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Thermal spraying - Quality requirements for manufacturers of thermal sprayed coatings

热喷涂 热喷涂涂层制造商质量要求

(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 supersedes GB/T 19352.1-2003 "Quality Requirements for Thermal Sprayed Structures - Part 1: Selection and Usage Guidelines".

GB/T 19352.2-2003 "Quality Requirements for Thermally Sprayed Structures - Part 2: Comprehensive Quality Requirements", GB/T 19352.3-2003 "Quality Requirements for Thermal Sprayed Structures - Part 3: Standard Quality Requirements" and GB/T 19352.4-2003 "Thermal Spraying" Quality requirements for thermally sprayed structures, Part 4: Basic quality requirements. This document is based on GB/T 19352.1-2003 and integrates...

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The contents of GB/T 19352.2-2003, GB/T 19352.3-2003, and GB/T 19352.4-2003 are included, along with those of GB/T 19352.1-2003.

In comparison, aside from structural adjustments and editorial changes, the main technical changes are as follows.

---The scope has been changed (see Chapter 1, GB/T 19352.1-2003);

---Terminology and definitions have been changed (see Chapter 3, Chapter 3 of GB/T 19352.1-2003);

---The quality requirement level for thermal spray coatings has been increased (see 4.3);

---The selection of thermal spraying quality requirements has been changed (see 4.4, Chapter 4 of GB/T 19352.1-2003);

---The requirements for the quality assurance system have been removed (see Chapter 5 of GB/T 19352.1-2003).

This document is modified to adopt ISO 14922:2021 "Thermal spray coatings - Quality requirements for manufacturers of thermal spray coatings".

This document has undergone the following structural adjustments compared to ISO 14922:2021.

---Appendix A corresponds to Appendix B of ISO 14922:2021;

---Appendix B corresponds to Appendix C of ISO 14922:2021;

---Appendix C corresponds to Appendix A of ISO 14922:2021.

The technical differences between this document and ISO 14922:2021, and the reasons therefor, are as follows.

---ISO 14917 (see Chapter 3) has been replaced with the normatively referenced GB/T 18719 to align with Chinese standards and comply with Chinese regulations.

National conditions;

---ISO 9712 has been replaced by the normatively referenced GB/T 9445, and ISO 14918 and GB/T 42262 have been replaced by GB/T 19824.

ISO 12690 and GB/T 19001 have been replaced by ISO 9001 (see Annex A and Annex B) to align with Chinese standards.

In line with my country's national conditions;

---The normative reference GB/T 20019 has been added, and the normative reference EN1395-1 (see Annex A and Annex B) has been deleted, in order to increase...

Increase the operability of this document;

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---ISO 14923 (see Appendix B) has been replaced with the normatively referenced GB/T 37421 to align with Chinese standards and comply with Chinese regulations.

National conditions.

The following editorial changes have been made to this document.

---ISO 14001 has been replaced by GB/T 24001 (for informational purposes), and ISO 45001 has been replaced by GB/T 45001 (see Chapter 1);

---Notes have been removed from the definitions of the terms "thermal spraying coordinator" and "thermal spraying operator" (see 3.4, 3.5);

---The references have been changed.

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 Machinery Industry Federation.

This document is under the jurisdiction of the National Technical Committee on Standardization of Metallic and Non-metallic Coatings (SAC/TC57).

Introduction

Thermal spraying technology is widely used in industrial product manufacturing, primarily for preventative surface protection, but it can also be used for wear coatings or on parts.

Surface repair of components. This process can be performed both in a workshop and on-site. Thermal spraying technology is used in aerospace, stationary gas turbines, and other applications.

It has typical applications in industries such as machinery, automobile manufacturing, mechanical engineering, printing, chemical industry, and oil extraction and refining fluid control, and also in medical equipment, it plays a vital role in marine and onshore steel structures. The coating is primarily used for corrosion/wear resistance, high-temperature protection, chemical corrosion resistance, and to meet US standards.

Requirements such as appearance or electrical characteristics.

Thermal spraying is a "special process," and the quality of its coating cannot be definitively determined through non-destructive testing. To ensure the proper application of thermal spray coatings...

To avoid quality or high-cost issues during manufacturing and use, strict control of process conditions and production flow is necessary for coating applications.

In addition to complying with quality management systems (such as GB/T 19001), manufacturers also need to have a complete quality assurance system.

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This document provides three quality levels of requirements for thermal spraying manufacturers (Comprehensive Level C, Standard Level S, and Basic Level E). Relevant Level Requirements the coating is specified by the customer's design department based on the coating characteristics or the operating conditions of the component.

According to the requirements of different quality assurance levels (Level C, Level S, and Level E), Appendix A or Appendix B specifies the complete process flow of thermal spraying.

Quality assurance elements. These elements are used to verify the effectiveness of the quality assurance system during quality audits.

This document and its corresponding quality level requirements are specified by the customer or designer to ensure that the component manufacturing process meets minimum quality standards.

Certificate requirements.

The requirements stipulated in this document provide effective support for establishing a quality assurance system and ensure that product quality conforms to relevant production activities.

Sexuality and consistency.

Quality Requirements for Thermal Spray Coating Manufacturers

1 Scope

This document specifies the key quality requirements for thermal spray coating manufacturers, including contracts, reviews, personnel, and testing, in the manufacturing process.

This document applies to thermal spraying technology, including the pretreatment of coatings throughout the entire process of new parts manufacturing and repair/maintenance (such as post-service treatment).

Processing and post-processing procedures (including workshop operations and on-site construction).

Note: When using this document, the effectiveness of quality management systems (such as GB/T 19001, GB/T 24001, and GB/T 45001) need not be considered. These systems involve...

The concepts and structures of quality management, environmental management, and occupational health and safety management are included, but are not within the scope of this document.

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