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

GB/T 30069.2-2016

**Metallic materials -- Tensile testing at high strain rates -- Part 2:
Servo-hydraulic and other test systems**

金属材料 高应变速率拉伸试验 第2部分：液压伺服型与其他类型试验系统

(English Translation)

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Foreword

GB/T 30069 "metal material high strain rate tensile test" is divided into two parts.

- Part 1. Elastic rod system;
- Part 2. Hydraulic servo type and other types of test systems.

This part is part 2 of GB/T 30069.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part uses the re-drafting method to modify ISO 26203-2.:2011 "High Strain Rate Tensile Test for Metallic Materials Part 2.

Hydraulic servo type and other types of test system ".

The technical differences between this section and ISO 26203-2.:2011 are as follows.

- In GB/T 228.1 instead of ISO 6892-1 in Chapter 2, "Normative references", to meet the technical conditions of our country (see paragraph Chapter 4, Chapter 5, Chapter 7 and Chapter 9);

This part also made the following editorial changes.

- Added in Chapter 6 "Note. When using the pendulum system, refer to Appendix D in GB/T 30069.1-2013;
- delete the symbol SD and the description that did not appear in Table 1;
- to modify Chapter 1 "scope";
- Reorder the references.

This part is made by China Iron and Steel Industry Association.

This part is headed by the National Steel Standardization Technical Committee (SAC/TC183).

This part of the drafting unit. Baoshan Iron and Steel Co., Ltd., Metallurgical Industry Information Standards Institute, Shenzhen million test Equipment Co., Ltd..

Introduction

Many engineering materials exhibit a positive correlation with the strain rate during deformation to plastic failure, ie, with loading strain the yield strength of the material and the failure (fracture) strain are also increased. As a result of numerical simulation method can effectively reduce the impact on the car Hit this high-cost long-term test of the demand, so access to material performance with the relevant rate of information on the impact of the reliability of the car structure Evaluation is very important. The numerical simulation of the type of collision is required to obtain the stress-strain curve of the material at higher strain rate line. According to GB/T 228.1 only quasi-static tensile results of the material, that is, the strain rate is less than or equal to $0.008s^{-1}$, the strain rate the rate does not apply to the actual deformation behavior of the component material above the quasi-static strain rate.

Metallic materials - High strain rate tensile test Part 2. Hydraulic servo type and others Type test system

1 Scope

This part of GB/T 30069 specifies the use of hydraulic servo type and other types of test system for metal materials to carry out high strain rate pull Extension of the test method. This section only provides examples of flat samples, the same can be used other geometric size of the sample.

This part applies to the strain rate of $10^{-2}s^{-1} \sim 10^3s^{-1}$, the test temperature is $10^{\circ}C \sim 35^{\circ}C$, unless otherwise specified, the use of hydraulic Servo type test system for tensile test.

Note: When the strain rate is less than $10^{-2}s^{-1}$, a tester specially designed for quasi-static test types can be used.

2 Normative reference documents

The following documents are indispensable for the application of this document. For dated references, only the dated edition applies to this article. For undated references, the latest edition (including all modifications) applies to this document.

GB/T 228.1-2010 Metallic materials - Tensile tests - Part 1. Room temperature test methods (ISO 6892-1:2009, MOD)

3 Terms and definitions

GB/T 228.1-2010 Definitions of terms and definitions apply to this document.

4 Symbols

GB/T 228.1-2010 and the symbols, units and instructions given in Table 1 apply to this document.

Table 1 symbols and descriptions

Symbol	Unit	Description
a ₀	mm	The original thickness of the plate sample
b ₀	mm	The original width of the parallel length of the plate specimen
b _k	mm	The width of the specimen holder
L ₀	mm	The original gauge length
L _c	mm	parallel length
L _e	mm	extensometer gauge length
r	mm	transition arc radius
S ₀	mm ²	parallel length original cross-sectional area
t _s	time	time