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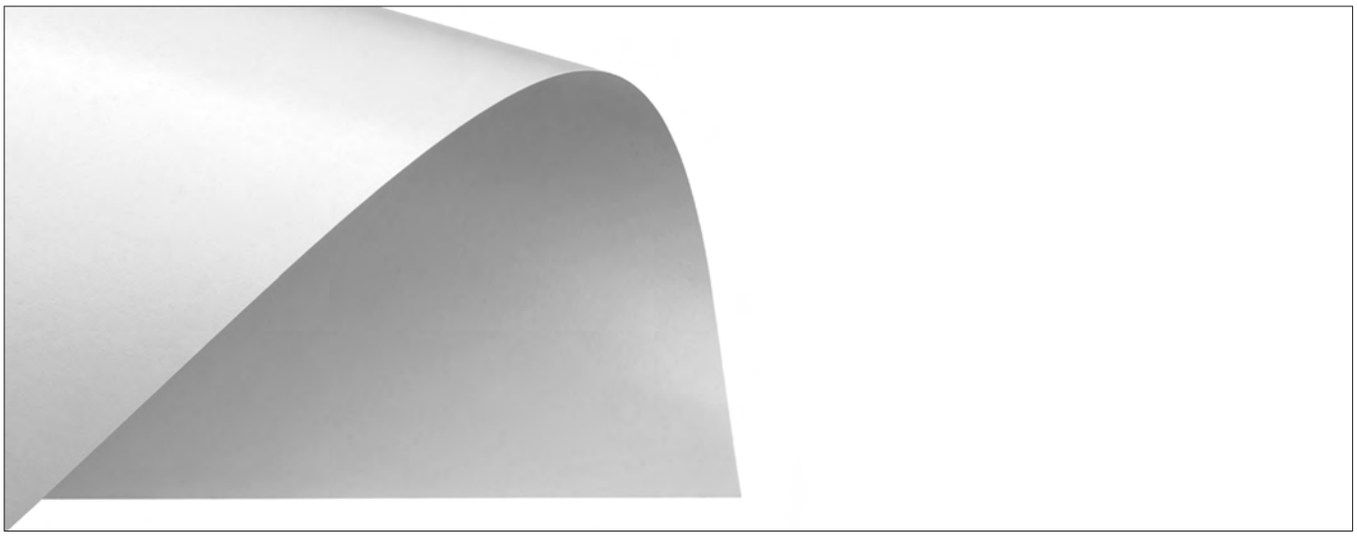
Phase Change thermal interface material



- strapless (free standing film) changing condition thermal conductive material as a foil
- material with phase changing temperature at 48 °C or 52 °C
- best thermal conductivity, above the phase change temperature the material flows in all gaps of the impinged device and heatsink
- thixotropic, therefore no migration of the material away from the moistened surface
- no influence on the thermal conductivity due to thermal cycles
- only low contact pressure necessary, as it is no elastomer and therefore ideally suitable for clamp mounting of the devices
- not electrically conductive, but no insulator
- self-adhesive properties, also suitable for large surfaces
- no toxic ingredients
- customised cuts upon request
- with double-sided protective film

art. no.	material thickness [mm]
FSF 30 P	0.120 ±0.025
FSF 52 P	0.127 ±0.025
FSF 20 P	0.200 ±0.025

	FSF 30 P	**FSF 52 P**	**FSF 20 P**
colour	grey	white	
density	2.4 g/cm³	2 g/cm³	2.9 g/cm³
phase change temperature	50 °C	52 °C	48 °C
thermal conductivity	3 W/m·K	0.9 W/m·K	2 W/m·K
thermal resistance (1 in², TO 3) at contact pressure of	0.1 K/W 0.031 N/mm²	0.03 K/W 0.031 N/mm²	0.08 K/W 0.031 N/mm²
temperature range	≤+150°C	≤+200°C	≤+150°C
adhesive holding force	0.6 N/mm²	0.35 N/mm²	0.6 N/mm²
dielectric constant	5.2 [1 kHz] / 4.8 [1 MHz]	3.8 [1 kHz] 3.4 [1 MHz]	4.8 [1 kHz] / 4.4 [1 MHz]
class of inflammability	UL 94 V-0		
type of delivery	plates, usable area 400x300mm/ other dimensions upon request	plates, usable area 343x330mm/ other dimensions upon request	plates, usable area 400x300mm/ other dimensions upon request

