

验证报告

编号: SHAEC24000068302

日期: 2024 年 01 月 12 日

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客户名称: 江苏鼎智智能控制科技股份有限公司
客户地址: 江苏省常州经济开发区潞城街道龙锦路 355 号

样品名称: 混合式空心轴步进电机
测试基本型号: 11HS2045-4D-100
客户参考信息: HS

以上样品及信息由客户提供。

SGS 工作编号: SHP24-000057
样品接收时间: 2024 年 01 月 02 日
验证周期: 2024 年 01 月 02 日 ~ 2024 年 01 月 11 日
验证要求: 参考欧盟 RoHS 指令 2011/65/EU 的修正指令(EU) 2015/863。
验证方法: 见后续页。
验证程序和结果: 见后续页。

检测结果总结:

检测项目	结论
欧盟 RoHS 指令 2011/65/EU 附录 II 修正指令(EU) 2015/863- 铅, 汞, 镉, 六价铬, 多溴联苯(PBBs), 多溴二苯醚(PBDEs), 邻苯二甲酸二丁酯 (DBP), 邻苯二甲酸丁苄酯(BBP), 邻苯二甲酸二(2-乙基己基)酯(DEHP)和邻苯二甲酸二异丁酯(DIBP)	符合

通标标准技术服务(上海)有限公司
授权签名

陈皆欢

Jessica Chen 陈皆欢
批准签署人

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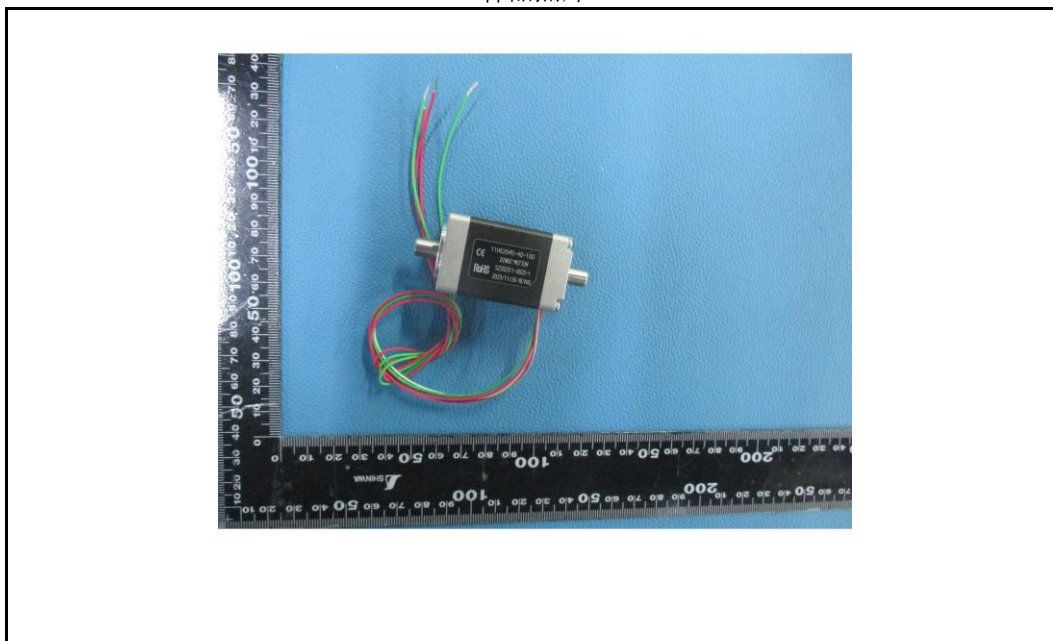
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样品照片



验证方法:

1. 参考 IEC 62321-2:2021, 拆分申请者提供的成品。
2. 参考 IEC 62321-1:2013, 仅对本报告照片中标识的样品进行了下列测试分析。
 - (1) 参考 IEC 62321-3-1: 2013, 用能量色散型 X 射线荧光分析仪器进行筛选。
 - (2) 湿法化学检测方法: 参考 IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015, IEC 62321-7-2:2017, ISO 17075-1:2017, IEC 62321-12:2023, IEC 62321-6:2015 和 IEC 62321-8:2017, 采用 ICP-OES, UV-Vis 和 GC- MS 进行分析。



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验证部件外观描述:

样品序号	样品编号	SGS 样品 ID	样品描述
SN1	A1	SHA24-0000683-0001.C001	银色金属外壳
SN2	A2	SHA24-0000683-0001.C002	银色金属外壳
SN3	A3	SHA24-0000683-0001.C003	银色金属螺丝
SN4	A4	SHA24-0000683-0001.C004	黑色粘性塑料标签
SN5	A5	SHA24-0000683-0001.C005	绿/白色塑料外被
SN6	A6	SHA24-0000683-0001.C006	红/白色塑料外被
SN7	A7	SHA24-0000683-0001.C007	银色金属线芯
SN8	A8	SHA24-0000683-0001.C008	银色金属轴
SN9	A9	SHA24-0000683-0001.C009	银色金属轴
SN10	A10	SHA24-0000683-0001.C010	铜色金属线圈
SN11	A11	SHA24-0000683-0001.C011	米色塑料支架
SN12	A12	SHA24-0000683-0001.C012	PCB 上银色金属焊锡
SN13	A13	SHA24-0000683-0001.C013	绿色 PCB 本体
SN14	A14	SHA24-0000683-0001.C014	PCB 上白色胶
SN15	A15	SHA24-0000683-0001.C015	黑色金属硅钢片
SN16	A16	SHA24-0000683-0001.C016	轴承上银色金属
SN17	A17	SHA24-0000683-0001.C017	轴承上银色金属
SN18	A18	SHA24-0000683-0001.C018	轴承上银色金属
SN19	A19	SHA24-0000683-0001.C019	轴承上银色金属
SN20	A20	SHA24-0000683-0001.C020	轴承上银色金属
SN21	A21	SHA24-0000683-0001.C021	轴承上银色金属



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验证结果:

根据物料风险评估的结果, 验证送测样品中的以下材料。(除特别标注, 单位均为: mg/kg)

检测项目	A1	A2	A3	A4	A5	A6	A7	A8
Cd	BL	BL	BL	BL	BL	BL	BL	BL
Pb	BL	BL	BL	BL	BL	BL	BL	BL
Hg	BL	BL	BL	BL	BL	BL	BL	BL
Cr(VI)▼	ND	ND	ND	BL	BL	BL	BL	ND
PBBs	---	---	---	BL	BL	BL	---	---
PBDEs	---	---	---	BL	BL	BL	---	---
DBP	---	---	---	BL	BL	BL	---	---
BBP	---	---	---	BL	BL	BL	---	---
DEHP	---	---	---	BL	BL	BL	---	---
DIBP	---	---	---	BL	BL	BL	---	---
结论	符合	符合	符合	符合	符合	符合	符合	符合

检测项目	A9	A10	A11	A12	A13	A14	A15	A16
Cd	BL	BL	BL	BL	BL	BL	BL	BL
Pb	BL	BL	BL	BL	BL	BL	BL	BL
Hg	BL	BL	BL	BL	BL	BL	BL	BL
Cr(VI)▼	ND	BL	BL	BL	BL	BL	ND	ND
PBBs	---	---	BL	---	ND	ND	---	---
PBDEs	---	---	BL	---	ND	ND	---	---
DBP	---	---	BL	---	BL	BL	---	---
BBP	---	---	BL	---	BL	BL	---	---
DEHP	---	---	BL	---	BL	BL	---	---
DIBP	---	---	BL	---	BL	BL	---	---
结论	符合	符合	符合	符合	符合	符合	符合	符合

