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Ståltråd och trådprodukter för stängsel och nät – Del 5: Grossiststängsel av stål

Steel wire and wire products for fencing and netting – Part 5: Steel wire woven hinged joint and knotted mesh fencing

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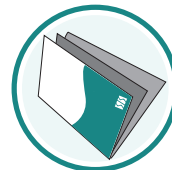
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Europastandarden EN 10223-5:2012 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 10223-5:2012.

Denna standard ersätter SS-EN 10223-5, utgåva 1.

The European Standard EN 10223-5:2012 has the status of a Swedish Standard. This document contains the official version of EN 10223-5:2012.

This standard supersedes the Swedish Standard SS-EN 10223-5, edition 1.

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 10223-5

November 2012

ICS 77.140.65

Supersedes EN 10223-5:1998

English Version

**Steel wire and wire products for fencing and netting - Part 5:
Steel wire woven hinged joint and knotted mesh fencing**

Fils et produits tréfilés en acier pour clôtures et grillages -
Partie 5: Grillage noué et grillage à raccords pivotants en
acier

Stahldraht und Drahterzeugnisse für Zäune und
Drahtgeflechte - Teil 5: Gelenk- und Knotengitter aus
Stahldraht für Zäune

This European Standard was approved by CEN on 13 October 2012.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 10223-5:2012) has been prepared by Technical Committee ECISS/TC 106 "Wire rod and wires", the secretariat of which is held by AFNOR.

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 May 2013, and conflicting national standards shall be withdrawn at the latest by May 2013.

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

This document supersedes EN 10223-5:1998.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

EN 10223 "Steel wire and wire products for fencing and netting" consists of the following parts:

- *Part 1: Zinc and zinc-alloy coated steel barbed wire*
- *Part 2: Hexagonal steel wire netting for agricultural, insulation and fencing purposes*
- *Part 3: Hexagonal steel wire mesh products for engineering purposes*
- *Part 4: Steel wire welded mesh fencing*
- *Part 5: Steel wire woven hinged joint and knotted mesh fencing*
- *Part 6: Steel wire chain link fencing*
- *Part 7: Steel wire welded panels for fencing*
- *Part 8: Welded mesh gabion products*

According to the CEN/CENELEC Internal Regulations, the national standards organisations 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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

SS-EN 10223-5:2012 (E)

1 Scope

This European Standard specifies preferred dimensions, properties and coatings of zinc and zinc alloy coated steel wire woven hinged joint and knotted mesh fencing.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 10021, *General technical delivery conditions for steel products*

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

EN 10218-1, *Steel wire and wire products — General — Part 1: Test methods*

EN 10218-2:2012, *Steel wire and wire products — General — Part 2: Wire dimensions and tolerances*

EN 10244-1:2009, *Steel wire and wire products — Non-ferrous metallic coatings on steel wire — Part 1: General principles*

EN 10244-2:2009, *Steel wire and wire products — Non-ferrous metallic coatings on steel wire — Part 2: Zinc and zinc alloy coatings*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

knotted mesh fencing

fencing with rectangular meshes made of line and stay wires zinc or zinc alloy coated to EN 10244-1:2009 and EN 10244-2:2009, class A

The line and stay wires are connected by a hinged joint spiral knot in the case of hinge joint stock fence (see Figure 1) and by a knot in the case of knotted stock fence (see Figure 2) (except for the selvage wire which is spiral knotted):

- The top and bottom wires of the fence may consist of a larger diameter selvage wire.
- The rectangular mesh openings may decrease in size from the top downwards.
- The line and selvage wire are regularly and evenly crimped between the stay wires (to aid erection of the fence)

3.2

woven joint fencing

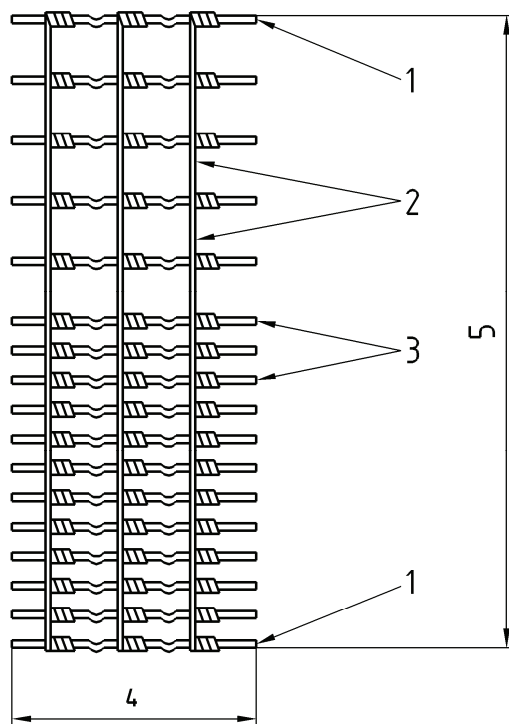
classification relating to:

a) strength of wire:

