SLOVENSKI STANDARD
SIST EN 3364:2023

01-marec-2023

Nadomešča:
SIST EN 3364:2009

Aeronavtika - Jeklo X5CrNiCu15-5 (1.4545) - Pretaljeno s taljivo elektrodo, mehčano - Materiali za kovanje - a ali D ≤ 300 mm

Aerospace series - Steel X5CrNiCu15-5 (1.4545) - Consumable electrode remelted, softened - Forging stocks - a or D ≤ 300 mm

Luft- und Raumfahrt - Stahl X5CrNiCu15-5 (1.4545) - Mit selbstverzehrender Elektrode umgeschmolzen, weichgeglüht - Schmiedevormaterial - a oder D ≤ 300 mm

Série aérospatiale - Acier X5CrNiCu15-5 (1.4545) - Refondu à l'électrode consommable, adouci - Produits destinés à la forge - a ou D ≤ 300 mm

Ta slovenski standard je istoveten z: **EN 3364:2022**

ICS:

49.025.10 Jekla Steels

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EUROPEAN STANDARD

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English Version

Aerospace series - Steel X5CrNiCu15-5 (1.4545) - Consumable electrode remelted, softened - Forging stocks - a or D ≤ 300 mm

Série aérospatiale - Acier X5CrNiCu15-5 (1.4545) - Refondu à l'électrode consommable, adouci - Produits destinés à la forge - a ou D ≤ 300 mm

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This European Standard was approved by CEN on 2 October 2022.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European Foreword

This document (EN 3364:2022) has been prepared by the Aerospace and Defence Industries Association of Europe — Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this document has received the approval of the National Associations and the Official Services of the member countries of ASD-STAN, prior to its presentation to CEN.

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of an identical text or by endorsement, at the latest by June 2023, and conflicting national standards shall be withdrawn at the latest by June 2023.

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 3364:2007.

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Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

Introduction

This document is part of the series of EN metallic material standards for aerospace applications. The general organization of this series is described in EN 4258.

This document has been prepared in accordance with EN 4500-005.

1 Scope

This document specifies the requirements relating to:

Steel X5CrNiCu15-5 (1.4545)

Consumable electrode remelted, softened

Forging stock

a or $D \leq 300$ mm

for aerospace applications.

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.

EN 2043, *Aerospace series — Metallic materials — General requirements for semi-finished product qualification (excluding forgings and castings)*

EN 2157-2, *Aerospace series — Steel — Forging stock and forgings — Technical specification — Part 2: Forging stock*

EN 2957, *Aerospace series — Method of preparation of forged samples*

3 Terms and definitions

No terms and definitions are listed in this document.

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/

4 Requirements

According to Table 1.

Table 1 — Requirements for Steel X5CrNiCu15–5 (1.4545) — Forging stock

1	Material designation		Steel X5CrNiCu15-5 (1.4545)										
2	Chemical composition %	Element	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	Nb+Ta	Fe
		min.	—	—	—	—	—	14,0	—	3,5	2,5	5 × C	Base
		max.	0,07	1,00	1,00	0,030	0,015	15,5	0,50	5,5	4,5	0,45	
3	Method of melting		Consumable electrode remelted										
4.1	Form		Forging stock										
4.2	Method of production		—										
4.3	Limit dimension(s)	mm	a or $D \leq 300$										
5	Technical specification		EN 2157-2										

6.1	Delivery condition	Softened
	Heat treatment	—
6.2	Delivery condition code	U
7	Use condition	Delivery condition
	Heat treatment	—

					Characteristics			
8.1	Test sample(s)			According to EN 2157-2.	Reforged sample in accordance with EN 2957 or cut for forging stock			
8.2	Test piece(s)			According to EN 2157-2.	Heat treated before machining			
8.3	Heat treatment			Delivery condition	See line 29.			
9	Dimensions concerned		mm	a or $D \leq 300$	a or $D \leq 300$			
10	Thickness of cladding on each face		%	—	—			
11	Direction of test piece			—	Test A		Test B	
					L	T	L	T
12	T	Temperature	θ °C	—	Ambient	Ambient	Ambient	Ambient
13		Proof stress	$R_{p0,2}$ MPa	—	≥ 1 000	≥ 1 000	≥ 1 170	≥ 1 170
14		Strength	R_m MPa	—	≥ 1 170	≥ 1 170	≥ 1 310	≥ 1 310
15		Elongation	A %	—	≥ 11	≥ 7	≥ 9	≥ 5
16		Reduction of area	Z %	—	≥ 45	≥ 27	≥ 35	≥ 15
17	Hardness			≤ 363 HB	311 ≤ HB ≤ 375	311 ≤ HB ≤ 375	388 ≤ HB ≤ 444	
18	Shear strength		R_c MPa	—	—	—	—	
19	Bending		k —	—	—	—	—	
20	Impact strength			—	KV ≥ 80 J; Notch direction T + KV ≥ 35 J, at −30 °C; Notch direction T	KV ≥ 55 J; Notch direction L + KV ≥ 25 J, at −30 °C; Notch direction L	—	
21	C	Temperature	θ °C	—				
22		Time	h	—				
23		Stress	σ_a MPa	—				
24		Elongation	a %	—				
25		Rupture stress	σ_R MPa	—				
26		Elongation at rupture	A %	—				
27	Notes (see line 98)			—				

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<tr><td rowspan="2">29</td><td rowspan="2">Reference heat treatment</td><td>—</td><td>Test A</td><td colspan="2">Test B[a]</td></tr>
<tr><td>—</td><td>Solution treated and precipitation treated
1 025 °C ≤ θ ≤ 1 055 °C / t ≥ 30 min / AC or OQ
+ cool to θ ≤ 30 °C
+ 565 °C ≤ θ ≤ 595 °C / t ≥ 4 h / AC</td><td colspan="2">Solution treated and precipitation treated
1 025 °C ≤ θ ≤ 1 055 °C / t ≥ 30 min / AC or OQ
+ cool to θ ≤ 30 °C
+ 465 °C ≤ θ ≤ 495 °C / t ≥ 1 h / AC</td></tr>
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<tr><td>1</td><td colspan="2">Freckles</td><td>A</td></tr>
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<tr><td>98</td><td>Notes</td><td>—</td><td colspan="4">[a] If required by the purchaser.</td></tr>
<tr><td>99</td><td>Typical use</td><td>—</td><td colspan="4">—</td></tr>
</table>

100	—	Product qualification	—	According to EN 2043. Qualification programme shall be agreed between manufacturer and purchaser.