检测项目	A17	A18	A19	A20	A21
Cd	BL	BL	BL	BL	BL
Pb	BL	BL	BL	BL	BL
Hg	BL	BL	BL	BL	BL
Cr(VI)▼	ND	ND	ND	ND	ND
PBBs	---	---	---	---	---
PBDEs	---	---	---	---	---
DBP	---	---	---	---	---
BBP	---	---	---	---	---
DEHP	---	---	---	---	---
DIBP	---	---	---	---	---
结论	符合	符合	符合	符合	符合



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备注:

(1) X 射线荧光光谱法(XRF)筛选结果说明:

(a)下表为 IEC62321-3-1: 2013 附录 A 不同基体材料中以 mg/kg 表示的筛选元素限值:

元素	聚合物	金属	复合材料
Cd	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$LOD < X < (150+3\sigma) \leq OL$
Pb	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Hg	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Br	$BL \leq (300-3\sigma) < X$	不适用	$BL \leq (250-3\sigma) < X$
Cr	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$

(b) 现行法规限制的最大允许值是对 PBB/PBDE 和 Cr(VI) 而不是对 Br 和 Cr 的, 而 XRF 测定的是 Br 和 Cr。如果元素 Br 和或 Cr 的定量结果均高于限值(Br 计算基于在常见物质中 PBB/PBDE 的组成的理论计算), 则样品的筛选结果为“不确定”。

(c) EDXRF 的结果用于初步筛选, LOD=检出限, BL=低于限值, OL=超出限值, IN (符号“X”标记的区域)=不确定, 需要进一步研究, 我们建议客户用更精确的化学检测方法测试样品, 如用 ICP-OES 测试 Cd/Pb/Hg; 用 UV-Vis 测试 Cr(VI); 用 GC-MS 测试 PBBs/PBDEs。

(d) 对于复合材料, EDXRF 筛选检测 RoHS 元素所得数据可能与样品中实际含量不同。

(2) 邻苯二甲酸酯(PHTH)筛分结果只作初步筛选, 如果检测结果超出下表所规定的警戒范围, 我们采用更精确的化学检测方法检测样品, 用 GC-MS 检测 DBP、BBP、DEHP 和 DIBP (单位: mg/kg)。

检测项目	CAS No.	聚合物/复合材料
邻苯二甲酸二丁酯 (DBP)	84-74-2	$BL \leq 600 < X$
邻苯二甲酸丁苄酯 (BBP)	85-68-7	$BL \leq 600 < X$
邻苯二甲酸二(2-乙基己基)酯 (DEHP)	117-81-7	$BL \leq 600 < X$
邻苯二甲酸二异丁酯 (DIBP)	84-69-5	$BL \leq 600 < X$

(3) 化学检测方法结果说明:

(a) $mg/kg = 0.0001\%$, MDL=方法检测限, ND =未检出(低于 MDL), --- =不适用。

(b) 化学检测方法的表达单位和方法检测限

检测项目	Pb	Cd	Hg	DBP	BBP	DEHP	DIBP
单位	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
方法检测限	10	10	10	100	100	100	100

任何一种 PBBs 和 PBDEs 的方法检测限是 100 mg/kg;

聚合物, 复合材料和皮革样品中 Cr(VI)的方法检测限是 10 mg/kg。

金属样品中 Cr(VI)的方法检测限是 0.10 $\mu g/cm^2$ 。

(c) ▼ = 金属样品中

a. 当六价格的浓度高于 0.13 $\mu g/cm^2$ 时, 样品为阳性, 即含有六价格;

b. 当六价格的浓度为 ND(低于 0.10 $\mu g/cm^2$)时, 样品为阴性, 即未检测到六价格;

c. 当六价格的浓度介于 0.10 $\mu g/cm^2$ 与 0.13 $\mu g/cm^2$ 之间时, 无法直接判定是否检测到六价格, 因不同个体的样品表面差异可能会影响测定结果;

由于未获知样品的存储条件和生产日期, 样品的六价格检测结果仅能代表检测时样品含六价格的状态。

(4) RoHS 指令中限制物质及均质材料中最大允许浓度值: Cd: 0.01%, Pb/Hg/Cr(VI)/PBBs/PBDEs/ DEHP /DBP/BBP/DIBP: 0.1%, 限值引用自 RoHS 指令(EU) 2015/863。



