

ICS 19.020
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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 42842.2-2023

**Fine bubble technology - Cleaning applications - Part 2: Test
method for cleaning machine-oil stained surfaces of machined
metal parts**

微细气泡技术 清洗应用 第2部分：机加工金属零件表面机械油污清洗的试验方法
(English Translation)

Issued on: August 6, 2023

Implemented on: December 1, 2023

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

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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 "Cleaning Applications of Fine Bubble Technology". "Fine Bubble Technology Cleaning Application" has released the following part.

---Part 1: Test methods for surface salt (sodium chloride) stain cleaning (GB/Z 42842.1-2023);

This document is modified to adopt ISO 21256-2:2020 "Cleaning Application of Fine Bubble

Technology Part 2: Machines for Surface Machining of Metal Parts" "Test methods for cleaning mechanical oil stains".

Compared with ISO 21256-2:2020, this document has made the following structural adjustments.

---Reversed the order of Appendix A and Appendix B.

The technical differences between this document and ISO 21256-2:2020 and their reasons are as follows.

---Replaced ISO 20480-1 with normatively cited GB/T 41914.1 (see Chapter 3, Section 3 of ISO 21256-2:2020 Chapter), GB/T 41914.2 replaced ISO 20480-2 (see Chapter 3, Chapter 3 of ISO 21256-2:2020), GB/T 6682 Replaced ISO 3696 (see 5.1, 5.1 of ISO 21256-2:2020) to adapt to my country's technical conditions and improve operability;

---An extraction agent (see 5.3) has been added to adapt to my country's technical conditions and improve operability;

---The range and requirements of water temperature have been changed [see 8.2a), 8.2a) of ISO 21256-2:2020] to improve operability;

---Changed the accuracy of some data of cleaning test conditions [see 8.2b), 8.2c) and 8.2g), 8.2b) of ISO 21256-2:2020, 8.2c) and 8.2g)] to improve operability;

---Added the conditions for starting the cleaning test [see 8.2e)] to improve operability;

---The document number (see Chapter 10) has been added to the test report to improve operability.

The following editorial changes have been made to this document.

---According to the chemical substance and contextual content, the error in ISO 21256-2:2020.5.3 Chemistry of chlorotrifluoroethylene dimer has been changed formula, the column numbers mentioned in 8.3e) and 8.3g), the content of Appendix A mentioned in 6.2 and the title of Appendix A;

---Changed the reference on extraction agent selection in 5.3;

---Deleted the annotation of references;

---Changed the introductory words of formula (1) and formula (2);

---Added some symbol descriptions for formula (1) and formula (2);

---This document number has been added to Table B.2.

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

Introduction

Mineral oils are widely used in industrial product production processes such as cutting, lubrication and cooling. During the production process and when the product is completed, the product any remaining oil on the surface needs to be removed. The cleaning agents mainly used in these industries, such as hydrocarbon cleaning agents, bromine cleaning agents and alkaline cleaning agents, can cause Cause environmental problems such as ozone layer destruction and water pollution.

As an environmentally friendly technology, micro-bubble technology that does not use cleaning agents has been widely used. Microbubble cleaning technology can it uses less water and does not use chemicals, thereby enabling sustainable use of resources and improving energy conservation and safety levels.

"Cleaning Applications of Micro Bubble Technology" aims to standardize the generally applicable principles and requirements in the field of cleaning applications of micro bubble technology.

, is intended to be composed of four parts.

---Part 1: Test methods for surface salt (sodium chloride) stain cleaning. The purpose is to establish an evaluation table for ultrafine sparkling water cleaning Test method for surface salt stain performance.

---Part 2: Test methods for cleaning mechanical oil stains on the surface of machined metal parts. The purpose is to establish a method for evaluating fine bubbles Test method for water cleaning performance of mechanical oil stains on corrosion-resistant metal surfaces.

---Part 3: Test methods for hard floor cleaning. The purpose is to establish a test to evaluate the performance of fine bubble water in cleaning hard floors.

test method.

---Part 4: Test methods for oil removal from polyester-based fabrics. The purpose is to establish a method to evaluate the use of fine bubble water for cleaning polyester-based fabrics.

Test methods for oil properties.

Micro bubble technology cleaning application Part 2: Surface machinery for machined metal parts Test methods for oil stain cleaning

1 Scope

This document describes the test method for cleaning mechanical oil stains from corrosion-resistant metal surfaces using finely bubbled water. Through comparative experiments, it was proved that water the cleaning advantage of adding fine bubbles.

This document is suitable for evaluating fine bubble water by measuring and comparing the oil stain cleaning index of fine bubble water and ordinary water on metal surfaces.

Cleaning performance.

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, the dated quotations for undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document.

GB/T 6682 Analytical laboratory water specifications and test methods (GB/T 6682-2008, ISO 3696:1987, MOD) GB/T 41914.1 Microbubble Technology General Principles for the Use and Measurement of Microbubbles Part 1: Terminology (GB/T 41914.1-2022, ISO 20480-1:2017, IDT) GB/T 41914.2 Microbubble Technology General Principles for the Use and Measurement of Microbubbles Part 2: Classification of Microbubble Properties (GB/T 41914.2-2022, ISO 20480-2:2018, MOD) ISO 15510 Stainless steel chemical composition (Stainlesssteels-Chemicalcomposition) the terms and definitions defined in GB/T 41914.1 and GB/T 41914.2 and the following apply to this document.

oil cleaning index $\text{oil cleaning index}$ the ratio of the oil stain removed by cleaning the test piece to the oil stain before cleaning.

4 Principles

The oil removal effect of fine bubbles was evaluated by measuring the amount of oil remaining after cleaning with fine bubble water and ordinary water. By comparing using micro the effect of fine bubble water and ordinary water on the oil stain cleaning index on the surface of the test piece is evaluated.

The amount of oil remaining is measured with an oil gauge based on infrared spectroscopy.

5 Reagents and materials

5.1

Water. treated, and the level complies with GB/T 6682.

5.2

Test oil. The test oil used to coat the surface of the test piece should be triolein or an agreed oil. Appendix A gives the oil tester measurement

Example using the infrared spectrum of a test oil.