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**Recycling and reuse method for waste liquid from display panel
stripping**

显示面板剥离废液回收再利用方法

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Foreword

This document conforms to GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents". Drafting is scheduled. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed by the China Petroleum and Chemical Industry Federation. This document is under the jurisdiction of the National Technical Committee on Standardization of Waste Chemicals Disposal (SAC/TC 294). This document was drafted by: CNOOC Tianjin Chemical Research and Design Institute Co., Ltd., Guangzhou Ruishang Chemical New Materials Co., Ltd., and Shenzhen Environmental Protection Group Co., Ltd. Bao Technology Group Co., Ltd., Hangzhou Greenda Electronic Materials Co., Ltd., and Hefei Greenda Electronic Materials Co., Ltd. The main drafters of this document are. Gong Chuangzhou, Liang Zhanxing, Tang Yuzhong, Chen Dongliang, Xu Xiaobo, Wu Donglong, Ji Fei, Xing Youmei, Xie Hongbo, and An Xiaoying. Ding Ling, Hu Tao, Li Jie, Xie Lianghuai, Luo Yongli. Method for recycling and reusing waste liquid from display panel stripping

1. Scope This document specifies the environmental protection requirements for display panel stripping waste liquid and describes the recycling and reuse methods. This document applies to thin-film transistor liquid crystal displays (TFT-LCD), organic light-emitting diode displays (OLED), and light-emitting diode displays. (LED) stripping waste liquid recycling and reuse.

The main components of the waste liquid from the stripping of the display panel are shown in Table 1.

5 Recycling and Reuse Methods

5.1 Principle The waste liquid from the stripping of display panels is processed through filtration, distillation, condensation, compounding, and filtration to obtain stripping solution

that meets the requirements for use in the display panel manufacturing process. Liquid regeneration solution.

5.2 Process Flow

5.2.1 Process Flow Diagram After filtration and slag removal by scraping, the waste liquid from the display panel stripping process undergoes dehydration distillation, distillation purification, condensation, compounding, and filtration to obtain the stripping solution. Regenerated solution. The process flow diagram is shown in Figure 1. Figure 1 shows the process flow for recycling and reusing waste liquid from panel stripping.

5.2.2 Filtering The stripping waste liquid is transported to the recycling workshop by a tank farm transfer pump, and after passing through a feed filter, it is treated at ambient temperature and pressure of

0.2 MPa~

0.5 MPa. Coarse filtration is performed under appropriate filter membrane pore size conditions. The filtrate enters the scraped membrane deslagging section, and the waste residue enters the waste residue treatment system for processing.

5.2.3 Slag removal by scraping the film The filtrate is heated to 120°C~160°C, and the organic solvents and water enter the dehydration and distillation section in gaseous form, while impurities such as photoresist are concentrated and precipitated. After being scraped to remove slag, the residue enters the waste residue treatment system for further processing.

5.2.4 Dehydration Distillation After the scraping process removes slag, the material enters the dehydration distillation column. Based on the difference in boiling points between the organic solvent components and water, the distillation temperature is controlled at 38 °C. At 60 °C, pressure 4 kPa~20 kPa, and reflux ratio (0.3~3).1, dehydration distillation is carried out, and the high-boiling-point solvent at the bottom of the column enters the distillation purification section.

5.2.5 Distillation purification Controlling the pressure inside the distillation purification column, the intermediate raw material after dehydration distillation is drawn into the distillation purification column for intermittent or continuous processing. The sample is then distilled and condensed in a condenser. The distillation and purification temperature is controlled at 60 °C~120 °C, the pressure at 3 kPa~10 kPa, and the reflux ratio at (0.5~3).1.

5.2.6 Condensation, compounding, and filtration The vapor from the top of the distillation purification column enters the condenser, where the condensation temperature is controlled at 20°C~50°C. After cooling, it is collected in the recovery tank and then pumped out. The mixture is compounded and prepared in a compounding tank, then filtered through a precision filter to obtain a stripping regeneration solution, which is then pumped to a tank

area for storage.

5.3 Main Equipment Storage tanks, filtration equipment, scraped film evaporators, distillation columns, and compounding tanks.

5.4 Processing Results Different types of recycled stripping solutions obtained from the recovery and reuse of waste liquid from display panel stripping should meet the requirements for display panel manufacturing and use. The control requirements and test methods for impurities are shown in Table 2.

6.Environmental protection requirements Wastewater, waste gas, and waste residue generated during the recycling and reuse of waste liquid from display panel stripping should be treated to render them harmless, depending on the specific conditions available to the user. The specific handling procedures are as follows: --Wastewater generated during the recycling process should be comprehensively treated. Wastewater that can be recycled should be sent to the production process; wastewater that cannot be recycled should be treated. The emissions shall meet the requirements stipulated in national standards, industry standards or local standards; --To address the waste gas generated during the recycling process, water spraying, activated carbon adsorption, etc., are employed in accordance with national standards, industry standards, or... Emissions must meet local standards. --Waste residue generated during the recycling process should be handled and disposed of by a qualified professional hazardous waste treatment organization.