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(5) IEC 62321 系列等同于 EN 62321 系列。

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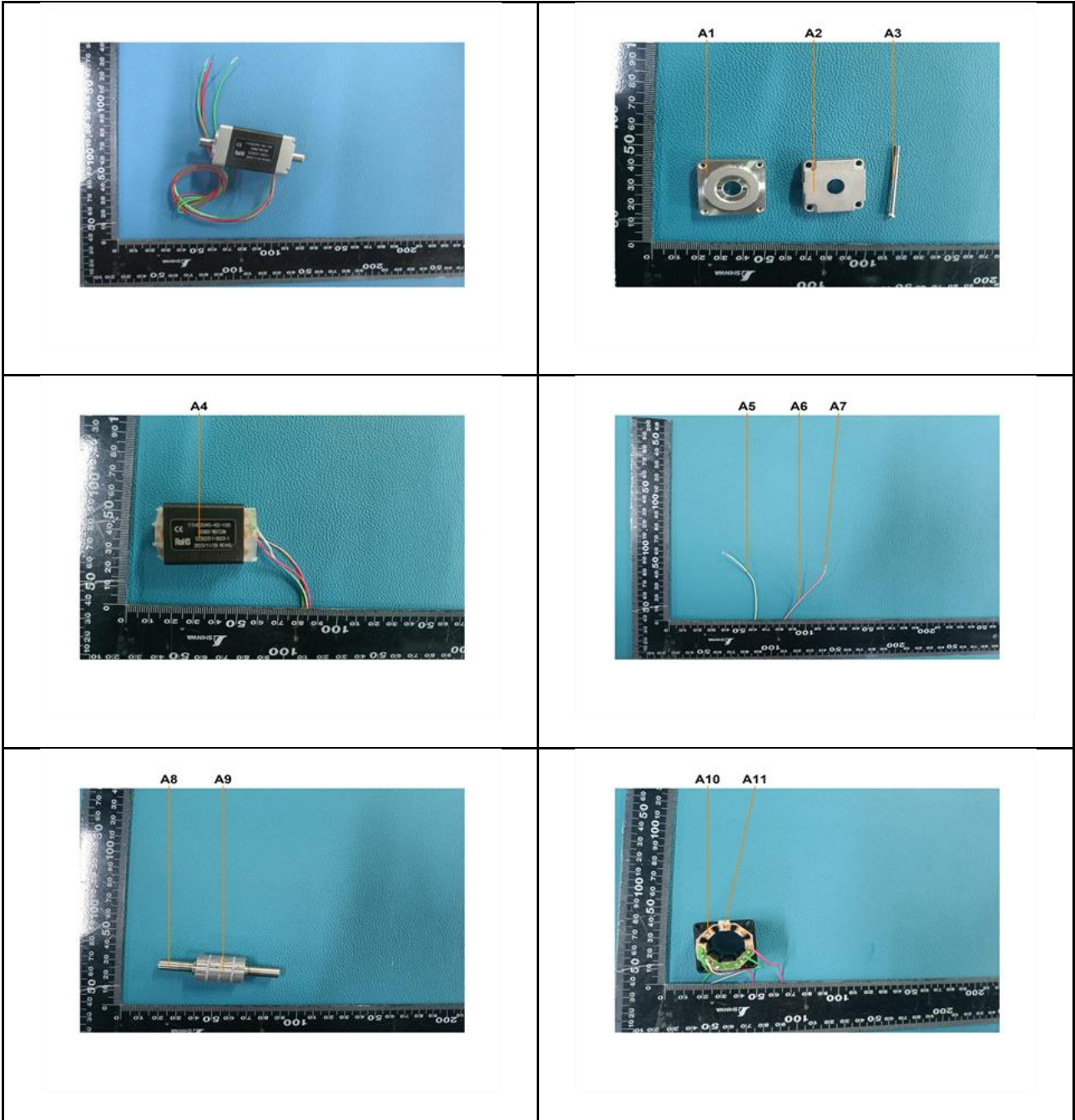
