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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 4949-2026

Replacing GB/T 4949-2018

Chemical analysis methods for Al-Zn-In sacrificial anode alloys

铝-锌-铟系合金牺牲阳极化学分析方法

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Standardization Administration of the PRC

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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. This document supersedes GB/T 4949-2018 "Chemical Analysis Methods for Sacrificial Anodes of Aluminum-Zinc-Indium Alloys" and is consistent with GB/T 4949-2018. Aside from structural adjustments and editorial changes, the main technical changes are as follows:

a) The measurement range of inductively coupled plasma atomic emission spectrometry has been changed (see Chapter 1, Chapter 1 of the.2018 edition); (b) Added requirements for the linear correlation coefficient of calibration curves in instrumental analysis methods (see 4.2.5.5, 5.5.5, 6.5.5, 7.4.5.2, 8.1.5.5). 9.4.5, 10.4.5, 11.1.4.5, 11.2.5.5, 12.1.5.5,

12.2.4.5, 13.5.5);

c) The sample dissolution method for inductively coupled plasma atomic emission spectrometry was modified, and the sodium hydroxide alkaline dissolution method was adopted for determining silicon content (see...). 14.5.4 (Version

13.5.4 from the.2018 version);

d) Spark source atomic emission spectrometry has been added for the determination of zinc, indium, cadmium, tin, magnesium, silicon, titanium, iron, and copper (see Chapters 1 and 15);

e) The square wave polarography method for the determination of zinc, indium, cadmium, tin, and lead has been removed (see Chapters 1, 3, 4, and 5 of the.2018 edition). Chapters 1, 6, and 12);

f) Quality assurance and control has been removed (see Chapter 14 of the.2018 edition). 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 Marine Ships (SAC/TC12). This document was drafted by: Luoyang Shipbuilding Materials Research Institute (725th Research Institute of China Shipbuilding Group Corporation) and Xiamen Shuangrui Materials Research Institute. Research Institute Co., Ltd., Qingdao Shuangrui Marine Environment Engineering Co., Ltd. The main drafters of this document are. Zhang Yi, Liu Pan, Zhang Jianhao, Chen Qianqian, Guo Xingjie, Zhao Yongtao, Zhang Xinyao, Lin Cunguo, Wang Hongfeng, and Li Jingbin. Zheng Guohua and Guan Xiaoying. The release history of this document and the document it replaces is as follows:

---First published in 1985 as GB/T 4949-1985, revised for the first time in.2007, and revised for the second time in.2018;

---This is the third revision. Chemical Analysis Methods for Sacrificial Anodes of Aluminum-Zinc-Indium Alloys

1 Scope

GB/T 4949-2026 is the Chinese national standard covering the composition of an aluminium sacrificial anode - the indium that keeps the surface active and the iron, copper and silicon that passivate it, on a component whose whole job is to corrode instead of the steel it protects. At 22,000 words it replaces GB/T 4949-2018, and it belongs with the pipeline corrosion protection inspection standard GB/T 19285-2026. It was issued on 28 January 2026 and has been in force since 1 August 2026, replacing GB/T 4949-2018. The document is under the responsibility of the Standardization Administration of China. This page is published from the official record of the 2026 edition; the clause text of a standard

this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document specifies the methods for determining the content of zinc, indium, cadmium, tin, magnesium, silicon, titanium, iron, copper and lead in aluminum-zinc-indium alloy sacrificial anodes. This document applies to the determination of zinc, indium, cadmium, tin, magnesium, silicon, titanium, iron, copper, and lead content in aluminum-zinc-indium alloy sacrificial anodes. Scope of determination See Table 1 for the dimensions. Table

1 Measurement Range element Measurement range (mass fraction)/% Titration method, spectrophotometry, atomic absorption spectrometry, inductively coupled plasma atomic emission spectrometry, spark source atomic emission spectrometry Zinc 1.00~8.00 - 1.00~5.00 1.00~10.00 1.00~

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/T 6682 Specifications and test methods for water used in analytical laboratories

GB/T 8170 Rules for rounding off numerical values and the representation and determination of limiting values

GB/T 14203 General Rules for Spark Discharge Atomic Emission Spectroscopy JJG768 Verification Procedure for Emission Spectrometer

3 Terms and Definitions

The terms and definitions defined in GB/T 14203 and the following terms and definitions apply to this document.

3.1 A homogeneous sample used for standardization correction.

4.00 Silicon - 0.020~0.200 - 0.010~0.500 0.010~

0.500 Titanium - 0.0050~0.100 - 0.0010~0.100 0.0010~

0.100 Iron - 0.020~0.200 0.020~0.200 0.010~0.300 0.010~

0.300 Copper - 0.0010~0.020 0.0010~0.020 0.0010~0.050 0.0010~

0.050 Lead - 0.0010~0.0100 0.0010~0.0100 -

8.00 Indium - 0.010~0.050 0.010~0.100 0.010~

0.100 Cadmium - 0.0050~0.030 0.0010~0.100 0.0010~

0.050 Tin - 0.010~0.050 - 0.0050~0.100 0.0020~

0.030 Magnesium 0.500~4.00 - 0.500~4.00 0.100~4.00 0.500~