

ICS 77.040.10
CCS H 22



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

GB/T 24172-2009

**Method for evaluation of tensile properties of metallic
superplastic materials**

金属超塑性材料拉伸性能测定方法

(English Translation)

Issued on: June 25, 2009

Implemented on: April 1, 2010

Issued by: Standardization Administration of China

Table of Contents

- Foreword
- Introduction
- 1 Scope
- 2 Normative references
- 3 Symbols, definitions and descriptions

Foreword

This revised standard adopts the International Standard ISO 20032:2007 "Determination of tensile properties of metallic superplastic materials Method" (in English).

This standard is based on ISO 20032:2007 redrafted, according to China's actual conditions, when using this standard under international standards Column modifications and additions.

- Expanding the scope of this standard, an increase of cylindrical specimens;
- In Table 1, an increase of cylindrical specimens of symbols, terms and definitions;
- In the "Sample 5" added cylindrical specimens (Fig. 3), and provides sample size for the sample plates can be used to increase the Gripping end with a pin hole of the sample;
- In the "7 performance measurements," added the determination of cylindrical samples, supplemented with 7.2 should be avoided in the weight of the specimen clamp influences;
- For ISO 20032:2007 and other international standards referenced have been modified for the use of standard, this standard references to our these standards replace the corresponding international standards (see Chapter 2 of this standard).

These technical differences identified in a single vertical line they involved provisions margin.

For ease of use, this standard also made the following editorial changes.

- a) "this International Standard" be replaced by "this standard";
- b) use a decimal point instead of a decimal point " , . " , " ;
- c) Remove ISO 20032:2007 Foreword;
- d) increase the standard of this preface.

The standard proposed by China Iron and Steel Association.

This standard is under the jurisdiction of the National Steel Standardization Technical Committee.

This standard was drafted. Iron and Steel Research Institute, Metallurgical Industry Information Standards Institute.

Drafters of this standard. Zhao Junping, TESTING AND Dong Li.

Introduction

Superplastic deformation of a metal material having superplastic characteristics generated. Especially in this standard test used to determine tensile material Superplastic performance. including superplastic elongation, flow stress, strain rate sensitivity index (m value), stress - strain relationship and rheological should Force - strain relationship and the like.

Metal Superplastic Tensile Properties Determination

1 Scope

This standard specifies the test method for tensile properties of metallic superplastic symbol definition, principle, samples, equipment, performance measurement and test report.

This standard applies to the fine grain superplasticity no significant hardening or no dynamic microstructural changes of a metal material. This method uses a constant Beam displacement rate control mode on a plate and a cylindrical specimen tensile test specimens measuring tensile superplastic properties. The method uneasy Mounted extensometer.

2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard.

GB/T 228 metal materials at room temperature tensile test method (GB/T 228-2002, eqvISO 6892.1998) GB/T 4338 high-temperature metallic materials - Tensile testing (GB/T 4338-2006, ISO 783:1999, MOD) GB/T 8170 repair value expressed about the rules and limit values \u200b\u200band judgment Inspection and tension and (or) pressure testing machine force measuring system. GB/T 16825.1 of static uniaxial testing machines - Part 1 Calibration (GB/T 16825.1-2008, ISO 7500-1:2004, IDT) JJG141 work with precious metal thermocouples JJG351 work with metal thermocouple

3 Symbols, definitions and descriptions

This standard uses the symbol table and definitions 1.

Table 1 Symbols, definitions and descriptions

Symbol	Definition	Description	Unit
	Superplastic	Superplasticity superplastic deformation state began its sustained	Sample - R Type ordinary tensile test specimens no parallel portion -- The main part of the R portion R type specimen elongation, sandwiched between two circular arc -Parallel sides or the width R portion of the minimum width the original width of the sample or S-type parallel portion R portion R type specimen original minimum width mm
A	superplastic elongation of the	Elongation superplastic state%	Bg holding section width S or R-type sample holder portion width mm