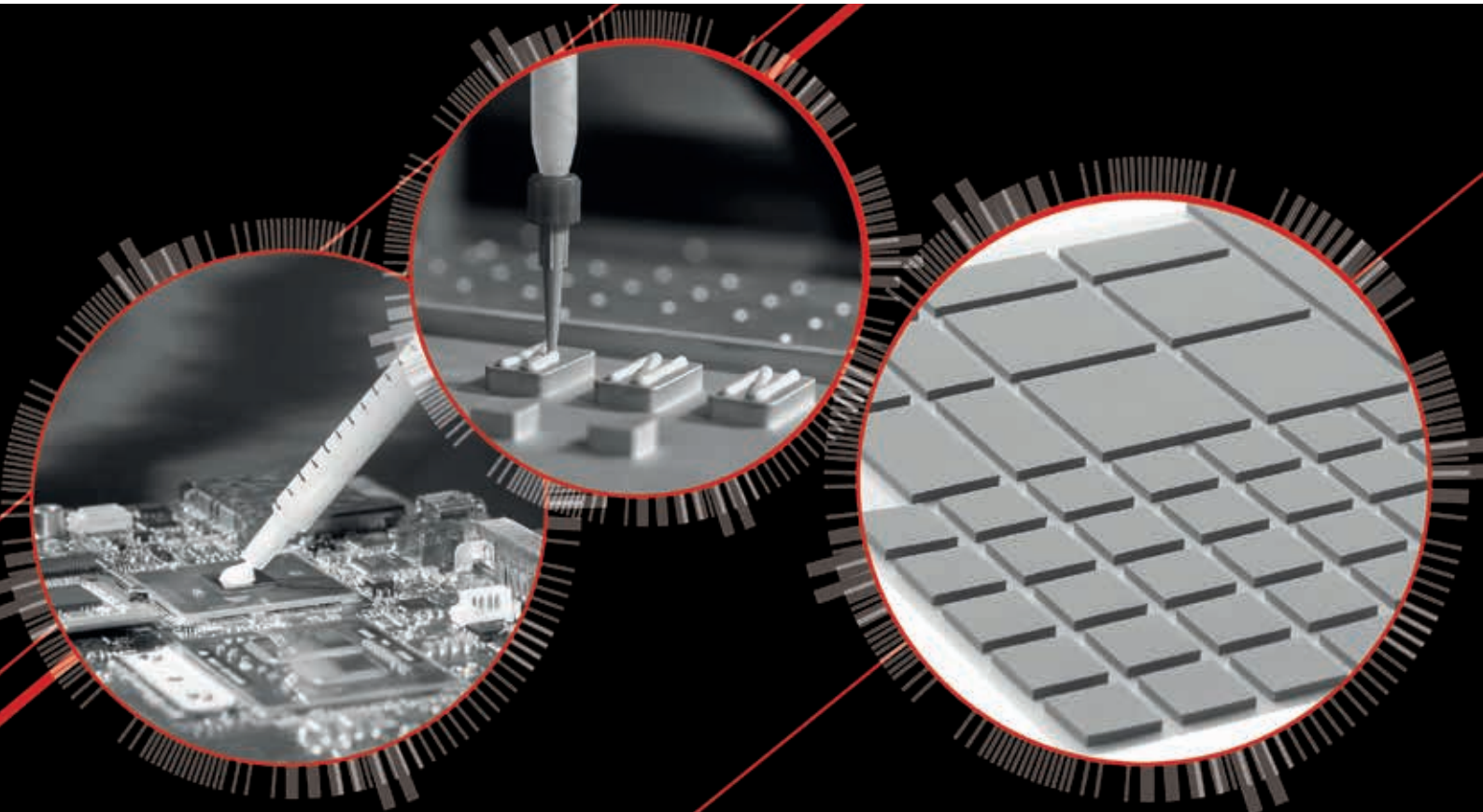




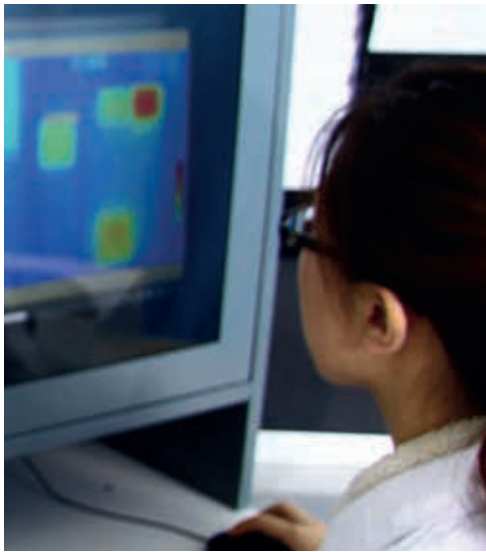
Compatherm® Product Portfolio
Dec 2021

Experience and Innovation





Nolato has a long successful history of driving innovation and developing materials, processes and equipment for silicone based applications.



Thermal Interface Materials (TIM)

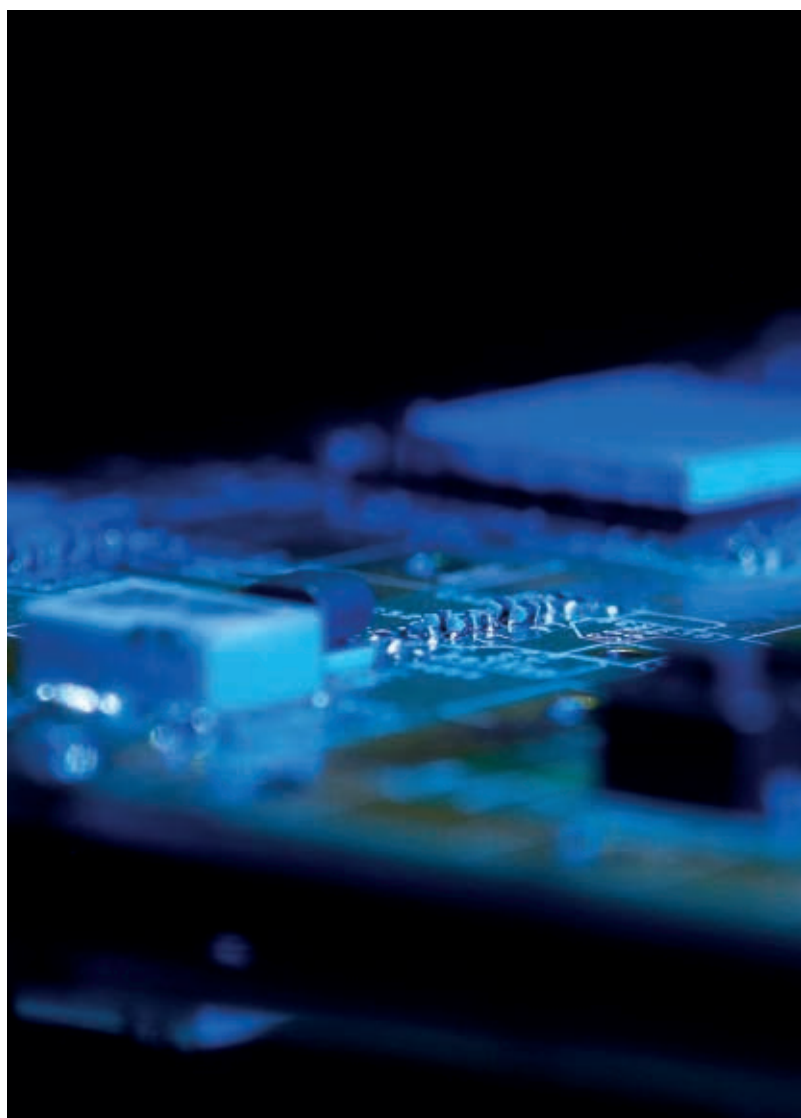
Compatherm, Nolato's range of thermally conductive materials, is used to facilitate the transfer of heat from hot components, e.g. on a PCB, to heat sinks and cold plates. The purpose of these materials is to displace the pockets of insulating air that form in the irregularities between surfaces, and thereby reduce the thermal resistance.

