



技 術 資 料

## Technical Information



# VISTEX V-4000

Acrylic impregnation resin for cut cores



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VISTEX V-4000 is a solvent-free, single-liquid type, acrylic impregnation resin which is developed especially for cut cores for electric transformers and motors.

Comparing with conventional epoxy impregnation resin, VISTEX V-4000 is easy to use and the work process can be completed in a short time.

For example, the short curing time and good permeability and removability of surplus liquid due to the low viscosity drastically make the time required for core production shorter and reduce running costs. In addition, high quality stability makes it possible to add to the impregnation tank and store the resin at room temperature.

### 1. Featured advantages of V-4000

- (1) Lower viscosity allows faster & easier impregnation and surplus resin removal.

<b>V-4000</b>	<b>50mPa·s</b>
Single liquid, epoxy resin for cut cores	120mPa·s

- (2) Significant shorter curing time for resin.

<b>V-4000</b>	<b>2 hours at 170°C</b>
Single liquid, epoxy resin for cut cores	12 hours at 150°C

- (3) Stronger bonding power.

<b>V-4000</b>	<b>20MPa</b>
Single liquid, epoxy resin for cut cores	10MPa

### 2. General Characteristics of V-4000 (in comparison with epoxy resin)

Item	VISTEX V-4000	Single liquid, epoxy resin for cut cores
Appearance	Pale Yellow Liquid	Red Brown Liquid
Viscosity(25°C)	50mPa·s	120mPa·s
Suggested hardening conditions	170°C×2hours	150°C×12hours
Tensile shear strength	20MPa	More than 10MPa
T-Peel strength(Amorphous)	1200mN/25mm	—
Hardness(Shore D)	56	90
Flash point	113°C	—
Transport of dangerous goods	<b>Not classified</b>	—
Warranty period	6 months	—
Storage conditions	Room temperature	5°C

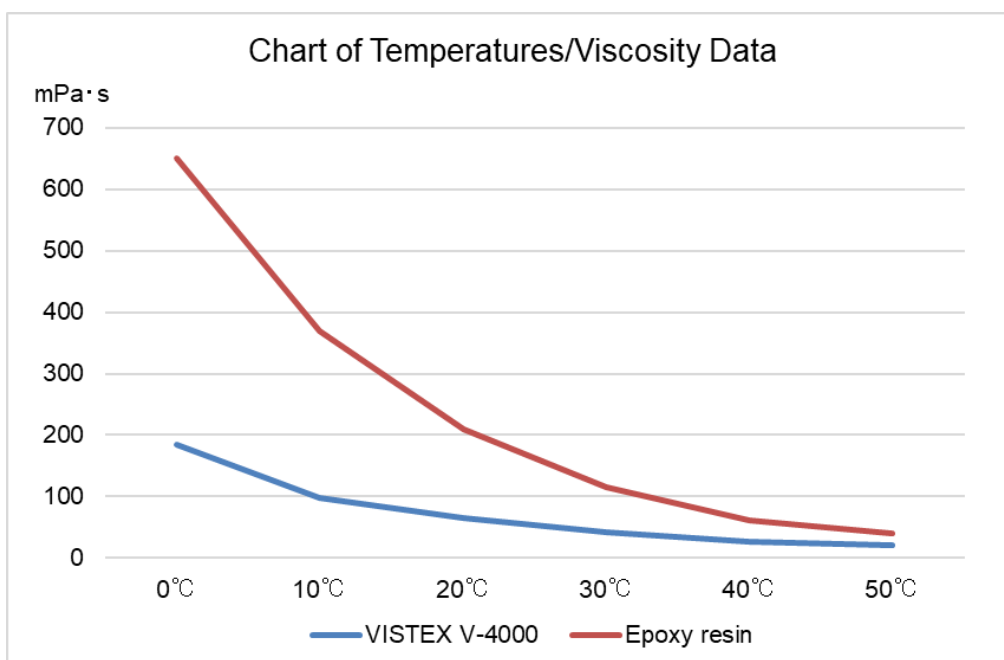
[This data is not our guaranteed specifications.]

### 3. Temperatures/Viscosity data between VISTEX V-4000 and Epoxy resin

Unit : mPa·s

Resin \ Temperature	0°C	10°C	20°C	30°C	40°C	50°C
VISTEX V-4000	184	98	65	42	26	21
Epoxy resin	650	370	210	115	62	40

Method: JIS K6833, by B-type rotational viscometer



VISTEX V-4000 has a relatively moderate increase in viscosity even at low temperatures.

