



SLOVENSKI STANDARD SIST EN 3523:2009

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Ta slovenski standard je istoveten z: EN 3523:2007

ICS:

49.025.10 Jekla Steels

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EUROPEAN STANDARD

EN 3523

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2007

ICS 49.025.10

English Version

**Aerospace series - Steel FE-PL1505 (15CrMoV6) - Air melted -
Hardened and tempered - Bar for machining - $De \leq 100$ mm - 1
 080 MPa $\leq R_m \leq 1$ 280 MPa**

Série aéronautique - Acier FE-PL1505 (15CrMoV6) -
Élaboré à l'air - Trempé et revenu - Barres pour usinage -
 $De \leq 100$ mm - 1 080 MPa $\leq R_m \leq 1$ 280 MPa

Luft- und Raumfahrt - Stahl FE-PL1505 (15CrMoV6) -
Lufterschmolzen - Gehärtet und angelassen - Stangen zur
spannenden Bearbeitung - $De \leq 100$ mm - 1 080 MPa $\leq R_m$
 ≤ 1 280 MPa

This European Standard was approved by CEN on 5 October 2006.

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 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 Management Centre has the same status as the official versions.

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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

Foreword

This document (EN 3523:2007) 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of an identical text or by endorsement, at the latest by September 2007, and conflicting national standards shall be withdrawn at the latest by September 2007.

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.

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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-PL1505 (15CrMoV6)
Air melted
Hardened and tempered
Bar for machining
 $D_e \leq 100$ mm
 $1\ 080\ \text{MPa} \leq R_m \leq 1\ 280\ \text{MPa}$

for aerospace applications.

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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 2043, *Aerospace series — Metallic materials — General requirements for semi-finished product qualification (excluding forgings and castings)*.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⁾

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

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

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1	Material designation		Steel FE-PL1505 (15CrMoV6)								
2	Chemical composition %	Element	C	Si	Mn	P	S	Cr	Mo	V	Fe
		min.	0,12	–	0,80	–	–	1,25	0,80	0,20	Base
		max.	0,18	0,20	1,10	0,020	0,015	1,50	1,00	0,30	
3	Method of melting		Air melted								
4.1	Form		Bar for machining								
4.2	Method of production		–								
4.3	Limit dimension(s)	mm	$D_e \leq 100$								
5	Technical specification		EN 4700-2								

6.1	Delivery condition		Softened			Hardened and tempered		
	Heat treatment		–			955 °C ≤ θ ≤ 995 °C / WQ or OQ + 595 °C ≤ θ ≤ 645 °C / AC		
6.2	Delivery condition code		A			U		
7	Use condition		Hardened and tempered			Delivery condition		
	Heat treatment		Delivery condition + 955 °C ≤ θ ≤ 995 °C / WQ or OQ + 595 °C ≤ θ ≤ 645 °C / AC			–		

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Characteristics

8.1	Test sample(s)		See EN 4700-2.								
8.2	Test piece(s)		See EN 4700-2.								
8.3	Heat treatment		Softened			Use condition					
9	Dimensions concerned	mm	a or $D \leq 250$			a or $D \leq 100$					
10	Thickness of cladding on each face	%	–			–					
11	Direction of test piece		–			L					
12	Temperature	θ	°C	–			Ambient				
13	Proof stress	$R_{p0,2}$	MPa	–			≥ 930				
14	T Strength	R_m	MPa	–			1 080 ≤ R_m ≤ 1 280				
15	Elongation	A	%	–			≥ 10				
16	Reduction of area	Z	%	–			–				
17	Hardness		≤ 235 HB			321 ≤ HB ≤ 380					
18	Shear strength	R_c	MPa	–			–				
19	Bending	k	–	–			–				
20	Impact strength		–			KV ≥ 30 J; Notch direction T					
21	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)		–								

31	Hardenability (Jominy test)	–	See EN 4700-2.						
		2	The "capability clause" applies						
		7	Distance in mm	1,5	5	9	15	25	40
			HRC min.	38	37	35	32	31	29
34	Grain size	–	See EN 4700-2.						
		7	G ≥ 5						
44	External defects	–	See EN 4700-2.						
		1	Visual						
50	Cleanliness/inclusion content (micro-cleanness)	–	See EN 4700-2.						
		7	Category 1						
61	Internal defects	–	See EN 4700-2.						
		6	a or D ≤ 100 mm may be tested either on the product or at an earlier stage of manufacturing						
		7	Class 2						
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95	Marking inspection	–	See EN 4700-2.						
96	Dimensional inspection	–	See EN 4700-2.						
98	Notes	–	–						
99	Typical use	–	–						

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100	-	Product qualification	-	See EN 2043.
				Qualification programme to be agreed between manufacturer and purchaser.
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