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Third edition
2021-09

Quality requirements for fusion welding of metallic materials —

Part 1: Criteria for the selection of the appropriate level of quality requirements

*Exigences de qualité en soudage par fusion des matériaux
métalliques —*

*Partie 1: Critères pour la sélection du niveau approprié d'exigences de
qualité*



Reference number
ISO 3834-1:2021(E)

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Published in Switzerland

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Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 General outline of the ISO 3834 series	2
5 Selection of the appropriate level of quality requirements	2
6 Elements to be considered for a quality management system to complement the ISO 3834 series	3
Annex A (informative) Criteria which assist in the selection of ISO 3834-2, ISO 3834-3 or ISO 3834-4	4
Bibliography	6

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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.

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 of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 10, *Quality management in the field of welding*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 121, *Welding and allied processes*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 3834-1:2005), which has been technically revised. The main changes compared with the previous edition are as follows:

- this document has been editorially revised;
- references to subclauses in ISO 9001 have been updated.

A list of all parts in the ISO 3834 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Official interpretations of ISO/TC 44 documents, where they exist, are available from this page: <https://committee.iso.org/sites/tc44/home/interpretation.html>.

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Introduction

Processes such as fusion welding are widely used to manufacture many products. In some companies, they are the key feature of production. Products can range from simple to complex. Examples include pressure vessels, domestic and agricultural equipment, cranes, bridges, transport vehicles and other items.

These processes exert a profound influence on the cost of manufacture and quality of the product. Therefore, it is important to ensure that these processes are carried out in the most effective way and that appropriate control is exercised over all aspects of the operation.

It is emphasized that the ISO 3834 series is not a quality management system (QMS) standard replacing ISO 9001:2015. However, it can be a useful tool when ISO 9001:2015 is applied by manufacturers.

Specification of quality requirements for welding processes is important because the quality of these processes cannot be readily or economically validated. Therefore, they are considered to be special processes as noted by ISO 9000:2015.

Quality cannot be inspected into a product: quality needs to be built in. Even the most extensive and sophisticated non-destructive testing does not improve the quality of the product.

For products to be free from serious problems in production and in service, it is necessary to provide controls, from the design phase, through material selection, into manufacture and subsequent inspection. For example, poor design can create serious and costly difficulties in the workshop, on site or in service. Incorrect material selection can result in problems, such as cracking in welded joints.

To ensure sound and effective manufacturing, management needs to understand and appreciate the sources of potential trouble and to implement appropriate procedures for their control.

The ISO 3834 series identifies measures that are applicable for different situations. Typically, they can be applied in the following circumstances:

- in contractual situations: specification of welding quality requirements;
- by manufacturers: establishment and maintenance of welding quality requirements;
- by committees drafting manufacturing codes or application standards: specification of welding quality requirements;
- by organizations assessing welding quality performance, e.g. third parties, customers or manufacturers.

The ISO 3834 series can be used by internal and external organizations, including certification bodies, to assess the manufacturer's ability to meet customer, regulatory or the manufacturer's own requirements.

NOTE 1 ISO 3834-2, ISO 3834-3 and ISO 3834-4 provide complete sets of quality requirements for process control related to all fusion welding processes (for each process separately or in combination as specified). ISO 3834-5 specifies the documents with which it is necessary to conform to claim conformity to the quality requirements of ISO 3834-2, ISO 3834-3 or ISO 3834-4.

NOTE 2 ISO 3834-2, ISO 3834-3 and ISO 3834-4 can be used on their own by a manufacturer or in conjunction with ISO 9001:2015.