SVENSK STANDARD
SS-EN ISO 636:2017

Fastställd/Approved: 2017-07-19
Publicerad/Published: 2017-07-21
Utgåva/Edition: 3
Språk/Language: engelska/English
ICS: 25.160.20

Tillsatsmaterial för svetsning – Stavar, tråd och svetsgods för TIG-svetsning av olegerade stål och finkornstål – Indelning (ISO 636:2017)

Welding consumables – Rods, wires and deposits for tungsten inert gas welding of non-alloy and fine-grain steels – Classification (ISO 636:2017)

Standarder får världen att fungera

SIS (Swedish Standards Institute) är en fristående ideell förening med medlemmar från både privat och offentlig sektor. Vi är en del av det europeiska och globala nätverk som utarbetar internationella standarder. Standarder är dokumenterad kunskap utvecklad av framstående aktörer inom industri, näringsliv och samhälle och befrämjar handel över gränser, bidrar till att processer och produkter blir säkrare samt effektiviserar din verksamhet.

Delta och påverka
Som medlem i SIS har du möjlighet att påverka framtida standarder inom ditt område på nationell, europeisk och global nivå. Du får samtidigt tillgång till tidig information om utvecklingen inom din bransch.

Ta del av det färdiga arbetet
Vi erbjuder våra kunder allt som rör standarder och deras tillämpning. Hos oss kan du köpa alla publikationer du behöver – allt från enskilda standarder, tekniska rapporter och standard-paket till handböcker och onlinetjänster. Genom vår webbtjänst e-nav får du tillgång till ett lättnavigerat bibliotek där alla standarder som är aktuella för ditt företag finns tillgängliga. Standarder och handböcker är källor till kunskap. Vi säljer dem.

Utveckla din kompetens och lyckas bättre i ditt arbete
Hos SIS kan du gå öppna eller företagsinterna utbildningar kring innehåll och tillämpning av standarder. Genom vår närhet till den internationella utvecklingen och ISO får du rätt kunskap i rätt tid, direkt från källan. Med vår kunskap om standarders möjligheter hjälper vi våra kunder att skapa verklig nytta och lönsamhet i sina verksamheter.

Vill du veta mer om SIS eller hur standarder kan effektivisera din verksamhet är du välkommen in på www.sis.se eller ta kontakt med oss på tel 08-555 523 00.

Standards make the world go round

SIS (Swedish Standards Institute) is an independent non-profit organisation with members from both the private and public sectors. We are part of the European and global network that draws up international standards. Standards consist of documented knowledge developed by prominent actors within the industry, business world and society. They promote cross-border trade, they help to make processes and products safer and they streamline your organisation.

Take part and have influence
As a member of SIS you will have the possibility to participate in standardization activities on national, European and global level. The membership in SIS will give you the opportunity to influence future standards and gain access to early stage information about developments within your field.

Get to know the finished work
We offer our customers everything in connection with standards and their application. You can purchase all the publications you need from us - everything from individual standards, technical reports and standard packages through to manuals and online services. Our web service e-nav gives you access to an easy-to-navigate library where all standards that are relevant to your company are available. Standards and manuals are sources of knowledge. We sell them.

Increase understanding and improve perception
With SIS you can undergo either shared or in-house training in the content and application of standards. Thanks to our proximity to international development and ISO you receive the right knowledge at the right time, direct from the source. With our knowledge about the potential of standards, we assist our customers in creating tangible benefit and profitability in their organisations.

If you want to know more about SIS, or how standards can streamline your organisation, please visit www.sis.se or contact us on phone +46 (0)8-555 523 00

Europastandarden EN ISO 636:2017 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN ISO 636:2017.

Denna standard ersätter SS-EN ISO 636:2016, utgåva 2.

The European Standard EN ISO 636:2017 has the status of a Swedish Standard. This document contains the official version of EN ISO 636:2017.

This standard supersedes the Swedish Standard SS-EN ISO 636:2016, edition 2.