1. strength 1 applies to fencing manufactured from low tensile wire;
2. strength 2 applies to fencing manufactured from high tensile wire;

b) nominal diameter of wires incorporated in the fence using:

1. *L* for light (small diameter wire);
2. *M* for medium (medium diameter wire);
3. *H* for heavy (large diameter wire)



Key

- 1 selvedge wire
- 2 stay wire
- 3 line wire

- 4 length
- 5 height

Figure 1 — Example of woven hinged joint design

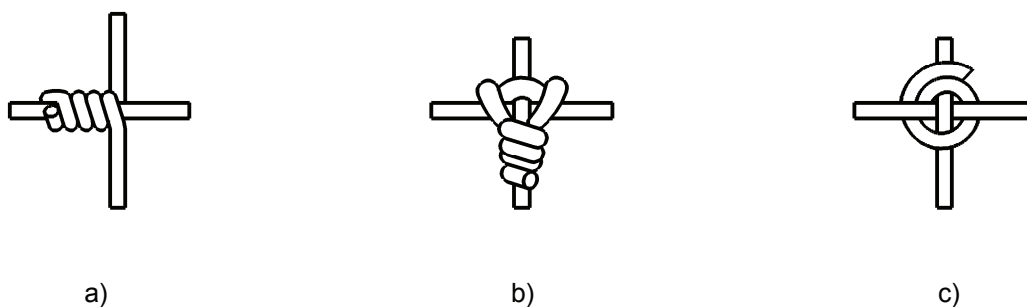


Figure 2 — Examples of knotted joint design

4 Information to be supplied by the purchaser

The following information shall be supplied by the purchaser at the time of enquiry and order:

- a) number of this European Standard;
- b) quantity;
- c) hinged joint or knotted joint;
- d) classification (i.e. *L*, *M* or *H* and 1 or 2 according to Table 1);
- e) designation (see Clause 5, Table A.1 and Table A.2);
- f) length of rolls;
- g) height of roll;
- h) number of line wires and stay wire spacing;
- i) for *2M* and *2H* (according to Table 1) the size of selvage wire required;
- j) coating type, zinc or zinc alloy;
- k) if uniformity of coating is to be measured;
- l) inspection documentation requirements;
- m) agreed quality characteristics for testing (see Clause 7).

5 Designation of hinged joint and knotted mesh fencing

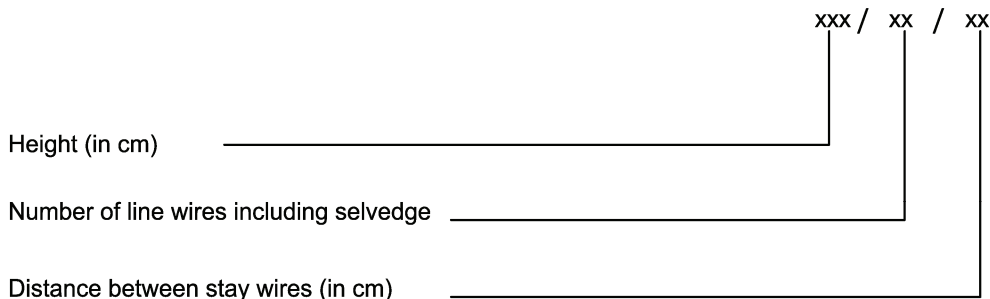


Figure 3

EXAMPLE 80/8/15

Typical designations of hinged joint and knotted mesh fencing are given in Table A.1 and Table A.2.

6 Manufacture

6.1 Base metal

Wires shall be manufactured from steel rod capable of achieving the tensile properties given in Tables 1 and 2.

6.2 Fabrication

The hinge joint or knotted fence shall be made from zinc or zinc-alloy coated wires which conform to EN 10244-1 and EN 10244-2.

The line and selvage wires shall be regularly and evenly crimped between the stay wires (to aid erection of the fence).

In the case of hinge joint fencing the wires shall be twisted at least one and a half times to ensure that the hinge joints are tightly fixed. In the case of knotted joint fencing the knots shall be manufactured so that they are tightly fixed.

