GB

NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

ICS 77.040.99
Z 24

GB/T 32790-2016

Methods for Evaluating the Weld Quality of Seam Welds in Aluminium and Aluminium Alloy Extrusion

铝及铝合金挤压焊缝焊合性能检验方法

Issued on: August 19, 2016 **Implemented on: July 1, 2017**

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

Standardization Administration of the People's Republic of China.

Table of Contents

Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard was proposed by China Nonferrous Metals Industry Association.

This Standard shall be under the jurisdiction of the National Standardization Technical Committee on Nonferrous Metals (SAC/TC 243).

The main drafting organizations: Liaoning Zhongwang Holdings Limited, Guangzhou Research Institute of Nonferrous Metals, Shandong Yancon Light Alloy Co., Ltd., China Nonferrous Metals Techno-Economic Research Institute, Longkou Conglin Aluminium Co., Ltd., Northeast Light Alloy Co., Ltd., Southwest Aluminium (Group) Co., Ltd., Jilin Midas Alluminium Co., Ltd., General Research Institute for Nonferrous Metals, Guangdong Haomei Aluminium Co., Ltd., Guangdong Huachang Aluminium Factory Co., Ltd. and Fujian Nanping Aluminium Co., Ltd.

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1 Scope

This Standard specifies the test method at room temperature for evaluating the weld quality of seam welds in aluminium and aluminium alloy extrusion.

This Standard applies to the test of the weld quality of seam welds in aluminium and aluminium alloy (hereinafter referred to as the weld quality).

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition dated applies to this document. For undated references, the latest edition of the referenced document (including any amendments) applies to this Standard.

GB/T 3246.2 Inspection Method for Structure of Wrought Aluminum and Aluminum Alloy Products – Part 2: Inspection Method for Macrostructure

GB/T 16865 Test Pieces and Method for Tensile Test for Wrought Aluminium and Magnesium Alloys Products

3 Etching Method

It shall be conducted as specified in GB/T 3246.2.

4 Breaking Method

4.1 Method summary

Conduct the breaking test by applying force on the seam welds in the extrusion of test pieces; make the test pieces bend, deform significantly or break; then determine the weld quality of seam welds in the extrusion in accordance with whether the seam welds in the extrusion breaks or the morphology of fracture. The method applies to the test pieces in the artificial ageing state.

4.2 Test apparatus

4.2.1 Tester: hydraulic or mechanical pressure tester or universal material testing machine.

Determine the weld quality in accordance with 4.5.2 to 4.5.5.

6.2 Test method for tensile property

6.2.1 Method summary

Conduct the tensile test for the test pieces containing seam welds; and determine the weld quality in accordance with the results of the tensile test.

6.2.2 Test apparatus

It shall be as specified in accordance with GB/T 16865.

6.2.3 Preparation of test pieces

Fabricate test pieces in accordance with GB/T 16865; and make the seam welds locate in the central part of the parallel section of test pieces.

6.2.4 Test procedure

It shall be as specified in GB/T 16865.

6.2.5 Results evaluation

The weld quality is determined to be qualified if the tensile test results meet the specifications of relevant standards; or else, it is unqualified.

7 Test report

The test report shall include the following content:

a) the number of this Standard;

b) the identification of materials and test pieces;

c) the type of test pieces;

d) the test methods (etching method, breaking method, flaring method, tensile method – fracture test method and tensile method – tensile property test method);

e) the test speed;

f) the diagram of seam welds' positions;

g) the testing equipment;

h) the test results;

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