



# SLOVENSKI STANDARD

## SIST EN 2279:2018

01-oktober-2018

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**Aeronavtika - Jeklo FE-PM37 - 900 MPa ≤ Rm ≤ 1100 MPa - Izkovki - De ≤ 150 mm**

Aerospace series - Steel FE-PM37 - 900 MPa ≤ Rm ≤ 1 100 MPa - Forgings - De ≤ 150 mm

Luft- und Raumfahrt - Stahl FE-PM37 - 900 MPa ≤ Rm ≤ 1 100 MPa - Gesenk- und Freiformschmiedestücke - De ≤ 150 mm

Série aérospatiale - Acier FE-PM37 - 900 MPa ≤ Rm ≤ 1 100 MPa - Pièces forgées et matricées - De ≤ 150 mm

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SIST EN 2279:2018

Ta slovenski standard je istoveten z: **EN 2279:2018**

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**ICS:**

49.025.10 Jekla

Steels

**SIST EN 2279:2018**

**en,fr,de**

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EUROPEAN STANDARD

EN 2279

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2018

ICS 49.025.10

English Version

## Aerospace series - Steel FE-PM37 - $900 \text{ MPa} \leq R_m \leq 1\,100 \text{ MPa}$ - Forgings - $De \leq 150 \text{ mm}$

Série aérospatiale - Acier FE-PM37 -  $900 \text{ MPa} \leq R_m \leq 1\,100 \text{ MPa}$  - Pièces forgées et matricées -  $De \leq 150 \text{ mm}$

Luft- und Raumfahrt - Stahl FE-PM37 -  $900 \text{ MPa} \leq R_m \leq 1\,100 \text{ MPa}$  - Gesenk- und Freiformschmiedestücke -  $De \leq 150 \text{ mm}$

This European Standard was approved by CEN on 6 November 2017.

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.



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 2279:2018) 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 January 2019, and conflicting national standards shall be withdrawn at the latest by January 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 organisations 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 2279:2018 (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 4500-005.

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## 1 Scope

This standard specifies the requirements relating to:

Steel FE-PM37  
 $900 \text{ MPa} \leq R_m \leq 1\,100 \text{ MPa}$   
Forgings  
 $D_e \leq 150 \text{ mm}$

for aerospace applications.

## 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 2157-1, *Aerospace series — Steel — Forging stock and forgings — Technical specification — Part 1: General requirements*

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*

## 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>

## EN 2279:2018 (E)

1	Material designation		Steel FE-PM37									
2	Chemical composition %	Element	C	Si	Mn	P	S	Cr	Mo	Ni	V	N <sub>2</sub>
		min.	0,08	-	0,50	-	-	11,0	1,50	2,00	0,25	0,020
		max.	0,13	0,35	0,90	0,030	0,025	12,5	2,00	3,00	0,40	0,040
3	Method of melting		Air melted									
4.1	Form		Forgings									
4.2	Method of production		-									
4.3	Limit dimension(s)	mm	$D_e \leq 150$ mm									
5	Technical specification		EN 2157-1									

6.1	Delivery condition		Softened				Hardened and tempered				
	Heat treatment		-				1 035 °C ≤ $\theta$ ≤ 1 065 °C/OQ or AC + tempered $\theta \geq 640$ °C				
6.2	Delivery condition code		-				-				
7	Use condition		Hardened and tempered				Hardened and tempered				
	Heat treatment		Delivery condition + 1 035 °C ≤ $\theta$ ≤ 1 065 °C/OQ or AC + tempered $\theta \geq 640$ °C				Delivery condition				

**iTeh STANDARD PREVIEW**  
Characteristics  
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8.1	Test sample(s)						Bar: $D = 16$ mm					
8.2	Test piece(s)		-				Reference <sup>a</sup>					
8.3	Heat treatment		Softened				Hardened and tempered					
9	Dimensions concerned	mm	-									
10	Thickness of cladding on each face	%	-									
11	Direction of test piece		-				L	L or LT <sup>b</sup>		-		
12	Temperature	$\theta$	°C		Ambient temperature							
13	Proof stress	R <sub>p0,2</sub>	MPa*		-				≥ 750		≥ 780	
14	Strength	R <sub>m</sub>	MPa*		-				900 ≤ R <sub>m</sub> ≤ 1 100		930 ≤ R <sub>m</sub> ≤ 1 130	
15	Elongation	A	%		-				≥ 14	≥ 12	≥ 14	
16	Reduction of area	Z	%		-				≥ 40	≥ 30	≥ 40	
17	Hardness		≤ 311				269 ≤ HB ≤ 331		285 ≤ HB ≤ 331			
18	Shear strength	R <sub>c</sub>	MPa*		-							
19	Bending	k	-		-							
20	Impact strength		-				≥ 35	≥ 25	≥ 35			
21	Temperature	$\theta$	°C		-							
22	Time		h		-							
23	Stress	$\sigma_a$	MPa*		-							
24	Elongation	a	%		-							
25	Rupture stress	$\sigma_R$	MPa*		-							
26	Elongation at rupture	A	%		-							
27	Notes (see line 98)		*, a, b									



28	-	-	-
29	Reference heat treatment	-	Hardened and tempered (1 050 ± 10) °C/OQ + tempered (650 ± 5) °C
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95	Marking inspection	-	-
96	Dimensional inspection	-	-
98	Notes	-	* 1 MPa = 1 N/mm <sup>2</sup> . a Optional test. b Transverse direction permitted for the largest diameters.
99	Typical use	-	-