ThreeBond

June 23, 2015
Three Bond Co., Ltd.

Technical Data

ThreeBond 1225C

One-component, moisture-curing silicone heat dissipating agent

1. Product description

ThreeBond 1225C is a one-component, moisture-curing heat dissipating agent containing silicone polymer and thermally conductive filler. Before curing, it is liquid and adheres well to parts. After applied, it cures with moisture in the air. The cured material shows high heat dissipation performance and keeps excellent heat resistance for a long time.

It contains a reduced amount of low-molecular siloxane which can cause contact failure.

Hereinafter, ThreeBond is abbreviated to TB.

2. Features

(1) One-component, moisture-curing silicone heat dissipating agent
(2) High heat dissipation performance
(3) High heat resistance
(4) Reduced content of low-molecular siloxane
(5) Not containing organotin compounds (complying with REACH regulation)

3. Applications

Heat dissipation from automotive electrical components and various electronic parts

4. Properties

4.1 General properties

Table 1 Properties of TB1225C

Test item	Unit	Result	Test method	Remarks
Appearance	-	Gray	3TS-2100-020	
Viscosity	Pa·s	70	3TS-4200-006	*
Specific gravity	-	2.90	3TS-2500-002	
Tack-free time	min	10	3TS-3130-006	23°C
Thermal conductivity	W/m·K	2.5	3TS-4750-001	Thin-film method (thickness: 2.0 mm)

* Test equipment: Stress-controlled rheometer Probe: Parallel flat plate (φ25 mm)
Measuring temperature: 25°C Frequency: 1 Hz Distortion: 1% Gap: 1 mm

4.2 Moisture curing ability

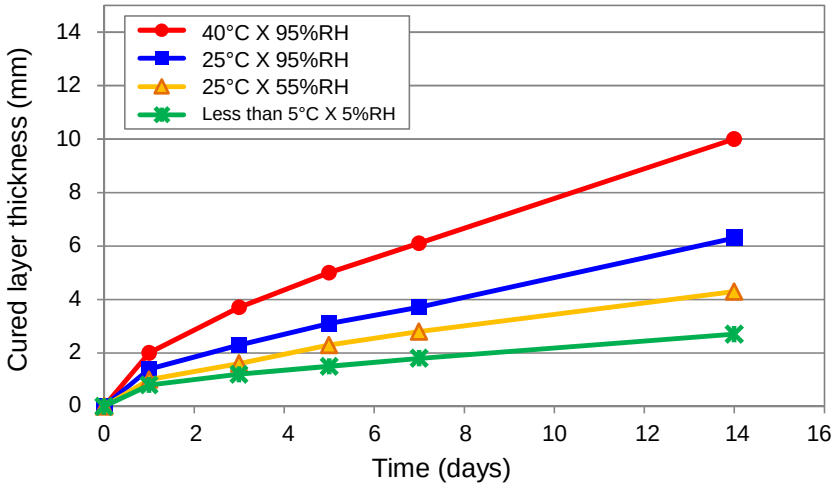

Fig.1 Curing ability of TB1225C depending on temperature and relative humidity
Measuring conditions: 3TS-3160-005

5. Characteristics

5.1 Characteristics of cured material

Table 2 Characteristics of TB1225C after curing

Test item		Unit	Result	Test method	Remarks
Hardness		-	A81	3TS-2B00-010	
Tensile strength		MPa	2.5	3TS-4190-001	Thickness: 2 mm
Elongation		%	50	3TS-4190-001	Thickness: 2 mm
Lap shear strength		MPa	1.1	3TS-4100-023	Al/Al*1
		MPa	1.0	3TS-4100-023	Fe/Fe*2
Glass transition temperature *3		°C	-41	3TS-4730-001	
Moisture permeability		g/m^2·24hr	2.4	JIS K 7129-C method *4	40°C×90%RH
Linear expansion coefficient	(-100 to -60°C)	ppm/°C	1.1 to 16	3TS-4740-001	
	(50 to 150°C)		86 to 97		