7 Requirements

7.1 Tensile strength

7.1.1 Woven hinged joint fencing

The tensile strength of wires shall not be less than that given in Table 1 for the classification and tensile strength required. The tensile strength range for any one batch within a type of wire shall be not more than 200 N/mm².

7.1.2 Knotted mesh fencing

The tensile strength of the wires shall be not less than that given in Table 2. The tensile strength range in any one batch within a wire type shall be not more than 200 N/mm².

7.2 Wire diameters

7.2.1 Woven hinged joint fencing

The nominal diameters of wires shall be as given in Table 1 and shall be subject to tolerance EN 10218-2:2012 (T1 – Table 1).

7.2.2 Knotted mesh fencing

The nominal diameters of wires shall be as given in Table 2 and shall be subject to tolerance EN 10218-2:2012 (T1 - Table 1).

7.3 Tolerances

The tolerance on roll width is ± 25 mm.

The maximum variation in any individual vertical or horizontal spacing shall be no more than ± 5 mm from the nominal stated by the manufacturer.

NOTE Rolls are usually supplied with either 150 or 300 mm spacing between verticals, but other spacing may be arranged by agreement.

7.4 Coating

The zinc or zinc alloy coating of wire shall be tested in accordance with EN 10244-2:2009 complying with class A for Zn coatings and class B for Zn95/Al5 alloys (for similar service life), adherence and where specified, the uniformity of the coating

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Where samples are taken from a fabricated fence the minimum coating mass requirement shall be reduced by 5 % and where specified the number of dips shall be reduced by one half minute dip.

The assessment of adherence (wrap quality) on $1 \times$ diameter for all wires prior to fabrication of the fence shall comply with EN 10244-2:2009 (Figure 1) classes 1 or 2. The assessment of adherence (wrap quality) on $1 \times$ diameter of the wire in the fabricated fence shall comply with EN 10244-2:2009 (Figure 1) classes 1, 2 or 3.

Table 1 — Preferred nominal diameters and minimum tensile strengths for woven hinged joint fencing

Wire type	Low tensile steel woven wire hinged joint						High tensile woven wire hinged joint					
	Light 1L			Medium 1M			Heavy 1H			Light 2L		
	Nominal diameter mm	Minimum tensile strength N/mm ²		Nominal diameter mm	Minimum tensile strength N/mm ²		Nominal diameter mm	Minimum tensile strength N/mm ²		Nominal diameter mm	Minimum tensile strength N/mm ²	
Top and bottom line (horizontal) selvedge wires	2,50	600		3,00	600		3,70	550		1,60 or 2,00	1 050	2,50 or 3,00 ^a
Intermediate line (horizontal) wires	1,90	600		2,50	600		3,00	600		1,60	1 050	2,50
Stay (vertical) wires	1,90	400		2,50	350		3,00	350		1,60	600	2,50
Tensile strength range for any one batch within a type of wire shall be not more than 200 N/mm ² .												
^a Where the duty of the fence requires them, larger diameter selvedge wires may be agreed.												

SS-EN 10223-5:2012 (E)**Table 2 — Preferred nominal wire diameters and minimum tensile strengths of wire for woven knotted mesh fencing**

Wire type	Nominal wire diameter mm	Minimum tensile strength N/mm ²
Top and bottom line/selvedge (horizontal) wires	3,70	550
Intermediate line (horizontal) wires	3,00	600
Stay (vertical) wires	3,00	600
Knot wire	3,00	350
Tensile strength range in any one batch within a wire type shall be not more than 200 N/mm ² .		

8 Sampling and testing

The manufacturer shall be responsible for the control of product quality by the application of statistical methods of sampling and analysis of results or, alternatively, by sampling and testing for the agreed quality characteristics at a rate of one roll/reel in 50.

9 Inspection documentation

Unless otherwise agreed at the time of enquiry and order, non specific testing and inspection documentation shall be provided according to the requirements of EN 10021 and EN 10204.

10 Test methods**10.1 Tensile tests**

Tensile tests shall be in accordance with EN 10218-1.

10.2 Coating tests

The zinc or zinc alloy coated wire before fabrication into the fence shall be tested for the weight, adherence of coating and, where required, the uniformity of coating in accordance with EN 10244-1 and EN 10244-2.

11 Packaging

Woven hinged or knotted joint fencing shall usually be supplied in 50 m or 100 m rolls with a tolerance of ${}^{+1}_0$ m.

Other lengths may be supplied by agreement.

