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

GB/T 31528-2015

**Technical specification for the treatment and disposal of spent
copper etchant**

含铜蚀刻废液处理处置技术规范

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Quarantine;
Standardization Administration of the PRC**

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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules. The standard proposed by China Petroleum and Chemical Industry Association. This standard by the national waste chemicals disposal Standardization Technical Committee (SAC/TC294) centralized. This standard was drafted. Shenzhen Hazardous Waste Treatment Station Co., Ltd., Hangzhou Green Chemical Co., Ltd., CNOOC Tianjin Chemical RESEARCH Study Design Institute, Hangzhou Vocational and Technical College, Shanghai, Chongqing New Century Chemical Co., Ltd. The main drafters of this standard. Chen Chuan, Yin cloud ship, An Xiaoying, country boy Tong, Chen Changming, Wenyan Shen, bow Chong Zhou, Shen Jing. Copper etching waste treatment and disposal technical specifications

1 Scope

China's national technical specification for treating and disposing of spent copper-bearing etchant. It specifies the composition of the spent etchant, the requirements for the treatment and disposal methods, and the environmental protection requirements, and it applies to the centralised collection, treatment and disposal of spent copper etchant from the industries that generate it. The material is a by-product of printed circuit board manufacture. A circuit board is made by covering a copper-clad laminate with a resist in the pattern of the circuit and dissolving away the copper that is not protected; the etchant that comes off the line at the end of that process is spent copper etchant, and it exists in two chemically distinct families. The acidic type is based on hydrochloric acid with sodium or ammonium chloride and an oxidant - a chlorate or hydrogen peroxide - and it leaves the line carrying a large quantity of dissolved copper. The alkaline type is an ammoniacal system in which copper is held as an ammine complex. The two are incompatible and must never be mixed: combining an ammoniacal solution with an acidic chloride one liberates ammonia and can liberate chlorine, and the mixture is far harder to treat than either stream alone. That incompatibility is the practical fact behind the whole standard. The material is also valuable rather than merely hazardous - it carries copper at concentrations that make recovery economic, so the correct disposal route is almost always recovery rather than destruction, and the specification is as much about capturing that value as about controlling the hazard. Issued

on 15 May 2015 and in force since 1 December 2015.

This standard specifies the copper etching waste composition, the relevant requirements of treatment and disposal methods and environmental protection. This standard applies to related fields generated by centralized collection copper etching waste treatment and disposal patterns.

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. Laboratory use specifications and test methods GB/T 6682-2008 Analysis

GB/T 23947.1-2009 Inorganic chemical products for the general method of determination of arsenic - Part 1. diethyl dithiocarbamate silver Spectrophotometry

HG/T 3696.1 inorganic chemical products, chemical analysis standard solution, Preparations Part 1. Standard titration solution Preparation liquid

HG/T 3696.2 inorganic chemical products, chemical analysis standard solution, Preparations Part 2. impurity standard solution Preparation liquid

HG/T 3696.3 inorganic chemical products, chemical analysis standard solution, Preparations Part 3. Formulation and products Preparation

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 Copper etching waste spentcopperetchant Printed circuit board (PCB) etching etching waste liquid discharge line, wherein the copper etching waste acidic and alkaline etching etching waste liquid waste Two kinds.

3.2 Acidic copper etching waste spentacidiccopperetchant With the main component of hydrochloric acid, sodium chloride, ammonium chloride, chlorate oxidant or hydrogen peroxide (HCl-H₂O₂) acid etching solution for printing Circuit board (PCB) after etching the etching waste liquid is discharged, containing a large amount of copper.

3.3 Alkaline copper etching waste spentalkalinecopperetchant After using the main component of aqueous ammonia, ammonium (NH₃-NH₄Cl) alkaline etching solution for printed circuit board (PCB) etching discharged Etching waste liquid containing a large amount of copper.

4 Copper etching waste composition

PCB manufacturing process produces two main copper etching waste, namely acidic and

alkaline etching etching waste liquid waste, consisting essentially of

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