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SIST EN 3524:2009

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EUROPEAN STANDARD

EN 3524

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2007

ICS 49.025.10

English Version

**Aerospace series - Steel FE-PL1505 (15CrMoV6) - Air melted -  
Hardened and tempered - Sheet and strip -  $2 \text{ mm} \leq a \leq 6 \text{ mm}$  -  $1$   
 $080 \text{ MPa} \leq R_m \leq 1\ 280 \text{ MPa}$**

Série aéronautique - Acier FE-PL1505 (15CrMoV6) -  
Élaboré à l'air - Trempé et revenu - Tôles et bandes -  $2 \text{ mm}$   
 $\leq a \leq 6 \text{ mm}$  -  $1\ 080 \text{ MPa} \leq R_m \leq 1\ 280 \text{ MPa}$

Luft- und Raumfahrt - Stahl FE-PL1505 (15CrMoV6) -  
Lufterschmolzen - Gehärtet und angelassen - Bleche und  
Bänder -  $2 \text{ mm} \leq a \leq 6 \text{ mm}$  -  $1\ 080 \text{ MPa} \leq R_m \leq 1\ 280 \text{ MPa}$

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

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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

**EN 3524:2007 (E)****Foreword**

This document (EN 3524:2007) 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of an identical text or by endorsement, at the latest by September 2007, and conflicting national standards shall be withdrawn at the latest by September 2007.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.

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, 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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## 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  
Sheet and strip  
 $2 \text{ mm} \leq a \leq 6 \text{ mm}$   
 $1\ 080 \text{ MPa} \leq R_m \leq 1\ 280 \text{ MPa}$

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)*.<sup>1)</sup>

EN 2951, *Aerospace series — Metallic materials — Test method — Micrographic determination of content of non-metallic inclusions*.<sup>1)</sup>

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*.<sup>1)</sup>

EN 4700-1, *Aerospace series — Steel and heat resisting alloys — Wrought products — Technical specification — Part 1: Plate, sheet and strip*.<sup>1)</sup>

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

## EN 3524:2007 (E)

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		Sheet and strip								
4.2	Method of production		Rolled								
4.3	Limit dimension(s)	mm	$2 \leq a \leq 6$								
5	Technical specification		EN 4700-1								

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

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Characteristics

8.1	Test sample(s)		See EN 4700-1.								
8.2	Test piece(s)		See EN 4700-1.								
8.3	Heat treatment		Softened			Use condition					
9	Dimensions concerned	mm	$2 \leq a \leq 6$			$2 \leq a \leq 6$					
10	Thickness of cladding on each face	%	–			–					
11	Direction of test piece		–			LT					
12	Temperature	$\theta$	°C		–			Ambient			
13	Proof stress	$R_{p0,2}$	MPa		–			≥ 930			
14	T Strength	$R_m$	MPa		–			$1\ 080 \leq R_m \leq 1\ 280$			
15	Elongation	A	%		–			$A_{50mm} \geq 9$			
16	Reduction of area	Z	%		–			–			
17	Hardness		HB ≤ 197 or HV ≤ 197			335 ≥ HV ≥ 382					
18	Shear strength	$R_c$	MPa		–			–			
19	Bending	k	–		$0,5; \alpha = 180^\circ$			–			
20	Impact strength		–								
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)		–								

34	Grain size	–	See EN 4700-1.
		7	$G \geq 5$
44	External defects	–	See EN 4700-1.
		1	Visual
50	Cleanliness/inclusion content (micro-cleanness)	–	See EN 4700-1.
		1	EN 2951
		7	Category 1
59	Decarburization	–	See EN 4700-1.
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95	Marking inspection	–	See EN 4700-1.
96	Dimensional inspection	–	See EN 4700-1.
98	Notes	–	–
99	Typical use	–	–

## EN 3524:2007 (E)

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