Upplysningar om sakinnehållet i standarden lämnas av SIS, Swedish Standards Institute, telefon 08-555 520 00. Standarder kan beställas hos SIS Förlag AB som även lämnar allmänna upplysningar om svensk och utländsk standard.

Information about the content of the standard is available from the Swedish Standards Institute (SIS), telephone +46 8 555 520 00. Standards may be ordered from SIS Förlag AB, who can also provide general information about Swedish and foreign standards.

Denna standard är framtagen av kommittén för AGS 443 Tillsatsmaterial för svetsning, SIS/TK 134/AG 03.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på www.sis.se - där hittar du mer information.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 636

June 2017

ICS 25.160.20

Supersedes EN ISO 636:2015

English Version

Welding consumables - Rods, wires and deposits for tungsten inert gas welding of non-alloy and fine-grain steels - Classification (ISO 636:2017)

Produits consommables pour le soudage - Baguettes et fils pour dépôts par soudage TIG des aciers non alliés et des aciers à grains fins - Classification (ISO 636:2017)

Schweißzusätze - Stäbe, Drähte und Schweißgut zum Wolfram-Inertgasschweißen von unlegierten Stählen und Feinkornstählen - Einteilung (ISO 636:2017)

This European Standard was approved by CEN on 20 April 2017.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

European foreword

This document (EN ISO 636:2017) has been prepared by Technical Committee ISO/TC 44 “Welding and allied processes” in collaboration with Technical Committee CEN/TC 121 “Welding and allied processes” 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 December 2017, and conflicting national standards shall be withdrawn at the latest by December 2017.

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

This document supersedes EN ISO 636:2015.

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

Endorsement notice

The text of ISO 636:2017 has been approved by CEN as EN ISO 636:2017 without any modification.

Introduction

This document provides a classification for the designation of rods and wires in terms of their chemical composition and, where required, in terms of the yield strength, tensile strength, and elongation of the all-weld metal. The ratio of yield to tensile strength of weld metal is generally higher than that of parent metal. Matching weld metal yield strength to parent metal yield strength will not necessarily ensure that the weld metal tensile strength matches that of the parent material. Where the application requires matching tensile strengths, selection of consumables is made by reference to column 3 of Table 1A or Table 1B.

Of note is that the mechanical properties of all-weld metal test specimens used to classify the rods and wires vary from those obtained in production joints because of differences in welding procedure such as diameter, width of weave, welding position, and material composition.

The classification according to system A is mainly based on EN 1668:1997[1]. The classification according to system B is mainly based upon standards used around the Pacific Rim.

Welding consumables — Rods, wires and deposits for tungsten inert gas welding of non-alloy and fine-grain steels — Classification

1 Scope

This document specifies requirements for classification of rods and wires in the as-welded condition and in the post-weld heat-treated condition for tungsten inert gas welding of non-alloy and fine-grain steels with a minimum yield strength of up to 500 MPa or a minimum tensile strength of up to 570 MPa.

This document is a combined specification providing classification utilizing a system based upon the yield strength and the average impact energy of 47 J of all-weld metal or utilizing a system based upon the tensile strength and the average impact energy of 27 J of all-weld metal.

a) Paragraphs and tables which carry the suffix letter "A" are applicable only to rods and wires classified to the system based upon the yield strength and the average impact energy of 47 J of all-weld metal in accordance with this document.

b) Paragraphs and tables which carry the suffix letter "B" are applicable only to rods and wires classified to the system based upon the tensile strength and the average impact energy of 27 J of all-weld metal in accordance with this document.

c) Paragraphs and tables which have neither the suffix letter "A" nor the suffix letter "B" are applicable to all rods and wires classified in accordance with 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 544, *Welding consumables — Technical delivery conditions for filler materials and fluxes — Type of product, dimensions, tolerances and markings*

ISO 13916, *Welding — Guidance on the measurement of preheating temperature, interpass temperature and preheat maintenance temperature*

ISO 14175, *Welding consumables — Gases and gas mixtures for fusion welding and allied processes*

ISO 14344, *Welding consumables — Procurement of filler materials and fluxes*

ISO 15792-1:2000, *Welding consumables — Test methods — Part 1: Test methods for all-weld metal test specimens in steel, nickel and nickel alloys*. Amended by ISO 15792-1:2000/Amd 1:2011.

