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

GB/T 47554.2-2026

**Corrosion of metals and alloys - Corrosion and fouling in industrial
cooling water systems - Part 2: Evaluation of the performance of
cooling water treatment programmes using a pilot-scale test rig**

金属和合金的腐蚀 工业冷却水系统的腐蚀和污垢 第2部分：应用中试试验台评估
冷却水处理方案

(English Translation)

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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 is Part 2 of GB/T 47554 "Corrosion of Metals and Alloys - Corrosion and Fouling of Industrial Cooling Water Systems".

GB/T 47554 has published the following parts.

---Part 1: Pilot-scale evaluation guidelines for scale and corrosion inhibitors in open-loop cooling water systems;

---Part 2: Evaluation of cooling water treatment solutions using pilot-scale test benches.

This document is equivalent to ISO 16784-2:2024 "Corrosion of metals and alloys - Corrosion and fouling of industrial cooling water systems - Part 2".

Part 1: Evaluation of cooling water treatment solutions using a pilot-scale test bench.

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 Iron and Steel Association.

This document is under the jurisdiction of the National Steel Standardization Technical Committee (SAC/TC183).

Introduction

The industrial sector needs to improve the safety, reliability, and cost-effectiveness of open-loop cooling water systems, partly due to increasingly stringent environmental regulations.

On the one hand, the demand is high, and on the other hand, it is also affected by rising

water resource costs. Therefore, it is crucial to establish a system for evaluating the performance of cooling water treatment.

The aim is to provide a method for cooling water system users and scale and corrosion inhibitor suppliers to treat cooling water systems on a pilot scale.

The plan underwent a consistency assessment.

With the continuous development of circulating water treatment technology, new treatment technologies such as reverse osmosis and electrochemical treatment have become popular solutions for cooling water treatment.

An important component.

GB/T 47554 "Corrosion of Metals and Alloys - Corrosion and Fouling of Industrial Cooling Water Systems" consists of two parts.

---Part 1: Pilot-Scale Evaluation Guidelines for Scale and Corrosion Inhibitors in Open-Circulation Cooling Water Systems. The purpose is to specify the scale and corrosion inhibitor standards for open-circulation cooling water systems.

General requirements and parameters for pilot-scale evaluation of scale and corrosion inhibitors.

---Part 2: Evaluation of Cooling Water Treatment Solutions Using Pilot-Scale Test Bench. The purpose is to specify the criteria for evaluating the treatment performance of open-loop cooling water systems.

A possible method.

This document describes a steam-heated cooling water dynamic simulation test device and an electrically heated series heat exchanger tube cooling water dynamic simulation test device.

A schematic diagram of a dynamic simulation test device for parallel heat exchanger tubes with electric heating is provided, along with a more detailed explanation of each component.

The steam-heated cooling water dynamic simulation test device solves the problem of uneven heating caused by electric heating and is closer to the actual on-site operating conditions.

Corrosion of metals and alloys in industrial cooling water systems Corrosion and Fouling Part 2: Application of Pilot-Scale Tests Taiwan evaluates cooling water treatment solutions

1 Scope

This document specifies the principles, reagents and materials, test apparatus, test methods, result evaluation, and testing procedures for pilot-scale tests in industrial cooling

water systems.

Report requirements.

This document specifies a method for evaluating the performance of open-loop cooling water treatment systems. This method is primarily based on laboratory experiments, but includes heat exchanger measurements.

The test unit can also be used for field evaluation. This document does not apply to heat exchangers with cooling water flowing on the shell side (i.e., outside the tubes).

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.

and test methods)

Note: GB/T 6682-2008 Specifications and test methods for water used in analytical laboratories (ISO 3696:1987, MOD) and definitions) Note. GB/T 10123-2022 Corrosion terminology for metals and alloys (ISO 8044:2020, IDT) Note. GB/T 16545-2025 Corrosion of metals and alloys - Removal of corrosion products from corroded specimens (ISO 8407:2021, IDT) Note. GB/T 18590-2025 Guidelines for the evaluation of pitting corrosion in metals and alloys (ISO 11463:2020, MOD) ISO 16784-1 Corrosion of metals and alloys - Corrosion and fouling of industrial cooling water systems - Part 1: Open-loop cooling water resistance Note. GB/T 47554.1-2026 Corrosion of metals and alloys - Corrosion and fouling of industrial cooling water systems - Part 1: Scale inhibition of open-loop cooling water Guidelines for Pilot-Scale Evaluation of Corrosion Inhibitors (ISO 16784-1:2024, IDT)

3 Terms and Definitions

The terms and definitions defined in ISO 8044, as well as the following terms and definitions, apply to this document.

Adenosine triphosphate (ATP) an active chemical substance found in living bacteria.