Benefits of Compatherm® Pad

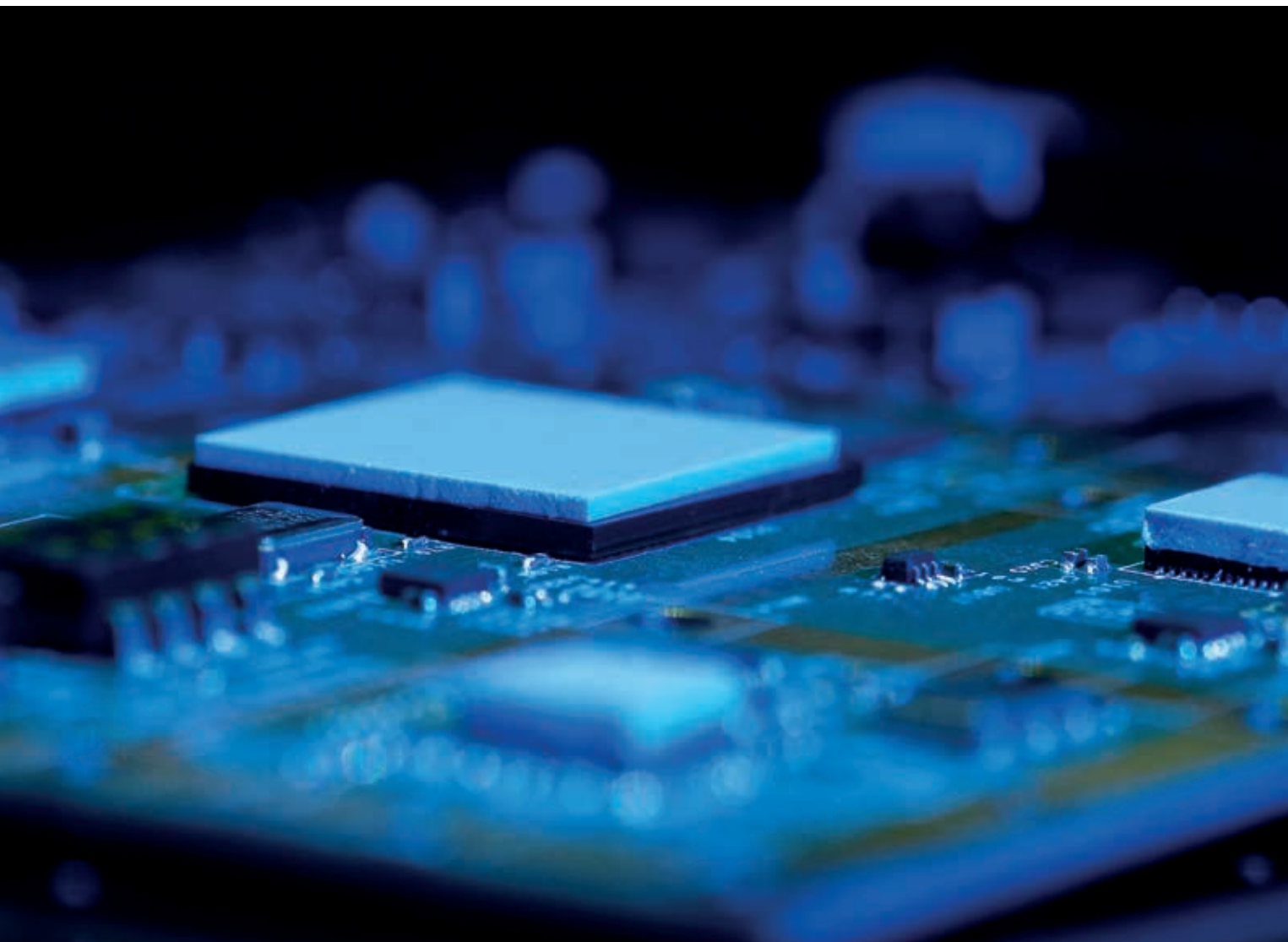
- ▶ Excellent thermal properties
- ▶ Ultra-softness for low compression forces
- ▶ Highly conformable
- ▶ Naturally tacky surfaces
- ▶ Comprehensive range of standard materials
- ▶ Customisation available

Customised solutions

- ▶ De-tackification coating
- ▶ Thermal resistance vs. pressure
- ▶ Deflection vs. pressure
- ▶ Custom test procedures
- ▶ Custom raw material sheet format
- ▶ Fibreglass reinforcement
- ▶ Insulator carrier
- ▶ Other mechanical and/or thermal properties



