3M™ Thermally Conductive Adhesive Tape 8904

Product Description

3M™ Thermally Conductive Adhesive Tape (TCAT) 8904 are 0.20mm, 0.25mm, and 0.50mm thick pressure sensitive adhesive tapes filled with thermally conductive ceramic particles, and flame retardant fillers. This product is designed to have good converting ability, handing and re-workability through the introduction of a thin PET carrier. TCAT 8904 is designed with a soft acrylic polymer and multiple thickness options to allow excellent wet-out or conformability to many surfaces. The tape has good adhesion performance to many substrate types and has excellent dielectric performance. 3M 8904 is a hybrid TCAT that offers a greater thickness range than the 3M TCAT thermal tape 8820 (maximum 0.5mm thickness), and has thickness options similar to the 3M™ Acrylic Thermal Pads, such as the Acrylic Thermal Pad 5570, but with higher adhesion performance that allow additional design and assembly flexibility.

Product Uses

This product can be used for heat management in electronic devices and for general heat dissipation in devices. This product may also be used for bonding/joining parts in electronic products.

Key Features

- Good thermal conductivity (>1.5W/m-K)
- Excellent dielectric performance
- Low thermal impedance
- Good and reliable adhesion performance to Al and SS
- Vibration damping

Product Construction

Product	3M™ Thermally Conductive Adhesive Tape 8904
Adhesive Type	Soft Acrylic Adhesive
Tape Thickness	0.20mm / 0.25mm / 0.50mm
Tape Color	White (slightly grey dotted)
Filler Type	Ceramic Particle
Product Liner	75 µm PET Liner
Roll Length	Standard: 40m (0.20mm, 0.25mm & 0.50mm) Custom size can be supplied by request.

Application Ideas

- General Heat Sink Bonding
- IC Chip Packaging Heat Conduction
- Printed Circuit Board
- LED module/board bonding
- Flat Panel Display assembly (e.g. LCD and PDP devices)
- COF Chip Heat Conduction
- Mechanical fastening such as clamp, bracket, screw can be used in parallel with this thermal conductive tape.

Typical Physical Properties and Performance Characteristics

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

Product		**3M™ Thermally Conductive Tape 8904**		
ASTM D-3330		**Unit : gram/25.4mm width**		
90 Angle Peel Adhesion		0.20	0.25	0.50
Crosshead speed : 508mm/min				
SUS 304 test substrate				
15 min dwell at 23°C	Liner side	>1300	>1300	>1300
	Non-liner side	>1300	>1300	>1300
72 hr dwell at 70°C	Liner side	>2000	>2000	>2000
	Non-liner side	>2000	>2000	>2000
ASTM D-1002		**Unit : Kg/6.25cm²**		
Dynamic Shear	Initial Adhesion	>15		
Crosshead speed : 305mm/min	(SUS to SUS)			
Foam Density (gram/cm³)		1.60 (±0.10)		
Dielectric Strength (KV/mm)		15		
Flammability (UL94)		VO (QMFZ2.E239181)		
Thermal Conductivity(See Note**)		1.5 W/m-K		
Operating Temperature Range*	Long Term (Weeks-Months)	Up to 80°C		
3M Test Method	Short Term (Hours-Days)	Up to 90°C		
Product Series	**8904-02**	**8904-025**	**8904-05**	
Thermal Conductivity	>1.5 W/m-K	>1.5 W/m-K	>1.5 W/m-K	
Thermal Impedance	1.31°C-in²/W	1.35°C-in²/W	1.50°C-in²/W	
Thermal Impedance (metric)	8.49°C-cm²/W	8.74°C-cm²/W	9.70°C-cm²/W	

***Note:** The end use customer application, design & verification testing will determine the final in use effective temperature range based on each application's environmental conditions.

Note** 8904 Thermal Conductivity Test Methods:
1.5W/m-K in XY direction per Hot wire plane Test method (Test equipment : QTM-500)
1.5W/m-K in Z direction per Simple/Modified ASTM D5470 Type Method (Test equipment : T3ster DynTIM)

Application Techniques

- Bond strength is dependent upon the amount of adhesive to surface contact developed. Firm application pressure helps to develop better adhesive contact and improve bonding strength.

Application Techniques (continued)

- To obtain optimum adhesion, the bonding surfaces must be clean, dry and well unified. Typical surface cleaning solvents are isopropyl alcohol and water (rubbing alcohol) or heptane. **Note:** Be sure to follow manufacturer's safety precautions and directions for use when using solvents.
- Ideal tape application temperature range is 21°C to 38°C (70°F to 100°F). Initial tape application to surfaces at temperatures below 10°C (50°F) is not recommended because the adhesive becomes too firm to adhere readily. However, once properly applied, low temperature holding is generally satisfactory.

Storage and Shelf Life

Shelf life is 12 months from the date of manufacture when stored in original cartons at 21°C (70°F) and 50% relative humidity.

Regulatory

For regulatory information about this product, contact your 3M representative.

Technical Information

The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

Product Use

Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

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