Curing conditions: At 23°C and 50%RH for 7 days
*1 Al: A1050P *2 Fe: SPCC-SD *3DMA E" peak top, frequency: 1Hz
*4 Penetration area: 15.2 cm^2, thickness: 1.5 mm, n = 3

5.2 Electrical characteristics of cured material

Table 3 Electrical characteristics of TB1225C

Test item		Unit	Result	Test method
Volume resistivity		Ω·m	1.1×10^{11}	3TS-5200-001
Surface resistivity		Ω	2.9×10^{13}	3TS-5200-002
Dielectric constant	1kHz	-	9.7	3TS-5220-001
	1MHz		8.2	
Dielectric loss tangent	1kHz	-	0.045	
	1MHz		0.019	
Dielectric breakdown strength		kV/mm	17.4	3TS-5230-002
Low-molecular siloxane		%	0.01	Gas chromatography (D_4-D_{10})

Curing conditions: At 23°C and 50%RH for 7 days

6. Durability

6.1 Heat resistance

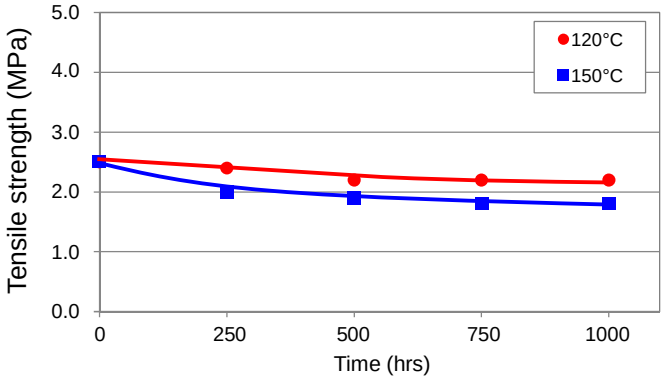

Fig.2 Heat resistance (tensile strength) of TB1225C
Curing conditions: At 23°C and 50%RH for 7 days
Measuring conditions: (Thickness: 2.0 mm)

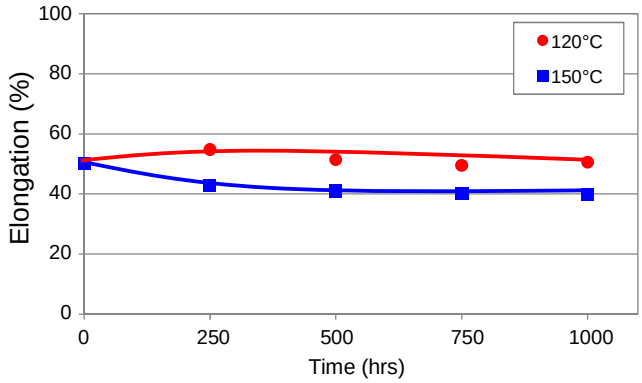

Fig.3 Heat resistance (elongation) of TB1225C
Curing conditions: At 23°C and 50%RH for 7 days
Measuring conditions: (Thickness: 2.0 mm)

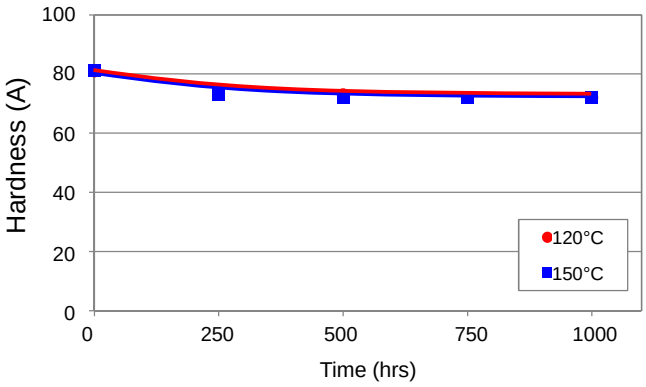

Fig.4 Heat resistance (hardness) of TB1225C
Curing conditions: At 23°C and 50%RH for 7 days
Measuring conditions:

