

Thermally Conductive Products, Sealing Products

- TCSC-3300 Thermally very well conductive one-component silicon paste, low viscosity, good electrical insulation, non-curing, very high temperature range:
 - heat coupling of power semiconductors with heat sinks
 - heat coupling of peltier elements with heat sinks

- TCSA-1530 Thermally very well conductive one-component silicon adhesive with high mechanical tensile strength and electrical insulation, humidity netting and permanently elastic, very high temperature range:
 - fastening power semiconductors and peltier elements on heat sinks
 - interconnection of heat sinks

- TCSG-1500 Thermally very well conductive one-component silicon gel with high electrical insulation, permanently elastic, unevenness-balancing, very high temperature range:
 - insulated mounting of power semiconductors on heat sinks
 - heat coupling of huge partly uneven areas

- TCSA-0770 Thermally well conductive two-component silicon casting mass with high tensile strength and electrical insulation, heat-polymerising, permanently elastic, extremely high temperature range:
 - fastening power semiconductors and peltier elements on heat sinks
 - interconnection of heat sinks
 - Casting of high power electronic devices with high power dissipation

- PUSG-0100 Thermally badly conductive single component PU adhesive, electrically insulating, extended industrial temperature range, humidity-binding, directly processable
 - protection of Peltier elements against condensation water
 - sealing of bolted connections
 - connection of housing construction units

Remark: TCSC-3300 replaces TCSA-1700.

The TCSC-3300 has a lower viscosity and a better heat conductivity compared with the TCSC-1700.

Packaging:

Product	Part	Weight Proportion	Syringe		Remarks
			Content	Cap's Colour	
TCSC-3300	A	100%	grey	blue	
TCSA-1530	A	100%	white	white	
TCSG-1500	A	100%	-	-	grey film protection films transparent
TCSA-0770	A	50%	grey	blue	
	B	50%	weiss	blue	
PUSA-0100	A	100%	white	red	

Technical Data

Thermal and General Technical Data:

	TCSC-3300	TCSA-1530	TCSG-1500	TCSA-0770	PUSA-0100	
Heat Conductance:	3.3	1.53	1.50	0.77	0.10	$\frac{W}{Km}$
Temperature Range:	-45/+200	-55/+150	-60/+150	-150/+150	-40/+150	°C

Mechanical Data:

	TCSC-3300	TCSA-1530	TCSG-1500	TCSA-0770	PUSA-0100	
Final Consistency:	pasty	solid	gel	solid	solid	
Colour:	grey	white	grey	grey	white	
Specific Weight:	3.5	2.59	2.77	2.14	1.38	$\frac{kg}{dm^3}$
Tensile Strength:	-	4	-	7	3	MPa
Length Dilatation:	-	$1 \cdot 10^{-4}$	$1 \cdot 10^{-4}$	$1 \cdot 10^{-4}$	$1 \cdot 10^{-4}$	$\frac{1}{K}$
Ultimate Strength:	-	50	100	55	80	%
Material Thickness:	-	-	0.5 / 1 / 2 / 3	-	-	mm

Electrical Data:

	TCSC-3300	TCSA-1530	TCSG-1500	TCSA-0770	PUSA-0100	
Specific Resistance:	$3.7 \cdot 10^{11}$	$1 \cdot 10^{14}$	$1 \cdot 10^{12}$	$1 \cdot 10^{13}$	$1 \cdot 10^{12}$	Ω
Disruptive Strength:	5	13	10	26	5	$\frac{kV}{mm}$

Storage:

	TCSC-1700	TCSA-1530	TCSG-1500	TCSA-0770	PUSA-0100	
Storage Temperature:	25	4	25	4	4	°C
With Desiccant:	×	-	-	×		
Durability:	3	-	3	3	months	

Processing:

	TCSC-3300	TCSA-1530	TCSG-1500	TCSA-0770	PUSA-0100	
Viscosity:	$10 \cdot 10^3$	$19 \cdot 10^3$	-	$4.7 \cdot 10^3$	-	mPa · s
Dripping Time (20°C):	-	4	-	1800	5	min
Mixing Ratio:	-	-	-	1:1	-	
Curing Temperature:	-	≥ 20	-	≥ 90	≥ 20	°C
Curing Time:	-	3 $\frac{mm}{24h}$	-	3 h	3 $\frac{mm}{24h}$	

Preparation

TCSC-3300 TCSA-1530 TCSG-1500 TCSA-0770 PUSA-0100

The surfaces to be connected must be dust and grease-free. It is advisable to clean the surfaces by using isopropanol or acetone

Mixing

TCSC-3300 TCSA-1530 TCSG-1500 TCSA-0770 PUSA-0100

The components (complete contents) have to be mixed well. The contents of the packages correspond to the mixing proportion. In case of only partial processing the homogenization might not be sufficient.

