

SLOVENSKI STANDARD

SIST EN 3479:2023

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Nadomešča:

SIST EN 3479:2009

Aeronavtika - Jeklo X5CrNiCu15-5 (1.4545) - Pretaljeno s taljivo elektrodo - Topilno žarjeno in izločevalno utrjeno - Plošče - $6 \text{ mm} < a \leq 20 \text{ mm}$ - $1070 \text{ MPa} \leq R_m \leq 1220 \text{ MPa}$

Aerospace series - Steel X5CrNiCu15-5 (1.4545) - Consumable electrode remelted - Solution treated and precipitation treated - Plates - $6 \text{ mm} < a \leq 20 \text{ mm}$ - $1070 \text{ MPa} \leq R_m \leq 1220 \text{ MPa}$

Luft- und Raumfahrt - Stahl X5CrNiCu15-5 (1.4545) - Mit selbstverzehrender Elektrode umgeschmolzen - Lösungsgeglüht und ausscheidungsgehärtet - Platten - $6 \text{ mm} < a \leq 20 \text{ mm}$ - $1070 \text{ MPa} \leq R_m \leq 1220 \text{ MPa}$

Série aérospatiale - Acier X5CrNiCu15-5 (1.4545) - Refondu à l'électrode consommable - Mis en solution et précipité - Plaques - $6 \text{ mm} < a \leq 20 \text{ mm}$ - $1070 \text{ MPa} \leq R_m \leq 1220 \text{ MPa}$

Ta slovenski standard je istoveten z: EN 3479:2022

ICS:

49.025.10	Jekla	Steels
77.140.50	Ploščati jekleni izdelki in polizdelki	Flat steel products and semi-products

SIST EN 3479:2023

en,fr,de

EUROPEAN STANDARD

EN 3479

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS 49.025.10

Supersedes EN 3479:2007

English Version

**Aerospace series - Steel X5CrNiCu15-5 (1.4545) -
Consumable electrode remelted - Solution treated and
precipitation treated - Plates - $6 \text{ mm} < a \leq 20 \text{ mm}$ - $1\ 070$
 $\text{MPa} \leq R_m \leq 1\ 220 \text{ MPa}$**

Série aérospatiale - Acier X5CrNiCu15-5 (1.4545) -
Refondu à l'électrode consommable - Mis en solution et
précipité - Plaques - $6 \text{ mm} < a \leq 20 \text{ mm}$ - $1\ 070 \text{ MPa} \leq$
 $R_m \leq 1\ 220 \text{ MPa}$

Luft- und Raumfahrt - Stahl X5CrNiCu15-5 (1.4545) -
Mit selbstverzehrender Elektrode umgeschmolzen -
Lösungsgeglüht und ausscheidungsgehärtet - Platten -
 $6 \text{ mm} < a \leq 20 \text{ mm}$ - $1\ 070 \text{ MPa} \leq R_m \leq 1\ 220 \text{ MPa}$

This European Standard was approved by CEN on 29 August 2022.

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.

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

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Contents	Page
European foreword	3
Introduction	4
1 Scope	5
2 Normative references	5
3 Terms and definitions	5
4 Requirements	5
Bibliography	9

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[SIST EN 3479:2023](https://standards.iteh.ai/catalog/standards/sist/6d1460ad-9a14-4c08-a4ae-40ec9d7c5ea5/sist-en-3479-2023)

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European foreword

This document (EN 3479:2022) 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 document 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 [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 3479:2007.

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

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EN 3479:2022 (E)

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.

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1 Scope

This document specifies the requirements relating to:

Steel X5CrNiCu15-5 (1.4545)
Consumable electrode remelted
Solution treated and precipitation treated
Plates
 $6 \text{ mm} < a \leq 20 \text{ mm}$
 $1\ 070 \text{ MPa} \leq R_m \leq 1\ 220 \text{ MPa}$

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 2951, *Aerospace series — Metallic materials — Micrographic determination of content of non-metallic inclusions*

EN 4050-4, *Aerospace series — Test method for metallic materials — Ultrasonic inspection of bars, plates, forging stock and forgings — Part 4: Acceptance criteria*

EN 4700-001, *Aerospace series — Steel and heat resisting alloys — Wrought products — Technical specification — Part 001: Plate, sheet and strip*

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

4 Requirements

According to Table 1.

Table 1 — Requirements for SteelX5CrNiCu15-5 (1.4545) — Plates

1	Material designation	SteelX5CrNiCu15-5 (WL 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	0,005	15,5	0,50	5,5	4,5	0,45		
3	Method of melting	Consumable electrode remelted												
4.1	Form	Plates												
4.2	Method of production	—												
4.3	Limit dimension(s)	mm	6 < a ≤ 20											
5	Technical specification	EN 4700-001												
6.1	Delivery condition	Solution treated						Solution treated and precipitation treated						
	Heat treatment	1 025 °C ≤ θ ≤ 1 055 °C/t ≥ 30 min/AC or faster + cool to θ ≤ 30 °C						1 025 °C ≤ θ ≤ 1 055 °C/t ≥ 30 min/AC or faster + cool to θ ≤ 30 °C + 535 °C ≤ θ ≤ 565 °C/t ≥ 4 h/AC						
6.2	Delivery condition code	W						U						
7	Use condition	Solution treated and precipitation treated						Delivery condition						
	Heat treatment	Delivery condition + 535 °C ≤ θ ≤ 565 °C/t ≥ 4 h/AC						—						

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Characteristics

8.1	Test sample(s)	According to EN 4700-001														
8.2	Test piece(s)	According to EN 4700-001														
8.3	Heat treatment	Solution treated						Use condition								
9	Dimensions concerned	mm	6 < a ≤ 20						6 < a ≤ 20							
10	Thickness of cladding on each face	%	—						—							
11	Direction of test piece	—						L			T					
12	Temperature	θ	°C	—						Ambient			Ambient			
13	Proof stress	R _{p0,2}	MPa	—						≥ 1 000			≥ 1 000			
14	T	Strength	R _m	MPa	—						1 070 ≤ R _m ≤ 1 220			1 070 ≤ R _m ≤ 1 220		
15		Elongation	A	%	—						≥ 11			≥ 7		
16		Reduction of area	Z	%	—						≥ 45			≥ 27		
17	Hardness	HB		≤ 363						321 ≤ HB ≤ 375			321 ≤ HB ≤ 375			
18	Strength	R _c	MPa	—						—			—			
19	Bending	k	—	—						—			—			
20	Impact strength	Impact strength + KV ≥ 25 J						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	Temperature	θ	°C	—						—						
22	Time	h		—						—						
23	Stress	σ _a	MPa	—						—						
24	C	Elongation	a	%	—						—					
25		Rupture stress	σ _R	MPa	—						—					
26		Elongation at rupture	A	%	—						—					
27	Notes (see line 98)	—														

30	Microstructure	—	According to EN 4700-001
		7	The δ ferrite content shall not exceed 2 %
34	Grain size	—	According to EN 4700-001
		7	$G \geq 5$
44	External imperfections (visual testing - VT)	—	According to EN 4700-001
		1	Visual
50	Inclusion content	—	According to EN 4700-001
			EN 2951
			Category 4
61	Internal imperfections (ultrasonic testing - UT)	—	According to EN 4700-001
		1	EN 4050-4
		7	Class 3
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95	Marking inspection	—	According to EN 4700-001
96	Dimensional inspection	—	According to EN 4700-001
98	Notes	—	—
99	Typical use	—	—

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