



**International  
Standard**

**ISO 14344**

**Welding consumables —  
Procurement of filler materials  
and fluxes**

*Produits consommables pour le soudage — Approvisionnement  
en matériaux d'apport et flux*

**Third edition  
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ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

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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 document 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](http://www.iso.org/directives)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

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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](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 3, *Welding consumables*, 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 14344:2010), which has been technically revised.

The main changes are as follows:

- content from scope has been moved to the introduction;
- in [Clause 2](#), reference is made to ISO 544, ISO 10474 and EN 10204;
- in [Clause 3](#), terms and definitions have been revised and the list expanded;
- [Clause 5](#) has been significantly revised.

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](http://www.iso.org/members.html). Official interpretations, where they exist, are available from this page: <https://committee.iso.org/sites/tc44/home/interpretation.html>. Official interpretations, where they exist, are available from this page: <https://committee.iso.org/sites/tc44/home/interpretation.html>.

## Introduction

In production, the components of welding consumables are divided into discrete, predetermined quantities so that satisfactory tests with a sample from that quantity will establish that the entire quantity meets specification requirements. These quantities, known by such terms as heats, lots, blends, batches and mixes, vary in size according to the manufacturer. For identification purposes, each manufacturer assigns a unique designation to each quantity. This designation usually consists of a series of numbers or letters, or combinations thereof, which will enable the manufacturer to determine the date and time (or shift) of manufacture, the raw materials used, and the details of the procedures used in producing the welding consumable. This designation stays with the welding consumable and can be used to identify the material later, in those cases in which identification is necessary.

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# Welding consumables — Procurement of filler materials and fluxes

## 1 Scope

This document specifies tools for communication between a purchaser and a supplier of welding consumables within quality systems, such as those based upon ISO 9001.

This document, together with an applicable welding consumable standard (ISO or other), provides a method for preparing the specific details needed for welding consumable procurement which consists of:

- a) the welding consumable classification (selected from the applicable welding consumable standard);
- b) the lot classification (selected from [Clause 4](#));
- c) the testing schedule (selected from [Clause 5](#)).

Selection of the specific welding consumable classification, lot classification, and testing schedule depends upon the requirements of the application for which the welding consumable is being procured.

This document does not apply to non-consumable electrodes or shielding gases.

## 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 544, *Welding consumables – Technical delivery conditions for filler materials and fluxes – Type of product, dimensions, tolerances and markings*

ISO 10474, *Steel and steel products — Inspection documents*

EN 10204, *Metallic products – Types of inspection documents*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 544 and the following apply.

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

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

### 3.1

#### controlled chemical composition

<covered or tubular electrodes> covering or core ingredients consisting of one or more wet mixes, dry batches, or dry blends that are subjected to sufficient tests to ensure that all within the *lot* ([3.8](#)) are equivalent

Note 1 to entry: These tests shall include chemical analysis, the results of which shall fall within the manufacturer's acceptance limits. The identification of the test procedure and the results of the tests shall be recorded.

### 3.2

#### **controlled chemical composition**

<solid welding consumables and solid source materials> materials used to fabricate welding consumables (core rod for covered electrodes and strip or tube for tubular wire or rod) consisting of one or more heats that are subjected to sufficient tests to ensure that all within the *lot* (3.8) are equivalent

Note 1 to entry: These tests shall include chemical analysis, the results of which shall fall within the manufacturer's acceptance limits. The identification of the test procedure and the results of the tests shall be recorded.

Note 2 to entry: Mill coils from mills that do not permit spliced-coil practice shall be sampled on at least one end. Coils from mills that permit spliced-coil practice with a maximum of one splice per coil shall be sampled on both ends. Coils with more than one splice are not permitted.

### 3.3

#### **dry batch**

quantity of dry ingredients mixed at one time in one mixing vessel

Note 1 to entry: Liquid(s), such as binders, when added to a dry batch, produce a wet mix. A dry batch can be divided into homogeneous smaller quantities, in which case addition of the liquid(s) produces a corresponding number of smaller wet mixes.

### 3.4

#### **dry blend**

two or more *dry batches* (3.3) from which quantities of each are combined proportionately, then mixed in a mixing vessel to produce a larger quantity in which the ingredients are as uniformly dispersed as they would have been had the entire quantity been mixed together at one time in one large mixer

Note 1 to entry: A dry blend, as in the case of a *dry batch* (3.3), can be used singly or divided into smaller quantities, in which case addition of liquid(s) produces a corresponding number of smaller wet mixes.

### 3.5

#### **heat**

<open hearth, electric arc, basic oxygen, argon-oxygen processes> material obtained from one furnace melt, where slag-metal or gas-metal reactions occur in producing the specified alloy

Note 1 to entry: For solid welding consumables and solid source materials used to fabricate welding consumables (core rod for covered electrodes and strip or tube for tubular wire or rod), the specific definition is dependent on the method of melting and refining of the metal.

Note 2 to entry: Neither mill splicing of coils from different heats nor coils containing transition heats is permitted.