ISO 80000-1:2009, *Quantities and units — Part 1: General.* Corrected by ISO 80000-1:2009/Cor. 1:2011.

3 Terms and definitions

No terms and definitions are listed in this document.

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

— ISO Online browsing platform: available at http://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Classification

4.1 General

Classification designations are based upon two approaches to indicate the tensile properties and the impact properties of the all-weld metal obtained with rods or wires. The two designation approaches include additional designators for some other classification requirements, but not all as will be clear from the following sections. In most cases, a given commercial product can be classified to the classification requirements in both systems. Then, either or both classification designations can be used for the product.

Rods or wires shall be classified according to their chemical composition in accordance with Table 3A or Table 3B.

4.1A Classification by yield strength and 47 J impact energy

The classification is divided into four parts.

1) The first part gives a symbol indicating the product/process to be identified.

2) The second part gives a symbol indicating the strength and elongation of the all-weld metal (see Table 1A).

3) The third part gives a symbol indicating the impact properties of all-weld metal (see Table 2).

4) The fourth part gives a symbol indicating the chemical composition of the rods or wires used (see Table 3A).

4.1B Classification according to alloy type

The classification is divided into four parts.

1) The first part gives a symbol indicating the product/process to be identified.

2) The second part gives a symbol indicating the strength and elongation of the all-weld metal in either the as-welded or post-weld heat-treated condition (see Table 1B).

3) The third part gives a symbol indicating the impact properties of all-weld metal in the same condition as specified for the tensile strength (see Table 2). The letter "U" after this designator indicates that the deposit meets an average optional requirement of 47 J at the designated Charpy test temperature.

4) The fourth part gives a symbol indicating the chemical composition of the rods or wires used (see Table 3B).

5 Symbols and requirements

5.1 Symbol for the product/process

The symbol of weld deposit by the tungsten inert gas welding process shall be the letter "W" placed at the beginning of the designation.

The symbol of rods or wires for the tungsten inert gas welding shall be the letter "W" placed at the beginning of the rod or wire designation.

5.2 Symbol for strength and elongation of all-weld metal

5.2A Classification by yield strength and 47 J impact energy

The symbol in Table 1A indicates yield strength, tensile strength, and elongation of the all-weld metal in the as-welded condition determined in accordance with Clause 6.

Table 1A — Symbol for strength and elongation of all-weld metal

Symbol	Minimum yield strength[a] MPa	Tensile strength MPa	Minimum elongation[b] %
35	355	440 to 570	22
38	380	470 to 600	20
42	420	500 to 640	20
46	460	530 to 680	20
50	500	560 to 720	18

[a] For yield strength, the lower yield (R_{eL}) is used when yielding occurs. Otherwise, the 0,2 % proof strength ($R_{p0,2}$) is used.

[b] Gauge length is equal to five times the test specimen diameter.

5.2B Classification by tensile strength and 27 J impact energy

The symbol in Table 1B indicates yield strength, tensile strength, and elongation of the all-weld metal in the as-welded condition or in the post-weld heat-treated condition determined in accordance with Clause 6.

Table 1B — Symbol for strength and elongation of all-weld metal

Symbol[a]	Minimum yield strength[b] MPa	Tensile strength MPa	Minimum elongation[c] %
43X	330	430 to 600	20
49X	390	490 to 670	18
55X	460	550 to 740	17
57X	490	570 to 770	17

[a] X is "A" or "P". Where "A" indicates testing in the as-welded condition and "P" indicates testing in the post weld heat-treated condition.

[b] For yield strength, the lower yield (R_{eL}) is used when yielding occurs. Otherwise, the 0,2 % proof strength ($R_{p0,2}$) is used.

[c] Gauge length is equal to five times the test specimen diameter.