



技 術 資 料

Technical Information



VISTEX V-4000

Acrylic impregnation resin for cut cores



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VISTEX V-4000 ~Impregnation resin for cut cores~

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

Comparing with conventional epoxy impregnation resin, VISTEX V-4000 reduces the processing time, and the unique properties of the resin itself significantly improve the usability of the adhesive.

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 adhesive at room temperature.

1. Featured advantages of V-4000

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

V-4000		50mPa·s
	Single liquid, epoxy adhesive for cut cores	120mPa·s

- (2) Significant shorter curing time for adhesion.

V-4000		2 hours at 170°C
	Single liquid, epoxy adhesive for cut cores	12 hours at 150°C

- (3) Stronger bonding power.

V-4000		More than 20MPa
	Single liquid, epoxy adhesive for cut cores	10MPa

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

Item	VISTEX V-4000	Single liquid, epoxy adhesive 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	More than 20MPa	More than 10MPa
T-Peel strength(Amorphous)	1200mN/25mm	—
Hardness(Shore D)	56	90
Flash point	113°C	—
Transport of dangerous goods	Not classified	—
Warranty period	6 months	—
Storage conditions	Room temperature	5°C

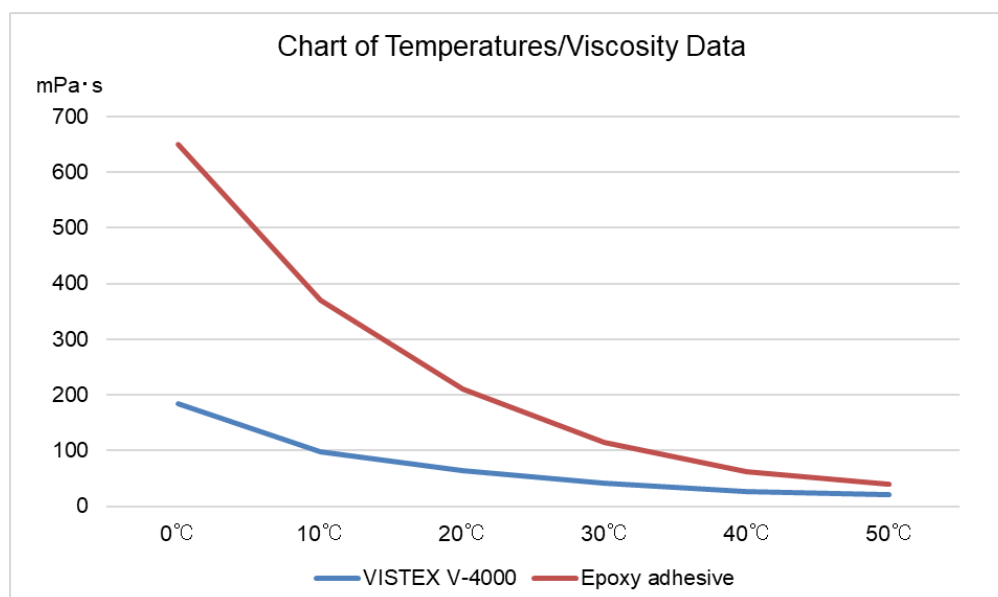
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3. Temperatures/Viscosity data between VISTEX V-4000 and Epoxy adhesive

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 adhesive	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, Adhesive 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	26.4	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)

Tensile Shear Adhesive 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.

Presence or Absence of Tack (stickiness)

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

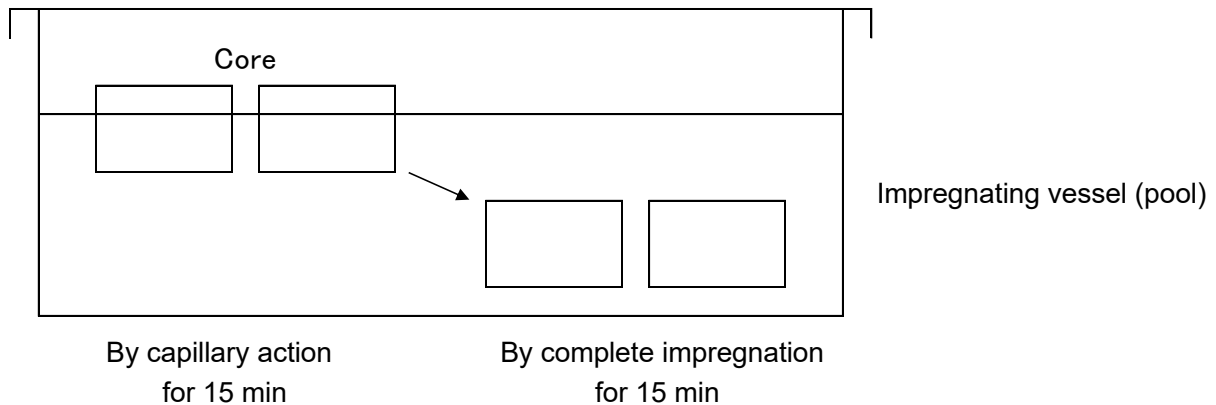
Hardening Temperature	30min	1hour	2hour	3hour
150°C	×	×	×	✓
160°C	×	×	✓	✓
170°C	✓	✓	✓	✓
180°C	✓	✓	✓	✓
190°C	✓	✓	✓	✓

✓ : No tack × : With tack

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 adhesive in cut core production process]

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

adhesive	Production Prozesse						
VISTEX V-4000	preliminary drying	air cooling	dipping impregnation		draining	curing	air cooling
	120°C 30min	50°C 30min	room temp 30min	→	room temp 15min	170°C 2hours	room temp 90min
	Total 5hours 15minutes						
	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.						
Epoxy adhesive (for Core)	preliminary drying	air cooling	dipping impregnation	vacuum impregnation	draining	curing	air cooling
	120°C 30min	50°C 30min	room temp 30min	room temp 60min	room temp 60min	150°C 12hours	room temp 90min
	Total 17hours						
	Disadvantages : 1) a vacuum impregnation system is required due to low permeability. 2) longer curing time.						

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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