### 3.6

#### **heat**

<induction melting in controlled atmosphere or vacuum> uninterrupted series of melts from one controlled batch of metals and alloying ingredients in one melting furnace under the same melting conditions, where each melt conforms to the chemical composition range approved by the purchaser of the material

Note 1 to entry: For solid welding consumables and solid source materials used to fabricate welding consumables (core rod for covered electrodes and strip or tube for tubular wire or rod), the specific definition is dependent on the method of melting and refining of the metal.

Note 2 to entry: Neither mill splicing of coils from different heats nor coils containing transition heats is permitted.

### 3.7

#### **heat**

<consumable electrode remelt> uninterrupted series of remelts in one furnace under the same remelting conditions using one or more consumable electrodes produced from a single melt, each remelt conforming to the chemical composition range approved by the purchaser of the material (i.e., the producer of the welding consumable) in processes involving continuous melting and casting

Note 1 to entry: For solid welding consumables and solid source materials used to fabricate welding consumables (core rod for covered electrodes and strip or tube for tubular wire or rod), the specific definition is dependent on the method of melting and refining of the metal.



Note 2 to entry: Neither mill splicing of coils from different heats nor coils containing transition heats is permitted.

### 3.8

#### **lot**

unique identifying designation for a specific type and quantity of welding consumable, usually beginning with the word “lot” and followed by a series of numbers and/or letters

Note 1 to entry: The lot class, as identified in [Clause 4](#), details the requirements for grouping consumables into a single lot.

### 3.9

#### **production schedule**

manufacturing campaign comprising of either a single manufacturing operation or a series of manufacturing operations, any part of which is uninterrupted by the production of any other product or any other lot number of the same product

### 3.10

#### **solid welding consumable**

fully metallic solid welding consumable

Note 1 to entry: Solid welding consumable includes wires, rods, strips, consumable inserts and metallic powders.

### 3.11

#### **wet mix**

combination of liquid(s) and a *dry batch* ([3.3](#)), *dry blend* ([3.4](#)), or a portion thereof, mixed at one time in one mixing vessel

### 3.12

#### **manufacturer**

<welding consumables> party who is actually manufacturing or the legal entity responsible for the product placed on the market

Note 1 to entry: In case the legal entity is not the actual manufacturer, it shall have traceability to the documents of the actual manufacturer concerning the items to be certified.

### 3.13

#### **distributor**

<welding consumables> party who receives the consumable from a *manufacturer* ([3.12](#)) and distributes it under the manufacturer's brand name

### 3.14

#### **supplier**

<welding consumables> *manufacturer* ([3.12](#)) or *distributor* ([3.13](#))

### 3.15

#### **purchaser**

party who purchases the welding consumable from a *supplier* ([3.14](#))

## 4 Lot classification

### 4.1 General

A lot class is a two character designation consisting of a letter representing the form of the consumable and a number designating how the grouping of a quantity of consumables into a single lot is allowed. The lot class shall be selected by the purchaser from those listed below.

## 4.2 Solid welding consumables

### 4.2.1 Lot class S1

This lot class corresponds to the quantity of solid welding consumables not exceeding the manufacturer's standard lot, as defined in the manufacturer's quality management system.

### 4.2.2 Lot class S2

This lot class corresponds to the quantity of solid welding consumables:

- not exceeding 45 000 kg;
- of one classification and dimension produced in a 24 h production schedule (i.e. consecutive normal work shifts) on one production line;
- from one heat as defined in [3.5](#), [3.6](#), or [3.7](#) or from controlled chemical composition material as defined in [3.2](#)

When a production schedule consists of a series of manufacturing operations, only those that affect the chemical composition and operability as defined by the manufacturer's acceptance limits are subject to the 24 h limitation. In these cases, each of those individual manufacturing operations rather than the manufacturing campaign is subject to an independent 24 h limitation.

The 24 h production schedule can be a combination of consecutive normal work shifts, for example 1 x 24 h, 2 x 12 h, 3 x 8 h.

[Annex A](#) gives examples of how to apply the 24 h limitation.

### 4.2.3 Lot class S3

This lot class corresponds to the quantity of solid welding consumables of one classification and dimension produced in one production schedule as defined in [3.9](#) from one heat as defined in [3.5](#), [3.6](#), or [3.7](#).

### 4.2.4 Lot class S4

This lot class corresponds to the quantity of solid welding consumables:

- not exceeding 45 000 kg;
- of one classification and dimension produced under one production schedule as defined in [3.9](#);
- from one heat as defined in [3.5](#), [3.6](#), or [3.7](#) or from controlled chemical composition material as defined in [3.2](#).

### 4.2.5 Lot Class S5

This lot class corresponds to the quantity of solid welding consumables of one classification from one heat as defined in [3.5](#), [3.6](#), or [3.7](#).

This lot class applies only to consumables for non-alloy and fine-grained steels, high tensile and creep resisting steels when testing is to schedule 4, 5 or 6.

## 4.3 Tubular cored electrodes and rods

### 4.3.1 Lot Class T1

This lot class corresponds to the quantity of tubular welding consumables not exceeding the manufacturer's standard lot, as defined in the manufacturer's quality management system.