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Technical Data | February 2018

3M™ Thermally Conductive Silicone Interface Pad 5516 Series

Product Description

3M™ Thermally Conductive Silicone Interface Pad 5516 Series is designed to provide a preferential heat transfer path between heat generating components and heat sinks, heat spreaders or other cooling devices. 3M pad 5516 series consists of a highly conformable and slightly tacky silicone elastomeric sheets filled with thermally conductive ceramic particles that provide enhanced thermal conductivity and excellent electrical insulation performance.

Key Features

- Good softness and conformability even to non-flat surfaces
- Very good thermal conductivity
- Good electrical insulation properties
- Compression relaxation properties reduces pressure to electric components
- Slight tack allows pre-assembly
- Good wettability for improved and lower thermal resistance

Product Construction/Material Description

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

3M™ Thermally Conductive Silicone Interface Pad 5516 Series	
Property	**Value**
Color	Gray
Base resin	Silicone
Thickness	0.5 – 2.0mm*
Primary filler type	Ceramic
Product liner	3M pads 5516, 5516S: PET liner 3M pad 5516BL: Base liner embo-patterned blue film for both faces

* Standard thickness range. Custom thickness options available up to 10mm. Contact your local 3M Technical Representative for more information.

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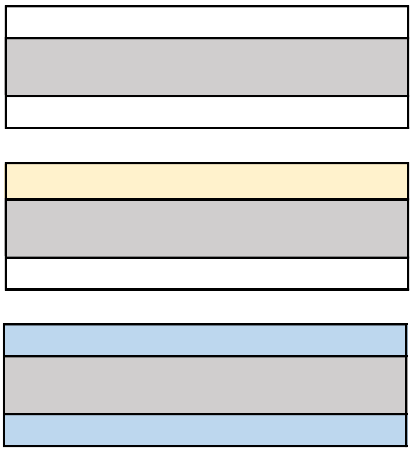

3M™ Thermally Conductive Silicone Interface Pad 5516 Series

Applications

- Integrated chip (IC) packaging heat conduction
- Heat sink interface
- COF chip heat conduction
- LED board thermal interface material (TIM)
- HD TV IC Chip
- General gap filling in electronic devices

Application Techniques

Note: Be sure to read and follow the manufacturers' precautions and directions when using solvents.

Substrate surfaces should be clean and dry prior to the thermal pad application to ensure best thermal performance. A clean surface can improve the thermal performance of an application.

- Isopropyl alcohol (isopropanol) applied with a lint-free wipe or swab should be adequate for removing surface contamination such as dust or fingerprints. Do not use "denatured alcohol" or glass cleaners, which often contain oily components. Allow the surface to dry for several minutes before applying the thermal pad. More aggressive solvents (such as acetone, methyl ethyl ketone (MEK) or toluene) may be required to remove heavier contamination (grease, machine oils, solder flux, etc.) but should be followed by a final isopropanol wipe as described above.
- Apply the thermal pad to one substrate at a modest angle with the use of a squeegee, rubber roller or finger pressure to help reduce the potential for air entrapment under the thermal pad during its application.
- Remove the release liner before application.
- Assemble the part by applying compression to the substrates to ensure a good wetting of the substrate surfaces with the thermal pads. Rigid substrates are more difficult to assemble without air entrapment as most rigid parts are not flat. Flexible substrates can be assembled to rigid or flexible parts with much less concern about air entrapment because one of the flexible substrate can conform to the other substrates during application.

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. Final product specifications and testing methods will be outlined in the products Certificate of Analysis (COA) that is provided once the product is approved by 3M for general commercialization and development work is completed.

3M™ Thermally Conductive Silicone Interface Pads 5516 Series			
Property		**Method[1]**	**Value**
Thermal Conductivity (W/m-K)		ASTM D5470	3.1 W/m-K
Density (g/cm^3, @ 25°C)		ASTM D6111	2.9
Operating Temperature Range	**Long Term (Weeks-Months)**	3M test method	-50°C to 130°C
	Short Term (Hours-Days)		-50°C to 180°C
Hardness Shore 00	**0.5, 1.0mm**	Modified ASTM D2240	55 ~ 65
	1.5mm ~		50 ~ 60
Dielectric Breakdown		Modified ASTM D149 (3M test method)	3.2KV/mm (5516S = 5.2 est.)
Volume Resistivity		ASTM D257	6.9 x 10^{14} Ohms

[1] Methods listed as ASTM are tested in accordance with the ASTM method noted

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Heat Resistance*

As tested on 3M™ Thermally Conductive Silicone Interface Pad 5516, 1.0 mm thickness				
Duration (hrs)	Initial	500	1000	3000
Thermal Conductivity (W/m-K)	2.8	2.8	2.8	2.8
Hardness (Shore 00)	49	50	50	50
Appearance	-	No effect	No effect	No effect

*Note 1: Aged by dwelling at 130°C in high temperature chamber.
*Note 2: Thermal Conductivity for aging tested using the QTM-500 Hot Wire Test Method. Values can differ from an ASTM-D5470 test method due to test method differences.
*Note 3: The end use customer application, design and verification testing will determine the final in use effective temperature range based on each application's environmental conditions.

Storage and Shelf Life

The shelf life of 3M™ Thermally Conductive Silicone Interface Pads 5516 Series is 24 months from the date of manufacture when stored in the original packaging materials and stored at 21°C (70°F) and 50% relative humidity.

Certificate of Analysis (COA)

The 3M Certificate of Analysis (COA) for this product is established when the product is commercially available from 3M. The commercially available product will have a COA specification established. The COA contains the 3M specifications and test methods for the products performance limits that the product will be supplied against. The 3M product is supplied to 3M COA test specifications and the COA test methods. Contact your local 3M representative for this product's COA.

This technical data sheet may contain preliminary data and may not match the COA specification limits and/or test methods that may be used for COA purposes. Final product specifications and testing methods will be outlined in the products Certificate of Analysis (COA) that is shipped with the commercialized product.

3M™ Thermally Conductive Silicone Interface Pad 5516 Series

Safety Data Sheet: Consult Safety Data Sheet before use.

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.

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