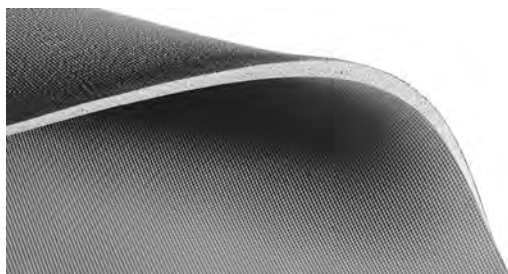


Heat conductive silicon foam foil



- elastomer foam with closed cell structure
- good heat conductor e.g. between components, heatsinks and casing parts
- electrical insulating
- can be compressed even with a low contact pressure
- absorbs shocks and vibrations

art. no.	material thickness [mm]
WSF 16	1.60 ±0.4
WSF 32	3.20 ±0.8
WSF 635	6.35 ±1.2
WSFS 635	6.35 ±1.2

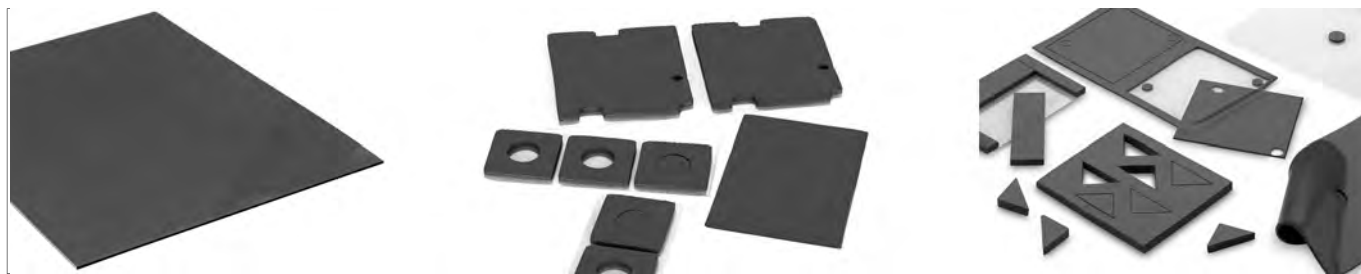
Thermal resistance at 3.2 mm material thickness:

compression %	contact	10	25	50
contact pressure PSI	>1	5	12	34
R _{th} K/W (1 in ² x 3.2 mm)	6	4.5	2.5	1
heat conductivity W/mK	0.3	0.4	0.45	0.65

- **WSFS 635** double sided adhesive and **WSF** adhesive upon request
- according to NASA gas emission requirements

	WSF	WSFS 635
version	no adhesive	one-sided self-adhesive
thermal conductivity	0.108 W/m·K (substrate)	
hardness range	13 Shore D	
compression, 25%	18 PSI	
temperature range	-62°C... +205°C	
extensibility	150 %	
tensile strength	120 PSI	
dielectric strength	4 kV/mm	
tightness	1.118 g/cm ³	
class of flammability	UL 94 V-1 (at thickness ≥3.2mm)	
type of delivery	plates 914x914mm/ cuttings on customer's requirements	

Silicone free thermal adhesive foils



- silicone free gap-filler with good thermal characteristics
- smooth, compressible and elastic
- cut outs, punchings and modifications according to customer specification
- other material thicknesses upon request

art. no.	material thickness [mm]	R _{th} (100 kPa) [°C in ² /W]	R _{th} (100 kPa) [°C cm ² /W]	art. no.	material thickness [mm]	R _{th} (100 kPa) [°C in ² /W]	R _{th} (100 kPa) [°C cm ² /W]
GEL F 15 10	1.0 ±0.2	1.06	6.56	GEL F 15 G 10	1.0 ±0.2	1.16	7.55
GEL F 15 15	1.5 ±0.2	1.44	8.01	GEL F 15 G 15	1.5 ±0.2	1.52	9.22
GEL F 15 20	2.0 ±0.3	1.83	11.26	GEL F 15 G 20	2.0 ±0.3	1.93	10.89

	GEL F 15	GEL F 15 G
version	standard	polyamide film mesh reinforced
thermal conductivity	1.5 W/m·K	
volume resistance	2 ·10 ³ MΩ/m	
hardness range	53 Shore 00	
temperature range	-40°C... +105°C	
extensibility	150 %	
dielectric constant	9,12 [50 Hz] / 8,55 [1 kHz] / 5,83 [1 MHz]	
dielectric loss factor	0,152 [50 Hz] / 0,135 [1 kHz] / 0,034 [1 MHz]	
dielectric strength	11 kV/mm	
tightness	2.1 g/cm ³	
class of flammability	UL 94 V-0	
type of delivery	on both sides covered with protective foil/ plates, usable area 300x200mm/ cuttings on customer's requirements	

