



SLOVENSKI STANDARD SIST EN 2481:2011

01-november-2011

**Aeronavtika - Jeklo FE-PL2108 (35NiCrMo16) - 1250 MPa ≤ Rm ≤ 1400 MPa - Izkovki
- De ≤ 75 mm**

Aerospace series - Steel FE-PL2108 (35NiCrMo16) - 1250 MPa ≤ Rm ≤ 1400 MPa -
Forgings - De ≤ 75 mm

Luft- und Raumfahrt - Stahl FE-PL2108 (35NiCrMo16) - 1250 MPa ≤ Rm ≤ 1400 MPa -
Gesenk- und Freiformschmiedestücke - De ≤ 75 mm

Série aérospatiale - Acier FE-PL2108 (35NiCrMo16) - 1250 MPa ≤ Rm ≤ 1400 MPa -
Pièces forgées et matricées - De ≤ 75 mm

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Ta slovenski standard je istoveten z: EN 2481:2010

ICS:

49.025.10 Jekla Steels

SIST EN 2481:2011 **en,fr,de**

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 2481

December 2010

ICS 49.025.10

English Version

**Aerospace series - Steel FE-PL2108 (35NiCrMo16) - 1 250 MPa
 $\leq R_m \leq 1\ 400$ MPa - Forgings - $D_e \leq 75$ mm**

Série aérospatiale - Acier FE-PL2108 (35NiCrMo16) - 1 250
MPa $\leq R_m \leq 1\ 400$ MPa - Pièces forgées et matricées - D_e
 ≤ 75 mm

Luft- und Raumfahrt - Stahl FE-PL2108 (35NiCrMo16) - 1
250 MPa $\leq R_m \leq 1\ 400$ MPa - Gesenk- und
Freiformschmiedestücke - $D_e \leq 75$ mm

This European Standard was approved by CEN on 2 July 2010.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 2481:2010) 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 2011, and conflicting national standards shall be withdrawn at the latest by June 2011.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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EN 2481:2010 (E)

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.

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1 Scope

This standard specifies the requirements relating to:

Steel FE-PL2108 (36NiCrMo16)
 $1\ 250\ \text{MPa} \leq R_m \leq 1\ 400\ \text{MPa}$
Forgings
 $D_e \leq 75\ \text{mm}$

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 4050-4, *Aerospace series — Test method for metallic materials — Ultrasonic inspection of bars, plates, forging stock and forgings — Part 4: Acceptance criteria* ¹⁾

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⁾ (standards.iteh.ai)

EN 4700-006, *Aerospace series — Steel and heat resisting alloys — Wrought products — Technical specification — Part 006: Pre-production and production forgings*

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1) Published as ASD-STAN Prestandard at the date of publication of this standard by Aerospace and Defence Industries Association of Europe-Standardization (ASD-STAN) (www.asd-stan.org).

EN 2481:2010 (E)

1	Material designation		Steel FE- PL2108 (36NiCrMo16)								
2	Chemical composition %	Element	C	Si	Mn	P	S	Cr	Mo	Ni	Fe
		min.	0,30	0,15	0,30	–	–	1,60	0,25	3,50	Base
		max.	0,40	0,40	0,60	0,025	0,020	2,00	0,60	4,20	
3	Method of melting		Air melted								
4.1	Form		Forgings								
4.2	Method of production		–								
4.3	Limit dimension(s)	mm	$D_e \leq 75$								
5	Technical specification		EN 4700-006								

6.1	Delivery condition		Annealed			Hardened and tempered		
	Heat treatment		–			860 °C ≤ θ ≤ 890 °C / AQ + $\theta \geq 540$ °C		
6.2	Delivery condition code		A			U		
7	Use condition		Hardened and tempered			Delivery condition		
	Heat treatment		Delivery condition + 860 °C ≤ θ ≤ 890 °C / AQ + $\theta \geq 540$ °C			–		

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Characteristics

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8.1	Test sample(s)		See EN 4700-006.								
8.2	Test piece(s)		See EN 4700-006.								
8.3	Heat treatment		Annealed			Hardened and tempered					
9	Dimensions concerned	mm	$D_e \leq 75$								
10	Thickness of cladding on each face	%	–								
11	Direction of test piece		–								
12	Temperature	θ	°C	Ambient							
13	Proof stress d'élasticité	$R_{p0,2}$	MPa	–			≥ 1 050				
14	T Strength	R_m	MPa	–			1 250 ≤ R_m ≤ 1 400				
15	Elongation	A	%	–			≥ 8				
16	Reduction of area	Z	%	–			≥ 40				
17	Hardness		HB ≤ 293 HV ≤ 309 ^a			363 ≤ HB ≤ 401 383 ≤ HV ≤ 425 ^a					
18	Shear strength	R_c	MPa	–							
19	Bending	k	–	–							
20	Impact strength	KV	J	–			≥ 25				
21	Temperature	θ	°C	–							
22	Time		h	–							
23	C Stress	σ_a	MPa	–							
24	Elongation	a	%	–							
25	Rupture stress	σ_R	MPa	–							
26	Elongation at rupture	A	%	–							
27	Notes (see line 98)		a								

34	Grain size	–	See EN 4700-006.
		7	$G \geq 5$
44	External defects	–	See EN 4700-006.
51	Macrostructure (Grain flow)	–	See EN 4700-006.
61	Internal defects	–	See EN 4700-006.
		1	EN 4050-4
		7	Class 2
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95	Marking inspection	–	See EN 4700-006.
96	Dimensional inspection	–	See EN 4700-006.
98	Notes	–	^a HV for $D_e \leq 5$ mm.
99	Typical use	–	Low alloy general purpose steel.