

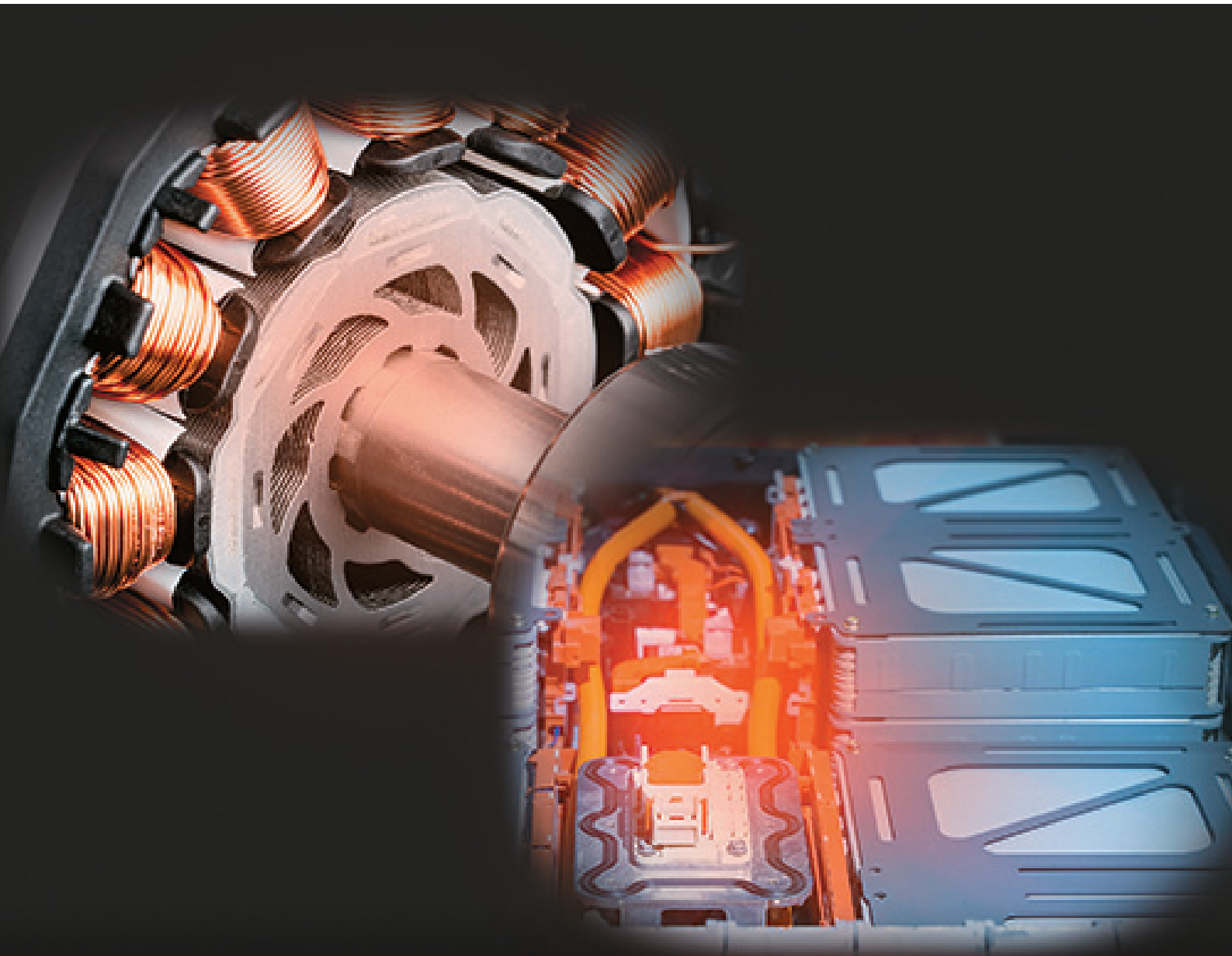
Thermally Conductive Materials

# Tran-Q Clay

# Tran-Q Clay

**Siloxane Reduced**

※Under Development



# Very Soft / Lower stickiness / Stretchable

High electric insulation and thermal-conductive material, with easy installation of complex and uneven surface



## Features

### Softness like clay

- High flexibility in shape
- Available in 3-dimensional space

### Excellent operatability and reworkability by low stickiness

- Non-fluidity
- Lower stickiness than conventional thermal grease

### Electric non-conductance property

- Available for electronic parts

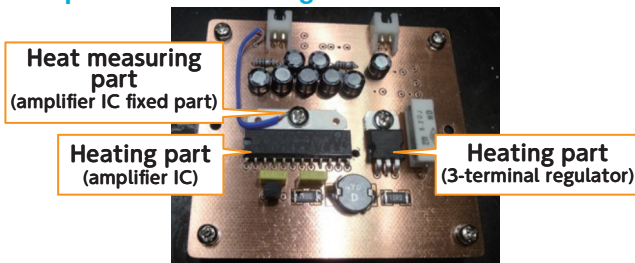
### “Siloxane Reduced Grade” Added ※Under Development

