



产 品 说 明 书
Product Instruction

产品名称：
环保无溶剂绝缘漆
Product Name:
Environmentally Friendly
Solventless Insulating Varnish

产品型号：
E57-89H
Product Model:
E57-89H

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E57-89H 环保型无溶剂绝缘漆

E57-89H Environmentally Friendly Solventless Insulating Varnish

产品描述:

Product Overview:

E57-89H 环保型无溶剂绝缘漆是由改性耐热无溶剂环保环氧聚酯树脂、促进剂、固化剂等组成，漆膜韧中带钢，耐热等级 H-C ($\geq 180^{\circ}\text{C}$) 级，单组份、通用型浸渍绝缘漆产品。

E57-89H is an environmentally friendly, solventless insulating varnish formulated with modified heat-resistant epoxy-polyester resin, an accelerator and a curing agent. This single-component, general-purpose impregnating varnish forms a cured film that combines toughness with rigidity and offers a thermal classification of H-C ($\geq 180^{\circ}\text{C}$).

产品特性:

Features:

- 理论 VOC 为 0，闪点 $> 96^{\circ}\text{C}$ ，环保低味无挥发、非易燃、非易爆。
- 产品有效成份含量为 100%，常温下粘度小，渗透力好，导热率高，降低电机温升，与漆包线相容性好，固化物热变形温度高，耐热等级高，热态电气、粘结强度高。
- 符合欧盟 ROHS，REACH，无卤，环保
- Theoretical VOC is zero; flash point $> 96^{\circ}\text{C}$; environmentally friendly, low odor, non-volatile, non-flammable and non-explosive.
- The product contains 100% active ingredients. It has low viscosity at room temperature, good penetration and high thermal conductivity, reducing motor temperature rise. It is well compatible with enameled wire. The cured product has a high heat distortion temperature and high thermal class, with high electrical strength and bond strength at elevated temperatures.
- Complies with EU RoHS and REACH; halogen-free and environmentally friendly.

产品应用:

Product Applications:

- 各类三项异步、永磁电机、风电核电电机、舰船类电机、分马力电机、高功率电动工具、汽车电机、定子浸渍绝缘。
- 水泵电机、裸扁线电机转子线圈浸渍绝缘。
- 中小型圆、扁线圈、绕组浸渍绝缘。
- 中小圆、扁线电抗器绕组浸渍绝缘。
- Impregnation insulation for stator windings in three-phase induction motors, permanent magnet motors, motors for wind and nuclear power applications, marine motors, fractional-horsepower motors, high-power electric tool motors and automotive motors.
- Impregnation insulation for water pump motors and motor rotor coils wound with bare flat wire.
- Impregnation insulation for small and medium-sized coils and windings made with round or flat wire.
- Impregnation insulation for small and medium-sized reactor windings made with round or flat wire.

性能指标:

Performance Specifications:

以下项目参照 GB/T15022.2-2017 标准试验方法:

The following items are tested in accordance with the standard test methods of GB/T 15022.2-2017:

序号 / No.	指标名称 / Property	试验条件 / Test Conditions	指标值 / Specification
1	外观 Appearance	试管法, 目测 Test tube method, visual	淡黄色透明液体, 无机械杂质 Pale yellow transparent liquid, free of mechanical impurities
2	粘度 Viscosity	涂四杯, $25 \pm 1^\circ\text{C}$ Ford cup No. 4, $25 \pm 1^\circ\text{C}$	40-80"
3	比重 Specific gravity	25°C	1.075 ± 0.05
4	固化时间 Curing time	$135^\circ\text{C} \sim 150^\circ\text{C}$ $135-150^\circ\text{C}$	$\geq 2\text{h}$
5	凝胶时间 Gel time	$120^\circ\text{C} \pm 2^\circ\text{C}$ $120 \pm 2^\circ\text{C}$	5-15 分钟 5-15 min
6	厚层固化能力 Thick-layer curing ability	10 克树脂于 $45 \times 45 \times 25\text{mm}$ 铝盒中, 135°C 3h 10 g of resin in a $45 \times 45 \times 25\text{ mm}$ aluminum box, 135°C for 3 h	不差于 S1-U1-I2.2 均匀 No worse than S1-U1-I2.2, uniform
7	存储增粘系数 Storage thickening coefficient	60°C 恒温/96h 闭口法 60°C constant temperature / 96 h, sealed method	$< 20\%$
8	电气强度 Electric strength	常态时 At ambient temperature	$\geq 24\text{MV/m}$
		$20^\circ\text{C} \pm 5^\circ\text{C}$ 水浸 24h 后 After immersion in water at $20 \pm 5^\circ\text{C}$ for 24 h	$\geq 22\text{MV/m}$
		$155 \pm 2^\circ\text{C}$	$\geq 20\text{MV/m}$
9	粘结强度(螺旋线圈法) Bond strength (helical coil method)	常态时 At ambient temperature	$\geq 140\text{N}$
		$180^\circ\text{C} \pm 2^\circ\text{C}$ $180 \pm 2^\circ\text{C}$	$\geq 50\text{N}$
10	体积电阻率 Volume resistivity	常态时 At ambient temperature	$\geq 1 \times 10^{13} \Omega \cdot \text{m}$
		$20^\circ\text{C} \pm 5^\circ\text{C}$ 水浸 24 小时后 After immersion in water at $20 \pm 5^\circ\text{C}$ for 24 h	$\geq 1 \times 10^{12} \Omega \cdot \text{m}$
		$180^\circ\text{C} \pm 2^\circ\text{C}$ $180 \pm 2^\circ\text{C}$	$\geq 1.2 \times 10^9 \Omega \cdot \text{m}$
11	导热系数 Thermal conductivity	W/(m·K) W/(m·K)	≥ 0.4