Gel thermal conducting foils

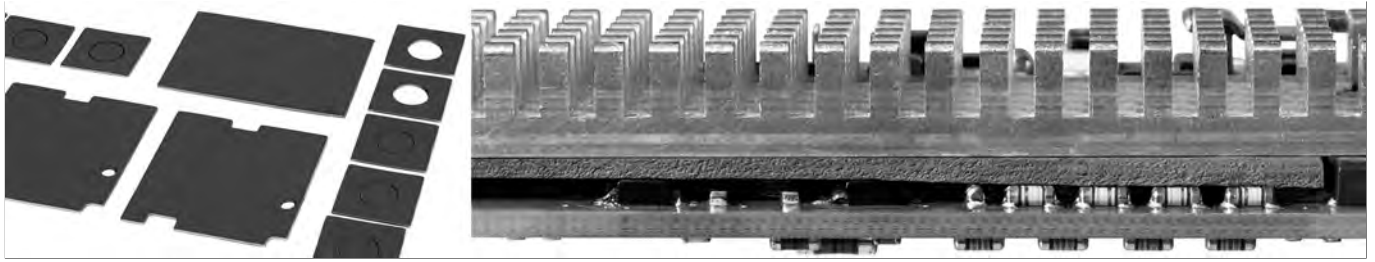


- highly heat-conductive silicoon foil
- smooth, elastic and compressible
- equals uneven surfaces very well (Gap-Filler)

art. no.	material thickness [mm]	R _{th} (100 kPa) [°C in ² /W]	R _{th} (100 kPa) [°C cm ² /W]	art. no.	material thickness [mm]	R _{th} (100 kPa) [°C in ² /W]	R _{th} (100 kPa) [°C cm ² /W]
GEL 05	0.5 ±0.1	0.69	4.45	GEL G 05	0.5 ±0.1	0.63	4.04
GEL 10	1.0 ±0.2	1.03	6.64	GEL G 1	1.0 ±0.2	1.17	7.56
GEL 15	1.5 ±0.2	1.39	8.96	GEL G 15	1.5 ±0.2	1.59	10.27
GEL 20	2.0 ±0.3	1.52	9.78	GEL G 2	2.0 ±0.3	2.07	13.33
GEL 25	2.5 ±0.3	2.10	13.58	GEL G 25	2.5 ±0.3	2.61	16.81
GEL 30	3.0 ±0.3	2.35	15.15	GEL G 3	3.0 ±0.3	2.89	18.66
GEL 35	3.5 ±0.3	2.56	16.51	GEL G 35	3.5 ±0.3	3.35	21.63
GEL 40	4.0 ±0.4	3.25	20.95	GEL G 4	4.0 ±0.4	3.56	22.96
GEL 45	4.5 ±0.4	3.38	21.82	GEL G 45	4.5 ±0.4	3.89	25.10
GEL 50	5.0 ±0.5	3.52	22.70	GEL G 5	5.0 ±0.5	4.22	27.23

	GEL	GEL G 05 - 25	GEL G 3 - 5
version	standard	polyamide film mesh reinforced, adherent layer on one side	
thermal conductivity	1.5 W/m·K		
volume resistance	1·10 ⁶ MΩ/m		
hardness range	49 Shore 00		
temperature range	-60°C ... +200°C		
extensibility	100 %	60 %	
dielectric constant	5.8 [50 Hz]/ 5.6 [1 KHz]/ 5.5 [1 MHz]		
dielectric loss factor	0.048 [50 Hz]/ 0.015 [1 KHz]/ 0.003 [1 MHz]		
dielectric strength	14 kV/mm (AC)	8 kV/mm (AC)	
tightness	2.6 g/cm ³		
class of flammability	UL 94 V-0	UL 94 V-1	UL 94 V-0
type of delivery	on both sides covered with protective foil/ plates, usable area 300x200mm/ cuttings on customer's requirements		

