Technical data sheet

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Manufacturer:	3M DEUTSCHLAND GMBH
Product group:	KLEBSTOFF
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3M™ HOT MELT ADHESIVE 3748 VO

Tewipack Uhl GmbH
Industriestraße 15
D-75382 Althengstett

Telephone:
+49(0)7051/9297-0
Fax:
+49(0)7051/9297-99

E-Mail:
info@tewipack.de
Website:
www.tewipack.de

Managing director:
Alexander Uhl,
Michael Uhl
HRB 330424
Amtsgericht
Stuttgart

Bank details:
Sparkasse
Pforzheim
Calw
BLZ 666 500
85
Konto 17 787

Commerzbank
Sindelfingen
BLZ 603 400 71
Konto 8 001 166

Vereinigte
Volksbank AG
Böblingen
BLZ 603 900 00
Konto 80 089
003

Postbank
Stuttgart
BLZ 600 100
70
Konto 146
294 708

English

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Technical Data Sheet

3M™ Self-Extinguishing Hot Melt Adhesive 3748 VO

Product Details

Regulatory Info/SDS

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

Attribute Name	Value
Color	Light Yellow [1]
Base Resin	Polyolefin

[1] Colors may vary from nearly white to yellow/amber. Adhesive performance is not affected by color variation.

Typical Physical Properties

Attribute Name	Temperature	Value
Specific Gravity		1.09
Ball & Ring Softening Point		152 °C (305 °F)
Weight Loss by TMA (In Air)	237 °C (459 °F)	1 % [1]
Weight Loss by TMA (In Air)	327 °C (621 °F)	5 % [1]
Weight Loss by TMA (In Air)	356 °C (672 °F)	10 % [1]
Viscosity	180 °C (356 °F)	8,500 cP
Viscosity	200 °C (392 °F)	5,000 cP
Viscosity	220 °C (428 °F)	3,300 cP

[1] Temperature of weight loss at 5°C/min

Typical Cured Characteristics

Temperature: 22 °C (72 °F)

Attribute Name	Test Method	Value
Shore D Hardness	ASTM D2240	26

Typical Performance Characteristics

180° Peel Adhesion

Temperature: 22 °C (72 °F)
Test Method: 3M C3168

Substrate	Value
Wire Mesh to Fir	416 oz/in [1]
Wire Mesh to FR-4	608 oz/in [1]
Wire Mesh to Polyethylene	432 oz/in [1]
Wire Mesh to Polypropylene	560 oz/in [1]

[1] 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 in/min.

Overlap Shear Strength

Temperature: 22 °C (72 °F)
Test Method: 3M C3096

Substrate	Value
FR-4	215 lb/in² [1]
Fir	275 lb/in² [1]
Polypropylene (PP)	250 lb/in² [1]
Polyethylene (PE)	220 lb/in² [1]

[1] 1in x 4in Douglas Fir specimens bonded with hot melt adhesive, 1in overlap and 13mil wire spacer to set bond line thickness. 24 hours at 70°F (22°C), 50% relative humidity dwell. Shear separation at 2in/min recording strength at failure.

Attribute Name	Test Method	Test Condition	Value
Two Pound Dead Load Heat Resistance	3M C3093		79 °C (175 °F) [1]
Thermal Shock Resistance	3M C3167	100°C (air) to -40°C (liquid)	Passes 5 cycles w/o cracking [2]

[1] 1in x 4in Douglas Fir specimens, 1in overlap shear. 24hr @ 70°F (22°C), 50%RH dwell. 2psi load at 100°F (49°C) for 30min. Bond line temp is raised every 30 minutes until failure. Heat resistance recorded is the last temp prior to bond failure.

[2] Potted Washer Olyphant test

Typical Environmental Performance

Solvent Resistance

Environmental Condition	Value
Immersed in Isopropyl Alcohol one hour	A [1]
Immersed in Acetone one hour	A [1]
Immersed In 1, 1, 1 - Trichloroethane one hour	B [1]
Immersed in Freon TF one hour	B [1]
Immersed in Freon TMC one hour	B [1]
Immersed in RMA Flux one hour	A [1]
Immersed in Isopropyl Alcohol 30 days	B [1]
Immersed in Acetone 30 days	B [1]
Immersed In 1, 1, 1 - Trichloroethane 30 days	C [1]
Immersed in Freon TF 30 days	C [1]
Immersed in Freon TMC 30 days	C [1]
Immersed in RMA Flux 30 days	B [1]

[1] A = No attack

B = Slight Surface Attack/Softness
C = Severe Attack/Breakup

Electrical and Thermal Properties

Attribute Name	Temperature	Test Condition	Value
Coefficient of Thermal Expansion		-100°C to -40°C	-34 x 10^{-6} m/m/°C [1]
Coefficient of Thermal Expansion		-20°C to 25°C	154.5 x 10^{-6} m/m/°C [1]
Thermal Conductivity	41 °C (107 °F)		4.58 x 10^-4 Cal/s/cm/°C (1.1 x 10^-1 (btu-ft)/(h-ft²-°F)) (1.92 x 10^-3 J/cm · s · °C) (19.2 W/m/K) [2]
Thermal Conductivity			6 x 10^{17} W/m/K

[1] CTE determined using TMA Analyzer using a heating rate of 10°C per minute. Second heat values given.
[2] On .020" samples

Attribute Name	Test Method	Temperature	Test Condition	Value
Dielectric Constant	ASTM D150	22 °C (72 °F)	100 Hz	2.3
Dielectric Constant	ASTM D150	22 °C (72 °F)	1 KHz	2.3
Dielectric Constant	ASTM D150	22 °C (72 °F)	10 KHz	2.3
Dielectric Constant	ASTM D150	22 °C (72 °F)	100 KHz	2.3
Dielectric Constant	ASTM D150	22 °C (72 °F)	1MHz	0.001
Dielectric Constant	ASTM D150	22 °C (72 °F)	100 MHz	2.3
Dissipation Factor	ASTM D150	22 °C (72 °F)	100 Hz	0.002
Dissipation Factor	ASTM D150	22 °C (72 °F)	1 KHz	0.001
Dissipation Factor	ASTM D150	22 °C (72 °F)	10 KHz	0.001
Dissipation Factor	ASTM D150	22 °C (72 °F)	100 KHz	0.001
Dissipation Factor	ASTM D150	22 °C (72 °F)	100 MHz	0.001
Dielectric Strength	ASTM D149			2.3 V/µm
Dielectric Strength	ASTM D149			1,400 V/mil [1]
Volume Resistivity	ASTM D257	22 °C (72 °F)		4.5 x 10^{17} Ω-cm

[1] 11 mil sample

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

Industry Specifications

UL 94 - V0

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.

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.

Information

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ISO Statement

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

3M
Industrial Adhesives and Tapes Division
3M Center, Building 225-3S-06
St. Paul, MN 55144-1000
800-362-3550