### 4. Curing Conditions, Strength

Tensile shear strength (Unit : MPa)

Hardening Temperature	30min	1hour	2hour	3hour
150°C	25.0	22.8	25.6	28.6
160°C	23.9	24.8	26.7	27.2
170°C	23.4	24.6	<b>26.4</b>	26.1
180°C	23.7	25.8	26.1	25.1
190°C	21.7	27.3	27.4	25.5

Suggested Curing conditions : 170°C and 2hours  
(displayed in yellow)

### Presence or Absence of Tack (stickiness)

Presence / Absence of Tack after Hardening (✓ or ×)

Hardening Temperature	30min	1hour	2hour	3hour
150°C	×	×	×	✓
160°C	×	×	✓	✓
170°C	✓	✓	<b>✓</b>	✓
180°C	✓	✓	✓	✓
190°C	✓	✓	✓	✓

✓ : No tack    × : With tack

#### Tensile Shear Strength

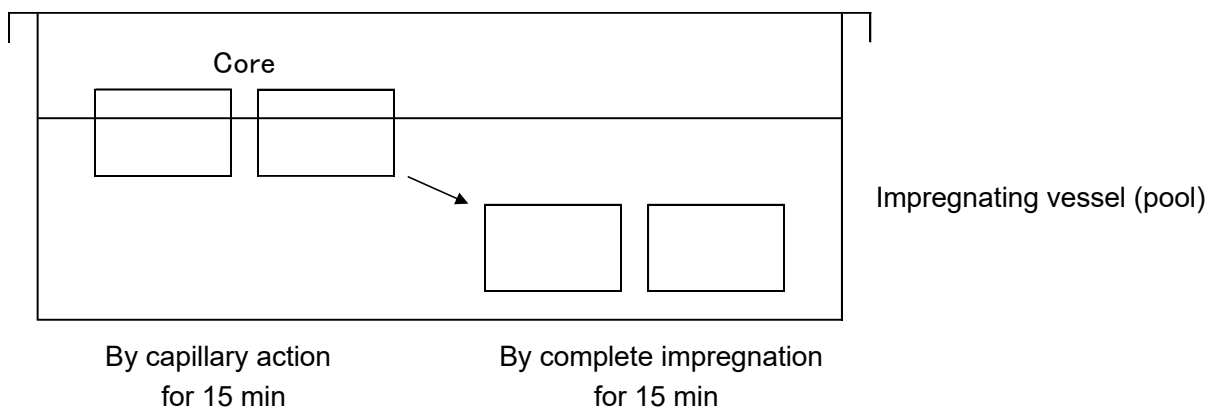
Method                      JIS K6850  
 Material                    Soft Steel Plate (JIS G3141)  
 Surface Preparation      Sand Blasting

\* Though the strength is improved even by curing at low temperature and in a short time, some tackiness remains on the surface.

### 5. Impregnation method

V-4000 is significantly low viscosity liquid. V-4000 provides high performance in general impregnation methods, such as a natural impregnation and a vacuum impregnation. As for a natural impregnation, please pay careful attention to avoid contamination of moisture into the impregnation vessel.

[an example of impregnation process]



### [Comparison between VISTEX V-4000 and an epoxy resin in cut core production process]

Example with a 300W transformer core (core weight: 800g)

Production Prozesse													
<b>VISTEX V-4000</b>	<table border="1"> <tr> <td>preliminary drying 120°C 30min</td> <td>→</td> <td>air coolin 50°C 30min</td> <td>→</td> <td>dipping impregnation room temp 30min</td> <td>→</td> <td>draining room temp 15min</td> <td>→</td> <td>curing 170°C 2hours</td> <td>→</td> <td>air cooling room temp 90min</td> </tr> </table> <p style="text-align: center;"><b>Total 5hours 15minutes</b></p> <p>Advantages : 1) higher permeability to penetrate deep into gaps with a shorter dipping time. 2) shorter curing time. 3) shorter total production time makes significant cost-cutting.</p>	preliminary drying 120°C 30min	→	air coolin 50°C 30min	→	dipping impregnation room temp 30min	→	draining room temp 15min	→	curing 170°C 2hours	→	air cooling room temp 90min	
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## 6. Safety instructions for using VISTEX V-4000

- (1) Wear proper protective equipments such as safety glasses, industrial canister gas masks, and skin protection gloves so as not to inhale or contact with eyes, skin or clothing.
- (2) If skin contact occurs, wash off with soap immediately.
- (3) If eye contact occurs, immediately rinse thoroughly with plenty of water for at least 15 min. Have the medical doctor's treatment.
- (4) Install a local ventilator.
- (5) Be careful not to ignite by fire, static electricity or shock spark.
- (6) Store at cool dark place under 35°C.
- (7) VISTEX V-4000 absorb moisture, so please do not leave it open to air. Please dry the core preliminarily before impregnate with V-4000.

Above are only basic safety instructions. Please be sure to refer SDS before using the product.

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