Annex A
(informative)

Typical designations for hinged joint and knotted joint fencing

Table A.1 — Typical woven hinged joint fencing designations

No. of line wires	Approximate woven roll width in centimeters															
	53	60	65	80	90	95	100	115	120	125	130	140	145	150	155	160
4		60/4/15														
5	53/5/15	60/5/15														
6		60/6/15	65/6/15	80/6/15	90/6/30											
7				80/7/15			100/7/15									
8				80/8/15	90/8/15		100/8/15	115/8/30					145/8/15			
9							100/9/15		120/9/15	125/9/15						
10						95/10/15			120/10/15			140/10/15				
11											130/11/15	140/11/15		150/11/15		160/11/15
12																180/12/15
13														150/13/15		190/13/15
14							100/14/15									160/14/15
15									120/15/15	125/15/15						160/15/15
16							100/16/15								155/16/15	
17							100/17/15									
18											130/18/15			150/18/15		
19													145/19/15			180/19/15
20																160/20/15
21																190/21/15
22																
23																160/23/15
25																200/25/15
220																220/25/15

NOTE 1

Type of fence is denoted by prefixing the designation with either 1L, 1M, 1H, 2L, 2M or 2H. See Table 1.

NOTE 2

The width of the roll and the spacing of the horizontal wires are dimensions inherent in the individual machines.

Table A.2 — Typical woven knotted joint fencing designations

Approximate woven roll width (height) in centimeters																	
	53	60	65	80	90	95	100	115	120	130	140	145	150	160	180	190	200
4																	
5																	
6							100/6/15										
7					90/7/15				120/7/15								
8				80/8/15	90/8/15												
9																	
10							100/10/15										
11									120/11/15								
12											140/12/15						
13																190/13/15	
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NOTE	The width of the roll and the spacing of the horizontal wires are dimensions inherent in the individual machines.																

Anteckningar/Notes

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Anteckningar/Notes

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Anteckningar/Notes

Ordlista

Här har vi samlat de förkortningar som oftast används i standardiseringssammanhang och förklarat dem kortfattat. Förkortningarna är sorterade i alfabetisk ordning.

CEN	European Committee for Standardization (Comité Européen de Normalisation). Utarbetar Europastandarder för områden som inte täcks av CENELEC.
CENELEC	European Committee for Electrotechnical Standardization (Comité Européen de Normalisation Electro-technique). Utarbetar Europastandarder inom el.
CWA	CEN/CENELEC Workshop Agreement. Tekniskt dokument utarbetat av CEN- och CENELEC-organiserad arbetsgrupp.
EN	Europastandard från CEN/CENELEC.
ETSI	European Telecommunications Standards Institute. De utarbetar Europastandarder inom telekommunikationsområdet.
FDIS	Final Draft International Standard. Slutligt förslag till global standard från IEC eller ISO.
ICS	International Classification for Standards. Ett internationellt klassificeringssystem för standarder.
IEC	International Electrotechnical Commission. Utarbetar internationell standard inom området el.
ISO	International Organization for Standardization. Utarbetar internationell standard inom alla områden utom telekommunikation och elteknik.
ITS	Informationstekniska standardiseringen. Utarbetar och bevakar standardisering inom informationsteknik. En av de svenska medlemmarna i ETSI, European Telecommunications Standards Institute.
ITU	International Telecommunication Union. Utarbetar internationella standarder inom radio och telekommunikation.
IWA	ISO Workshop Agreement. Tekniskt dokument utarbetat av ISO-organiserad arbetsgrupp.
Konsoliderad	En konsoliderad standard har sitt tillägg inarbetat och ersätter tidigare utgåva.
PAS	Publicly Available Specifications. Tekniska dokument inom IEC och ISO.
prEN	Förslag till Europastandard från CEN, CENELEC eller ETSI.
SEK	SEK Svensk Elstandard. Svarar för standardiseringen inom området el i Sverige. Svensk medlem i CENELEC och IEC.
SIS	SIS, Swedish Standards Institute. Svensk medlem i CEN och ISO.
SIS-TR	Technical Report. Teknisk rapport som beskriver resultat av undersökningar eller andra studier.
SIS-TS	Technical Specification. Teknisk specifikation som anger tekniska krav som ska uppfyllas av en produkt, process eller tjänst.
SIS-WA	SIS Work Shop Agreement. Överenskommelse som ger regler, riktlinjer eller kännetecken för aktiviteter eller deras resultat.
SIS-WS	SIS Workshop. Standardiseringsprojekt med syfte att snabbt ta fram SIS Workshop Agreement.
SS	Svensk standard. Fastställs av SIS, SEK eller ITS. SS ingår som första led i beteckningen för svensk standard fastställd efter 1 januari 1978.
SS/T1	Tillägg 1 till svensk standard.
SS-EN	Europastandard fastställd som svensk standard.
SS-EN/AC	Rättelse till Europastandard fastställd som svensk standard.
SS-EN/A1	Tillägg 1 till Europastandard fastställd som svensk standard.
SS-EN ISO	Internationell standard från ISO som blivit Europastandard och fastställd som svensk standard.
SS-EN ISO/AC	Rättelse till standard från ISO som blivit Europastandard och fastställd som svensk standard.
SS-EN ISO/A1	Tillägg 1 till standard från ISO som blivit Europastandard och fastställd som svensk standard.
SS-EN ISO/IEC	Internationell standard från ISO/IEC som blivit Europastandard och fastställd som svensk standard.
SS-IEC	IEC-standard fastställd som svensk standard.
SS-ISO	ISO-standard fastställd som svensk standard.
SS-ISO Amd 1	ISO-standard fastställd som svensk standard. Tillägg 1.
SS-ISO/Cor 1	ISO-standard fastställd som svensk standard. Rättelse 1.
WD	Working Draft. Förslag till internationell standard eller Europastandard utarbetade i WG.
WG	Working Group. Arbetsgrupp tillsatt av t. ex. en internationell kommitté.
WI	Work Item. Ärende, en avgränsad arbetsuppgift som avser att resultera i en standard.

