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

GB/T 46191-2025

Electronic grade pentakis(dimethylamido)tantalum

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents". Drafting. 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 and is under the jurisdiction of the National Technical Committee on Standardization of Semiconductor Equipment and Materials (SAC/TC203). This document was drafted by: Nanjing University Optoelectronic Semiconductor Materials Co., Ltd., China Electronics Technology Standardization Institute, Suzhou Laboratory, Jiangsu Nan Daguang Optoelectronic Materials Co., Ltd., Suzhou Yuanzhan Materials Technology Co., Ltd., Yangtze Memory Technologies Co., Ltd., and SMIC Integrated Circuits. Lu Manufacturing (Beijing) Co., Ltd., Quanjiao Nanda Optoelectronic Materials Co., Ltd., Anhui Yagesheng Electronic New Materials Co., Ltd., Ningbo Nanda Optoelectronic Materials Co., Ltd., Hefei Andekeming Semiconductor Technology Co., Ltd., Nanjing University Optoelectronic (Ulanqab) Co., Ltd., Nanjing University Optoelectronic (Zibo) Co., Ltd. Limited Liability Company, Anhui Botai Electronic Materials Co., Ltd. The main drafters of this document are: Chen Deyi, Cao Kewei, Mao Bingrong, Xu Wentao, Yang Min, Shi Zeyuan, Sun Minglu, Chen Pengyu, Sun Peng, and Zhang Ting. Zhao Junsha, Wu Yiran, Zhang Jian, Luo Wenjiao, Li Xue, Gao Jiaxin, Guo Wei, Wang Wei, Wei Liangjie, Mao Guoyu, Zhang Xueqi, He Xiaochen, Zhang Baoshuai, Liu Liwei Wang Xiaoliang, Sun Lili, Cao Yining, Tong Yi, Lu Ping, Wang Bowen, Peng Yuanbing, Lou Xiabing, Liu Nengqiao, Meng Qingdian, Sun Jian, Gao Peng, Zhang Peng, Gu Yangyang. Electronic grade penta(dimethylamino)tantalum

1 Scope

GB/T 46191-2025 is the Chinese national standard covering PDMAT at semiconductor purity - the assay and the metallic impurities in parts per billion, the moisture and the particles, and the handling of an air- and moisture-sensitive precursor used to deposit tantalum nitride barriers by atomic layer deposition. First edition, one of the group of electronic grade precursor standards issued this year. In force from 1 May 2026. Issued on

5 October 2025, it has been in force since 1 May 2026.

This document specifies the technical requirements, inspection rules, packaging, marking, and accompanying documentation for electronic-grade pentane (dimethylamino) tantalum used in the semiconductor industry. The requirements for transportation, storage, and safety information are described, along with the corresponding testing methods. This document applies to electronic-grade penta(dimethylamino)tantalum for depositing tantalum-based thin films such as tantalum nitride, tantalum oxide, and tantalum dopants.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB 190 Packaging Marks for Dangerous Goods

GB/T 3723 General Safety Rules for Sampling of Industrial Chemical Products

GB/T 6679 General Rules for Sampling of Solid Chemical Products

GB/T 11446.1 Electronic Grade Water

GB 12463 General Technical Requirements for Transport Packaging of Dangerous Goods

GB 15258 Regulations for Writing Safety Labels for Chemicals

GB 15603 General Rules for Storage of Hazardous Chemicals in Warehouses

GB/T 16483-2008 Contents and Item Order of Safety Data Sheets for Chemicals

GB/T 17519-2013 Guidelines for the Preparation of Safety Data Sheets for Chemicals

GB/T 25915.1 Cleanrooms and related controlled environments - Part

3 Terms and Definitions

This document does not contain any terms or definitions that need to be defined.

4. Technical Requirements Electronic grade penta(dimethylamino)tantalum should conform to the specifications in Table 1.