

One-component Epoxy Adhesive

EPOXY RESIN

XN1244

== Description ==

- Curable at 85°C.
- Good adhesion to metals, ceramics and plastics.
- Good high temperature and thermal adhesive strength.
- Long shelf life

200.624

The information given in this publication is based on the present state of our knowledge, but any conclusion and recommendations are made without liability on our part.

Buyers and users should make their own assessment of our products under their own conditions and for their own requirements

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## 1. Properties before curing

| Item                          |             | EPOXY RESIN XN1244 |
|-------------------------------|-------------|--------------------|
| Aspect                        |             | Black paste        |
| Viscosity                     | at 25°C     | 70 - 150 Pa·s      |
| Thixotropic index             | at 25°C     | 1.1                |
| Specific gravity              | at 25°C     | 1.41               |
| Gelation time                 | at 120°C    | 280 s              |
|                               | at 150°C    | 40 s               |
|                               | at 170°C    | 20 s               |
| Storage                       | at 5 - 15°C | 12 months          |
| Curing condition<br>(example) |             | 85°C / 180min      |
|                               |             | 100°C / 60min      |
|                               |             | 120°C / 30min      |
|                               |             | 150°C / 10min      |

## 2. Cured properties

### Adhesion

Measurement temperature @25°C

| Item   | Cured @ 120°C / 30min | Cured @ 150°C / 30min |
|--|-----------------------|-----------------------|
| Lap shear strength<br>Mild steel (t=1.6mm), overlap:10mm | 24 N/mm <sup>2</sup>  | 25 N/mm <sup>2</sup>  |
| T-Peel strength<br>Mild steel (t=0.4mm)                  | 50 N/25mm             | 60 N/25mm             |

### Mechanical properties

Measurement temperature @25°C

Curing condition :120°C / 60min

| Item                                    | Method     | Value                                 |
|---|------------|---------------------------------------|
| Tensile strength                        | ASTM D-638 | 31 N/mm <sup>2</sup>                  |
| Flexural strength                       | ASTM D-790 | 61 N/mm <sup>2</sup>                  |
| Modulus of elasticity in bending        | ASTM D-790 | 3.9 GPa                               |
| Compression strength                    | ASTM D-695 | 127 N/mm <sup>2</sup>                 |
| Heat distortion temperature             | ASTM D-648 | 138°C                                 |
| Tg                                      | DSC method | 144°C                                 |
| Coefficient of linear thermal expansion | TMA method | 41 x 10 <sup>-6</sup> K <sup>-1</sup> |
| Water absorption (100°C /1h)            | JIS K-6911 | 0.1 %                                 |

## Electrical properties

Curing condition :120°C / 60min

| Item                                     | Method     |       | Value                   |
|--|------------|-------|-------------------------|
| Dielectric constant<br>(10KHz)           | ASTM D-150 | 25°C  | 4.2                     |
|  |            | 100°C | 4.4                     |
| Dielectric dissipation factor<br>(10KHz) | ASTM D-150 | 25°C  | 0.010                   |
|  |            | 100°C | 0.010                   |
| Volume resistivity<br>(500V)             | ASTM D-257 | 25°C  | $4 \times 10^{15}$ W-cm |
|  |            | 100°C | $4 \times 10^{13}$ W-cm |
| Break-down voltage                       | JIS K-6911 | 25°C  | 16 kV/mm                |

