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**Ugotavljanje odpornosti nerjavnih jekel proti medkristalni koroziji - 1. del:  
Avstenitna in feritno-avstenitna (dupleksna) nerjavna jekla - Korozijski preskus v  
mediju, ki vsebuje dušikovo kislino, z merjenjem izgube mase (Hueyev preskus)  
(ISO 3651-1:1998)**

Determination of resistance to intergranular corrosion of stainless steels - Part 1:  
Austenitic and ferritic-austenitic (duplex) stainless steels - Corrosion test in nitric acid  
medium by measurement of loss in mass (Huey test) (ISO 3651-1:1998)

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Ermittlung der Beständigkeit nichtrostender Stähle gegen interkristalline Korrosion - Teil  
1: Nichtrostende austenitische und ferritisch-austenitische (Duplex-) Stähle  
Korrosionsversuch in Salpetersäure durch Messung des Massenverlustes (Huey-Test)  
(ISO 3651-1:1998) <https://standards.iteh.ai/catalog/standards/sist/c593af8d-9439-44bc-a353-691d0d205021/sist-en-iso-3651-1-2000>

Détermination de la résistance a la corrosion intergranulaire des aciers inoxydables -  
Partie 1: Aciers austénitiques et austéno-ferritiques (duplex) - Essai de corrosion en milie  
u acide nitrique par mesurage de la perte de masse (essai de Huey) (ISO 3651-1:1998)

**Ta slovenski standard je istoveten z: EN ISO 3651-1:1998**

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**ICS:**

77.060

Korozija kovin

Corrosion of metals

**SIST EN ISO 3651-1:2000**

**en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

EN ISO 3651-1

May 1998

ICS 77.060

Descriptors: see ISO document

English version

Determination of resistance to intergranular corrosion of  
stainless steels - Part 1: Austenitic and ferritic-austenitic  
(duplex) stainless steels - Corrosion test in nitric acid medium by  
measurement of loss in mass (Huey test) (ISO 3651-1:1998)

Détermination de la résistance à la corrosion intergranulaire  
des aciers inoxydables - Partie 1: Aciers austénitiques et  
austéno-ferritiques (duplex) - Essai de corrosion en milieu  
acide nitrique par mesurage de la perte de masse (essai de  
Huey) (ISO 3651-1:1998)

This European Standard was approved by CEN on 26 March 1998.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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EN ISO 3651-1:1998

### Foreword

The text of the International Standard ISO 3651-1:1998 has been prepared by Technical Committee ISO/TC 17 "Steel" in collaboration with Technical Committee ECISS/TC 1 "Steel testing", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 1998, and conflicting national standards shall be withdrawn at the latest by November 1998.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

### Endorsement notice

The text of the International Standard ISO 3651-1:1998 was approved by CEN as a European Standard without any modification.

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# INTERNATIONAL STANDARD

# ISO 3651-1

Second edition  
1998-05-15

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## Determination of resistance to intergranular corrosion of stainless steels —

### Part 1:

Austenitic and ferritic-austenitic (duplex) stainless steels — Corrosion test in nitric acid medium by measurement of loss in mass (Huey test)

iTeh STANDARD PREVIEW  
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*Détermination de la résistance à la corrosion intergranulaire des aciers inoxydables*

<https://standards.iteh.ai/catalog/standards/sist/c593af8d-9439-44bc-a353-671e21564105/iso-3651-1>

*Partie 1: Aciers inoxydables austénitiques et austéno-ferritiques (duplex) — Essai de corrosion en milieu acide nitrique par mesurage de la perte de masse (essai de Huey)*



Reference number  
ISO 3651-1:1998(E)

## ISO 3651-1:1998(E)

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 3651-1 was prepared by Technical Committee ISO/TC 17, Steel, Subcommittee SC 7, *Methods of testing (other than mechanical tests and chemical analysis)*.  
<https://standards.iteh.ai/catalog/standards/sist-en-iso-3651-1-2000>

This second edition cancels and replaces the first edition (ISO 3651-1:1976), which has been technically revised.

ISO 3651 consists of the following parts, under the general title *Determination of resistance to intergranular corrosion of stainless steels*:

- *Part 1: Austenitic and ferritic-austenitic (duplex) stainless steels — Corrosion test in nitric acid medium by measurement of loss in mass (Huey test)*
- *Part 2: Ferritic, austenitic and ferritic-austenitic (duplex) stainless steels — Corrosion test in media containing sulfuric acid*

## Introduction

The term “intergranular corrosion test” denotes the corrosion test carried out by means of preferential attack of the grain boundaries.

Austenitic and ferritic-austenitic (duplex) stainless steels may be subject to such attack when they are held at a temperature between about 500 °C and 1 000 °C. This heat cycle, which may provoke sensitization to intergranular corrosion, may occur during hot forming (forging, rolling) as the result of incorrect solution treatment or during a welding operation.

NOTE — Intergranular corrosion in nitric acid may be associated with one or more of the following:

- precipitation of chromium carbides;
- precipitation of intermetallic compounds such as sigma phase, in molybdenum-bearing grades;
- segregation of impurity elements to the grain boundaries.

The interpretation of the result (for example, maximum rate of corrosion) shall form the subject of an agreement between the interested parties.

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# Determination of resistance to intergranular corrosion of stainless steels —

## Part 1:

### Austenitic and ferritic-austenitic (duplex) stainless steels — Corrosion test in nitric acid medium by measurement of loss in mass (Huey test)

#### 1 Scope

This part of ISO 3651 specifies a method for the determination of the resistance to intergranular corrosion of austenitic and ferritic-austenitic (duplex) stainless steels in a nitric acid medium by measurement of the loss in mass (Huey test). It also specifies the purpose which may be assigned to the test.

The method is applicable only to austenitic and ferritic-austenitic (duplex) stainless steels supplied in the form of rolled or forged products, tubes and cast products and intended for use in a strongly oxidizing medium (for example, relatively concentrated nitric acid). In general the Huey test should not be used for grades containing molybdenum unless the material tested is to be used in nitric acid service.

NOTE — It is important to note that the result of the corrosion test is only strictly valid for the corrosive medium used in the test. It constitutes a basis for estimating the resistance to intergranular corrosion but may not be used to check resistance to other forms of corrosion (general corrosion, pitting, stress corrosion, etc.). It is necessary for the user to adapt the specified corrosion test to the use which will be made of the alloy. This test should, in no case, be considered as an absolute criterion of the quality of the alloy.

#### 2 Purpose of the test

This intergranular corrosion test may have either of the purposes given in 2.1 or 2.2. If an order specifies this corrosion test, the purpose of the test shall be stated at the time of ordering.

##### 2.1 Verification of the intrinsic resistance of the alloy to intergranular corrosion

This verification applies only to austenitic steel grades which are specially produced for resistance to intergranular corrosion in strongly oxidizing media. The specimen is inspected after having undergone a heat treatment for sensitization (see clause 3).

##### 2.2 Inspection of the efficiency of the solution treatment

This inspection is only carried out on thin products for which the cooling speed may be made sufficiently rapid. The specimen is inspected in the state in which it is delivered to the user, without heat treatment for sensitization.