

产品技术数据表 TECHNICAL DATA SHEET

东莞科耀新材料有限公司 | DONGGUAN KEYAO NEW MATERIALS CO., LTD.

K-8065M 无刷电机磁钢粘接专用环氧胶 | K-8065M Epoxy Adhesive for Brushless Motor Magnet Steel Bonding

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一、产品描述 Product Description

中文：本品是专为无刷电机钕铁硼(NdFeB)、铁氧体磁瓦与转子、定子基体粘接研发的单组分热固化环氧结构胶，采用改性潜伏型固化体系，突破常规环氧胶高温固化局限，可在 80°C 低温条件下快速固化，精准匹配电机行业高精度装配、高耐久粘接的核心需求，固化后粘接强度高、耐高低温、耐老化，适配各类工业无刷电机的磁钢固定工艺。

English: This product is a one-component heat-curing epoxy structural adhesive specially developed for bonding neodymium iron boron (NdFeB) and ferrite magnetic tiles of brushless motors with rotor and stator substrates. Adopting a modified latent curing system, it breaks through the limitation of high-temperature curing of conventional epoxy adhesives, and can be cured quickly at a low temperature of 80°C. It accurately matches the core requirements of high-precision assembly and high-durability bonding in the motor industry. After curing, it has high bonding strength, high and low temperature resistance, and aging resistance, and is suitable for magnet steel fixing processes of various industrial brushless motors.

二、产品特点 Product Features

序号 No.	中文特性 Chinese Features	英文特性 English Features
1	低温快速固化：80°C×30-60 分钟即可完成基础固化，30 分钟可达到搬运强度	Low-temperature fast curing: Basic curing can be completed at 80°C for 30-60 minutes, handling

	度，提升生产效率	strength can be achieved in 30 minutes, improving production efficiency
2	超高粘接强度：常温剪切强度≥30MPa，高温环境下仍保持优异粘接性能，杜绝磁钢脱落风险	Ultra-high bonding strength: Normal temperature shear strength ≥30MPa, maintaining excellent bonding performance in high temperature environment, eliminating the risk of magnet steel falling off
3	宽温域适用：可在-50°C~220°C 环境下长期稳定工作，适配电机高低温交变工况	Wide temperature range application: Long-term stable operation at -50°C~220°C, suitable for alternating high and low temperature conditions of motors
4	低收缩设计：热膨胀系数CTE 与金属基体高度匹配，固化收缩率低，避免应力开裂	Low shrinkage design: CTE is highly matched with metal substrate, low curing shrinkage rate, avoiding stress cracking
5	优良工艺性：粘度适中，触变性好，施胶不流淌、不滴落，适配点胶、刮胶等多种工艺	Excellent processability: Moderate viscosity, good thixotropy, no flowing or dripping during gluing, suitable for dispensing, scraping and other processes

三、固化前特性 **Properties Before Curing**

特性 Property	典型值 Typical Value	数值范围 Range	测试方法 Test Method
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外观 Appearance	黑色均匀膏状 Black Uniform Paste	—	目视 Visual Inspection
密度 Density (25°C)	1.50 g/cm³	1.40~1.60 g/cm³	GB/T 13354
粘度 Viscosity (25°C)	12,000 mPa·s	8,000~15,000 mPa·s	GB/T 2794
细度 Fineness	≤20μm	—	GB/T 1724
储存期 Storage Life (5-15°C)	6 个月 6 months	≥6 months	粘度倍增法

四、固化条件 Curing Conditions

温度 Temperature	时间 Time	强度达成率 Strength Achievement Rate	备注 Remarks
80°C	30 分钟 30min	≥70%	可搬运 Handleable
80°C	60 分钟 60min	≥90%	标准固化 Standard
80°C + 120°C	30min + 30min	≥95%	推荐工艺 Recommended
80°C + 150°C	60min + 120min	≥98%	后固化优化 Post-cure Optimal

说明：后固化可显著提升 Tg 和高温强度保持率 | Note: Post-curing can significantly improve Tg and high-temperature strength retention rate