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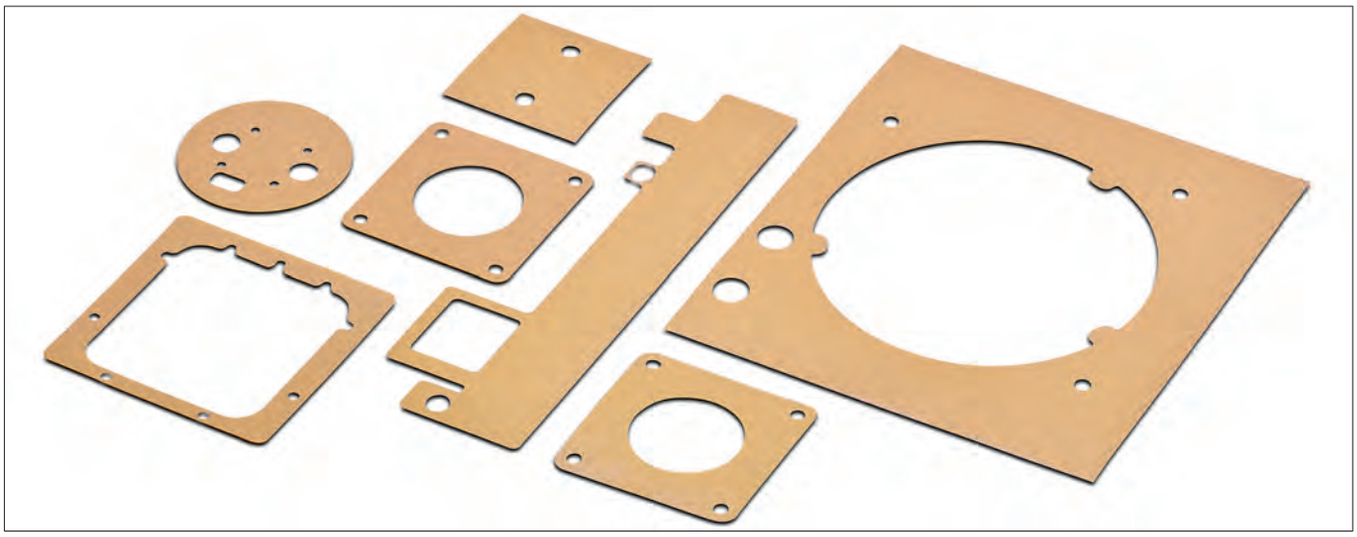

- phase change material on a polyimide basis
- very good thermal properties
- one-sided adhesive layer eases the mounting
- particularly suitable for the application of spring clips
- cuts and contours upon customised drawing specifications

art. no.	material thickness [mm]
FSF 15 P 011	0.114
FSF 15 P 012	0.127
FSF 15 P 014	0.140

	FSF 15 P
version	electrically insulating phase change material with polyimide reinforcement and one-sided adhesive layer
colour	gold
phase change temperature	52 °C
thermal conductivity	1.5 W/m·K
temperature range	-40°C... +150°C
elongation	40 %
volume resistance	10^{12} Ω·m
dielectric constant	4.5 [1 kHz]
tear strength	7,000 psi
dielectric strength	5 kV
class of inflammability	UL 94 V-0
type of delivery	rolled goods, roll width 266mm/ cuttings on customer's requirement

Thermal resistances vs. contact pressure / surface TO 220					
pressure [psi]	10	25	50	100	200
thermal resistance FSF 15 P 011 [K/W]	1.20	1.15	1.11	1.06	1.00
thermal resistance FSF 15 P 012 [K/W]	1.47	1.41	1.37	1.33	1.29
thermal resistance FSF 15 P 014 [K/W]	1.59	1.48	1.43	1.38	1.35
thermal impedance FSF 15 P 011 [K-cm²/W]	1.31	1.25	1.19	1.13	1.06
thermal impedance FSF 15 P 012 [K-cm²/W]	1.44	1.38	1.31	1.25	1.19
thermal impedance FSF 15 P 014 [K-cm²/W]	1.75	1.69	1.63	1.56	1.50

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Phase Change thermal interface material

- phase change material on a polyimide basis
- very good thermal properties
- easy handling and high dielectric strength
- particularly suitable for the application of spring clips
- cuts and contours upon customised drawing specifications

art. no.	material thickness [mm]
FSF 16 P 010	0.102
FSF 16 P 011	0.114
FSF 16 P 012	0.127

	FSF 16 P
version	electrically insulating phase change material with polyimide reinforcement
colour	green
phase change temperature	55 °C
thermal conductivity	1.6 W/m·K
temperature range	-40°C... +150°C
elongation	40 %
volume resistance	10^{12} Ω·m
dielectric constant	4.5 [1 kHz]
tear strength	7,000 psi
dielectric strength	5 kV
class of inflammability	UL 94 V-0
type of delivery	plates, usable area 300x275mm/ other dimensions upon request

Thermal resistances vs. contact pressure					
pressure [psi]	10	25	50	100	200
thermal resistance FSF 16 P 010 [K/W]	0.95	0.94	0.92	0.91	0.90
thermal resistance FSF 16 P 011 [K/W]	1.19	1.17	1.16	1.14	1.12
thermal resistance FSF 16 P 012 [K/W]	1.38	1.37	1.35	1.33	1.32
thermal impedance FSF 16 P 010 [K-cm²/W]	0.81	0.81	0.75	0.75	0.75
thermal impedance FSF 16 P 011 [K-cm²/W]	1.06	1.00	1.00	1.00	0.93
thermal impedance FSF 16 P 012 [K-cm²/W]	1.18	1.18	1.18	1.12	1.12