

2006-03-14

# **Kvalitetskrav til smeltesvejsning af metalliske materialer – Del 1: Kriterier for valg af passende niveau for kvalitetskrav**

Quality requirements for fusion welding of  
metallic materials – Part 1: Criteria for the  
selection of the appropriate level of quality  
requirements

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DS-projekt: 54733  
ICS: 25.160.10

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EUROPEAN STANDARD

**EN ISO 3834-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2005

ICS 25.160.01

Supersedes EN 729-1:1994

English Version

**Quality requirements for fusion welding of metallic materials -  
Part 1: Criteria for the selection of the appropriate level of quality  
requirements (ISO 3834-1:2005)**

Exigences de qualité en soudage par fusion des matériaux  
métalliques - Partie 1: Critères pour la sélection du niveau  
approprié d'exigences de qualité (ISO 3834-1:2005)

Qualitätsanforderungen für das Schmelzschweißen von  
metallischen Werkstoffen - Teil 1: Kriterien für die Auswahl  
der geeigneten Stufe der Qualitätsanforderungen (ISO  
3834-1:2005)

This European Standard was approved by CEN on 28 October 2005.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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

**Management Centre: rue de Stassart, 36 B-1050 Brussels**

## Foreword

This document (EN ISO 3834-1:2005) has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" in collaboration with Technical Committee CEN/TC 121 "Welding", the secretariat of which is held by DIN.

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 June 2006, and conflicting national standards shall be withdrawn at the latest by June 2006.

This document supersedes EN 729-1:1994.

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

## Endorsement notice

The text of ISO 3834-1:2005 has been approved by CEN as EN ISO 3834-1:2005 without any modifications.

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## **Forord**

Dette dokument (EN ISO 3834-1:2005) er udarbejdet af teknisk komité ISO/TC 44, Welding and allied processes, i samarbejde med teknisk komité CEN/TC 121, Welding, hvis sekretariat varetages af DIN.

Denne europæiske standard skal inden juni 2006 have status som national standard, enten ved at der udgives en identisk tekst, eller ved formel godkendelse, og modstridende nationale standarder skal være trukket tilbage senest juni 2006.

Dette dokument erstatter EN 729-1:1994.

I henhold til CEN/CENELEC's interne regler er de nationale standardiseringsorganisationer i følgende lande forpligtet til at implementere denne europæiske standard: Belgien, Cypern, Danmark, Estland, Finland, Frankrig, Grækenland, Holland, Irland, Island, Italien, Letland, Litauen, Luxembourg, Malta, Norge, Polen, Portugal, Schweiz, Slovakiet, Slovenien, Spanien, Storbritannien, Sverige, Tjekkiet, Tyskland, Ungarn og Østrig.

## **Godkendelse**

Teksten i ISO 3834-1:2005 er godkendt af CEN som EN ISO 3834-1:2005 uden ændringer.

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Second edition  
2005-12-15

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## 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 3834-1:2005(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.

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.

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 3834-1 was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 10, *Unification of requirements in the field of metal welding*.

This second edition cancels and replaces the first edition (ISO 3834-1:1994), which has been technically revised.

ISO 3834 consists of the following parts, under the general title *Quality requirements for fusion welding of metallic materials*:

- *Part 1: Criteria for the selection of the appropriate level of quality requirements*
- *Part 2: Comprehensive quality requirements*
- *Part 3: Standard quality requirements*
- *Part 4: Elementary quality requirements*
- *Part 5: 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 A Technical Report ISO/TR 3834-6, *Quality requirements for fusion welding of metallic materials — Part 6: Guidance on implementing ISO 3834* is being prepared.

Requests for official interpretations of any aspect of this part of ISO 3834 should be directed to the Secretariat of ISO/TC 44/SC 10 via your national standards body, a complete listing which can be found at <http://www.iso.org>.

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## Forord

ISO (the International Organization for Standardization) er en verdensomspændende sammenslutning af nationale standardiseringsorganisationer (ISO's medlemslande). Internationale standarder udarbejdes normalt af ISO's tekniske komitéer. Hvert medlemsland, som er interesseret i et emne, inden for hvilket der er oprettet en teknisk komité, har ret til at være repræsenteret i den pågældende komité. Internationale organisationer, både statslige og ikke-statslige, der har en samarbejdsaftale med ISO, deltager ligeledes i arbejdet. ISO samarbejder tæt med IEC (the International Electrotechnical Commission) i alle anliggender vedrørende elektroteknisk standardisering.

Internationale standarder udarbejdes i henhold til reglerne i ISO/IEC Directives, Part 2.

Tekniske komitéers væsentligste opgave er at udarbejde internationale standarder. Forslag til internationale standarder, der er godkendt af de tekniske komitéer, sendes ud til medlemslandene til afstemning. Offentliggørelse som international standard kræver godkendelse fra mindst 75 % af de medlemslande, som afgiver deres stemme.

Der gøres opmærksom på muligheden for, at dele af denne internationale standard kan være genstand for patentrettigheder. ISO kan ikke drages til ansvar for at identificere sådanne rettigheder.

ISO 3834-1 er udarbejdet af teknisk komité ISO/TC 44, Welding and allied processes, underkomité SC 10, Unification of requirements in the field of metal welding.

Denne 2. udgave ophæver og erstatter 1. udgave (ISO 3834-1:1994), hvis indhold er blevet revideret.