五、固化后特性 Properties After Curing

5.1 力学性能 Mechanical Properties

性能 Property	测试条件 Test Condition	典型值 Typical Value	测试方法 Test Method
剪切强度 Shear Strength	钢-钢, 25°C	≥30 MPa	GB/T 7124
剪切强度 Shear Strength	钢-钢, 150°C	≥15 MPa	GB/T 7124
剪切强度 Shear Strength	钢-钢, 200°C	≥8 MPa	GB/T 7124
拉伸强度 Tensile Strength	25°C	≥50 MPa	GB/T 2567
断裂伸长率 Elongation at Break	25°C	≥3%	GB/T 2567
邵氏硬度 Shore Hardness D	25°C	85±5	GB/T 2411
压缩强度 Compressive Strength	25°C	≥80 MPa	GB/T 2567
冲击强度 Impact Strength	25°C	≥12 kJ/m²	GB/T 2567
玻璃化转变温度 Tg Tg	DSC 法	≥130°C	GB/T 19466

5.2 粘接性能（磁钢专用） Bonding Properties (Magnet Steel Specific)

粘接组合 Bonding Combination	测试条件 Test Condition	典型值 Typical Value	测试方法 Test Method
钕铁硼-钢 NdFeB-Steel	25°C	≥25 MPa	GB/T 7124

Steel			
钕铁硼-钢 NdFeB-Steel	150°C	≥12 MPa	GB/T 7124
钕铁硼-铝 NdFeB-Aluminum	25°C	≥20 MPa	GB/T 7124
铁氧体-钢 Ferrite-Steel	25°C	≥18 MPa	GB/T 7124
铁氧体-铝 Ferrite-Aluminum	25°C	≥15 MPa	GB/T 7124
剥离强度 Peel Strength	25°C	≥6 N/mm	GB/T 2792

5.3 热性能 Thermal Properties

性能 Property	典型值 Typical Value	测试方法 Test Method
热膨胀系数 CTE CTE (T<T _g)	45×10 ⁻⁶ /K	GB/T 36800
热膨胀系数 CTE CTE (T>T _g)	120×10 ⁻⁶ /K	GB/T 36800
导热系数 Thermal Conductivity	0.6 W/(m·K)	GB/T 10295
热变形温度 HDT HDT	≥140°C	GB/T 1634
耐温范围 Service Temperature	-50°C ~ 220°C	—

5.4 电性能 Electrical Properties

性能 Property	典型值 Typical Value	测试方法 Test Method
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体积电阻率 Volume Resistivity	$\geq 1 \times 10^{15} \Omega \cdot \text{cm}$	GB/T 1410
表面电阻率 Surface Resistivity	$\geq 1 \times 10^{14} \Omega$	GB/T 1410
介电强度 Dielectric Strength	$\geq 20 \text{ kV/mm}$	GB/T 1408
介电常数 Dielectric Constant (1MHz)	3.5 ± 0.3	GB/T 1409
介质损耗因数 Dissipation Factor (1MHz)	≤ 0.02	GB/T 1409

5.5 耐化学性能 Chemical Resistance

化学介质 Chemical Medium	浸泡条件 Immersion Condition	强度保持率 Strength Retention
机油 Engine Oil	150°C, 1000h	$\geq 85\%$
变速箱油 Gear Oil	150°C, 1000h	$\geq 85\%$
制动液 Brake Fluid	120°C, 500h	$\geq 80\%$
防冻液 Antifreeze	100°C, 1000h	$\geq 85\%$
汽油 Gasoline	25°C, 500h	$\geq 80\%$
去离子水 Deionized Water	85°C, 1000h	$\geq 85\%$
盐雾测试 Salt Spray (5%NaCl)	35°C, 1000h	$\geq 80\%$

六、使用说明 Instructions for Use

6.1 表面处理 Surface Preparation

中文：被粘基材表面需清洁、干燥、无油污。建议采用以下处理方式：钢件：喷砂处理（Ra 3.2-6.3 μ m）或砂纸打磨后丙酮擦拭；铝件：阳极氧化或化学处理后用丙酮擦拭；钕铁硼磁钢：用丙酮或酒精擦拭去除表面防护油渍，避免破坏镀层；铁氧体：砂纸轻打磨后丙酮擦拭。

English: The surface of the bonded substrate shall be clean, dry and free of oil. The following treatment methods are recommended: Steel parts: Sandblasting (Ra 3.2-6.3 μ m) or sandpaper polishing followed by acetone wiping; Aluminum parts: Anodizing or chemical treatment followed by acetone wiping; NdFeB magnet steel: Wipe with acetone or alcohol to remove surface protective oil, avoiding damage to the coating; Ferrite: Light sandpaper polishing followed by acetone wiping.

