SLOVENSKI STANDARD
SIST EN 2438:2009

01-januar-2009

Aeronavtika - Jeklo FE-PL2102 (35NiCr6) - 900 MPa ÒRm Ò1 100 Mpa - Palice - De Ò40 mm

Aerospace series - Steel FE-PL2102 (35NiCr6) - 900 MPa ÒRm Ò1 100 MPa - Bars - De Ò40 mm

Luft- und Raumfahrt - Stahl FE-PL2102 (35NiCr6) - 900 MPa ÒRm Ò1 100 MPa - Stangen - De Ò40 mm

S®rie a®rospatiale - Acier FE-PL2102 (35NiCr6) - 900 MPa ÒRm Ò1 100 MPa - Barres - De Ò40 mm

Ta slovenski standard je istoveten z: **EN 2438:2008**

ICS:

49.025.10 Jekla Steels

SIST EN 2438:2009 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 2438

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ICS

English Version

Aerospace series - Steel FE-PL2102 (35NiCr6) - 900 MPa ≤ Rm ≤ 1 100 MPa - Bars - De ≤ 40 mm

Série aérospatiale - Acier FE-PL2102 (35NiCr6) - 900 MPa ≤ Rm ≤ 1 100 MPa - Barres - De ≤ 40 mm

Luft- und Raumfahrt - Stahl FE-PL2102 (35NiCr6) - 900 MPa ≤ Rm ≤ 1 100 MPa - Stangen - De ≤ 40 mm

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (EN 2438:2008) 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of an identical text or by endorsement, at the latest by May 2009, and conflicting national standards shall be withdrawn at the latest by May 2009.

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Introduction

This standard 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 standard has been prepared in accordance with EN 4500-5.

1 Scope

This standard specifies the requirements relating to:

Steel FE-PL2102 (35NiCr6)
900 MPa ≤ R_m ≤ 1 100 MPa
Bars
D_e ≤ 40 mm

for aerospace applications.

2 Normative references

The following referenced documents are indispensable for the application 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 4258, *Aerospace series — Metallic materials — General organization of standardization — Links between types of EN standards and their use.*

EN 4500-5, *Aerospace series — Metallic materials — Rules for drafting and presentation of material standards — Part 5: Specific rules for steels.* [1)]

EN 4700-2, *Aerospace series — Steel and heat resisting alloys — Wrought products — Technical specification — Part 2: Bar and section.* [1)]

1) Published as an ASD Prestandard at the date of publication of this standard.

1	Material designation		Steel FE-PL2102 (35NiCr6)								
2	Chemical composition %	Element	C	Si	Mn	P	S	Cr	Mo	Ni	Fe
		min.	0,30	0,10	0,60	–	–	0,80	–	1,20	Base
		max.	0,37	0,40	0,90	0,025	0,020	1,10	–	1,60	
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 4700-2								

6.1	Delivery condition	Softened	Hardened and tempered
	Heat treatment	–	840 °C ≤ θ ≤ 860 °C / OQ + Temper θ ≥ 550 °C / OQ [a]
6.2	Delivery condition code	A	U
7	Use condition	Hardened and tempered	Hardened and tempered
	Heat treatment	Delivery condition + 840 °C ≤ θ ≤ 860 °C / OQ + Temper θ ≥ 550 °C / OQ [a]	Delivery condition

8.1	Test sample(s)			Characteristics		See EN 4700-2.	
8.2	Test piece(s)					See EN 4700-2.	
8.3	Heat treatment			Softened	Hardened and tempered		Reference [b] See line 29 Bar: D = 16 mm
9	Dimensions concerned		mm	≤ 40			
10	Thickness of cladding on each face		%	–			
11	Direction of test piece			–			
12	T	Temperature	θ °C	Ambient			
13	T	Proof stress	$R_{p0,2}$ MPa*	–	≥ 750		≥ 750
14	T	Strength	R_m MPa*	–	900 ≤ R_m ≤ 1 100		900 ≤ R_m ≤ 1 100
15	T	Elongation	A %	–	≥ 14		≥ 14
16	T	Reduction of area	Z %	–	–		–
17	Hardness			HB ≤ 223 HV ≤ 234 [c]	269 ≤ HB ≤ 331 284 ≤ HV ≤ 350 [c]		269 ≤ HB ≤ 331
18	Shear strength		R_c MPa*	–			
19	Bending		k –	–			
20	Impact strength		KV J	–	≥ 40		≥ 40
21	C	Temperature	θ °C	–			
22	C	Time	h	–			
23	C	Stress	σ_a MPa*	–			
24	C	Elongation	a %	–			
25	C	Rupture stress	σ_R MPa*	–			
26	C	Elongation at rupture	A %	–			
27	Notes (see line 98)			a, b, c			

<table>
<tr><td>29</td><td>Reference heat treatment</td><td>–</td><td colspan="6">Hardened and tempered
+ (850 ± 10) °C / OQ
+ Temper (565 ± 5) °C</td></tr>
<tr><td rowspan="3">31</td><td rowspan="3">Hardenability (Jominy test)</td><td rowspan="3">–</td><td>Distance (mm)</td><td>5</td><td>9</td><td>15</td><td>25</td><td>40</td></tr>
<tr><td>HRC min.</td><td>49</td><td>48</td><td>44</td><td>40</td><td>35</td></tr>
<tr><td>HRC max.</td><td>58</td><td>57</td><td>55</td><td>53</td><td>50</td></tr>
<tr><td></td><td></td><td></td><td colspan="6"></td></tr>
<tr><td>95</td><td>Marking inspection</td><td>–</td><td colspan="6">See EN 4700-2.</td></tr>
<tr><td>96</td><td>Dimensional inspection</td><td>–</td><td colspan="6">See EN 4700-2.</td></tr>
<tr><td>98</td><td>Notes</td><td>–</td><td colspan="6">* 1 MPa = 1 N/mm^2.
a Tempering shall be followed by oil quenching.
b Optional test.
c HV for $D_e \leq 5$ mm.</td></tr>
<tr><td>99</td><td>Typical use</td><td>–</td><td colspan="6">Low alloy general purpose steel.</td></tr>
</table>

100	–	Product qualification	–	–
				Qualification programme to be agreed between manufacturer and purchaser.