

First edition
2005-02-01

**Weldability — Metallic materials —
General principles**

Soudabilité — Matériaux métalliques — Principes généraux



Reference number
ISO/TR 581:2005(E)

© ISO 2005

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

This document is a preview generated by EVS

© ISO 2005

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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.

ISO/TR 581 was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 7, *Representation and terms*.

It cancels and replaces ISO 581:1980, which has been technically revised.

This document is a preview generated by EVS

Weldability — Metallic materials — General principles

1 Scope

This Technical Report gives general principles related to the weldability of metallic materials. These principles apply to all welding processes and all different types of construction whatever properties they may have.

2 Weldability

2.1 General

A component consisting of metallic material is considered to be weldable by a given process when metallic continuity can be obtained by welding using a suitable welding procedure. At the same time, the welds shall comply with the requirements specified in regard to both their metallurgical and mechanical properties and their influence on the construction of which they form a part. Weldability is governed by three factors, namely material, design and production (see Figure 1).

Each of these factors is associated with different properties:

a) **Metallurgical weldability: material properties**

These are influenced primarily by production and to a minor extent by the design.

b) **Constructional weldability: design properties**

These are influenced primarily by the material and to a minor extent by production.

c) **Operative weldability: production properties**

These are influenced primarily by the design and to minor extent by the material.

Each of these sets of properties depends — like the weldability of a component — on material, design and production, but the importance of the influencing factors differs for each.

2.2 Metallurgical weldability

A material possesses Metallurgical Weldability if, in the course of the procedure adopted, the chemical, metallurgical and physical properties inherent in the material allow a weld to be made which satisfies the requirements of the application. The less the factors governed by the material have to be taken into account when determining the welding procedure for a given construction, the better is the Metallurgical Weldability of a material within a material group.