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

GB/T 43917.1-2024

**Equipment for capture and separation of welding fume - Part 1:
General requirements
(English Translation)**

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting:

This document is part 1 of GB/T 43917 "Welding fume capture and separation equipment": GB/T 43917 has been published for the following part:

- Part 1: General requirements;
- Part 2: Testing and marking requirements for separation efficiency;

--- Part 3: Determination of the collection efficiency of smoke suction devices on welding guns;

--- Part 4: Determination of minimum air volume of capture device:

This document is modified to adopt ISO 21904-1:2020 "Health and safety in welding and allied processes - Equipment for capturing and separating welding fumes" Part 1: General requirements:

The technical differences between this document and ISO 21904-1:2020 and their reasons are as follows:

--- Change the undeleted notes in Table 1, Table 2, Table 3 and Table 4 to paragraphs (see Table 1, Table 2, Table 3 and Table 4) to facilitate the implementation of this document;

--- Replaced IEC 60695-2-12:2010 A1:2014 with the normative reference GB/T 5169.12-2013 (see 5.1), GB/T 43917.4-2024 replaces ISO 21904-4:2020 (see 5.2, 5.4), GB 4706.88 replaces IEC 60335-2-69:2012 (see 5.4), GB/T 43917.2-2024 replaces ISO 21904-2:2020 (see 5.4), GB/T 5226.1-2019 replaces IEC 60204-1:2005 (see 7.1) to apply my country's technical requirements:

The following editorial changes were made to this document:

--- In order to coordinate with the existing standards, the name of the standard is changed to "Welding fume capture and separation equipment Part 1: General requirements";

--- Change the additional information in the definition of "receiving cover" to a note (see 3.10);

--- Deleted the note "1:1 Requirements for all equipment" in Table 1 (see 5.1);

--- Deleted "1:1 General", "2:2 Verification Method for Filter Protectors" and Note 3:2 in Table 4 (see 5.4);

--- Deleted Notes 1 and 2 in 6:1:

Introduction

The fumes and gases produced by welding and related processes can seriously affect human health: Therefore, it is necessary to control the fumes and gases produced by welding to minimize the risk of it is extremely important to minimize the exposure of welders and welding operators: The most effective control method is to prevent smoke and gas from entering welders and welding operators:

The welding fume is captured near the welding source before the welding breathing zone or the working environment: The capture effect of the equipment will directly affect the welder and the welding operator:

Health at work:

GB/T 43917 "Welding fume capture and separation equipment" specifies the design and manufacturing requirements of welding fume capture and separation equipment, various related Component requirements and testing of three basic performance parameters: separation efficiency, capture efficiency of the smoke suction device on the welding gun and minimum air volume of the capture device Method, through the above provisions, ensure that the welding fume capture and separation equipment achieves the desired capture effect:

GB/T 43917 is intended to consist of four parts:

--- Part 1: General requirements: Aims to specify the requirements for collecting and separating materials produced by welding and related processes (such as arc welding and thermal cutting):

Overall design and manufacturing requirements for flue gas ventilation equipment:

--- Part 2: Test and marking requirements for separation efficiency: Aims to specify the test method for the separation efficiency of welding fume separation equipment and and marking requirements:

--- Part 3: Determination of the collection efficiency of the smoke suction device on the welding gun: Aims to specify the welding smoke collection efficiency of the welding gun suction system Laboratory measurement methods:

--- Part 4: Determination of the minimum air volume of the capture device: Aims to specify the test method for measuring the minimum air volume of welding fume capture and separation equipment:

Test method:

Welding fume capture and separation equipment Part 1: General requirements

1 Scope

This document specifies the design of ventilation equipment for collecting and separating fumes arising from welding and allied processes such as arc welding and thermal cutting: and manufacturing requirements, including occupational health information, equipment requirements and validation, instructions for use and labeling:

This document applies to local exhaust ventilation systems (LEV, excluding ventilated workbenches), mobile and fixed fume capture equipment and Fume separation equipment for welding and allied processes, not suitable for use in integral ventilation systems, air supply or delivery systems, air conditioning systems and grinding dust:

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document:

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document:

GB 4706.88 Safety of household and similar electrical appliances Particular requirements for industrial and commercial wet or dry vacuum cleaners with powered brushes (GB 4706.88-2008, IEC 60335-2-69:1997, IDT) GB/T 5169.12-2013 Fire hazard tests for electric and electronic products Part 12: Basic test methods for glowing wire/hot wire Glow Wire Flammability Index (GWFI) Test Method for Materials (GB/T 5169.12-2013, IEC 60695-2-12:2010, IDT) GB/T 5226.1-2019 Electrical safety of machinery Electrical equipment of machinery Part 1: General technical requirements (GB/T 5226.1-2019, IEC 60204-1:2016, IDT) GB/T 15706-2012 General principles for safety design of machinery - Risk assessment and risk reduction (GB/T 15706-2012, ISO 12100:2010, IDT) GB/T 16855.1-2018 Safety of machinery control systems - Safety-related components - Part 1: General principles for design (GB/T 16855.1-2018, ISO 13849-1:2015, IDT) GB/T 43917.2-2024 Welding fume capture and separation equipment Part 2: Test and marking requirements for separation efficiency (GB/T 43917.2-2024, ISO 21904-2:2020, MOD) GB/T 43917.4-2024 Welding fume capture and separation equipment Part 4: Determination of minimum air volume of capture device (GB/T 43917.4-2024, ISO 21904-4:2020, MOD)

3 Terms and definitions

The following terms and definitions apply to this document:

Air filtration equipment for separating particles generated by welding and related processes from workplace air:

NOTE Some separation equipment is designed to remove gases generated by welding, but this series of standards does not address the efficiency of gas separation: