb/in ²	Polyethylene to Polyethylene

Property: Overlap Shear Strength
 Method: 3M C3096
 notes: 1" x 4" Douglas Fir specimens are bonded with hot melt adhesive using a 1" overlap and 13 mil wire spacer to set bond line thickness. Bonds are then conditioned for 24 hours at 70°F (22°C), 50% relative humidity before testing. Bonds are pulled in shear at a separation bond speed of 2 inch a minute recording strength at failure.

180° Peel Strength	Substrate
608 oz/in	Wire Mesh to FR-4
560 oz/in	Wire Mesh to Polypropylene
432 oz/in	Wire Mesh to Polyethylene
416 oz/in	Wire Mesh to Fir

Property: 180° Peel Strength
 Method: 3M C3168
 notes: Test involves bonding .020 in wire mesh (galvanized window screen type) to substrate using hot melt adhesive. Wire mesh is encapsulated with adhesive. After conditioning, bond is tested by 180° peel back method using Instron at 10 inches per minute peel speed.

Weight Loss by TMA (In Air)	Test Condition
1 %	459°F (237°C)
5 %	621°F (327°C)
10 %	673°F (356°C)

Property: Weight Loss by TMA (In Air)
 notes: Temperature of weight loss at 5°C/min

Typical Performance Characteristics (continued)

Property	Values		Method	Notes	Test Condition
Two Pound Dead Load Heat Resistance	79 °C	175 °F	3M C3093	1" x 4" Douglas Fir specimens are bonded with hot melt adhesive using a 1" overlap shear configuration. Bonds are then conditioned for 24 hours at 70°F (22°C), 50% relative humidity before testing. Bonds are subjected to 2 lbs. per square inch load at 100°F (49°C) for 30 minutes. Temperature of the bond line is raised every 30 minutes until failure. Heat resistance recorded is the last temperature prior to bond failure.	
Thermal Shock Resistance	Passes 5 cycles w/o cracking		3M C3167	Potted Washer Olyphant test	100°C (air) to -40°C (liquid)

Electrical and Thermal Properties

Dielectric Constant	Test Condition
2.3	10 KHz, Room Temperature
2.3	100 KHz, Room Temperature
2.3	1 KHz, Room Temperature
0.001	1MHz, Room Temperature
2.3	100 Hz, Room Temperature
2.3	100 MHz, Room Temperature

Property: Dielectric Constant
Method: ASTM D150

Dissipation Factor	Test Condition
0.001	10 KHz, Room Temperature
0.001	100 KHz, Room Temperature
0.001	1 KHz, Room Temperature
0.002	100 Hz, Room Temperature
0.001	100 MHz, Room Temperature

Property: Dissipation Factor
Method: ASTM D150

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Electrical and Thermal Properties (continued)

Thermal Conductivity			
19.2 W/m/K	1.92×10^{-3} J/cm - sec - °C	1.1×10^{-1} (btu-ft)/(h-ft ² -°F)	4.58×10^{-4} Cal/s/cm/°C

Property: Thermal Conductivity
 Test Condition : 107°F (41°C)
 notes: On .020" samples

Property	Values	Method	Notes	Test Condition
Dielectric Strength	2.3 V/μm			
Dielectric Strength	1400 V/mil	ASTM D149	11 mil sample	
Thermal Conductivity (k value)	6×10^{17} W/m/K			
Volume Resistivity	4.5×10^{17} Ω-cm	ASTM D257		Room Temperature
Coefficient of Thermal Expansion	-34×10^{-6} m/m/°C		By TMA	-100 - -40°C
Coefficient of Thermal Expansion	154.5×10^{-6} m/m/°C		By TMA	-20 - 25°C

Typical Physical Properties

Viscosity	Test Condition
8,500 cP	356°F(180°C)
5,000 cP	392°F(200°C)
3,300 cP	428°F(220°C)

Property: Viscosity

Property	Values	
Specific Gravity	1.09	
Ball & Ring Softening Point	152 °C	305 °F
UL Listing	UL 94 - VO	

Handling/Application Information

Application Equipment

- 3M™ Hot Melt Applicator TC or TCQ
- 3M™ Hot Melt Applicator EC - Temperature Module #4
- 3M™ Hot Melt Applicator PG II

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Storage and Shelf Life

Store below 120°F (49°C).

When stored at the recommended conditions, this product has a shelf life of 24 months from the date of manufacture.

Industry Specifications

UL 94 - VO

Trademarks

3M is a trademark of 3M.

Freon is a registered trademark of E.I. DuPont de Nemours Co.

References

1. 3m.com Product Page

Url: https://www.3m.com/3M/en_US/company-us/all-3m-products/~/3M-Hot-Melt-Adhesive-3748-VO?N=5002385+3293241784&rt=rud

2. Safety Data Sheet

Url: https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&msdsLocale=en_US&co=ptn&q=3748 VO

ISO Statement

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

Precautionary Information

Refer to Product Label and Material Safety Data Sheet for health and safety information before using this product. For additional health and safety information, call 1-800-364-3577 or (651) 737-6501.

Technical Information

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