## Lap shear strength vs various test condition

Measurement temperature @25°C

Curing condition :150°C / 30min

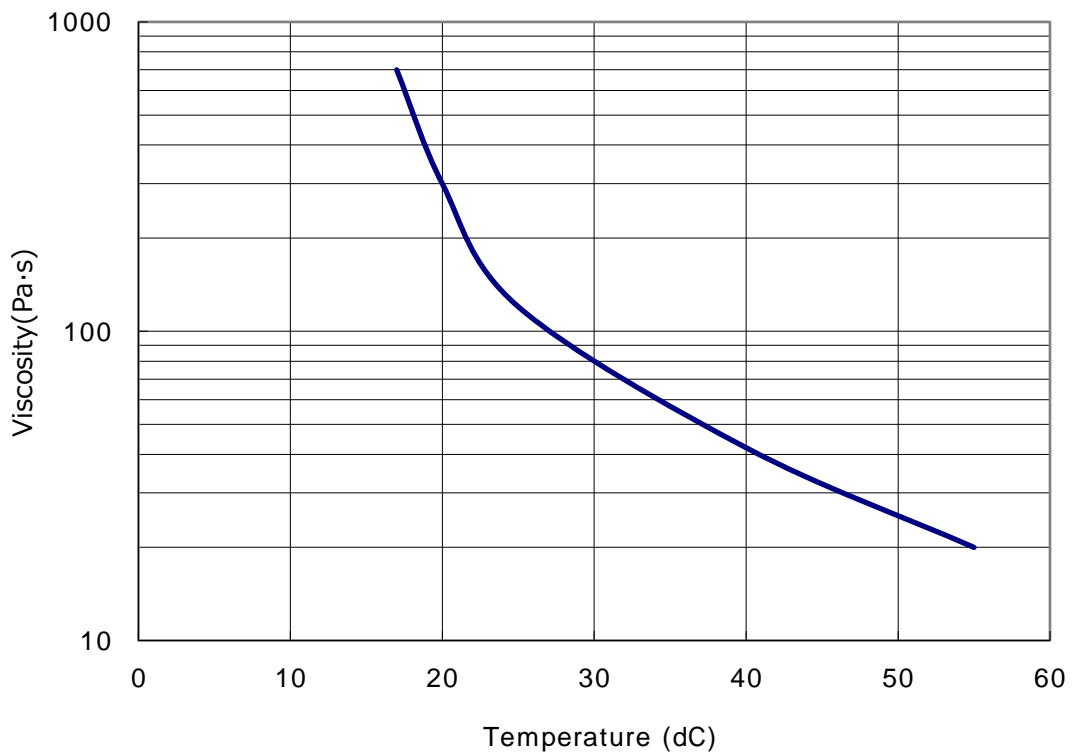
| Item                       | Method                 | Lap shear strength<br>(N/mm <sup>2</sup> ) |
|----------------------------|------------------------|--|
| Initial value              |                        | 24   |
| Heat test                  | 150°C/30days           | 24   |
|                            | 180°C/ 8days           | 25   |
| PCT (Pressure cooker test) | 120°C/2atm/100%RH/150h | 21   |
| Thermal cycling            | Condition 1 *          | 24   |
|                            | Condition 2 *          | 24   |
| Damp heat test             | 100°C/90-100%RH/150h   | 21   |
| Immersion in hot water     | 70°C/ 7days            | 21   |
|                            | 70°C/30days            | 21   |
| in boiling water           | 24h                    | 22   |
| in salt water              | 25°C/150h              | 17   |
| in 5% NaCl solution        | 25°C/ 24h              | 19   |
| in Trichloroethylene       | 25°C/ 24h              | 27   |
| in Gasoline                | 25°C/ 24h              | 26   |
| in Engine oil              | 25°C/ 24h              | 26   |
| in Kerosene                | 25°C/ 24h              | 26   |

