BRITISH STANDARD

BS EN
4315:2007

Aerospace series — Heat resisting alloy FE-PA2601 (X6NiCrTiMoV26-15) — Solution treated and precipitation treated, bar and section a or D ≤ 100 mm, Rm ≥ 900 MPa

ICS 49.025.05

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British Standards

National foreword

This British Standard is the UK implementation of EN 4315:2007.

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.

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English Version

Aerospace series - Heat resisting alloy FE-PA2601 (X6NiCrTiMoV26-15) - Solution treated and precipitation treated, bar and section a or D ≤ 100 mm, Rm ≥ 900 MPa

Série aérospatiale - Alliage résistant à chaud FE-PA2601 (X6NiCrTiMoV26-15) - Mis en solution et précipité, barres et profilés a ou D ≤ 100 mm, Rm ≥ 900 MPa

Luft- und Raumfahrt - Hochwarmfeste Legierung FE-PA2601 (X6NiCrTiMoV26-15) - Lösungsgeglüht und ausgehärtet, Stangen und Profile a oder D ≤ 100 mm, Rm ≥ 900 MPa

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Foreword

This document (EN 4315:2007) 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 *a* or $D \leq 100$ mm, $R_m \geq 900$ 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)*[1)]

EN 2860-2, *Aerospace series — Heat resisting alloys — Forging stock and forgings — Technical specification — Part 2: Forging stock*[1)]

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*[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.

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[a]	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[a]	16,0	1,50	27,0	2,30	0,50	20[a]	
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	a or $D \leq 100$													
5	Technical specification		EN 4700-2													

6.1	Delivery condition	Solution treated	Solution treated and precipitation treated
	Heat treatment	θ = 980 °C ± 10 °C / $t \geq$ 1 h / OQ or WQ	θ = 980 °C ± 10 °C / $t \geq$ 1 h / OQ or WQ + θ = 720 °C ± 10 °C / $t \geq$ 16 h / AC
6.2	Delivery condition code	W	U
7	Use condition	Solution treated and precipitation treated	Delivery condition
	Heat treatment	Delivery condition + θ = 720 °C ± 10 °C / t = 16 h / 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	a or $D \leq 100$	a or $D \leq 100$
10	Thickness of cladding on each face			%	–	–
11	Direction of test piece				–	See EN 4700-2
12	T	Temperature	θ	°C	–	Ambient
13	T	Proof stress	$R_{p0,2}$	MPa	–	≥ 590
14	T	Strength	R_m	MPa	–	≥ 900
15	T	Elongation	A	%	–	≥ 13
16	T	Reduction of area	Z	%	–	≥ 20
17	Hardness				≤ 201 HB	248 ≤ HB ≤ 341
18	Shear strength		R_c	MPa	–	–
19	Bending		k	–	–	–
20	Impact strength				–	–
21	C	Temperature	θ	°C	–	650[b]
22	C	Time		h	–	$t_R \geq 23$
23	C	Stress	σ_a	MPa	–	–
24	C	Elongation	a	%	–	–
25	C	Rupture stress	σ_R	MPa	–	480
26	C	Elongation at rupture	A	%	–	≥ 5 for $t_R \leq$ 48 h ≥ 3 for $t_R >$ 48 h
27	Notes (see line 98)				a, b	

34	Grain size	–	See EN 4700-2
		7	G ≥ 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	–	[a] p.p.m. [b] Proportional round test piece.
99	Typical use	–	–

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

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