
**Steel flat products for pressure
purposes — Technical delivery
conditions —**

**Part 7:
Stainless steels**

*Produits plats en acier pour service sous pression — Conditions
techniques de livraison —*

Partie 7: Aciers inoxydables



This document is a preview generated by ERS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2018

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Published in Switzerland

Contents

	Page
Foreword.....	iv
Introduction.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	1
4 Classification and designation.....	1
5 Information to be supplied by the purchaser.....	2
5.1 Mandatory information.....	2
5.2 Options.....	2
5.3 Example for ordering.....	2
6 Requirements.....	2
6.1 Steelmaking process.....	2
6.2 Delivery condition.....	2
6.3 Chemical composition and chemical corrosion properties.....	2
6.4 Mechanical properties.....	2
6.5 Surface condition.....	3
6.6 Internal soundness.....	3
6.7 Post-weld heat treatment.....	3
6.8 Dimensions and tolerances.....	3
6.9 Calculation of mass.....	3
6.10 Physical properties.....	3
7 Inspection.....	3
7.1 Types of inspection and inspection documents.....	3
7.2 Tests to be carried out.....	3
7.3 Re-tests.....	3
8 Sampling.....	4
8.1 Frequency of testing.....	4
8.2 Selection and preparation of samples and test pieces.....	4
9 Test methods.....	4
10 Marking.....	4
Annex A (informative) Steel designations in accordance with this document and designation of comparable steel grades in national or regional standards.....	30
Annex B (informative) Guidelines for further treatment (including heat treatment) in fabrication.....	32
Annex C (informative) Post-weld heat treatment.....	36
Annex D (informative) Preliminary reference data for the tensile strength of austenitic-ferritic steels at elevated temperatures.....	39
Annex E (informative) Reference data on strength values for 1 % (plastic) creep strain and creep rupture.....	40
Annex F (informative) Reference data on mechanical properties of austenitic steels at room temperature and at low temperature.....	47
Annex G (informative) Reference data on some physical properties.....	49
Annex H (informative) Numbering of steel grades in accordance with ISO 15510.....	56
Bibliography.....	58

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 17, *Steel*, Subcommittee SC 10, *Steel for pressure purposes*.

This third edition cancels and replaces the second edition (ISO 9328-7:2011), which has been technically revised. The following changes have been made:

- the term “product thickness” has been replaced with “nominal thickness”;
- new steel grades X1CrNiSI18-5-4, X2CrCuNbTiV22-1, X2CrNiMoN21-9-1, X2CrMnNiN21-5-1 and X2CrNiMnMoCuN24-4-3-2 and all their technical data have been added;
- the technical data in [Table 5](#) have been revised;
- the technical data in [Table 9](#) have been aligned with EN 10028-7.

A list of all the parts in the ISO 9328 series can be found on the ISO website.

Introduction

The International Organization for Standardization (ISO) draws attention to the fact that it is claimed that compliance with this document may involve the use of patents concerning eight steel grades.

ISO takes no position concerning the evidence, validity and scope of this patent right. The holder of this patent right has assured ISO that he/she is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with ISO. Information may be obtained from the following sources.

For steel grades 1.4162 (but also consider footnote ^c in [Table 4](#)) and 1.4662 from:

Outokumpu Stainless AB

SE-77480 AVESTA, Sweden

For steel grades 1.4420 and 1.4622 from:

Outokumpu Oyj

FI-02200 Espoo, Finland

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights other than those identified above. ISO shall not be held responsible for identifying any or all such patent rights.

Steel flat products for pressure purposes — Technical delivery conditions —

Part 7: Stainless steels

1 Scope

This document specifies requirements for flat products for pressure purposes made of stainless steels, including austenitic creep-resisting steels, in thicknesses as specified in [Tables 7](#) to [10](#).

The requirements and definitions of ISO 9328-1 also apply to this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3651-2, *Determination of resistance to intergranular corrosion of stainless steels — Part 2: Ferritic, austenitic and ferritic-austenitic (duplex) stainless steels — Corrosion test in media containing sulfuric acid*

ISO 9328-1:2018, *Steel flat products for pressure purposes — Technical delivery conditions — Part 1: General requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 9328-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1

cryogenic temperature

temperature lower than -75 °C used in the liquefaction of gases

4 Classification and designation

Shall be in accordance with ISO 9328-1.

NOTE 1 Information on the designation of comparable steel grades in national or regional standards is given in [Annex A](#).

NOTE 2 Information on numbering of steel grades is in accordance with ISO 15510.