6.2 Moisture resistance (85°C × 85%RH)

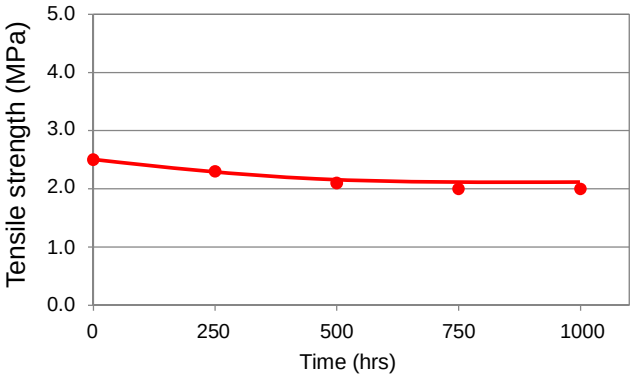

Fig.5 Moisture resistance of TB1225C (tensile strength)
Curing conditions: At 23°C and 50%RH for 7 days
Measuring conditions: (Thickness: 2.0 mm)

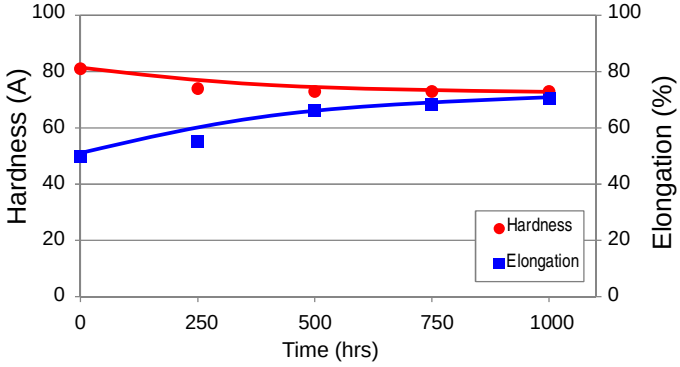

Fig.6 Moisture resistance of TB1225C (elongation, hardness)
Curing conditions: At 23°C and 50%RH for 7 days
Measuring conditions: (Thickness: 2.0 mm)

7. Directions for use

(1) Harmful to health. Do not inhale or ingest.
(2) Persons who have allergies or sensitive skin should avoid using it.
(3) When using this product, wear appropriate protective equipment.
(4) Keep out of reach of children.
(5) For industrial use. Do not use for household purposes.
(6) Before using, sufficiently confirm whether the method of application and the purpose are appropriate.
(7) Pay attention to the protrusion on the cap.
(8) For detailed hazard information of the product, see the Safety Data Sheet (SDS).

8. Storage

(1) Store with the cap tightly fitted to prevent deterioration and contamination.
(2) Store in an indoor dark dry place at -5 to 10°C avoiding fire, heat sources and direct sunlight.

9. Disposal

After this product has been completely used, ask a licensed waste disposal company to dispose of the empty container as industrial waste.

10. Precautions

For Industrial Use Only (Do not use for household purposes.)

This product is developed for general industrial use. Before using this product, the user must accept the following terms:

- The technical data given herein are not guaranteed values, but examples of experimental values obtained by our specified test methods.
  We do not guarantee that the uses described herein do not conflict with any intellectual property right.
- Before using this product, confirm the appropriateness and safety of the use for the application in question, and bear all responsibilities and risks involved in the use.
  Never embed or inject into bodies nor use as a medical implant that may be left in the body.
- We are not liable for personal injury or property damage caused by improper handling of this product.
  If the properties or usage of the product to be used are unclear, never use it.
- For detailed safety information of the product, see the Safety Data Sheet (SDS).
  To obtain the SDS, contact our sales office or customer service center.
- Information in this document is subject to change at our own discretion.

12. Registered trademark