SLOVENSKI STANDARD
oSIST prEN 4890:2020

01-julij-2020

Aeronavtika - Jeklo X4CrNiMo16-5-1 - Taljeno na zraku - Utrjeno in mehko žarjeno - Pločevina - 0,3 mm ≤ a ≤ 6 mm - 900 MPa ≤ Rm ≤ 1050 MPa

Aerospace series - Steel X4CrNiMo16-5-1 - Air melted - Hardened and tempered - Sheets - 0,3 mm ≤ a ≤ 6 mm - 900 MPa ≤ Rm ≤ 1 050 MPa

Luft- und Raumfahrt - Stahl X4CrNiMo16-5-1 - Lufterschmolzen - Gehärtet- und angelassen - Bleche - 0,3 mm ≤ a ≤ 6 mm - 900 MPa ≤ Rm ≤ 1 050 MPa

Série aérospatiale - Acier X4CrNiMo16-5-1 - Élaboré à l'air - Trempé et revenu - Tôles - 0,3 mm ≤ a ≤ 6 mm - 900 MPa ≤ Rm ≤ 1 050 MP

Ta slovenski standard je istoveten z: **prEN 4890**

ICS:

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

oSIST prEN 4890:2020 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 4890

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ICS

English Version

Aerospace series - Steel X4CrNiMo16-5-1 - Air melted - Hardened and tempered - Sheets - 0,3 mm ≤ a ≤ 6 mm - 900 MPa ≤ Rm ≤ 1 050 MPa

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee ASD-STAN.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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European foreword

This document (prEN 4890:2020) 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 document is currently submitted to the CEN Enquiry.

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 X4CrNiMo16-5-1

— Air melted

— Hardened and tempered

— Sheets

— 0,3 mm ≤ a ≤ 6 mm

— 900 MPa ≤ R_m ≤ 1 050 MPa

for aerospace applications.

ASD-STAN designation: FE-PM 3504.

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

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 http://www.iso.org/obp
- IEC Electropedia: available at http://www.electropedia.org/

4 Requirements

See Table 1.

Table 1 — Requirements for steel X4CrNiMo16–5-1 — Sheets

1	Material designation		Steel X4CrNiMo16–5-1									
2	Chemical composition %	Element	C	Si	Mn	P	S	N	Cr	Mo	Ni	Fe
		min.	—	—	—	—	—	0,02	15,00	0,80	4,00	Base
		max.	0,06	0,70	1,50	0,040	0,015	0,08	17,00	1,50	6,00	
3	Method of melting		Air melted									
4.1	Form		Sheets									
4.2	Method of production		Hot rolled									
4.3	Limit dimension(s)	mm	0,3 ≤ a ≤ 6									
5	Technical specification		EN 4700-001									

6.1	Delivery condition	Softened	Hardened and tempered
	Heat treatment	—	1 010 °C ≤ θ ≤ 1 060 °C AC or AQ, OQ or PQ + Tempered 580 °C ≤ θ ≤ 650 °C or Process according to manufacturer and purchaser agreement
6.2	Delivery condition code	*A*	*U*
7	Use condition	Hardened and tempered	Hardened and tempered
	Heat treatment	Delivery condition + 1 010 °C ≤ θ ≤ 1 060 °C AC or AQ or OQ + Tempered 580 °C ≤ θ ≤ 650 °C or For tempering before process according to manufacturer and purchaser agreement	Delivery condition

Characteristics

8.1	Test sample(s)				See EN 4700-001.		
8.2	Test piece(s)				See EN 4700-001.		
8.3	Heat treatment				Softened	Delivery condition	
9	Dimensions concerned			mm	$a \leq 6$	0,6 ≤ a ≤ 2	2 ≤ a ≤ 6
10	Thickness of cladding on each face			%	—	—	—
11	Direction of test piece				—	*L*	*L*
12	T	Temperature	θ	°C	—	Ambient	Ambient
13		Proof stress	$R_{p0,2}$	MPa	—	≥ 700	≥ 700
14		Strength	R_m	MPa	—	900 ≤ R_m ≤ 1 050	900 ≤ R_m ≤ 1 050
15		Elongation	A	%	—	A 50 mm ≥ 8	A 5,65 $\sqrt{So}$ ≥ 16
16		Reduction of area	Z	%	—	—	—
17	Hardness		HB	—	≤ 255	—	—
18	Shear strength		R_c	MPa	—	—	—
19	Bending		k	—	—	K = 2; α = 180°; 2 for *L*; 2 for *T*	K = 2; α = 180°; 2 for *L*; 2 for *T*
20	Impact strength		*KV*	J	—	—	—
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)				—		

30	Microstructure	—	See EN 4700-001.
		7	The δ ferrite content shall not exceed 5 %.
34	Grain size	—	See EN 4700-001.
		7	$G \geq 5$
44	External imperfections Visual testing (VT)	—	See EN 4700-001.
50	Inclusion content	—	See EN 4700-001.
		7	EN 2951, category 2
61	Internal imperfections Ultrasonic testing (UT)	—	—
		—	—
95	Marking inspection	—	See EN 4700-001.
96	Dimensional inspection	—	See EN 4700-001.
98	Notes	—	—
99	Typical use	—	—

100	—	Product qualification	—	See EN 4700-001.
				Qualification programme to be agreed between manufacturer and purchaser.