



SLOVENSKI STANDARD
SIST EN 4318:2007
01-november-2007

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Aerospace series - Heat resisting alloy FE-PA2601 (X6NiCrTiMoV26-15) - Solution treated and precipitation treated, bar and section De <= 100 mm, Rm >= 960 MPa

Luft- und Raumfahrt - Hochwarmfeste Legierung FE-PA2601 (X6NiCrTiMoV26-15) - Lösungsgeglüht und ausgehärtet, Stangen und Profile De <= 100 mm, Rm >= 960 MPa

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Série aérospatiale - Alliage résistant a chaud FE-PA2601 (X6NiCrTiMoV26-15) - Mis en solution et précipité, barres et profilés De <= 100 mm, Rm >= 960 MPa

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ICS:

49.025.05 Železove zlitine na splošno Ferrous alloys in general

SIST EN 4318:2007

en

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EUROPEAN STANDARD

EN 4318

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 2007

ICS 49.025.05

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 aéronautique - 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.

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

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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.

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 February 2008, and conflicting national standards shall be withdrawn at the latest by February 2008.

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 4500-3.

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)*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	$D_e \leq 100$													
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	θ	°C		-				Ambient							
13	Proof stress	$R_{p0,2}$	MPa		-				≥ 655							
14	T Strength	R_m	MPa		-				≥ 960							
15	Elongation	A	%		-				≥ 10							
16	Reduction of area	Z	%		-				≥ 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	θ	°C		-				650							
22	Time		h		-				$t_R \geq 23$							
23	Stress	σ_a	MPa		-				-							
24	C Elongation	a	%		-				-							
25	Rupture stress	σ_R	MPa		-				450							
26	Elongation at rupture	A	%		-				≥ 5 for $t_R \leq 48 \text{ h}$ ≥ 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
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96	Marking inspection	–	See EN 4700-2
97	Dimensional inspection	–	See EN 4700-2
98	Notes	–	^a p.p.m.
99	Typical use	–	–