



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

GB/T 41107.2-2021

**Destructive tests on welds in metallic materials - Hot cracking
tests for weldments - Arc welding processes - Part 2:
Self-restraint tests**

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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 of Standardization Documents"

drafted:

This document is part 2 of GB/T (Z)41107 "Hot crack test arc welding method for destructive test weldments of metal materials"

point: GB/T (Z)41107 has released the following parts:

- Part 1: General;
- Part 2: Self-restraint test;
- Part 3: External load test:

This document uses the redrafted method to modify the use of ISO 17641-2:2015 "Destructive test of welds in metallic materials Hot crack test of weldments"

Arc Welding Methods Part 2: Self-restraint Tests:

There are technical differences between this document and ISO 17641-2:2015, and the clauses involved in these technical differences have been

The vertical single line (|) in the blank position is marked, and the corresponding technical differences and their reasons are as follows:

a) Regarding normative reference documents, this document has made adjustments with technical differences to adapt to the technical conditions of our country:

as follows:

* Replace ISO 6892-1 with GB/T 228:1 modified to adopt international standards (see 6:2:2:2);

* Replace ISO 5178 with GB/T 2652 which is equivalent to adopting international standards (see 6:2:2:2, 6:2:2:3);

* Replace ISO 5173 with GB/T 2653 which is equivalent to adopting international standards (see 6:3:3, 6:3:5);

* Replace ISO 15614-1 with GB/T 19869:1 which is equivalent to adopting international standards (see 6:1:4, 6:2:2:1, 6:3:2);

* Replace ISO 15792-1 with GB/T 25774:1 modified to adopt international standards (see 6:2:2:2);

* Replace ISO 17641-1:2004 (see Chapter 3) with GB/T 41107:1 which has been modified to adopt the international standard:

b) The symbol of the width of the specimen has been changed from "B" to "b" to be consistent with those shown in Figure 5, Figure 6 and formula (2) (see Chapter 4);

c) Changed the label in Figure 2 from "t₂" to "t/2" to correspond to the size shown, and added the symbol and description of t (see

Chapter 4, 6:2:2:2);

d) Changed the dimension line marking position of "L_c" in Figure 3 to correspond to "L_c" in GB/T 228:1 (see 6:2:2:2);

e) Changed the labeling of the corner radius in Figure 5, from "R1 2-1" to "R1 2 0", and pointed to the edge of the sample on the length, to match the R1 2-1 in Table 1:

The description corresponds to (6:3:3):

The following editorial changes have also been made to this document:

--- Added Figure 1 to describe "G---Strengthened plate;" (see 6:1:2):

Please note that some content of this document may be patented: The issuing agency of this document assumes no responsibility for identifying patents:

Introduction

Hot cracks in the heat affected zone of the weld metal and base metal are one of the most common defects in arc welding: Cracks affect the safety of welded parts

Use, in most codes and standards, any type of detectable cracks are not allowed, therefore, countries are working on research and development of thermal

Crack-insensitive welding consumables and base metals, and welding processes designed to reduce or eliminate the risk of hot cracking: At the same time, a variety of

Test methods for thermal crack susceptibility of metallic weldments (including weld

consumables, base metals, and welded joints) are also being developed:

GB/T (Z)41107 "Arc Welding Method for Destructive Testing of Welds of Metal Materials for Hot Crack Test" is a guide for hot cracking of weldments in my country:

Basic and generic document for striae testing: GB/T (Z) 41107 aims to establish the terminology, basic principles and tests applicable to hot crack testing

type, which consists of three parts:

--- Part 1: General: A brief introduction to hot crack testing terminology, basic principles, test types, test overview, and test applications

The regulations aim to provide the corresponding basic information for the testing personnel:

--- Part 2: Self-restraint test: Specifications for specimen dimensions, specimen requirements and test procedures for self-restrained thermal crack tests are intended to

Provide inspectors with relevant technical information on thermal crack self-restraint testing:

--- Part 3: External load test: For thermal tensile test, adjustable restraint test and transverse adjustable restraint test, program-controlled flat plate tensile test

Specifications for specimen size, specimen preparation, test procedures and evaluation methods for thermal crack testing under external load

Provides technical information on thermal crack external load testing:

Destructive testing of welds in metallic materials

Arc welding method for hot crack test of weldments

Part 2: Self-restraint test

1 Scope

This document specifies the self-restrained thermal crack tests of T-joint weld crack test, weld metal tensile test, longitudinal bending test, etc:

Specimen dimensions, specimen requirements and test procedures:

This document is mainly applicable to the evaluation of hot crack susceptibility of austenitic stainless steel, nickel, nickel-based and nickel-copper welding consumables, and can also be used to evaluate other

Weld metal, but not suitable for qualifying base metal and no acceptance criteria are given:

2 Normative references

The contents of the following documents constitute essential provisions of this document

through normative references in the text: Among them, dated citations

documents, only the version corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to

this document:

GB/T 228:1 Tensile test of metallic materials Part 1: Test method at room temperature (GB/T 228:1-2010, ISO 6892-1:

2009, MOD)

GB/T 2652 Tensile test method for welds and deposited metals (GB/T 2652-2008, ISO 5178:2001, IDT)

GB/T 2653 Bend Test Method for Welded Joints (GB/T 2653-2008, ISO 5173:2000, IDT)

GB/T 19869:1 Welding procedure qualification test for steel, nickel and nickel alloys (GB/T 19869:1-2005, ISO 15614-1:2004,

IDT)

GB/T 25774:1 Inspection of Welding Consumables Part 1: Preparation and Inspection of Mechanical Properties of Steel, Nickel and Nickel Alloy Deposited Metal Specimens

Test (GB/T 25774:1-2010, ISO 15792-1:2000, MOD)

GB/T 41107:1 Arc Welding Method for Destructive Test Welds of Metal Materials - Part 1: General Provisions

(GB/T 41107:1-2021, ISO 17641-1:2004, MOD)

3 Terms and Definitions

The terms and definitions defined in GB/T 41107:1 apply to this document:

4 Symbols and Abbreviations

The symbols and abbreviations in Table 1 apply to this document: