



# SLOVENSKI STANDARD SIST EN ISO 544:2004

01-junij-2004

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SIST EN 759:1999

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8 cXUbj'a UHYf]U]`nUj Uf^Yb^Y!'HY\ b] b]XcVUj b]`dc[ c^]nUXcXU`bY'a UHYf]UY`nU  
j Uf^Yb^Y!'JfghU]nXY\_UZ]na YfYZhc`YfUbW`]b`cnbU Yj Ub^YfIGC`)( (.&\$ \$' Ł

Welding consumables - Technical delivery conditions for welding filler materials - Type of product, dimensions, tolerances and markings (ISO 544:2003)

Schweißzusätze - Technische Lieferbedingungen für metallische Schweißzusätze - Art des Produktes, Maße, Grenzabmaße und Kennzeichnung (ISO 544:2003)

Produits consommables pour le soudage - Conditions techniques de livraison des matériaux d'apport pour le soudage - Type de produit, dimensions, tolérances et marquage (ISO 544:2003)

Ta slovenski standard je istoveten z: EN ISO 544:2003

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**ICS:**

25.160.20 Potrošni material pri varjenju Welding consumables

**SIST EN ISO 544:2004**

**en**

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## Foreword

This document (EN ISO 544:2003) has been prepared by Technical Committee CEN/TC 121 "Welding", the secretariat of which is held by DS in collaboration with Technical Committee ISO/TC 44 "Welding and allied processes".

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of an identical text or by endorsement, at the latest by May 2004, and conflicting national standards shall be withdrawn at the latest by May 2004.

This document supersedes EN 759:1997.

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

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**EN ISO 544:2003 (E)****1 Scope**

This European Standard specifies technical delivery conditions for filler materials for fusion welding. This European Standard does not apply to auxiliaries such as shielding gases.

**2 Normative references**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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

EN ISO 4063, *Welding and allied processes – Nomenclature of processes and reference numbers (ISO 4063:1998)*.

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### 3 Type of product and relevant processes

Table 1 below indicates the range of products covered by this standard and processes in which they are used. Within brackets reference numbers from EN ISO 4063 are given.

**Table 1 - Type of product and relevant processes**

Type of product	Applied in welding process <sup>a</sup>
Cored strip electrode	EG, ES, S
Covered electrode	E
Solid rod	W, O, P
Solid strip electrode	ES, S
Solid wire	W, P, L, EB
Solid wire electrode	EG, ES, G, S
Tubular cored rod	W, O, P
Tubular cored wire	L, W
Tubular cored electrode	EG, ES, P, S, T
Thin foil	L, EB
<sup>a</sup> Correspondence between symbols used in this standard and reference numbers of EN ISO 4063, see below: E Manual metal-arc welding (111) EB Electron beam welding (51) EG Electro gas welding (73) ES Electro slag welding (72) G Gas-shielded metal-arc welding (131, 135) L Laser beam welding (52) O Oxy-fuel gas welding (31) P Plasma arc welding (15) S Submerged arc welding (12) T Tubular cored electrode arc welding with or without a shielding gas (136, 114) W Tungsten inert-gas arc welding (141)	

### 4 Dimensions and dimensional limits

#### 4.1 Filler wires, covered electrodes and filler rods

Table 2 indicates standardized dimensions and tolerances for filler wires, covered electrodes and filler rods.

Table 2 - Dimensions and tolerances<sup>a</sup>

Dimensions in millimetres

Welding process	Solid wires and wire electrodes		Tubular cored wires and electrodes	Filler rods			Covered electrodes <sup>b</sup>			
	G, W, L, EB	S, ES, EG	T, S, EG	W, O, P			E			
Nominal diameter	Diameter tolerance	Diameter tolerance	Diameter Tolerance	Diameter tolerance	Length	Length tolerance	Diameter core wire	Diameter tolerance	Length	Length tolerance
0,5	+0,01 / -0,03	-	-	-	-	-	-	-	-	-
0,6		-	-	-	-	-	-	-	-	-
0,8	+0,01 / -0,04	-	+0,02 / -0,05	±0,1	500 up to 1000	±5	-	-	-	-
0,9		-					-	-	-	-
1,0		-					-	-	-	-
1,2		-	-				-	-	-	
1,4		-	-				-	-	-	
1,6		±0,04	+0,02 / -0,06				1,6	±0,06	200	±5
1,8	+0,01 / -0,07	2,0		up to						
2,0		2,5		350						
2,4	+0,01 / -0,07	-	-	-	-	-				
2,5		-	-	-	-	-				
2,8	+0,01 / -0,07	±0,06	+0,02 / -0,07	3,2	±0,10	275 up to 450 <sup>c</sup>	±5			
3,0								4,0		
3,2	-	-	+0,02 / -0,08	5,0	±0,1	-	-			
4,0								6,0		
5,0	-	-	-	8,0	-	-	-			
6,0								8,0		
8,0	-	-	-	-	-	-	-			

- means not applicable.

<sup>a</sup> Other dimensions may be agreed. For intermediate dimensions tolerances given in the table shall be used.

<sup>b</sup> Dimensions for the core wire.

<sup>c</sup> For special cases (for example gravity welding) length up to 1000 mm.

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## 4.2 Strip electrodes

Table 3 indicates dimensions and tolerances for strip electrodes.

**Table 3 - Dimensions and tolerances for strip electrodes**

Dimensions in millimetres

	Dimensions	Tolerances
Nominal thickness	$\leq 1,0$	$\pm 0,05$
Nominal width	$\leq 100$	+ 0,5 / 0
	$> 100$	+ 0,8 / 0

## 4.3 Cored strip electrodes and thin foils

For cored strip electrodes and thin foils dimensions and dimensional limits shall be as required by the application standard.

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## 5 Condition of consumables

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### 5.1 Covered electrodes

The covering of the electrodes shall be concentric and consistent along the length in order to avoid asymmetrical melting-off of the covering when welding. The electrode covering shall not exhibit any irregularities, cracks or other surface defects, which would adversely affect the welding operation. It shall firmly adhere to the core wire and shall not break off during proper handling and usage.

The grip end of the electrode shall be free from covering material for a length of at least 15 mm.

NOTE The striking end may be provided with arc ignition enhancing material.

### 5.2 Filler wires, filler rods and strip electrodes

The surface of the welding consumables shall be free from contamination and surface defects that can adversely affect welding. Any surface finish is allowed, provided that welding operation and properties of the weld metal are not adversely affected. All cored products shall have the core ingredients distributed throughout their length with uniformity such that the performance of the products, the chemical composition and the properties of the deposited weld metal thereby are not adversely affected.

Filler wires and strip electrodes are delivered in coils or wound on spools in accordance with Figure 1 and Table 4. They shall not exhibit kinks, waves, sharp bends or other irregularities that could interfere with continuous feeding. The beginning and end of the wire, spooled in one length, shall be secured.

Welding consumables on coils without formers shall be tied at three places, at least, approximately equally spaced around the circumference of the coil.

The solid wires and solid wire electrodes for steel shall not exhibit helix greater than described below. Helix is defined as the vertical separation between any part of one loop of wire placed on a flat surface without restraint and the flat surface. It shall not be more than 25 mm for spools having an outside