

Pure Interface Material - Phase Change Wax / Ap-Bar/PEN, Ip-Bar/PEN

Phase change Wax

Ap-Bar/PEN and Ip-Bar/PEN (with graphite fiber) are thermally conductive phase change waxes (silicone and solvent free). The **PC-Fillup-Stick** is the efficient and straight forward solution when it comes to the manual, fast and clean attaching of interface to the thermal interfaces of the semiconductor and heat sink. In the so-called **Fill-up process**, the stick is pulled over the two surfaces with a little pressure. The unevenness and roughness on the surface then provide sufficient abrasion. The film thus applied ensures a simple and clean connection of the two surfaces to be contacted. During warm-up the phase change wax (Ap-Bar 60°C, Ip-Bar 51°C) goes in soft stage and starts to expand up 20% filling up surface-specific roughnesses and expels any air from micropores and pockets across whole touch pad even at low pressure. The thickness of the soft material layer is minimal under the pressure. The thermal resistance is minimized and remains very low even at temperatures below the phase change point. The process is repeated at higher temperatures so that it is able to equalize thermal cycling of materials while maintaining a very low Rth .



PROPERTIES

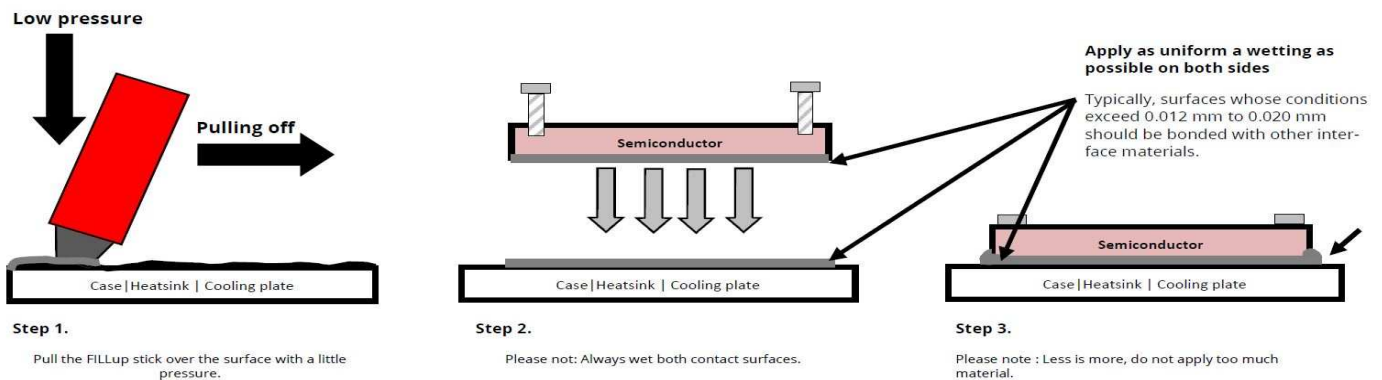
Perfect thermal and mechanical contact, Silicone and solvent free, cleaning with isopropyl, Stable - without migrating, desiccation and evaporation. The **PC - FillUp Sticks** are ideal for small production lots as well as for smaller surfaces, service use and using in develop. centers.

APPLICATION EXAMPLES

The PC-FillUp-Stick is ideal for use on a small surface with moderate surface quality or slight roughness of the contact surfaces, for example, often in extrusion profiles and other heat sinks-which are used for connection to CPUs, IGBT/MOS in TO-packages, as well as LEDs, microprocessors or other discrete parts of heat generation is the case.

Property	Unit	Ap-BAR-19gr	Ap-PEN-05gr	Ip-BAR-19gr	Ip-PEN-05gr
Phase change Material		Silicone and solvent free paraffine compound		Silicone and solvent free paraffine compound with graphite fiber	
Colour		White	White	Black	Black
Container / Weight	gramm	Stick-Bar /19 gramms	PEN 5 gramms	Stick-Bar 19 gramms	PEN 5 gramms
Thermal					
Thermal Resistance @ 100 kPa	°C-inch ² /W	0,038	0,038	0,017	0,017
Thermal Resistance @ 300 kPa	°C-inch ² /W	0,028	0,028	0,010	0,010
Thermal Resistance @ 600 kPa	°C-inch ² /W	0,021	0,021	0,008	0,008
Thermal Conductivity	W/m*K	0,47	0,47	3,0	3,0
Phase Change Temperature	°C	cca 60/ softens 40°C	cca 60/ softens 40°C	cca 51 / softens from 40°C	cca 51 / softens from 40°C
Storage Temperature	°C	up 30	up 30	up 30	up 30
Operating Temperature	°C	from -60 °C to 140 °C	from -60 °C to 140 °C	from -60 °C to 140 °C	from -60 °C to 140 °C

