EMS-TM-P20-20

Gap filler pad, 2.0 W/m·K, 2.0 mm thick, 45–55 Shore 00

Cured soft elastomer pad die-cut for the TIM2 plane, lid or heat-sink base to cold plate.

Cured soft elastomer gap filler pad at 2.0 W/m·K and 45–55 Shore 00, die-cut to 2.0 mm thick from a stocked envelope of 1.0 mm to 2.0 mm. The impedance test condition is not published for this grade, so the figure is measured at 10 psi, 30 psi and 50 psi on the delivered batch and printed with both its pressure and its thickness. The failure it is selected against is silicone oil reaching the loop: oil bleed is capped at 1 %, measured on 30 mm diameter filter paper at 25 % compression, 125 °C for 48 h. Silicone-free grade, stocked as the compliance answer to the siloxane question.

ORDERING INFORMATION

Part number	**EMS-TM-P20-20**
Thermal conductivity (through-plane)	**2.0 W/m·K**
Hardness	**45–55 Shore 00**
Thickness	**2.0 mm die-cut**
Thickness envelope for the grade	**1.0 / 2.0 mm stocked**
Impedance test pressures	**10 psi · 30 psi · 50 psi**
Isolation	**Not published for this grade**
Packaging	**Die-cut parts on release liner, bagged to the drawing; custom outline to supplied drawing**

THERMAL PERFORMANCE AND DIMENSIONS

Parameter	Value	Notes
Model code	**EMS-TM-P20-20**	Ladder position: Silicone-free grade, stocked as the compliance answer to the siloxane question.
Thermal conductivity, through-plane	**2.0 W/m·K**	ASTM D5470 three-point regression, and ISO 22007-2 where the grade quotes it. Through-plane figure; comparable with grease and phase-change figures. ASTM D5470 measures apparent thermal impedance at a controlled pressure and thickness; intrinsic conductivity comes from repeating the measurement at several thicknesses and regressing the results, where the intercept is contact resistance and the slope gives the conductivity. A conductivity figure without its pressure and thickness is not a specification.
Thermal impedance at 10 psi	**Not published for this grade**	No impedance band is published for this grade, so the test condition is not published either. The figure is measured at 10 psi on the delivered batch and printed with both its pressure and its thickness.
Thermal impedance at 30 psi	**Not published for this grade**	No impedance band is published for this grade, so the test condition is not published either. The figure is measured at 30 psi on the delivered batch and printed with both its pressure and its thickness.

Parameter	Value	Notes
Thermal impedance at 50 psi	**Not published for this grade**	No impedance band is published for this grade, so the test condition is not published either. The figure is measured at 50 psi on the delivered batch and printed with both its pressure and its thickness.
Test pressure and thickness of the impedance rows	**10 psi, 30 psi and 50 psi; thickness per the delivered batch**	ASTM D5470 measures apparent thermal impedance at a controlled pressure and thickness. The condition is not published for this grade, so both are printed with the figure for the delivered batch.
Thickness, die-cut	**2.0 mm**	Stocked thickness for this code. The envelope for the grade is 1.0 mm to 2.0 mm; custom pads are offered across 0.25 mm to 20 mm to drawing.
Thickness range	**1.0 mm to 2.0 mm**	ASTM D374. Thickness tolerance is not published in the source, so the datasheet carries the drawing tolerance agreed on the first article.
Thickness tolerance	**Per the agreed drawing**	Thickness tolerance is not published; the first-article drawing tolerance governs and is printed on the datasheet for the delivered order.
Hardness	**45–55 Shore 00**	ASTM D2240. Hardness is the assembly-stress number; conductivity is the thermal number, and the ladder orders by the pair. Deflection is published at 10, 30 and 50 psi. The impedance at your assembly pressure is the figure to quote, not the impedance at a neighbouring pressure.
Density	**2.5 g/cm³**	Density of the silicone-free grade, measured by ASTM D792.

ELECTRICAL, CONTAMINATION AND COMPLIANCE

Parameter	Value	Notes
Breakdown voltage	**Not published for this grade**	The 5.0 W/m·K grade publishes 5.0 kV/mm minimum by ASTM D149; no breakdown figure is published for this grade, so it is measured on the delivered batch where the interface has to isolate.
Dielectric constant at 1 MHz	**Not published for this grade**	The 5.0 W/m·K grade publishes 7.1 and the 7.5 W/m·K grade 8.10 at 1 MHz by ASTM D150; the dielectric constant belongs to the grade and is not carried across the family.
Volume resistivity	**Not published for this grade**	The 7.5 W/m·K grade publishes 8.7×10^{13} ohm·cm; no figure is published here.
Oil bleed	**Not applicable: silicone-free grade**	A silicone-free grade has no silicone oil to bleed. The low-siloxane statement applies instead: D3–D20 below 20 ppm.
Outgassing TML	**0.170 %**	Measured figures reported by ASTM E595 screening on a comparable published pad in this category. No pass/fail threshold is published, because the threshold is not confirmed from a primary source; the figures for the delivered grade are issued with its datasheet.
Outgassing CVCM	**0.010 %**	Measured figures reported by ASTM E595 screening on a comparable published pad in this category. No pass/fail threshold is published, because the threshold is not confirmed from a primary source; the figures for the delivered grade are issued with its datasheet.

