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**Aeronavtika - X5CrNiCu15-5 (1.4545) - Pretaljeno s talično elektrodo (ESR ali VAR) - Topilno žarjeno in izločevalno utrjeno (H1025) - Palice za obdelavo - a ali D ≤ 250 mm - 1070 MPa ≤ Rm ≤ 1200 MPa - Visoka stopnja kakovosti (pq)**

Aerospace series - X5CrNiCu15-5 (1.4545) - Consumable electrode remelted (ESR or VAR) - Solution treated and precipitation treated (H1025) - Bar for machining - a or D ≤ 250 mm - 1 070 MPa ≤ Rm ≤ 1 200 MPa - Premium quality (pq)

Luft- und Raumfahrt - X5CrNiCu15-5 (1.4545) - Mit selbstverzehrender Elektrode umgeschmolzen (ESR oder VAR) - lösungsgeglüht und ausgelagert (H1025) - Stangen zur spanenden Bearbeitung - a oder D ≤ 250 mm - 1 070 MPa ≤ Rm ≤ 1 200 MPa - Beste Güte (pq)

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Série aérospatiale - X5CrNiCu15-5 (1.4545) - Refondu à l'électrode consommable (ESR ou VAR) - Mis en solution et vieilli (H1025) - Barres pour usinage - a ou D ≤ 250 mm - 1 070 MPa ≤ Rm ≤ 1 200 MPa - Première qualité (pq)

**Ta slovenski standard je istoveten z: EN 4842:2019**

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**ICS:**

49.025.15      Neželezove zlitine na splošno      Non-ferrous alloys in general

**SIST EN 4842:2019**

**en,fr,de**

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EUROPEAN STANDARD

EN 4842

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2019

ICS 49.025.15

English Version

**Aerospace series - X5CrNiCu15-5 (1.4545) - Consumable electrode remelted (ESR or VAR) - Solution treated and precipitation treated (H1025) - Bar for machining - a or D  $\leq 250$  mm -  $1\ 070\ \text{MPa} \leq R_m \leq 1\ 200\ \text{MPa}$  - Premium quality (pq)**

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Luft- und Raumfahrt - X5CrNiCu15-5 (1.4545) - Mit selbstverzehrender Elektrode umgeschmolzen (ESR oder VAR) - lösungsgeglüht und ausgelagert (H1025) - Stangen zur spanenden Bearbeitung - a oder D  $\leq 250$  mm -  $1\ 070\ \text{MPa} \leq R_m \leq 1\ 200\ \text{MPa}$  - Beste Güte (pq)

This European Standard was approved by CEN on 14 October 2018.

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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 4842:2019) 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 Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, 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 November 2019, and conflicting national standards shall be withdrawn at the latest by November 2019.

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.

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.

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EN 4842:2019 (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:

X5CrNiCu15-5 (1.4545)  
Consumable electrode remelted (ESR or VAR)  
Solution treated and precipitation treated (H1025)  
Bar for machining  
 $a$  or  $D \leq 250$  mm  
 $1\ 070\ \text{MPa} \leq R_m \leq 1\ 200\ \text{MPa}$   
Premium quality (pq)

for aerospace applications.

NOTE Other designation:  
Only the chemical composition of this standard must be considered.

## 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 2950, *Aerospace series — Test method — Wrought heat resisting alloys semifinished products and parts — Conditions for macrographic and micrographic examination — Atlas of structures and defects*

EN 3874, *Aerospace series — Test methods for metallic materials — Constant amplitude force-controlled low cycle fatigue testing*<sup>1)</sup>

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

EN 4258, *Aerospace series — Metallic materials — General organization of standardization — Links between types of EN standards and their use*

EN 4500-005, *Aerospace series — Metallic materials — Rules for drafting and presentation of material standards — Part 005: Specific rules for steels*

EN 4700-002, *Aerospace series — Steel and heat resisting alloys — Wrought products — Technical specification — Part 002: Bar and section*

ISO 1143, *Metallic materials — Rotating bar bending fatigue testing*

ASTM E45, *Standard Test Methods for Determining the Inclusion Content of Steel*

AMS 2315, *Determination of Delta Ferrite Content*<sup>2)</sup>

1) Published as ASD-STAN Prestandard at the date of publication of this standard, <http://www.asd-stan.org/>

2) Published by: National (US) Society of Automotive Engineers (SAE), <http://www.sae.org/>

EN 4842:2019 (E)

### 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:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

### 4 Requirements

The requirements for material X5CrNiCu15-5 (1.4545) are listed in Table 1.

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Table 1 — Requirements for material X5CrNiCu15-5 (1.4545)

1	Material designation		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	0,025	0,005	15,5	0,50	5,5	4,5	0,45	
3	Method of melting		Consumable electrode remelted (ESR or VAR)										
4.1	Form		Bar										
4.2	Method of production		–										
4.3	Limit dimension(s)	mm	$a$ or $D \leq 250$										
5	Technical specification		See EN 4700-002.										

6.1	Delivery condition		Solution treated and precipitation treated										
	Heat treatment		$1\ 025\ ^\circ\text{C} \leq \theta \leq 1\ 050\ ^\circ\text{C} / t \geq 30\ \text{min} / \text{AC}$ or faster + cool to $\theta \leq 30\ ^\circ\text{C}$ + $540\ ^\circ\text{C} \leq \theta \leq 570\ ^\circ\text{C} / t \geq 4\ \text{h} / \text{AC}$ or faster										
6.2	Delivery condition code		U										
7	Use condition		Delivery condition										
	Heat treatment		–										

## Characteristics

8.1	Test sample(s)		See EN 4700-002.										
8.2	Test piece(s)		See EN 4700-002.										
8.3	Heat treatment		Use condition										
9	Dimensions concerned	mm	$a$ or $D \leq 250$										
10	Thickness of cladding on each face	mm	–										
11	Direction of test piece		L					T ( $a$ or $D \geq 75\ \text{mm}$ )					
12	Temperature	$\theta$	°C		Ambient								
13	Proof stress	$R_{p0.2}$	MPa		$\geq 1\ 000$								
14	T	Strength	$R_m$	MPa		$1\ 070 \leq R_m \leq 1\ 200$							
15		Elongation	A	%		$\geq 11$					$\geq 7$		
16		Reduction of area	Z	%		–					–		
17	Hardness		$321 \leq \text{HBW} \leq 375$										
18	Shear strength	$R_c$	MPa		–								
19	Bending	k	–		–								
20	Impact strength		Notch direction			L-T				T-L			
			Temperature °C			+ 20		– 30		+ 20		– 30	
			Energy	KV	J	$\geq 80$		$\geq 35$		$\geq 56$		$\geq 25$	
21	Temperature	$\theta$	°C		–								
22	Time		h		–								
23	Stress	$\sigma_a$	MPa		–								
24	C	Elongation	a	%		–							
25		Rupture stress	$\sigma_R$	MPa		–							
26		Elongation at rupture	A	%		–							
27	Notes (see line 98)												