Assembly of Pieces (Heat Conductive Paste)

TCSC-3300 TCSA-1530 TCSG-1500 TCSA-0770 PUSA-0100

For a connection of plane parts an appropriate amount of the heat conductive paste is put in the center of the surface and then pressed firmly against the other one. By slightly shifting the parts against each other it is ensured that a **thin** layer is formed over the full contact area.

Assembly of Pieces and Compounds (Adhesive)

TCSC-3300 TCSA-1530 TCSG-1500 TCSA-0770 PUSA-0100

For connecting plane parts an appropriate quantity of the adhesive is put in the center of one part and then strongly pressed on the other. By slight shifting of the parts against each other it is ensured that a **thin** layer is formed over the full contact area. Excessive adhesive can be removed after cross-linking with a knife. (alternatively both parts can be coated with a **thin** layer of the adhesive and then pressed on each other. By this kind of processing bubbles might occur that diminish the heat flow.

Assembly of Pieces (Silicon Gel)

TCSC-1700 TCSA-1530 TCSG-1500 TCSA-0770 PUSA-0100

Starting at the edge put on the gel bubblelessly on the cleaned surface of one part using only little strength. After this press the parts against each other and fix them mechanically. The choice of the gel's thickness is dependent on the sizes of the parts to be connected and their surface properties (e.g. unevennesses).

Casting Assemblies

TCSC-3300 TCSA-1530 TCSG-1500 TCSA-0770 PUSA-0100

Due to the extremely high thermal conduction the TCSA-0770 is suitable even for filling larger cavities. Depending upon volumes the adhesive should be degassed first and/or let rest for some hours, to prevent bubbles under construction units.

For applications with highest thermal conduction or electrical isolation needed (e.g. casting in of power semiconductor elements for instance LED in cooling tubs, or with high voltage building groups) a degassing of the mixture at 1 Torr is recommended. Casting in in the vacuum and a following curing in standard atmosphere improve the characteristics seriously!

Curing

TCSC-3300 TCSA-1530 TCSG-1500 TCSA-0770 PUSA-0100

Curing occurs at temperatures indicated in the table.

An increase of the curing temperature leads to shorter curing times while a decrease of the curing temperature leads to longer curing times and worsens strongly the characteristics of the adhesive. But curing temperature should not exceed 125° C. The TCSA-0770 extremely liquefies during curing phase. If the parts are pressed against each other during this time, the adhesive optimally distributes between them and the distance of the parts is reduced to a minimum. Thermal conduction is strongly improved by this. Excessive adhesive can be removed after cross-linking with a knife.

Sealing

TCSC-3300 TCSA-1530 TCSG-1500 TCSA-0770 PUSA-0100

PUSA-0100 is gap-bridging. A joint width of 15mm should not be exceeded.

The joint to be sealed shall briskly be filled with a 2mm to 3mm thick layer. When sealing a closed volume (e.g. a peltier element) the interior is lastingly dried due to the hygroscopic effect of the material.

For sealing bolted connections cover the area around it with tape. Put the adhesive into the thread and under the screw head. Tighten the screws afterwards and remove the excessive adhesive as well as the tape.

Safety Instructions

TCSC-3300 TCSA-1530 TCSG-1500 TCSA-0770 PUSA-0100

When processing these chemicals please pay attention to appropriate protective clothing and a good aeration of the working area. The materials are not suitable for applications in the field of medicine or in the food sector. Contact with skin and food must be avoided. If contact with the skin occurs, rinse off with much water and tensides (soap), when swallowed immediately contact the doctor.

Further Products and Services:

- Consulting services for planned applications with heat sinks and peltier elements
- Dimensioning and simulation of peltier elements and thermoelectrical cooling systems



- hollow fin cooling aggregates with 1 to 3 chambers, cooling capacities between $0.3 \frac{K}{W}$ and $0.02 \frac{K}{W}$
- high-performance cooling aggregates for free convection with cooling capacities between $0.5 \frac{K}{W}$ and $0.03 \frac{K}{W}$
- fluid-heat-exchanger for dissipation powers up to 2000W



Ready-to-Use Thermoelectric Cooling Systems:

- standard cooling systems with cooling capacities up to 140W
- custom cooling systems with cooling capacities up to 1kW



The EURECA Messtechnik GmbH offers Peltier elements of various power classes and geometries:

- high-performance peltier elements up to 440W to an excellent price-performance ratio
- standard peltier elements up to 62mm and 186W
- micro peltier elements from 3mm to 26mm and 0,5W to 21W
- high-temperature peltier elements up to 250°C and up to 210 W
- peltier cascades for high temperature differences
- special peltier elements e.g. round, with hole etc.
- customised peltier elements

Irrtümer und Änderungen vorbehalten!
Errors and changes excluded!