Gel thermal conducting foils

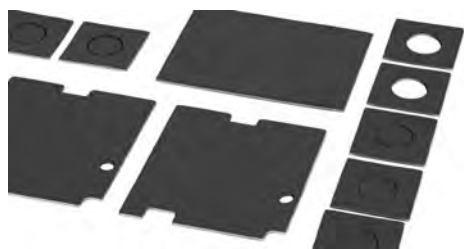


- GEL thermal conductive foils with very good thermal characteristics
- for balancing non-planarities and differences in components (Gap Filler)
- soft, elastic and compressible
- customer specific cuts and punchings according to drawing

art. no.	material thickness [mm]	R _{th} (100 kPa) [°C in ² /W]	R _{th} (100 kPa) [°C cm ² /W]	art. no.	material thickness [mm]	R _{th} (100 kPa) [°C in ² /W]	R _{th} (100 kPa) [°C cm ² /W]
GEL 28 05	0.5 ±0.15	0.23	1.48	GEL 28 G 05	0.5 ±0.15	0.29	1.85
GEL 28 10	1.0 ±0.2	0.44	2.76	GEL 28 G 10	1.0 ±0.2	0.47	2.99
GEL 28 15	1.5 ±0.2	0.61	3.82	GEL 28 G 15	1.5 ±0.2	0.72	4.53
GEL 28 20	2.0 ±0.3	0.80	5.00	GEL 28 G 20	2.0 ±0.3	0.97	6.07
GEL 28 25	2.5 ±0.3	0.90	5.65	GEL 28 G 25	2.5 ±0.3	1.15	7.23
GEL 28 30	3.0 ±0.3	1.10	6.90	GEL 28 G 30	3.0 ±0.3	1.23	7.69
GEL 28 35	3.5 ±0.3	1.27	7.97	GEL 28 G 35	3.5 ±0.3	1.35	8.46
GEL 28 40	4.0 ±0.3	1.39	8.69	GEL 28 G 40	4.0 ±0.3	1.67	10.47
GEL 28 50	5.0 ±0.3	1.67	10.47	GEL 28 G 50	5.0 ±0.3	1.92	12.02

	GEL 28	GEL 28 G
version	standard	polyamide film mesh reinforced
thermal conductivity	2.5 W/m·K	
volume resistance	3.6·10 ⁴ MΩ/m	
hardness range	50 Shore 00	55 Shore 00
temperature range	-60°C ... +200°C	
extensibility	64 %	32 %
dielectric constant	8,98 [50 Hz] / 8,63 [1 kHz] / 8,05 [1 MHz]	
dielectric loss factor	0.0826 [50 Hz]/0.0300 [1 kHz]/0.0052 [1 MHz]	
dielectric strength	15 kV/mm	
tightness	2.7 g/cm ³	
class of flammability	UL 94 V-0	
type of delivery	on both sides covered with protective foil/ plates, usable area 300x200mm/ other dimensions upon request	

Thermal adhesive foils



- gap filler with exceptionally good thermal conductivity and low outgassing
- especially smooth, compressible and elastic
- cut outs, punchings and modifications according to customer specification
- other material thicknesses upon request

art. no.	material thickness [mm]	R _{th} (100 kPa) [°C in ² /W]	R _{th} (100 kPa) [°C cm ² /W]	art. no.	material thickness [mm]	R _{th} (100 kPa) [°C in ² /W]	R _{th} (100 kPa) [°C cm ² /W]
GEL 45 05	0.5 ±0.15	0.61	3.94	GEL 45 G 05	0.5 ±0.15	0.64	4.17
GEL 45 10	1.0 ±0.2	0.96	6.27	GEL 45 G 10	1.0 ±0.2	0.97	6.28
GEL 45 15	1.5 ±0.2	1.30	8.42	GEL 45 G 15	1.5 ±0.2	1.71	11.06
GEL 45 20	2.0 ±0.3	1.52	9.85	GEL 45 G 20	2.0 ±0.3	1.71	11.06
GEL 45 25	2.5 ±0.3	1.71	11.08	GEL 45 G 25	2.5 ±0.3	2.03	13.11
GEL 45 30	3.0 ±0.3	1.94	12.52	GEL 45 G 30	3.0 ±0.3	2.28	14.76
GEL 45 35	3.5 ±0.35	2.20	14.20	GEL 45 G 35	3.5 ±0.35	2.54	16.40
GEL 45 40	4.0 ±0.4	2.46	15.88	GEL 45 G 40	4.0 ±0.4	2.80	18.12
GEL 45 45	4.5 ±0.45	2.68	17.34	GEL 45 G 45	4.5 ±0.45	3.03	19.56
GEL 45 50	5.0 ±0.5	2.84	17.34	GEL 45 G 50	5.0 ±0.5	3.22	20.82