6.2 施胶 Application

中文：施胶前将胶液从冷藏环境取出，恢复至室温（25°C 左右）；如有分层现象，需搅拌均匀后使用；可采用点胶机、刮刀或毛刷涂布，建议胶层厚度 0.05-0.15mm；涂胶后尽快完成装配，避免敞置时间过长影响粘接效果。

English: Take the adhesive out of the refrigerated environment and return it to room temperature (about 25°C) before application; If there is stratification, stir evenly before use; It can be applied by dispenser, scraper or brush, and the recommended adhesive layer thickness is 0.05-0.15mm; Complete the assembly as soon as possible after gluing to avoid excessive open placement time affecting the bonding effect.

6.3 固化 Curing

中文：推荐固化工艺：80°C × 60 分钟；如需更高耐温性能，建议进行后固化：120-150°C × 1-2 小时；固化过程中避免工件震动和位移，防止粘接错位。

English: Recommended curing process: 80°C × 60 minutes; For higher temperature resistance, post-curing is recommended: 120-150°C × 1-2 hours; Avoid vibration and displacement of the workpiece during curing to prevent bonding misalignment.

七、储存与包装 Storage and Packaging

包装规格 **Package Size:** 50ml 针筒、200ml 支装、1kg/罐、5kg/桶（可定制） | 50ml Syringe, 200ml Tube, 1kg/Can, 5kg/Bucket (Customizable)

储存条件 **Storage Condition:** 5-15°C 阴凉干燥处密封保存，避免阳光直射和高温 | Sealed storage in a cool and dry place at 5-15°C, avoid direct sunlight and high temperature

保质期 **Shelf Life**: 未开封原包装 6 个月 (5-15°C) | 6 months in unopened original package (5-15°C)

运输条件 **Transport Condition**: 按非危险品运输, 建议冷链运输 (<25°C) |
Transport as non-dangerous goods, cold chain transportation recommended (<25°C)

八、安全与环保 **Safety and Environment**

中文: 本品为热固化型环氧胶, 固化前避免直接接触皮肤和眼睛; 使用时保持工作场所通风良好; 如不慎接触皮肤, 立即用肥皂水清洗; 溅入眼睛, 立即用大量清水冲洗并就医; 固化后产品无毒无害, 符合 RoHS 2.0 和 REACH 法规要求; 废弃物处理请遵循当地环保法规。

English: This product is a thermosetting epoxy adhesive. Avoid direct contact with skin and eyes before curing; Keep the workplace well ventilated during use; If accidentally contact with skin, wash immediately with soapy water; If splashed into eyes, rinse immediately with plenty of water and seek medical attention; The cured product is non-toxic and harmless, complying with RoHS 2.0 and REACH regulations; Dispose of waste in accordance with local environmental regulations.

九、符合标准 **Compliance Standards**

- GB/T 7124-2008 胶粘剂 拉伸剪切强度的测定 (刚性材料对刚性材料)
- GB/T 2567-2021 树脂浇铸体性能试验方法
- GB/T 13354-1992 液态胶粘剂密度的测定 重量杯法
- GB/T 2794-2013 胶粘剂粘度的测定 单圆筒旋转粘度计法
- GB/T 19466.2-2004 塑料 差示扫描量热法(DSC) 第 2 部分: 玻璃化转变温度的测定
- RoHS Directive 2011/65/EU
- REACH Regulation (EC) No 1907/2006

十、注意事项 **Precautions**

- 本品为单组分热固化胶, 必须在规定温度以上才能固化, 常温下不固化
- 储存温度严禁超过 25°C, 否则会导致粘度上升甚至提前固化
- 从冷藏取出后需恢复至室温再开封, 防止冷凝水进入胶管影响产品性能
- 固化温度和时间的设定需根据实际工件大小和传热条件灵活调整
- 大批量使用前建议进行小样测试, 确认适配工艺参数后再批量投产

十一、制造商信息 Manufacturer Information

产品型号 Product Model: K-8065M

版本 Version: V1.0

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