

ICS 25.160.50

CCS J 33



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

GB/T 11363-2008

**Test method of the strength for brazed and soldered joint
(English Translation)**

Issued on: May 6, 2008

Implemented on: November 1, 2008

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China**

Table of Contents

Foreword...	3
1 Scope...	5
2 Normative references...	5
3 Principle...	5
4 Terms and definitions...	6
5 Symbols and descriptions...	7
6 Samples...	7
7 Determination of brazing/soldering area (S0)...	16
8 Specimens and processing requirements...	17
9 Brazing filler metal/solder, brazing/soldering flux and shielding gas...	17
10 Assembly and brazing/soldering...	18
11 Test methods...	18
12 Expression of test results...	22
13 Test report...	24

Foreword

This Standard corresponds to ISO 5187:1985 "Welding and allied processes - Assemblies made with soft solders and brazing filler metals - Mechanical test methods" (English edition). The degree of conformity with ISO 5187 is not equivalent. The main differences are as follows.

- ADD Clause 3 "Principle", Clause 4 "Terms and definitions", Clause 5 "Symbols and descriptions" and 6.2.1 "Plate joint sample".

This Standard replaces GB/T 11363-1989 "Methods of the strength tests for brazed and soldered joint" and GB/T 8619-1988 "Method of the strength test for brazed and soldered seam". Compared with GB/T 11363-1989 and GB/T 8619-1988, the main changes are as follows.

- The standard name is modified to "Test method of the strength for brazed and soldered joint";

- ADD five clauses, i.e. "Normative references", "Principle", "Terms and definitions", "Symbols and descriptions" and "Determination of brazing/soldering area (S0)";
- ADD 3 types of sample, i.e. plate samples of which the parallel part width is 10 mm, 15 mm, 30 mm (6.2.1);
- ADD 4 types of sample, i.e. bar samples of which the parallel part diameter is 5 mm, 10 mm, 15 mm, 20 mm; DELETE the 8 mm sample type (6.2.2);
- ADD the requirements for test machines (11.1);
- USE international symbols in strength calculation equations (12.1.3, 12.2.2);
- DELETE the schematic diagram of oxyacetylene flame heating device (2.5.2 of GB/T 8619);
- ADD the requirements of test date, test site, brazing filler metal/solder form, heat treatment state of brazed/soldered joints, test temperature, number of this Standard and test personnel in the test report record (Clause 13).

This Standard was proposed by China Machinery Industry Federation.

This Standard shall be under the jurisdiction of China National Standardization Technical Committee of Welding (SAC/TC 55).

Drafting organizations of this Standard. Harbin Welding Institute, Shenzhen Yik Shing Tai Industrial Co., Ltd., Beijing Institute of Aeronautical Materials, State-Test method of the strength for brazed and soldered joint

1 Scope

This Standard specifies the conventional tensile and shear test methods for brazed/soldered joints.

This Standard applies to the determination of the strength of brazed/soldered joints of metallic materials. Other structural materials such as ceramics and composites may also refer to this Standard.

2 Normative references

The following documents contain the provisions which, through reference in this Standard, become the provisions of this Standard. For dated references, their subsequent amendments (excluding corrigendum) or revisions do not apply to this Standard. However, the parties who enter into agreement based on this Standard are encouraged to investigate whether the latest versions of these documents are applicable. For undated reference documents, the latest versions apply to this Standard.

GB/T 228 Metallic materials - Tensile testing at ambient temperature (GB/T 228-2002, eqv ISO 6892.1998)

GB/T 3375 Welding terminology

GB/T 8170 Rules for rounding off of numerical values

GB/T 16825 (all parts) Verification of static uniaxial testing machines

3 Principle

The test is to pull the sample, generally pull to fracture, to determine the tensile strength, shear strength, or creep limit of brazed/soldered joints.

Unless otherwise specified, the test is generally carried out at room temperature ranging from 10 °C to 35 °C. For temperature-critical tests, the test temperature shall be $23\text{ °C} \pm 5\text{ °C}$.

4 Terms and definitions

For the purpose of this Standard, the following terms and definitions and those established in GB/T 3375 and GB/T 228 apply. For convenience, some terms in GB/T 3375 and GB/T 228 are listed below.

4.1

maximum force

F_m

The maximum force that the sample can resist after the yield phase. For

metallic materials without apparent yield (continuous yield), it is the maximum force during the test.

4.2

stress

Quotient of the force at any time during the test divided by the original cross-sectional area of the sample (S_0).

4.3

tensile strength

R_m

Stress of the corresponding maximum force (F_m).

4.4

shear strength

τ_{max}

The maximum shear stress that the sample bears before fracture.

4.5

creep limit

At the specified temperature, the maximum stress that makes the creep total elongation or constant creep rate of the sample not exceed the specified value in a certain period of time.

It shall calculate the original brazing/soldering area based on the measured original dimensions of the sample. The calculation result is expressed to four digits after the decimal point. The rules for rounding off of numerical values are in accordance with the specifications of GB/T 8170.

8.1 SELECT the type of specimen according to the test purpose. Under the condition of ensuring the length of the test part in the middle of the sample, the length of the sample clamping part may also be lengthened according to the test machine conditions. The plate-shaped specimen shall be flat.