## Thermal cycling test

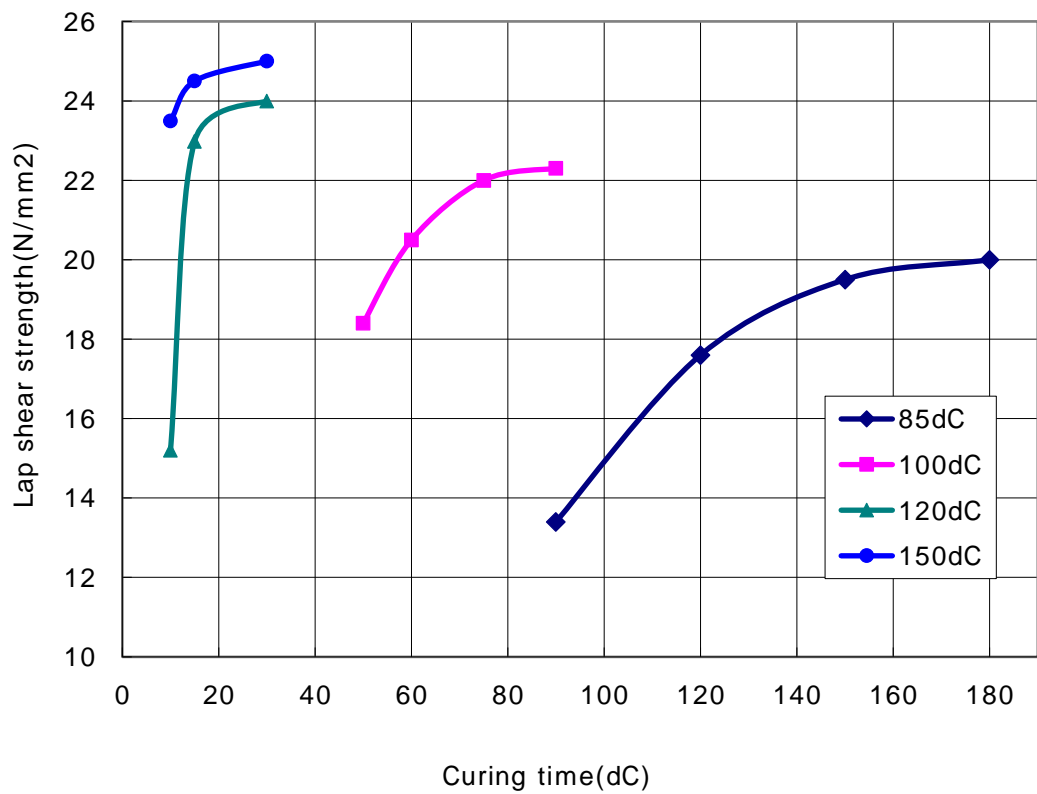
Condition 1 \* : (200°C/30min -60°C/30min) x3 cycles

