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Tin-coated copper ribbon for photovoltaic application

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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules. Please note that some of the content of this document may involve patents. Release mechanism of the present document does not assume responsibility for the identification of these patents. The standard equipment by the National Standardization Technical Committee and the semiconductor material (SAC/TC203) and focal points. This standard was drafted. Jiangsu Sun Group Co., Ltd., Wuxi City Brunswick Technology Co., Ltd., Jiangyin Yan billion New Materials Co., Suzhou-State New Materials Co., National Solar PV Product Quality Supervision and Inspection Center, Three Little Kunming Technology Co., Ltd., Suzhou Calendar New Material Technology Co., Ltd., Jiangsu Wei Electrical Technology Co., Ltd. Jiang Yin Aikang PV ribbon, Suntech Power Co., Ltd., China Electronics Standardization Institute. The main drafters of this standard. wide process, cold pine, Wu Jianguo, Bao Jun, monogenic Yan, Wang Wei, Pei Xuefeng, with Dong Bao, Xiao Feng, Liu Yazhou, Hu Yunzong square veneration, strong history, Zhu Jingbing Indian ice Fengya Bin. PV Tin coated copper ribbon

1 Scope

China's national product standard for the tin-coated copper ribbon used in photovoltaic modules. It specifies the terms and symbols, the requirements, the test methods, the inspection rules and the marking, packaging, transport and storage, and it applies to the soldering ribbon used in terrestrial crystalline silicon photovoltaic modules. The ribbon is the conductor that carries the current out of a solar cell. A flat copper strip, coated with a tin-based solder alloy, is soldered along the busbars on the front of one cell and onto the back of the next, connecting the cells into a string and the strings into a module. It is a component of very few parts and enormous consequence, because every one of the module's electrical joints is made with it and every one of those joints has to survive twenty-five years of daily thermal cycling under glass. Two properties dominate. The first is the copper's softness: the ribbon must yield readily, because a silicon cell is a brittle wafer under 200 micrometres thick and a ribbon stiffer than the cell will crack it as the laminate expands and contracts. That is why the standard specifies elongation and tensile strength as tightly as it specifies resistivity, and why fully annealed copper is used. The second is the solder coating: its alloy, its thickness and its uniformity determine whether the joint wets properly at the soldering temperature and how it ages, and a coating that is uneven produces cold joints that pass the factory test and fail years later as a hot spot. Issued on 11 September 2015 and in force since 1 May 2016.

This standard specifies the terms and symbols PV modules coated with solder, requirements, test methods, inspection rules, marking, packaging, transport and Storage. This standard applies to ground crystalline silicon photovoltaic module with a solder-coated tape.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document. RT Test Method. Test Part 1

GB/T 228.1 metallic materials tensile

GB/T 1216 outside micrometer

GB/T 2828.1 Sampling procedures for inspection - Part 1. batch inspection sampling plan by acceptance quality (AQL) retrieval

GB/T 3048.2 wire and cable electrical performance test methods - Part 2. Metal resistivity test

GB/T 5121 copper and copper alloy chemical analysis method (all parts)

GB/T 5231 and processing of copper and copper alloy grades and chemical composition

GB/T 6461 on the metal base metals and other inorganic coatings by etching after the test specimens and ratings

GB/T 6462 and the metal oxide coating layer thickness measurement microscope method

GB/T 8012 casting Xiqianhanliao GB/T 9056 metal ruler

GB/T 10125 artificial atmosphere corrosion test salt spray test GB/T 10574.1 ~

GB/T 10574.13 chemical analysis of tin Method

GB/T 14594 oxygen-free copper plate and strip

GB/T 16921 Metallic coatings - Measurement of coating thickness X-ray spectroscopy

3 Terms and symbols

3.1 Terms The following terms and definitions apply to this document.

3.1.1 Tin coated with tin-coatedcopperribbon In certain size copper tape coated with a tin-based solder certain thickness to form a composite conductive material.

3.1.2 Interconnection with interconnectingribbon Interconnect Article For connecting the photovoltaic cells to collect, transport current photovoltaic cells is coated with a tin solder.