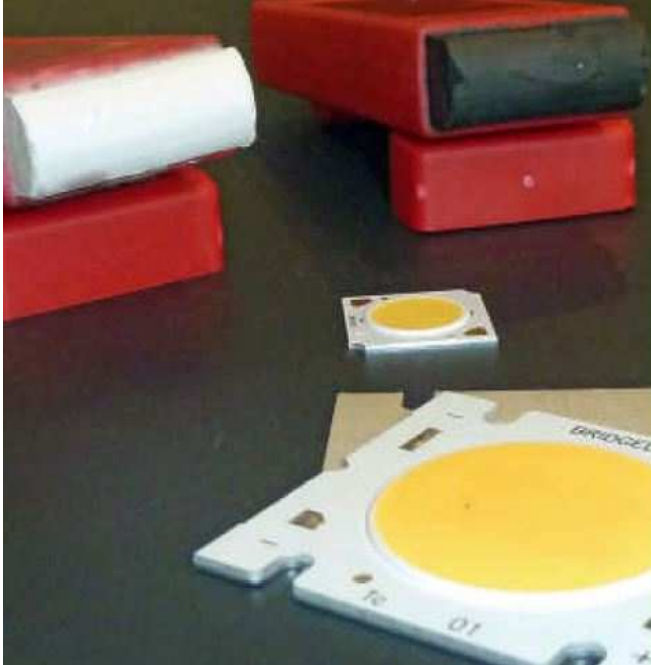
Test Methods: 'ASTM D 5470. All data without warranty and subject to change. Please contact us for further data and information.



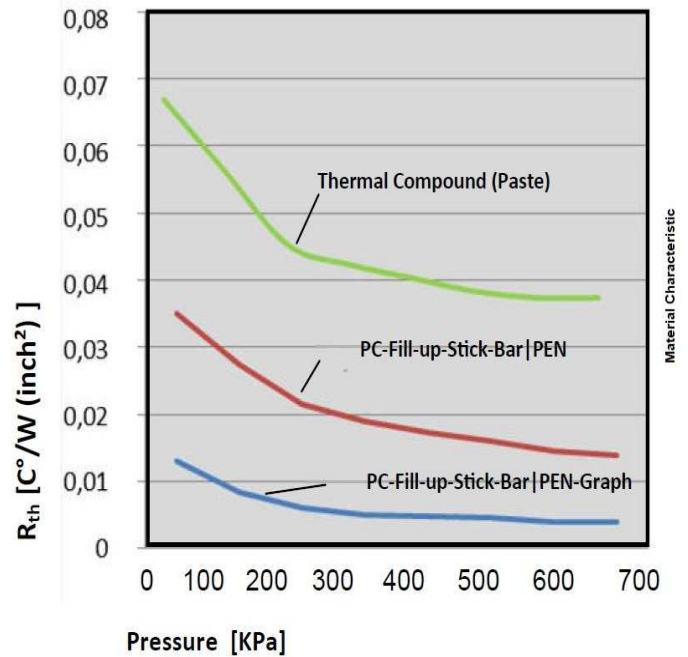
The Pure Compound - PC-fill-up stick simple handling - remove protective cap - apply PCM - done; a really cool solution available as Stick-Pen or Bar

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Thermal impedance versus contact pressure



Pressure [kPa]	0	100	200	300	400	500	600	700
Thermal compound (Paste)	0,068	0,057	0,046	0,043	0,041	0,039	0,038	0,038
PC-Fill-up-Stick-Bar PEN	0,044	0,038	0,031	0,028	0,025	0,023	0,021	0,020
PC-Fill-up-Stick-Bar PEN - Graph	0,026	0,017	0,012	0,010	0,010	0,009	0,008	0,008

Thermal resistance Rth / °C-inch²/W

Some further properties:

- Minimisation of thermal contact resistance by volumetric expansion by approx. 15-20% and active wetting of the contact surfaces.
- Solid silicone-free thermal conductive substance – dry when touched
- No curing and bleeding
- Fast and practical application by block-like fill-up stick and dispenser-like pen
- Very productive
- Interchangeability of the material without surface treatment
- Cleaning by Isopropyl alcohol
- Fast, clean and process-safe pre-assembly CT PC-fill-up stick simple handling - remove