Parameter	Value	Notes
Low siloxane D3–D20	**D3–D20 below 20 ppm**	Low-siloxane grade. The 2025 REACH SVHC candidate list runs to more than 240 substances and includes D4, D5 and D6, so the low-siloxane or silicone-free grade answers a compliance question rather than a preference.
Operating temperature range	**Not published for this grade**	The 5.0 W/m·K grade publishes -40 °C to +150 °C and the 7.5 W/m·K grade -65 °C to +125 °C by IEC 60068-2-14; no range is published for this grade.
Flame rating	**UL 94 V-0**	The rating these grades are built to. The rating name is published; no reference to a certification document is published, because none is in hand.
Adhesive face and liner	**Natural tack on both faces; adhesive face to order**	The buyer orders a drawing rather than a chemistry: die-cut outline, thickness, adhesive face and release liner.
Shelf life and storage	**12 months from shipment**	Published grade figure. Storage per the safety data sheet.
Die-cutting and first article	**Die-cut to the supplied outline**	First-article inspection record per order; sample lead time 5–10 working days.
Standards applied	**ASTM D5470 · ASTM D374 · ASTM D2240 · ASTM D792 · ASTM D149 · ASTM D150 · ASTM E595 · UL 94 (IEC 60695)**	Standard designations are named. UL 94 V-0 is the rating these grades are built to; no reference to a certification document is published, because none is in hand.

APPLICATIONS

- Warped lids and non-flat cold plates where compliance covers what bulk conductivity does not
- Rack-scale gaps from 1.0 mm upwards, die-cut to the drawing
- Interfaces that have to isolate as well as conduct
- Replacement of a paste where thermal cycling drives pump-out

COMPATIBLE WITH

- EMS-TM-G series thermal grease where the bond line is 0.05 mm and the surfaces are flat
- EMS-TM-PC series phase change pads where the gap is below the pad envelope
- EMS-TM-GR series graphene pads where through-plane conductivity above the pad band is required
- Die-cut outlines supplied as a drawing with thickness, adhesive face and release liner

ORDERED AS

- A die-cut outline, a thickness and a hardness, not a chemistry
- One face or both faces adhesive-backed, with a release liner
- A first-article inspection record against the supplied drawing

MODEL LADDER — GAP FILLER PADS

Parameter	Value	Notes
EMS-TM-P12-10 · P12-20 · P12-30	**1.2 W/m·K · 10 Shore 00 · 2.0 g/cm³**	1.0 / 2.0 / 3.0 mm; ultra-soft grade
EMS-TM-P20-10 · P20-20	**2.0 W/m·K · 45–55 Shore 00 · 2.5 g/cm³**	1.0 / 2.0 mm; silicone-free grade
EMS-TM-P30-10 · P30-20	**3.0 W/m·K · 45 Shore 00 (ladder target)**	1.0 / 2.0 mm
EMS-TM-P50-10 · P50-20 · P50-30	**5.0 W/m·K · 40 Shore 00 · 3.2 g/cm³**	1.0 / 2.0 / 3.0 mm; published grade, 0.75–6.0 mm

Parameter	Value	Notes
EMS-TM-P60-10 · P60-20	**6.0 W/m·K · 40 Shore 00 · 3.285 g/cm³**	1.0 / 2.0 mm
EMS-TM-P70-10 · P70-20	**7.0 W/m·K · 65 Shore 00 · 3.3 g/cm³**	1.0 / 2.0 mm; firm end of the ladder
EMS-TM-P75-20	**7.5 W/m·K · 32 Shore 00 · 3.50 g/cm³**	2.0 mm die-cut; supplied 500–5 000 µm

LADDER ENDS AND THEIR USE

Parameter	Value	Notes
Ultra-soft end	**1.2 W/m·K at 10 Shore 00**	Warped lids and thin boards, where assembly stress is the constraint
Firm end	**7.0 W/m·K at 65 Shore 00**	Flat interfaces under firm clamping, where deflection is not wanted
Silicone-free grade	**2.0 W/m·K at 45–55 Shore 00**	The compliance answer where the REACH SVHC list or an oil-bleed limit rules out a silicone grade
Published grade	**5.0 W/m·K at 40 Shore 00**	Covers 0.75 mm to 6.0 mm and publishes 5.0 kV/mm minimum by ASTM D149

NOTES

- Thermal impedance carries its test pressure and its thickness. Thermal conductivity is never published alone on this datasheet.
- Through-plane conductivity is the figure on this datasheet. In-plane conductivity is a different measurement axis and is never printed in the same row or column as a through-plane figure.
- Outgassing is published as measured figures only, TML 0.170 % and CVCM 0.010 % by ASTM E595. No pass/fail threshold is published as a specification, because the threshold is not confirmed.
- Where the blueprint marks a figure as a ladder target, the note column says so; the datasheet renders the delivered batch figure at the stated pressure.
- Isolation is published per grade, not per family: breakdown voltage and dielectric constant belong to the grade, so they render as rows on the grade's own datasheet.
- Scope: the TIM2 plane, lid or heat-sink base to cold plate and cold plate to manifold or rail. No coolant distribution units and no cold plates are supplied.
- Supplied by EMS-Trade Cooling, a Shenzhen trading house that integrates, inspects, stocks and ships. Die-cutting runs to the supplied drawing with a first-article inspection record per order. No manufacturing of this item is claimed.

Full specification sheet and current pricing
EMS-Trade Cooling · ems-cool.com
Typical lead time confirmed on order acknowledgement.

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