Glossary

Here are a number of the abbreviations/acronyms frequently used in standardisation contexts, with brief explanations. The abbreviations are in alphabetical order.

CEN	European Committee for Standardization (Comité Européen de Normalisation). Develops European standards for areas not covered by CENELEC.
CENELEC	European Committee for Electrotechnical Standardization (Comité Européen de Normalisation Electro-technique). Develops European standards in the electricity sector.
CWA	CEN/CENELEC Workshop Agreement. Technical document developed by CEN- and CENELEC-organised working group.
Consolidated	A consolidated standard incorporates its supplement and replaces previous editions.
EN	European standard from CEN/CENELEC.
ETSI	European Telecommunications Standards Institute. Develop European standards in the telecommunications field.
FDIS	Final Draft International Standard. Final proposal for global standard from IEC or ISO.
ICS	International Classification for Standards. An international classification system for standards.
IEC	International Electrotechnical Commission. Develops global standards in the electricity sector.
ISO	International Organization for Standardization. Develops global standards in all areas except telecommunications and electrical technology.
ITS	ITS Information Technology Standardisation. Develops and monitors standardisation in information technology. A Swedish member of the ETSI, European Telecommunications Standards Institute.
ITU	International Telecommunication Union. Develops global standards in radio and telecommunications.
IWA	ISO Workshop Agreement. Technical document developed by ISO-organised working group.
PAS	Publicly Available Specifications. Technical IEC and ISO documents.
prEN	Draft European standards from CEN, CENELEC or ETSI.
SEK	SEK Svensk Elstandard. Develops and monitors standardisation in the electrotechnical sector. Swedish member of the CENELEC and IEC.
SIS	SIS, Swedish Standards Institute. Swedish member of CEN and ISO.
SIS-TR	Technical Report. Technical report describing the results of investigations or other studies.
SIS-TS	Technical Specification. Technical specification describing what requirements a product, process or service must fulfil.
SIS-WA	SIS Workshop Agreement. An agreement setting out rules, guidelines or criteria for activities or their results.
SIS-WS	SIS Workshop. Standardisation project aimed at rapidly developing an SIS Workshop Agreement.
SS	Swedish standard. Established by SIS, SEK or ITS. SS is the first step in all standard classifications to emerge since 1 January 1978.
SS/T1	Supplement 1 to a Swedish standard.
SS-EN	European standard established as Swedish standard.
SS-EN/AC	Correction to the European standard established as Swedish standard.
SS-EN/A1	Supplement to the European standard established as Swedish standard.
SS-EN ISO	International and European standard established as Swedish standard.
SS-EN ISO/AC	Correction to the international and European standard established as Swedish standard.
SS-EN ISO/A1	Supplement to the international and European standard established as Swedish standard.
SS-EN ISO/IEC	International and European standard established as Swedish standard.
SS-IEC	IEC standard established as Swedish standard.
SS-ISO	ISO standard established as Swedish standard.
SS-ISO Amd 1	ISO standard established as Swedish standard, with Amendment 1.
SS-ISO/Cor 1	ISO standard established as Swedish standard, with Correction 1.
WD	Working Draft. Proposed international or European standard developed by the Working Group.
WG	Working Group. Appointed by an international committee or some other body.
WI	Work Item. A delimited task designed to result in a standard.

Slutanvändarlicens

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