Condition 2 \* : (160°C/60min 25°C/30min -40°C/60min) x20 cycles

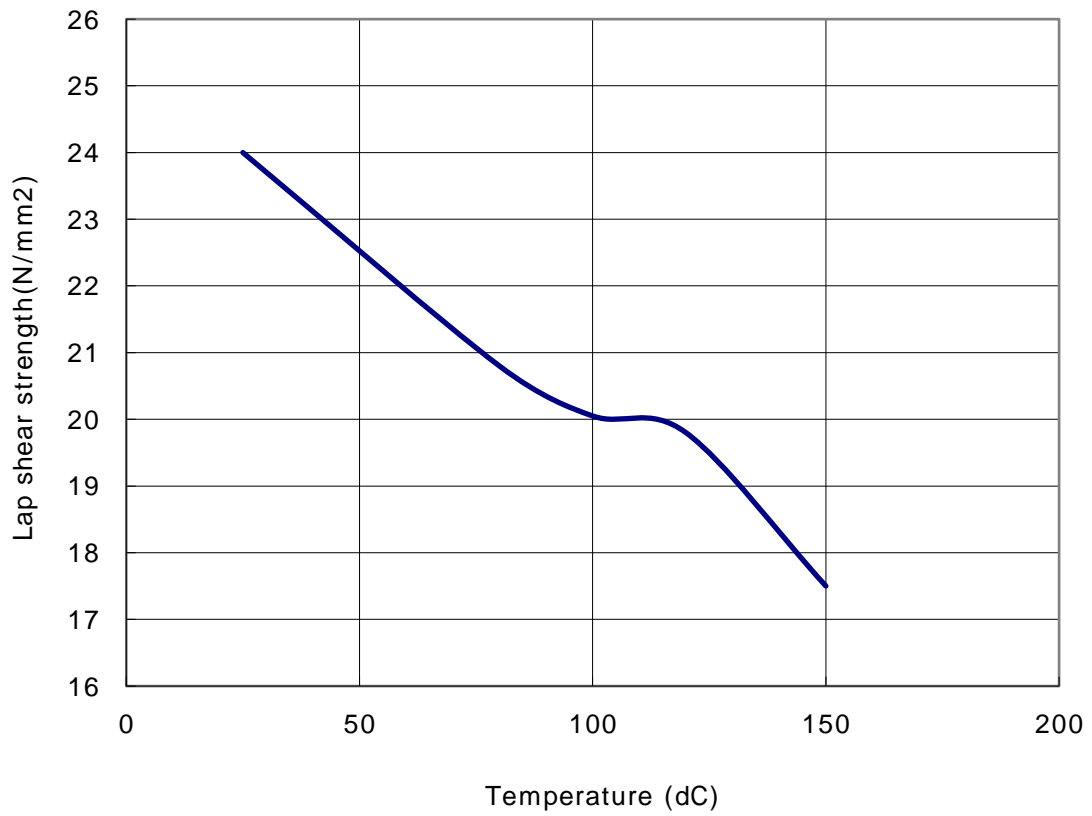
XN1244: Tmeperature vs viscosity



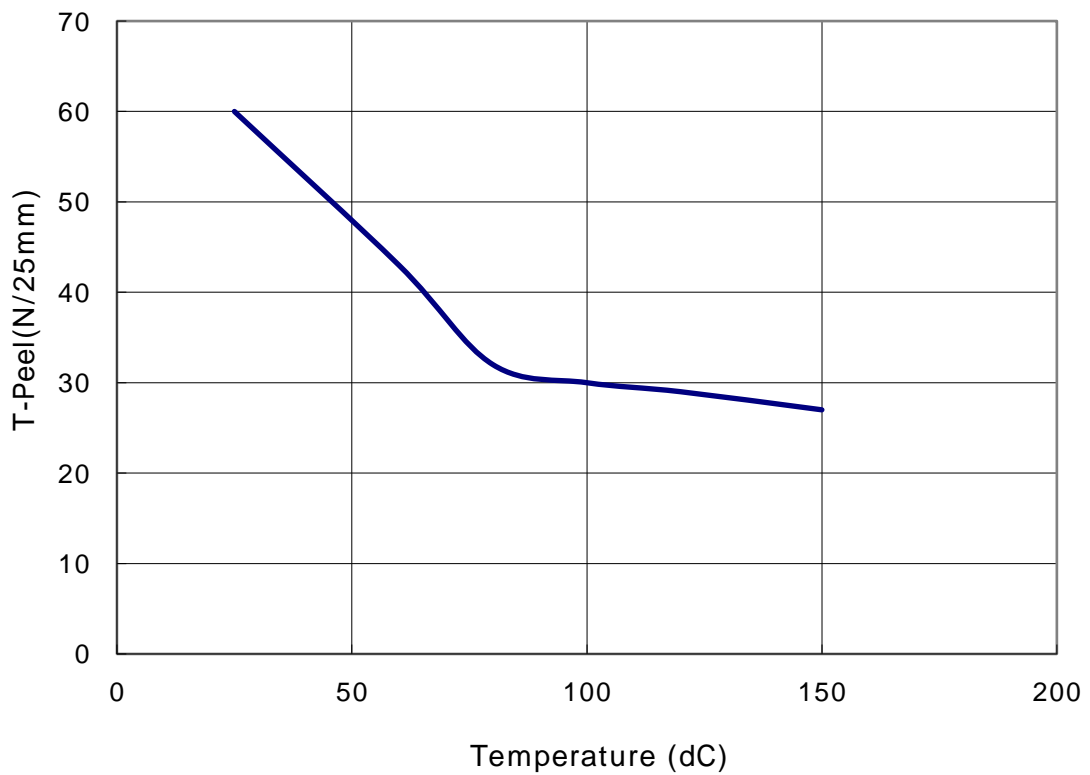
Cured Condition vs Lap shear strength



XN1244 : Temperature vs Lap shear strength



XN1244 : Temperature vs T-Peel



XN1244 : Cured Condition vs Tg