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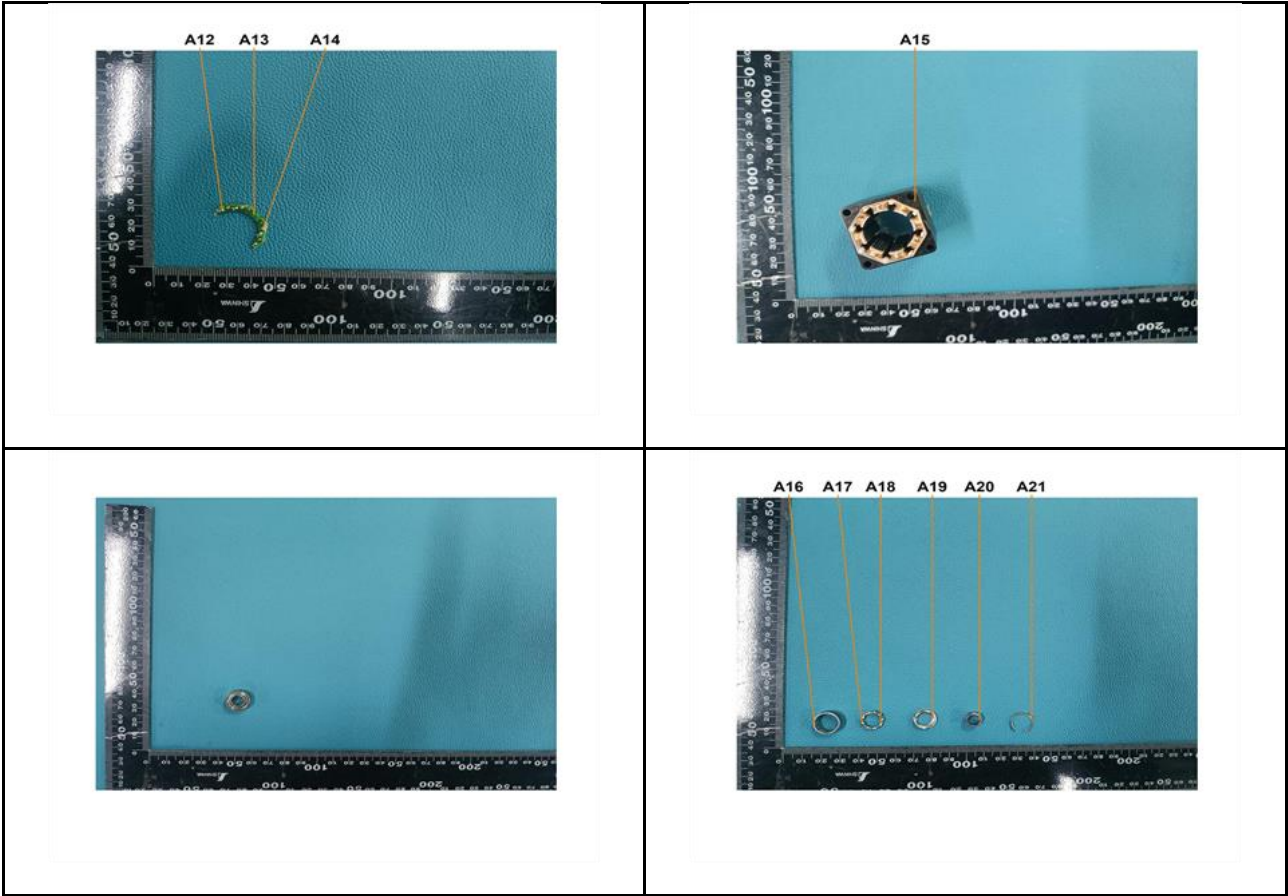
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中国·上海·徐汇区宜山路889号3号楼 邮编: 200233 t HL (86-21) 61402594 f HL (86-21) 61156899 e sgs.china@sgs.com