

**Aerospace series —  
Heat resisting alloy  
FE-PA2601  
(X6NiCrTiMoV26-15) —  
Solution treated and  
precipitation treated,  
bar and section  
De ≤ 100 mm,  
Rm ≥ 960 MPa**

ICS 49.025.05

## National foreword

This British Standard is the UK implementation of EN 4318:2007.

The UK participation in its preparation was entrusted by Technical Committee ACE/61, Metallic materials for aerospace purposes, to Panel ACE/61/-/48, Heat resisting alloys.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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### Amendments/corrigenda issued since publication

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English Version

**Aerospace series - Heat resisting alloy FE-PA2601  
(X6NiCrTiMoV26-15) - Solution treated and precipitation treated,  
bar and section  $De \leq 100$  mm,  $Rm \geq 960$  MPa**

Série aérospatiale - Alliage résistant à chaud FE-PA2601  
(X6NiCrTiMoV26-15) - Mis en solution et précipité, barres  
et profilés  $De \leq 100$  mm,  $Rm \geq 960$  MPa

Luft- und Raumfahrt - Hochwarmfeste Legierung FE-  
PA2601 (X6NiCrTiMoV26-15) - Lösungsgeglüht und  
ausgehärtet, Stangen und Profile  $De \leq 100$  mm,  $Rm \geq 960$   
MPa

This European Standard was approved by CEN on 15 February 2007.

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

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## Foreword

This document (EN 4318:2007) 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.

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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 4500-3.

## 1 Scope

This standard specifies the requirements relating to:

Heat resisting alloy FE-PA2601 (X6NiCrTiMoV26-15) — Solution treated and precipitation treated, bar and section  $D_e \leq 100$  mm,  $R_m \geq 960$  MPa

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 2043, *Aerospace series — Metallic materials — General requirements for semi-finished product qualification (excluding forgings and castings)*<sup>1)</sup>

EN 4258, *Aerospace series — Metallic materials — General organization of standardization — Links between types of EN standards and their use*

EN 4500-3, *Aerospace series — Metallic materials — Rules for drafting and presentation of material standards — Part 3: Specific rules for heat resisting alloys*<sup>1)</sup>

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

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<sup>1)</sup> Published as ASD prestandard at the date of publication of this standard.

1	Material designation		Heat resisting alloy FE-PA2601 (X6NiCrTiMoV26-15)													
2	Chemical composition %	Element	C	Si	Mn	P	S	Al	B	Cr	Mo	Ni	Ti	V	Pb	Fe
		min.	-	-	-	-	-	-	30 <sup>a</sup>	13,5	1,00	24,0	1,90	0,10	-	Base
		max.	0,080	1,00	2,00	0,020	0,015	0,35	100 <sup>a</sup>	16,0	1,50	27,0	2,30	0,50	20 <sup>a</sup>	
3	Method of melting		Consumable electrode remelted													
4.1	Form		Bar and section													
4.2	Method of production		Rolled, extruded													
4.3	Limit dimension(s)	mm	$D_e \leq 100$													
5	Technical specification		EN 4700-2													

6.1	Delivery condition		Solution treated				Solution treated and precipitation treated			
	Heat treatment		$\theta = 900 \text{ }^\circ\text{C} \pm 10 \text{ }^\circ\text{C} / t \geq 1 \text{ h} / \text{OQ or WQ}$				$\theta = 900 \text{ }^\circ\text{C} \pm 10 \text{ }^\circ\text{C} / t \geq 1 \text{ h} / \text{OQ or WQ}$ $+ \theta = 720 \text{ }^\circ\text{C} \pm 10 \text{ }^\circ\text{C} / t = 16 \text{ h} / \text{AC}$			
6.2	Delivery condition code		W				U			
7	Use condition		Solution treated and precipitation treated				Delivery condition			
	Heat treatment		Delivery condition $+ \theta = 720 \text{ }^\circ\text{C} \pm 10 \text{ }^\circ\text{C} / t = 16 \text{ h} / \text{AC}$				-			

Characteristics

8.1	Test sample(s)		See EN 4700-2				See EN 4700-2									
8.2	Test piece(s)		See EN 4700-2				See EN 4700-2									
8.3	Heat treatment		Solution treated				Use condition									
9	Dimensions concerned	mm	$D_e \leq 100$				$D_e \leq 100$									
10	Thickness of cladding on each face	%	-				-									
11	Direction of test piece		-				See EN 4700-2									
12	Temperature	$\theta$	$^\circ\text{C}$		-				Ambient							
13	Proof stress	$R_{p0,2}$	MPa		-				$\geq 655$							
14	T Strength	$R_m$	MPa		-				$\geq 960$							
15	Elongation	$A$	%		-				$\geq 10$							
16	Reduction of area	$Z$	%		-				$\geq 15$							
17	Hardness		$\leq 201 \text{ HB}$				$277 \leq \text{HB} \leq 363$									
18	Shear strength	$R_c$	MPa		-				-							
19	Bending	$k$	-		-				-							
20	Impact strength		-				-									
21	Temperature	$\theta$	$^\circ\text{C}$		-				650							
22	Time		h		-				$t_R \geq 23$							
23	Stress	$\sigma_a$	MPa		-				-							
24	C Elongation	$a$	%		-				-							
25	Rupture stress	$\sigma_R$	MPa		-				450							
26	Elongation at rupture	$A$	%		-				$\geq 5$ for $t_R \leq 48 \text{ h}$ $\geq 3$ for $t_R > 48 \text{ h}$							
27	Notes (see line 98)		a													

34	Grain size	-	See EN 4700-2
		7	$G \geq 3$
44	External defects	-	See EN 4700-2
		1	Only visual is required
51	Macrostructure	-	See EN 4700-2
		7	To be defined on the order
61	Internal defects	-	See EN 4700-2
		7	Class 2
96	Marking inspection	-	See EN 4700-2
97	Dimensional inspection	-	See EN 4700-2
98	Notes	-	<sup>a</sup> p.p.m.
99	Typical use	-	-



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

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