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**NATIONAL STANDARD OF THE  
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**Test method for interface bonding strength of coating by laser  
cladding repairing  
(English Translation)**

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## Table of Contents

|                                                                    |  |
|--------------------------------------------------------------------|--|
| Preface                                                            |  |
| Introduction                                                       |  |
| 1 Scope                                                            |  |
| 2 Normative references                                             |  |
| 3 Terms and Definitions                                            |  |
| 4 Principle                                                        |  |
| 5 Sample preparation                                               |  |
| 6 Specimen holder                                                  |  |
| 7 Test requirements                                                |  |
| 7.1 Test temperature                                               |  |
| 7.2 Accuracy of test equipment                                     |  |
| 7.3 Setting the test force zero point                              |  |
| 7.4 Specimen clamping method                                       |  |
| 7.5 Loading Speed                                                  |  |
| 7.6 Number of test repetitions                                     |  |
| 8 Test results                                                     |  |
| 8.1 Test evaluation                                                |  |
| 8.2 Rounding of values                                             |  |
| 8.3 Measurement uncertainty                                        |  |
| 9 Test Report                                                      |  |
| Appendix A (Normative) Sample preparation, sampling and dimensions |  |
| A.1 General requirements                                           |  |
| A.2 Sample sampling method                                         |  |
| A.3 Specimen size                                                  |  |
| Appendix B (Normative) Specimen fixture                            |  |
| References                                                         |  |

## 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.

## Introduction

The test method of interface bonding strength of laser cladding repair layer is of great significance for evaluating the service safety and performance stability of repaired parts.

The current interface bonding strength test standard is only applicable to the interface bonding strength test of the coating and the substrate for mechanical bonding, and does not cover the interface bonding strength test of the coating and the substrate for mechanical bonding.

The surface is a metallurgical bonded laser cladding repair layer. At present, the sampling standards and test procedures used in the laser cladding repair layer interface bonding strength test are There is no unified standard for the sequence and interface identification, which makes the service safety and service life evaluation of laser cladding repair parts lack of effective data.

According to support.

Therefore, it is urgent to formulate feasible and standardized standards to guide the interface bonding strength test of laser cladding repair layer to ensure that the test results are reliable.

The laser cladding repair layer effectively characterizes the interface bonding characteristics, reflecting the fracture behavior of the metallurgical bonded interface after repair when subjected to external force.

This document will provide support for evaluating the safety of laser melting in the engineering field.

It provides guidance for the service safety of cladding and repair parts, and lays the foundation for promoting the engineering application of laser cladding repair technology.

Test method for interface bonding strength of laser cladding repair layer

## 1 Scope

This document describes the test method for the interface bonding strength of the laser cladding repair layer, including the principle, sample preparation, sample fixture, test requirements, Test results and test reports.

This document is applicable to the test of interface bonding strength of laser cladding repair layer.

## 2 Normative references

The contents of the following documents constitute 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/T 228.1-2021 Tensile test of metallic materials Part 1: Room temperature test method  
GB/T 8170 Rules for rounding off values and expression and determination of limit values  
GB/T 10623 Terminology for testing mechanical properties of metallic materials  
GB/T 16825.1 Inspection and calibration of static uniaxial testing machines for metallic materials  
Part 1: Tension and/or compression testing machines  
Inspection and calibration of force measuring systems  
GB/T 29795-2013 Laser repair technology terms and definitions  
GB/T 29796 General technical specification for laser repair  
JJG139-2014 Verification procedures for tension, pressure and universal testing machines

### 3 Terms and definitions

The terms and definitions defined in GB/T 228.1-2021, GB/T 10623, GB/T 29795-2013, GB/T 29796 and the following terms and definitions apply for use in this document.

Laser cladding repair technology is used to form a surface coating on the surface of damaged parts that is metallurgically bonded to the substrate.

[Source: GB/T 29795-2013, 3.3.5, modified] 3.2 Original surface of workpiece the surface of the substrate before laser cladding repair.

Test sample

Blanks used to prepare test specimens.

**Note:** The test sample and the parts have the same or similar characteristics as the laser cladding repair part, such as material, laser cladding process, and heat treatment status.

[Source: GB/T 41477-2022, 3.8, modified] 3.4 interface the metallurgical bonding surface between the laser cladding repair layer (3.1) and the substrate.