- That content of low-molecular siloxane is less than 50ppm(measured value)

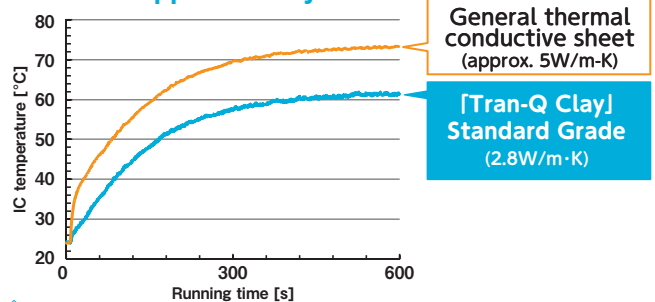
- Better heat transfer efficiency than sheets of approx. 5W/m·K

\* The results based on in-house evaluation using our Standard Grade as a sample.

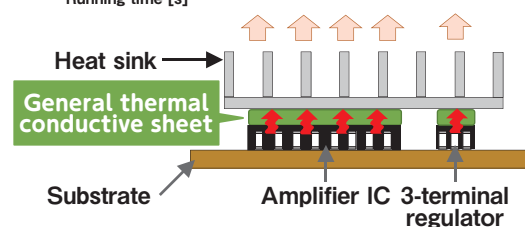
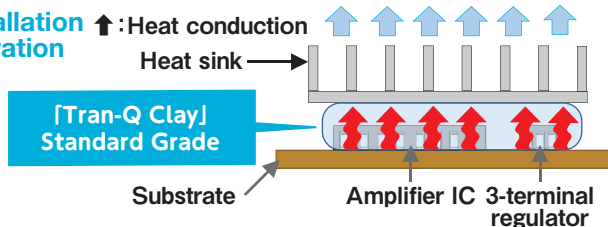
#### Substrate heating unit and temperature measuring unit



#### Comparison of IC temperature rise suppression by TIM



#### TiM Installation configuration



#### Package type



Standard Grade packaging (500g)



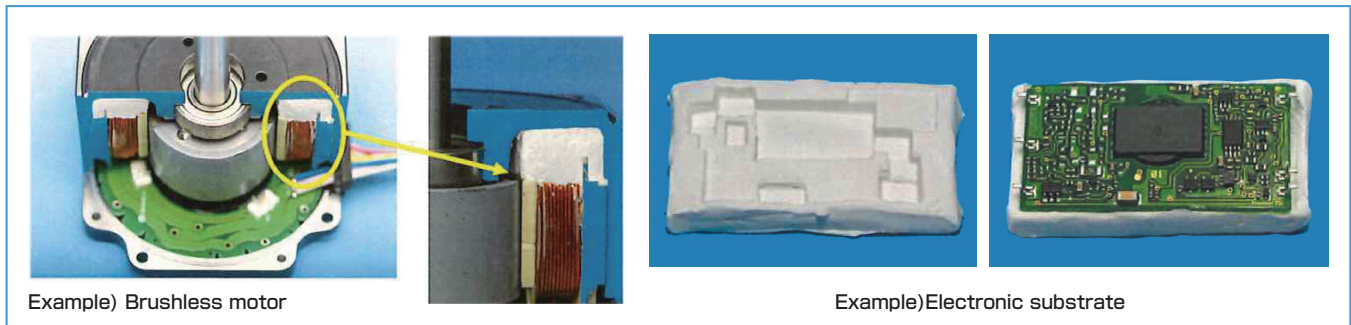
Standard Grade packaging (50g)



Siloxane Reduced Grade packaging (50g)

## Application Examples

It will be used for wire winding of any motor, also for the air gap between an electronic circuit board and a heat sink part.