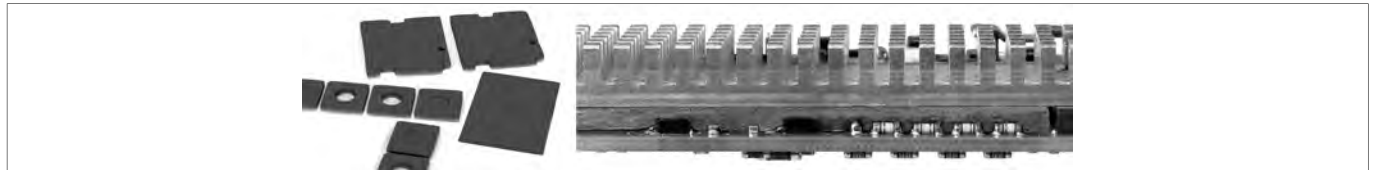
	GEL 45	GEL 45 G
version	standard	polyamide film mesh reinforced
thermal conductivity	4.5 W/m·K	
volume resistance	1.4·10 ⁵ Ω/cm	
hardness range	45 Shore 00	
temperature range	-60°C ... +200°C	
extensibility	50 %	
dielectric constant	8,98 [50 Hz] / 8,63 [1 kHz] / 8,05 [1 MHz]	
dielectric loss factor	0,0249 [50 Hz] / 0,0219 [1 kHz] / 0,00675 [1 MHz]	
dielectric strength	11 kV/mm	
tightness	3.2 g/cm ³	
class of flammability	UL 94 V-0	
type of delivery	on both sides covered with protective foil/ plates, usable area 300x200mm/ cuttings on customer's requirements	

Gel thermal conducting foils

- GEL silicone foils with especially high thermal conductivity
- balances non-planarities and differences in components (Gap Filler)
- soft, elastic and compressible
- cuts, punchings and special designs according to customer specifications

art. no.	material thickness [mm]	R _{th} (100 kPa) [°C in ² /W]	R _{th} (100 kPa) [°C cm ² /W]	art. no.	material thickness [mm]	R _{th} (100 kPa) [°C in ² /W]	R _{th} (100 kPa) [°C cm ² /W]
GEL 60 05	0.5 ±0.1	0.20	1.30	GEL 60 G 05	0.5 ±0.1	0.21	1.37
GEL 60 10	1.0 ±0.2	0.33	2.11	GEL 60 G 10	1.0 ±0.2	0.31	1.99
GEL 60 15	1.5 ±0.2	0.53	3.45	GEL 60 G 15	1.5 ±0.2	0.48	3.08
GEL 60 20	2.0 ±0.3	0.61	3.91	GEL 60 G 20	2.0 ±0.3	0.62	4.00
GEL 60 25	2.5 ±0.3	0.72	4.67	GEL 60 G 25	2.5 ±0.3	0.77	4.96

	GEL 60	GEL 60 G
version	standard	polyamide film mesh reinforced
thermal conductivity	6 W/m·K	
volume resistance	1·10 ⁶ MΩ/m	
hardness range	52 Shore 00	
temperature range	-60°C ... +200°C	
extensibility	80 %	
dielectric constant	6.4 [50 Hz]/6.4 [1 kHz]/6.4 [1 MHz]	
dielectric loss factor	0.035 [50 Hz]/0.005 [1 kHz]/0.001 [1 MHz]	
dielectric strength	13 kV/mm	
tightness	3.2 g/cm ³	
class of flammability	UL 94 V-0	
type of delivery	on both sides covered with protective foil/ plates, usable area 300x200mm/ other dimensions upon request	



- especially soft design
- levels smallest air gaps and unevennesses
- cuts and contours with cutouts according to customer specification

art. no.	material thickness [mm]	R _{th} (100 kPa) [°C in ² /W]	R _{th} (100 kPa) [°C cm ² /W]	art. no.	material thickness [mm]	R _{th} (100 kPa) [°C in ² /W]	R _{th} (100 kPa) [°C cm ² /W]
GEL 27 S 25	2.5	0.94	6.05	GEL 27 S 50	5.0	1.69	10.91
version:	standard						
thermal conductivity:	2.7 W/m·K						
volume resistance:	2·10 ⁷ MΩ/m						
hardness range:	53 Shore 00						
temperature range:	-60°C ... +200°C						
extensibility:	45 %						
dielectric strength:	15 kV/mm						
tightness:	3 g/cm ³						
class of flammability:	UL 94 V-0						
type of delivery:	on both sides covered with protective foil/ plates, usable area 300x200mm/ other dimensions upon request						