序号 / No.	指标名称 / Property	试验条件 / Test Conditions	指标值 / Specification
12	耐油性 Oil resistance	180℃±2℃24h (机油 BOT805CEV/BOT790/SL3767) 180±2℃ for 24 h (engine oil BOT805CEV/BOT790/SL3767)	漆膜光滑平整无气泡无开裂 Film smooth and flat, no blisters or cracking
13	TGA 温度指数 TGA temperature index	GBT27761-2011 GB/T 27761-2011	≥265℃
14	稀释剂 Thinner	X-101	

使用工艺:

Application Procedure:

真空浸漆工艺: 定子放入漆槽, 先负压向漆槽注入漆液, 真空度至 0.08 或保压沉浸 30 分钟, 工件出槽滴干 > 30 分钟, 升温至 120-130℃, 烘烤 30 分钟-1 小时, 再升温至 135-150℃, 保温烘烤 2-4 小时或至电机电阻值稳定为止。

滴浸工艺: 工件先预热至 50℃ 左右后开始滴浸, 效果较佳。

真空浸漆和浸压排气时和浸漆后的工件烘烤过程中, 需配置通风与排气管道有组织排放。

Vacuum Impregnation Process: Place the stator in the impregnation tank and draw the varnish into the tank under negative pressure. Reach a vacuum of 0.08 MPa and maintain immersion for 30 minutes. Remove the workpiece and allow excess varnish to drain for more than 30 minutes. Heat to 120-130℃ and bake for 30-60 minutes, then raise the temperature to 135-150℃ and hold for 2-4 hours, or until the motor winding resistance stabilizes.

Trickle Impregnation Process: For best results, preheat the workpiece to approximately 50℃ before starting trickle impregnation.

Ventilation and Exhaust: Provide ventilation and exhaust ducting for controlled discharge during vacuum impregnation, pressure release and degassing, and subsequent baking of the impregnated workpieces.

注意事项:

Precautions:

实际应用时客户请根据含浸的变压器的形状、大小不同, 通过实验确定所用的含浸的时间、固化时间等生产条件。

In actual application, please determine the impregnation time, curing time and other process conditions through testing, according to the different shapes and sizes of the impregnated transformers.

包装、储运及保质期:

Packaging, Storage, Transportation and Shelf Life:

- 包装:
20Kg/桶、200Kg/桶
- 储运:

请远离火源、热源，按法规搬运。

本产品存储和使用过程中，禁止太阳光、紫外光照射漆液，存放于阴凉通风处，存储温度应低于 40℃。

使用过程中产品不宜长时间密闭静置，适当流动搅拌有利于延长存储时间。

本产品在存放过程中，粘度会发生轻微增长，使用时用专用稀释剂兑稀到使用粘度，使用即可。

- **保质期：**

密闭保存，存储温度应低于 40℃，保质期为 6 个月

- **Packaging:**

20 kg/pail; 200 kg/drum.

- **Storage and Transportation:**

Keep away from ignition sources and heat. Handle and transport in accordance with applicable regulations.

Protect the varnish from sunlight and ultraviolet light during storage and use. Store in a cool, well-ventilated area below 40°C.

During use, avoid leaving the product sealed and undisturbed for prolonged periods. Gentle circulation or stirring helps extend storage life.

Viscosity may increase slightly during storage. Before use, adjust to the required application viscosity with the designated thinner.

- **Shelf Life:**

Six months when stored in sealed containers below 40°C.

安全操作须知：

Safe Handling Instructions:

安全使用须知不在此列出，操作前请阅读本产品的化学品安全说明书（MSDS），可从本公司业务专员处获得。

Safety instructions are not listed in this document. Before operation, please read the Material Safety Data Sheet (MSDS) of this product, which can be obtained from our sales representative.

温馨提示：

Please Note:

- 由于我们的产品会持续优化和改进，本手册中的相关信息可能会根据实际情况进行调整，不另行通知。如需获取最新版本或了解更多信息，欢迎随时联系我们的销售团队。

- 本公司严格按相关产品标准控制质量和提供产品（特制品按双方约定）。产品应用条件的多样性和多变性，且均非我们所能控制，因此用户应对本产品之说明书与施工参考工艺所介绍的信息和产品预先进行试验和评估，自行确定对其特定用途的适用性。

- As our products are continuously improved, the information in this manual may be updated from time to time without prior notice. Please feel free to contact our sales team for the latest version.

- Do not mix this product with other products.

- We strictly control product quality and supply products in accordance with applicable product standards. Custom products are supplied according to mutually agreed specifications. Application conditions vary and are beyond our control. Users should therefore test and evaluate the product and the information provided in this manual and the recommended application procedures to determine suitability for their specific use.