



SLOVENSKI STANDARD

SIST EN 2450:2019

01-marec-2019

Aeronavtika - Jeklo 31Ni10 - $1230 \text{ MPa} \leq R_m \leq 1420 \text{ MPa}$ - Palice - $De \leq 40 \text{ mm}$

Aerospace series - Steel 31Ni10 - $1\ 230 \text{ MPa} \leq R_m \leq 1\ 420 \text{ MPa}$ - Bars - $De \leq 40 \text{ mm}$

Luft- und Raumfahrt - Stahl 31Ni10 - $1\ 230 \text{ MPa} \leq R_m \leq 1\ 420 \text{ MPa}$ - Stangen - $De \leq 40 \text{ mm}$

Série aérospatiale - Acier 31Ni10 - $1\ 230 \text{ MPa} \leq R_m \leq 1\ 420 \text{ MPa}$ - Barres - $De \leq 40 \text{ mm}$

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Ta slovenski standard je istoveten z: EN 2450:2018

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ICS:

49.025.10 Jekla

Steels

SIST EN 2450:2019

en,fr,de

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EUROPEAN STANDARD

EN 2450

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2018

ICS

English Version

Aerospace series - Steel 31Ni10 - $1\ 230\ \text{MPa} \leq R_m \leq 1\ 420\ \text{MPa}$ - Bars - $D_e \leq 40\ \text{mm}$

Série aérospatiale - Acier 31Ni10 - $1\ 230\ \text{MPa} \leq R_m \leq 1\ 420\ \text{MPa}$ - Barres - $D_e \leq 40\ \text{mm}$

Luft- und Raumfahrt - Stahl 31Ni10 - $1\ 230\ \text{MPa} \leq R_m \leq 1\ 420\ \text{MPa}$ - Stangen - $D_e \leq 40\ \text{mm}$

This European Standard was approved by CEN on 27 May 2018.

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.

CEN members are the national standards bodies of 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 United Kingdom.

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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 2450:2018) 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 June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

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.

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 2450:2018 (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:

$$\begin{array}{c} \text{Steel 31Ni10} \\ 1\,230\text{ MPa} \leq R_m \leq 1\,420\text{ MPa} \\ \text{Bars} \\ D_e \leq 40\text{ mm} \end{array}$$

for aerospace applications.

The ASD STAN designation of this material is FE-PL73.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 2034, *Aerospace series — Round steel bars drawn and/or descaled — Dimensions — Tolerance h 11*

EN 2035, *Round steel bars — Drawn — Dimensions — Tolerance h 9 — Aerospace series* ¹⁾

EN 2036, *Aerospace series — Round steel bars ground — Dimensions — Tolerance h 8*

EN 2037, *Aerospace series — Hexagonal steel bars drawn — Dimensions — Tolerances h 11 and h 12*

EN 2038, *Hexagonal steel bars — Drawn — Dimensions — Tolerance h 9 — Aerospace series* ¹⁾

EN 2039, *Rectangular steel bars — Drawn — Dimensions — Tolerances h 11 / h 12 — Aerospace series* ¹⁾

EN 2040, *Aerospace series — Rectangular steel bars rolled — Dimensions — Tolerance js 16*

EN 2041, *Square steel bars — Drawn — Dimensions — Tolerances h 11 / h 12 — Aerospace series* ¹⁾

EN 2042, *Square steel bars — Rolled — Dimensions — Tolerance js 16 — Aerospace series* ¹⁾

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*

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

See Table 1.

1) Published as ASD-STAN Standard at the date of publication of this European Standard by AeroSpace and Defence industries Association of Europe - Standardization (www.asd-stan.org)

EN 2450:2018 (E)

Table 1 — Requirements for steel 31Ni10

1	Material designation		Steel 31Ni10							
2	Chemical Composition %	Element	C	Si	Mn	P	S	Cr	Mo	Ni
		min.	0,27	0,15	0,45	-	-	0,50	0,45	2,30
		max.	0,35	0,35	0,70	0,025	0,020	0,80	0,65	2,80
3	Method of melting		Air melted							
4.1	Form		Bars							
4.2	Method of production		-							
4.3	Limit dimension(s)	mm	$D_e \leq 40$							
5	Technical specification		EN 4700-002 EN 2034 to EN 2042							

6.1	Delivery condition	Softened		Hardened and tempered	
	Heat treatment	-		840 °C ≤ θ ≤ 860 °C/OQ + temper $\theta \geq 520$ °C	
6.2	Delivery condition code	-			
7	Use condition	Hardened and tempered		Hardened and tempered	
	Heat treatment	Delivery condition + 840 °C ≤ θ ≤ 860 °C/OQ + temper $\theta \geq 520$ °C		Delivery condition	

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Characteristics

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8.1	Test sample(s)		-			
8.2	Test piece(s)		-			
8.3	Heat treatment		Softened		Hardened and tempered	
9	Dimensions concerned	mm	≤ 40			
10	Thickness of cladding on each face	%	-			
11	Direction of test piece		-			
12	Temperature	θ	°C			
13	Proof stress	$R_{p0,2}$	MPa*		≥ 1 080	
14	T Strength	R_m	MPa*		1 230 ≤ R_m ≤ 1 420	
15	Elongation	A	%		≥ 9	
16	Reduction of area	Z	%		≥ 40	
17	Hardness		HB ≤ 248 HV ≤ 261 ^a		363 ≤ HB ≤ 415 383 ≤ HV ≤ 440 ^a	
18	Shear strength	R_c	MPa*		-	
19	Bending	k	-		-	
20	Impact strength		-		≥ 20	
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)		*, a,			

28	-	-	-					
31	Hardenability (Jominy test)	-	Distance in mm	6	10	16	25	40
			HRC min.	49	48	48	47	47
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95	Marking inspection	-	-					
96	Dimensional inspection	-	-					
98	Notes	-	<p>* 1 MPa = 1 N/mm². a HV for $D_e \leq 5$ mm.</p>					
99	Typical use	-	Low alloy general purpose steel.					