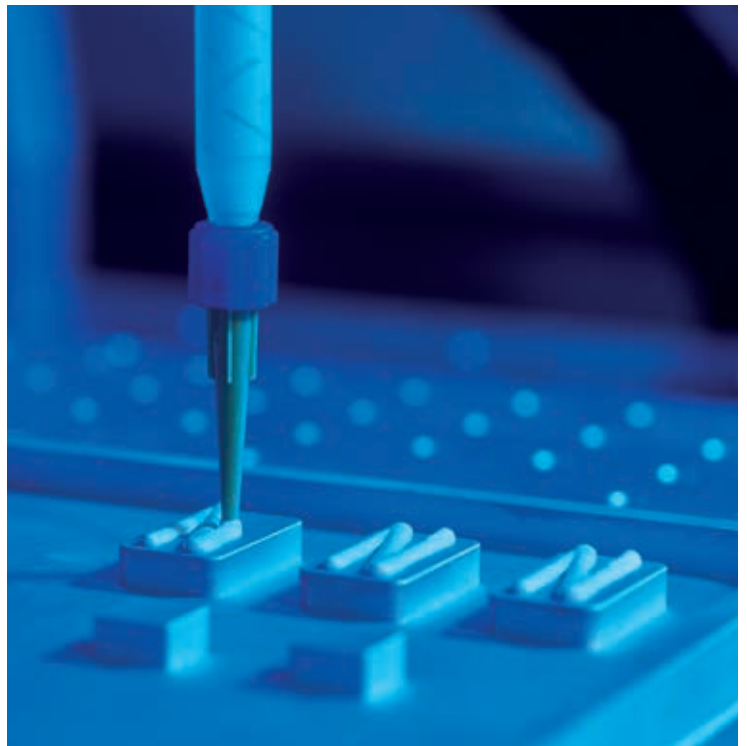
Compatherm® Pad	Test Standard	Unit	9410	9411	9420	9421	9422	9423	9430	9431	9432
Base matrix			Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone
Thermally conductive filler			Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic
Colour	Visual		Pink	Lt Blue	Lt Blue	Pink	Lt Blue Lt Yellow	Pink	Grey	Blue	Brown
Thickness Range	ASTM D374	mm	0.25 - 5.00	0.50 - 5.00	0.25 - 5.00	0.50 - 5.00	0.50 - 5.00	0.50 - 5.00	0.25 - 5.00	0.25 - 5.00	1.00 - 5.00
Thermal Conductivity	ISO 22007-2 mod	W/(m-K)	1	1.2	2	2.5	2	2.5	3	3	3
Hardness	ASTM D2240	Shore 00	40	9	40	40	25	60	60	40	10
Density	ASTM D792	g/cm ³	2.07	2.1	2.73	2.70	2.73	2.70	2.65	3.10	2.92
Volume Resistivity	ASTM D257	Ω-cm	2.5x10 ¹³	1.7x10 ¹³	3.5x10 ¹²	8.5x10 ¹²	8.4x10 ¹⁴	1.5x10 ¹⁴	2.1x10 ¹³	4.7x10 ¹⁴	2.1x10 ¹⁵
Dielectric Breakdown Voltage	ASTM D149	VAC/mm	5 000	8 000	5 000	5 000	5 000	5 000	500	8 000	7 000
Dielectric Constant @ 1MHZ	ASTM D150		6.33	6.62	6.33	7.47	7.07	7.09	22.8	7.43	5.48
Outgassing, TML	ASTM E595 Modified	%	0.061	0.59	0.06	0.13	0.1	0.13	0.06	0.04	0.05
Flammability	UL94 (file: E483565)				V-0		V-0		V-0	V-0	



