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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Fire hazard testing for electric and electronic products - Part 49:
Arc ignition test method for materials**

电工电子产品着火危险试验 第49部分：电弧法 材料的电弧着火试验方法

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting. This document is Part 49 of "Fire Hazard Tests for Electrical and Electronic Products". See Appendix A for details. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document was proposed by the China Electrical Equipment Industry Association. This document is under the jurisdiction of the National Technical Committee for Standardization of Fire Hazard Testing for Electrical and Electronic Products (SAC/TC300). This document was drafted by: China Southern Power Grid Co., Ltd. Ultra-high Voltage Transmission Company Electric Power Research Institute, China Electric Power Research Institute Co., Ltd., Shenyang Transformer Research Institute Co., Ltd., University of Science and Technology of China, Wuhan University, Tsinghua University Shenzhen International Graduate School, State Grid Jiangsu Electric Power Co., Ltd. Electric Power Research Institute, Shenzhen Power Supply Bureau Co., Ltd., State Grid Jiangxi Electric Power Co., Ltd. Electric Power Research Institute Institute of Technology, Harbin University of Science and Technology, State Grid Shaanxi Electric Power Co., Ltd. Electric Power Research Institute, China Southern Power Grid Co., Ltd. Ultra-high Voltage Transmission Company, Guangxi Power Grid Co., Ltd. Electric Power Research Institute, Guangdong Power Grid

Co., Ltd. Electric Power Research Institute, China Southern Power Grid Science Research Institute Co., Ltd., Yunnan Power Grid Co., Ltd. Electric Power Research Institute, Qinghai University, Chongqing University, China University of Mining and Technology China Academy of Testing and Certification (Beijing) Co., Ltd. The main drafters of this document are. Deng Jun, Jie Ganxin, Pan Zhicheng, Liu Xiuzhen, Xie Zhicheng, Liu Xin, Xu Ke, Zhou Haibin, Guan Qinggang, Lu Shouxiang, Wang Jun, Huang Daochun, Jia Zhidong, Lu Yuncai, Chen Tian, Tian Jie, Lü Gang, Zhou Ke, Qian Guochao, Ma Shouxiao, Gu Yu, Chi Minghe, Guo Can, Cai Linglong, Zhu Junlin, Wang Youyuan, Qiao Xinhan, Wang Xilin, Zhang Yuanqin, Wan Cheng.

The design of all electrical and electronic products needs to consider the risk of fire and potential fire hazards. The design of components, circuits and parts The purpose of material selection is to reduce the potential fire risk to an acceptable level even if foreseeable misuse, malfunction or failure occurs. The purpose of the Fire Hazard Test for Electrical and Electronic Products is to save lives by reducing the number of fires or the severity of fires. life and property. It can be achieved through.

---Prevent ignition of live parts as much as possible. If ignition occurs, limit the scope of the fire to the casing of the electrical and electronic products;

--- Minimize the spread of flames to the product enclosure as much as possible, and reduce the risk of combustion including heat, smoke, toxic or corrosive gases. The harmful effects of the product are minimized. The Fire Hazard Test for Electrical and Electronic Products now consists of 40 parts, divided into three major areas.

--- Fire hazard test assessment guidelines and terminology standards, including 1 terminology and 8 assessment guidelines, the purpose is to provide a professional field Provide guidance and reference procedures for fire hazard assessment;

---Fire test method standards, including 5 basic glow wire/hot wire test methods, 9 flame test methods, 2 abnormal heat resistance Capability test method, 1 arc ignition test method, the purpose is to introduce suitable for electrical and electronic equipment manufacturers and testing institutions Small-scale test methods using specific heat sources to simulate the heat sources that cause fires;

---Hazard assessment criteria for combustion flow, including 2 items of corrosiveness, 2 items of smoke blurring, 5 items of toxicity, 3 items of heat release, and 2 items of flame surface The purpose is to provide measurement of combustion toxicity, corrosiveness, smoke haze and heat release of electrical and electronic products and their materials. Guidelines and current technical status of test methods. This document describes the tests for the fire hazard of materials ignited by electric arcs. This document cannot be used alone to describe or evaluate materials, products or assemblies. The fire hazard or fire risk of a component under actual fire conditions. However, the results of this test can be used as an estimate of the fire risk taking into account the factors used. Elements of an ignition risk

assessment that are relevant to the assessment of the ignition hazard for a specific end use. Fire hazard test for electrical and electronic products Part

49.Arc method Arc ignition test methods for materials

1 Scope

Part 49 of China's fire hazard testing series for electric and electronic products, covering the arc ignition test for materials. The test addresses an ignition source that the more familiar flame tests do not represent at all. A glowing wire or a small flame is a thermal source; an arc is an electrical one, and it deposits energy into a very small area at a temperature far above any flame, while also decomposing the material into conductive residue that can sustain the arc. That is the actual mechanism of most electrical fires - a loose connection or a tracking path that arcs intermittently against a plastic housing - and a material that passes a glow-wire test may still ignite readily under it. The document specifies the test principles and objectives, general requirements, apparatus, specimens, conditioning and test conditions, procedure, safety measures and the assessment of results. It does not apply to materials that bend easily, that do not ignite when exposed to fire, or that curl and expand on heating.

This document specifies the test principles and objectives, general requirements, test equipment, test specimens, State adjustment and test conditions, test procedures, safety technical measures and result determination. This document applies to arc ignition tests of solid materials used in electrical and electronic products. This test method is not applicable to materials that are easily bent or do not ignite when exposed to fire. Materials that curl up and expand when heated.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 1094.1 Power transformers Part

3 Terms and definitions

Terms defined in GB/T 2900.1, GB/T 2900.95, GB/T 5169.1, GB/T 5169.2, and GB/T 5169.16 and the following and definitions apply to this document.

3.1 Electric arc A self-sustaining gas conducts electricity in which the majority of the charge carriers are electrons produced by primary electron emission. [Source: GB/T 2900.1-2008,

3.1.77]

3.2 Arc ignition test arcignitiontest Ignition test for solid materials or electrical and electronic products using electric arc as ignition source.

16 Test flame 50W horizontal and vertical fire Flame test method

GB 8702 Electromagnetic environment control limits

GB/T 20840.1 Transformers Part