## Typical properties

| Test property               | unit  | Common                |       |       | Test method                       |
|-----------------------------|-------|-----------------------|-------|-------|-----------------------------------|
| Color                       | —     | White                 |       |       | —                                 |
| Specific gravity            | —     | 2.8                   |       |       | —                                 |
| Hardness (cone penetration) | —     | 120                   |       |       | JIS K 2220                        |
| Thermal conductivity        | W/m·K | 2.8                   |       |       | Hot wire method                   |
| Recommended operating temp. | ℃     | -40~200               |       |       | —                                 |
| Volume resistivity          | Ω·cm  | $>2.7 \times 10^{13}$ |       |       | JIS K 6249(Pretreatment 105℃/24h) |
| Breakdown voltage           | kV/mm | 7.6                   |       |       | JIS C 2110                        |
| Dielectric characteristic   | kV/mm | 6.5                   |       |       | JIS C 2110                        |
| Frequency                   | (Hz)  | 100Hz                 | 1kHz  | 1MHz  | —                                 |
| Dielectric constant         | —     | 6.2                   | 6.0   | 5.9   | JIS C 2138                        |
| Dissipation factor          | —     | 0.023                 | 0.011 | 0.006 | JIS C 2138                        |
| Flame retardant             | —     | V-0 equivalent        |       |       | UL94 V                            |

| Test property   | unit | Siloxane Reduced Grade | Test method                           |
|---|------|------------------------|---------------------------------------|
| Contents of Low-molecular siloxanet (D3 D10 total)※measured value | ppm  | ≤50                    | Test condition<br>140℃ × 10min(GC/MS) |

※Our products are compliant with RoHS Directive and REACH Regulation.

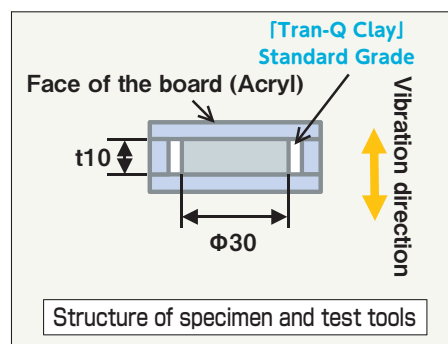
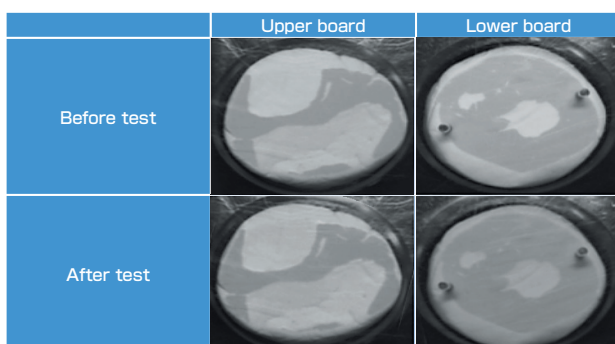
※Siloxane Reduced Grade is still under development.

## Reliability\_ environmental test

| Test property              | unit  | Origin                | -40℃<br>(1,000h)     | 200℃<br>(1,000h)      | 85℃/95%Rh<br>(1,000h) | -40℃⇄150℃<br>(30min/each×1,000cycles) |
|----------------------------|-------|-----------------------|----------------------|-----------------------|-----------------------|---------------------------------------|
| Hardness(cone penetration) | —     | 120                   | 115                  | 130                   | 185                   | 125                                   |
| Thermal conductivity       | W/m·K | 2.8                   | 2.9                  | 3.0                   | 2.9                   | 3.0                                   |
| Breakdown voltage(AC)      | kV/mm | 7.6                   | 8.7                  | 8.2                   | 7.7                   | 8.0                                   |
| Volume resistivity         | Ω·cm  | $>2.7 \times 10^{13}$ | $1.5 \times 10^{12}$ | $>2.7 \times 10^{13}$ | $2.3 \times 10^{12}$  | $>2.7 \times 10^{13}$                 |

## Reliability\_ vibration test

Comparison of contact conditions with the face of the board sandwiching the [Standard Grade] before and after the vibration test.



**[Test condition]**  
 ISO16750-3 equivalent  
 Vibration time: 8 hours  
 Vibration type: random  
 Test Temperature: R.T.

No peeling or shape change from the face of the board due to vibration

### Notes on handling the product

- The information and data provided are not standard or guaranteed.
- Store the product in a cool, dark place away from direct sunlight and high temperatures.
- Do not use the product for medical device applications where it is implanted in human or animal body or comes into contact with body fluids or living tissues.
- Do not put it in your mouth or swallow it as it is not food.
- A few amount of silicone oil in the product may bleed, so use it where there is no problem.
- Follow laws and regulations when disposing of the product.
- The contents of this catalog are subject to change without notice.

# NOK CORPORATION



<https://www.nok.co.jp/en/>

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● **Disclaimer**

- There is no guarantee that the use of this product will not violate any patent.
- Our company assumes no responsibility or liability for any accidents or damages caused by the use of this product.
- Our company assumes no responsibility or liability for any damages caused by the use of this product to any third party.

● **Cautionary Notes**

- Reprinting the contents of this catalog requires prior approval of our company.
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