9433	9434	9440	9441	9450	9451	9452	9453	9460	9470	9470S	9471	9472	9473	9480	9611
Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone
Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Carbon
Grey	Blue	Green	Green	Black	Grey	Grey	Grey	Lt Blue	Lt Grey	Lt Grey	Pink	Lt Grey	Pink	Blue	Dk Grey
0.25 - 5.00	0.25 - 5.00	1.00 - 5.00	1.00 - 5.00	0.50 - 5.00	0.50 - 5.00	1.00 - 5.00	1.00 - 5.00	1.00 - 5.00	1.00 - 5.00	1.00 - 5.00	1.00 - 5.00	1.00 - 5.00	1.00 - 5.00	0.50 - 5.00	1.00 - 5.00
3	3	4	4	5	5	5	5	6	7	7	7	7	7	8	16
28	40	40	8	40	28	60	30	60	40	15	40	20	20	40	40
2.65	3.00	3.10	3.10	3.10	3.07	3.10	3.16	3.24	2.55	2.55	3.10	2.55	3.10	3.10	2.76
2.1×10^{13}	3.4×10^{10}	4.0×10^{12}	4.0×10^{12}	3.2×10^{14}	3.2×10^{14}	2.0×10^{14}	4.3×10^{12}	5.32×10^{13}	6.7×10^{12}	6.7×10^{12}	3.1×10^{12}	6.7×10^{12}	3.1×10^{12}	1.0×10^{13}	500
500	8 000	8 000	8 000	7 000	5 000	5 000	10 000	10000	1 500	1 500	8 000	1 500	8 000	8 000	n/a
22.8	5.66	7.90	7.90	7.57	7.57	6.39	6.3	14.5	26.4	26.4	7.68	26.4	7.68	7.7	n/a
0.06	0.10	0.10	0.10	0.04	0.04	0.33	0.2	0.13	0.23	0.58	0.3	0.23	0.3	0.3	0.2
V-0				V-0	V-0				V-0	V-0		V-0			

Benefits of Compatherm® Filler

- ▶ Excellent thermal properties
- ▶ Ultra-conforming
- ▶ Negligible compression forces
- ▶ Very low contact resistance
- ▶ High-volume efficiency
- ▶ Customised material properties available



Compatherm® Filler	Test Standard	Unit	9263	9290	9343	9344	9360
Base matrix			Silicone 1-part	Silicone 1-part	Silicone 2-part	Silicone 2-part	Silicone 2-part
Thermally conductive filler			Ceramic	Ceramic	Ceramic	Ceramic	Ceramic
Colour	Visual		Pink	Purple/Green			
Colour, part A	Visual				White	White	White
Colour, part B	Visual				Pink	Green/pink	Green
Pot life		h			4	2.5	3
Cure time @25°C		h	n/a	n/a	24	20	16
Thermal Conductivity	ISO 22007-2 mod	W/(m-K)	6	9	4	4	6
Viscosity (mixed)	Brookfield 20rpm	Pa-s			350	300	1 700*
Flow Rate	2mm nozzle @ 50 PSI	g/min			28	36	30
Flow Rate	3.2mm nozzle @ 90 PSI	g/min	39	26			
Hardness	ASTM D2240	Shore 00			70	40	70
Density	ASTM D792	g/cm ³	3.3	3.16	3.1	3.1	3.1
Volume Resistivity	ASTM D257	Ω-cm			9.4x10 ¹²	2.2x10 ¹⁴	3.09x10 ¹⁴
Dielectric Breakdown Voltage	ASTM D149	VAC/mm	6 000	6 000	5 000	8 000	10 000
Dielectric Constant @ 1MHZ	ASTM D150				1.51	8.31	8.677
Outgassing, TML	ASTM E595 Modified	%	0.1	0.08	0.1	0.1	0.14
Flammability	UL94 (file:E483565)				V-0		

*Brookfield 2rpm

Benefits of Compatherm® Paste

- ▶ Very high thermal performance due to ultra-thin bond line
- ▶ Allows bond lines down to tenths of microns
- ▶ Dispensable and silk/stencil screen printable
- ▶ Stable composition with no dry-out



Compatherm® Paste	Test Standard	Unit	9532	9543
Base matrix			Silicone	Silicone
Thermally conductive filler			Ceramic	Ceramic, Al
Colour	Visual		White	Gray
Thermal Conductivity	ISO 22007-2 mod	W/(m-K)	2.5	4.3
Viscosity	Brookfield 10rpm	cP	110 000	250 000
Density	ASTM D792	g/cm ³	2.68	2.3
Dielectric Breakdown Voltage	ASTM D149	VAC/mm	4 000	400
Volatile Content	ASTM E595 (mod.)	%	0.3	0.3

Welcome to check out our TIM portfolio

<http://thermalguide.nolato.com>

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- ▶ Download the newest data sheets
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For additional information please visit our Corporate Website

www.nolato.com/TIM