

3M™ Thermally Conductive Acrylic Interface Pad 5590H

Technical Data Sheet

Description

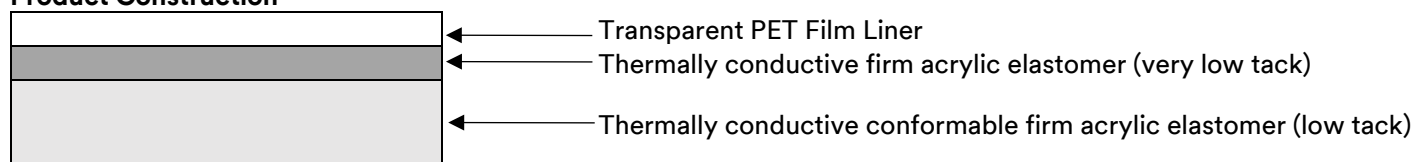
3M™ Thermally Conductive Acrylic Interface Pad 5590H is designed to provide a preferential heat transfer path from heat generating components to a cooling device (e.g., aluminum plate or heat sink.) 3M Thermally Conductive Acrylic Interface Pad 5590H consists of a conformable slightly tacky acrylic elastomer sheet with a thermally conductive ceramic filler. 3M Thermally Conductive Acrylic Interface Pad 5590H typical applications include: battery cooling, power electronics, and HMI displays.

This product provides the following key features:

- UL94 V-0 listed
- Does not contain intentionally added silicone, so there is not siloxane VOC or oil bleeding, which are associated with silicone products
- Conformable even for non-flat surfaces
- Good conformability to fill gaps for excellent thermal conductivity
- Good electrical insulation properties
- Soft, compliant material allows for pressure relaxation, helping to reduce high pressure zones on components
- Incorporates a thin acrylic layer for easy handling during pre-assembly and die-cutting



Product Construction



Physical Properties

	Method	3M Thermally Conductive Acrylic Interface Pad 5590H Value
Color	--	Light gray adhesive and core; White liner
PAD Thickness (mm)	3M method	0.5 ± 0.10 mm
		1.0 ± 0.12 mm
		1.2 ± 0.12 mm
		1.5 ± 0.15 mm
		2.0 ± 0.20 mm
PET Liner Thickness (mm)	3M method	0.050 mm
Thermal Conductivity (W/m-K)	ASTM D5470	2.08 (Min.1.65)*
Flammability	UL94 UL registration: file no. E176845	V-0
Density (g/cm ³ , @ 25°C)	3M method	2.14 (2.03-2.25)*
Hardness Shore00	ASTM D2240	70 (53-87)*
Volume Resistivity (Ω-cm)	ASTM D257	5.5 E+11 ohm-cm (Min. 1.0 E+10 ohm-cm)*
Breakdown Voltage (kV)	ASTM D149	19.1 (Min. 16.0)*

* Tests conducted with 1.0 mm thick product

Performance Properties

Typical performance of 3M Thermally Conductive Acrylic Interface Pad 5590H-10 is shown below. These values are for reference only and should not be used for specification purposes.

3M understands that development of automotive applications is typically driven by specification requirements and performance. Each OEM has their own unique criteria and 3M continues to develop products to meet those demands. Please contact your 3M application engineer for support and to obtain specific test data.

Heat Resistance: 1.0 mm thick product aged at 110°C in high temperature chamber		
Duration (hrs)	Initial	1000
Hardness Shore00	74	83
Thermal Conductivity	2.13	2.23

Shelf Life

The shelf life of 3M™ Thermally Conductive Acrylic Interface Pad 5590H is 24 months from date of manufacture when stored in the original packaging materials and store at 23°C and 50% relative humidity.

Regulatory Information

Please refer to the product label and Safety Data Sheet (SDS) for health and safety information before using. Observe proper handling precautions as outlined in the SDS, which is available on request or at www.3M.com/msds.

Contact Information

The information provided in this technical document is intended as a guide for this product. For more information or help in selecting a 3M product for an application, please contact your 3M application engineering representative or [connect with a 3M expert](#).

Intended Use: These products are intended for use within a high voltage lithium-ion battery pack and power electronics to help maintain temperature uniformity of cells and electrical components in automotive, off-highway, industrial and marine applications. Since there are many factors that can affect a product's use, the customer remains responsible for determining whether the 3M product is suitable and appropriate for the customer's specific application and system, including customer conducting an appropriate risk assessment and evaluating the 3M product in customer's application and system. **Restricted Use:** 3M advises against the use of this 3M product in any application other than the stated intended use(s), since other applications have not been evaluated by 3M and may result in an unsafe or unintended condition. **Technical Information:** Technical information, guidance, and other statements provided by 3M are based upon records, tests, or experience that 3M believes to be reliable, but the accuracy, completeness, and representative nature of such information is not guaranteed. Such information is intended for people with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license to any intellectual property rights is granted or implied with respect to this technical information. **Product Selection and 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. Customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer's application, including conducting a workplace hazard assessment, reviewing all applicable regulations and standards, and reviewing the product label and use instructions. Failure to properly evaluate, select, and use a 3M product in accordance with instructions or to meet all applicable safety regulations may result in injury, sickness, death, and/or harm to property. **Warranty, Limited Remedy, and Disclaimer:** Unless a different warranty is specifically stated on the applicable 3M product packaging or product literature (in which case such warranty governs), 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY OR CONDITION OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ARISING OUT OF A COURSE OF DEALING, CUSTOM, OR USAGE OF TRADE. If a 3M product does not conform to this warranty, the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price. **Limitation of Liability:** Except for the limited remedy stated above, and except to the extent prohibited by law, 3M will not be liable for any loss or damage arising from or related to the 3M product, whether direct, indirect, special, incidental, or consequential (including, but not limited to, lost profits or business opportunity), regardless of the legal or equitable theory asserted, including, but not limited to, warranty, contract, negligence, or strict liability.



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