ISO 3834 består af følgende dele under den generelle titel: Quality requirements for fusion welding of metallic materials:

- Part 1: Criteria for the selection of the appropriate level of quality requirements
- Part 2: Comprehensive quality requirements
- Part 3: Standard quality requirements
- Part 4: Elementary quality requirements
- Part 5: 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 – En teknisk rapport ISO/TR 3834-6, Quality requirements for fusion welding of metallic materials – Part 6: Guidance on implementing ISO 3834, er under udarbejdelse.

Anmodninger om officielle fortolkninger i enhver henseende af denne del af ISO 3834 bør sendes til sekretariatet for ISO/TC 44/SC 10 via det nationale standardiseringsorgan. En liste herover findes på <http://www.iso.org>.

## Introduction

Processes such as fusion welding are widely used to manufacture many products. In some companies, they are the key feature of production. Products may 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. It is important, therefore, 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 emphasised that ISO 3834 is not a quality management system standard replacing ISO 9001:2000. However, it can be a useful tool when ISO 9001:2000 is applied by manufacturers.

Specification of quality requirements for welding processes is important because the quality of these processes cannot be readily verified. Therefore, they are considered to be special processes as noted by ISO 9000:2000.

Quality cannot be inspected into a product, it has 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 may create serious and costly difficulties in the workshop, on site, or in service. Incorrect material selection may 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.

ISO 3834 identifies measures that are applicable for different situations. Typically, they may 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.

ISO 3834 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.

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## Indledning

Processer som smeltesvejsning anvendes bredt til fremstilling af mange produkter. I nogle virksomheder er de kerneprocesserne i produktionen. Produkter kan variere fra enkle til komplekse. Eksempler herpå er trykudstyr, hus- og landbrugsudstyr, kraner, broer, transportkøretøjer samt andre ting.

Disse processer har en stor indflydelse på driftsomkostningerne og produktets kvalitet. Det er derfor vigtigt at sikre, at disse processer udføres på den mest effektive måde, og at der udføres en passende styring af alle aspekter i arbejdsprocessen.

Det skal understreges, at ISO 3834 ikke er en standard for kvalitetsstyringssystem, der erstatter ISO 9001:2000. Den kan dog være et nyttigt redskab, når ISO 9001:2000 anvendes af producenter.

Specifikation af kvalitetskrav til svejseprocesser er vigtig, idet kvaliteten af disse processer ikke umiddelbart kan verificeres. Derfor betragtes de som specielle processer, som bemærket i ISO 9000:2000.

Kvalitet kan ikke inspiceres ind i en produkt, det skal indbygges som en del af produktet. Selv de mest omfattende og sofistikerede metoder til ikke-destruktiv prøvning kan ikke forbedre et produkts kvalitet.

For at produkter kan være fri for alvorlige problemer under produktionen og i brug, er det nødvendigt at styre fra designfasen gennem materialevalget til selve produktionen og den efterfølgende inspektion. Fx kan dårligt design skabe alvorlige og kostbare vanskeligheder i svejseværkstedet, på montagestedet eller i driften. Forkert materialevalg kan resultere i problemer som fx revner i svejste samlinger.

For at sikre fornuftig og effektiv produktion er det nødvendigt, at ledelsen forstår og værdsætter kilder til potentielle problemer og indfører passende procedurer til styring heraf.

ISO 3834 identificerer midler, som kan anvendes i forskellige situationer. De kan typisk anvendes under følgende omstændigheder:

- i kontraktsituationer: specifikation af svejsekvalitetskrav
- af producenter: fastlæggelse og vedligeholdelse af svejsekvalitetskrav
- af komitéer, der udarbejder produktionsstandarder eller anvendelsesstandarder: specifikation af svejsekvalitetskrav
- af organisationer, der vurderer udført svejsekvalitet, fx 3. part, kunder eller producenter.

ISO 3834 kan anvendes af interne og eksterne virksomheder, herunder certificeringsorganer, til at vurdere en producents evne til at opfylde kundens, myndighedens eller producentens egne krav.

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# Quality requirements for fusion welding of metallic materials —

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

### 1 Scope

This part of ISO 3834 provides a general outline of ISO 3834 and criteria to be taken into account for the selection of the appropriate level of quality requirements for fusion welding of metallic materials, among the three levels specified in ISO 3834-2 <sup>[3]</sup>, ISO 3834-3 <sup>[4]</sup> and ISO 3834-4 <sup>[5]</sup>. It applies to manufacturing, both in workshops and at field installation sites.

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.

This part of ISO 3834 does not specify requirements for a total quality management system. However, Clause 6 identifies quality management system elements where their inclusion will complement ISO 3834.

NOTE 2 ISO 3834-2, ISO 3834-3 and ISO 3834-4 may be used on their own by a manufacturer or in conjunction with ISO 9001:2000.

### 2 Normative references

The following referenced documents are indispensable for the application 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 9000:2000, *Quality management systems — Fundamentals and vocabulary*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 9000:2000 and the following apply.

#### 3.1

##### **design specification**

requirements for products specified by customers or by the organization in anticipation of customer requirements, or by regulation

NOTE The requirements for products and in some cases associated processes can be contained in, for example, technical specifications, product standards, process standards, contractual agreements and regulatory requirements.

#### 3.2

##### **qualified person**

person whose competence and knowledge have been obtained by education, training and/or relevant practical experience