

**Aerospace series – Steel FE-PM2701 (X2NiCoMo
18-8-5) – Vacuum induction melted and vacuum arc
remelted – Solution treated and precipitation
treated – Sheet and strip – $a \leq 6 \text{ mm}$ – $1\,750 \text{ MPa} \leq$
 $R_m \leq 2\,000 \text{ MPa}$**

Europastandarden EN 3531:2007 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 3531:2007.

The European Standard EN 3531:2007 has the status of a Swedish Standard. This document contains the official English version of EN 3531:2007.

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Telefon: 08 - 555 523 10. *Telefax:* 08 - 555 523 11
E-post: sis.sales@sis.se. *Internet:* www.sis.se

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English Version

**Aerospace series - Steel FE-PM2701 (X2NiCoMo18-8-5) -
Vacuum induction melted and vacuum arc remelted - Solution
treated and precipitation treated - Sheet and strip - $a \leq 6$ mm - 1
750 MPa $\leq R_m \leq 2\ 000$ MPa**

Série aérospatiale - Acier FE-PM2701 (X2NiCoMo18-8-5) -
Élaboré sous vide et refondu par arc sous vide - Mis en
solution et vieilli - Tôles et bandes - $a \leq 6$ mm - 1 750 MPa
 $\leq R_m \leq 2\ 000$ MPa

Luft- und Raumfahrt - Stahl FE-PM2701 (X2NiCoMo18-8-5)
- Vakuuminduktionserschmolzen und mit
selbstverzehrender Elektrode im Vakuum umgeschmolzen
- Lösungsgeglüht und ausgelagert - Bleche und Bänder - a
 ≤ 6 mm - 1 750 MPa $\leq R_m \leq 2\ 000$ 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.

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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 3531:2007) 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.

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-PM2701 (X2NiCoMo18-8-5)
Vacuum induction melted and vacuum arc remelted
Solution treated and precipitation treated
Sheet and strip
 $a \leq 6 \text{ mm}$
 $1\,750 \text{ MPa} \leq R_m \leq 2\,000 \text{ MPa}$

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 2951, *Aerospace series — Metallic materials — Test method — Micrographic determination of content of non-metallic inclusions*.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 4700-1, *Aerospace series — Steel and heat resisting alloys — Wrought products — Technical specification — Part 1: Plate, sheet and strip*.¹⁾

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

EN 3531:2007 (E)

1	Material designation		Steel FE-PM2701 (X2NiCoMo18-8-5)										
2	Chemical composition %	Element	C	Si	Mn	P	S	Mo	Ni	Al	Co	Ti	Fe
		min.	–	–	–	–	–	4,6	17,0	0,05	7,0	0,30	Base
		max.	0,03	0,10	0,10	0,010	0,010	5,2	19,0	0,15	8,5	0,60	
3	Method of melting		Vacuum induction melted and vacuum arc remelted										
4.1	Form		Sheet										
4.2	Method of production		Rolled										
4.3	Limit dimension(s)	mm	$a \leq 6$										
5	Technical specification		EN 4700-1										

6.1	Delivery condition		Solution treated										
	Heat treatment		$790\text{ °C} \leq \theta \leq 840\text{ °C} / AC$										
6.2	Delivery condition code		W										
7	Use condition		Solution treated and precipitation treated										
	Heat treatment		Delivery condition $+ 465\text{ °C} \leq \theta \leq 495\text{ °C} / t \geq 3\text{ h} / AC$										

Characteristics

8.1	Test sample(s)		See EN 4700-1.													
8.2	Test piece(s)		See EN 4700-1.													
8.3	Heat treatment		Solution treated					Use condition								
9	Dimensions concerned	mm	$a \leq 6$					$a \leq 3$		$3 < a \leq 6$						
10	Thickness of cladding on each face	%	–					–		–						
11	Direction of test piece		–					L		L						
12	Temperature	θ	°C		–					Ambient		Ambient				
13	Proof stress	$R_{p0,2}$	MPa		–					$\geq 1\ 650$		$\geq 1\ 650$				
14	T	Strength	R_m	MPa		–					$1\ 750 \leq R_m \leq 2\ 000$		$1\ 750 \leq R_m \leq 2\ 000$			
15		Elongation	A	%		–					$A_{50mm} \geq 3$		≥ 4			
16		Reduction of area	Z	%		–					–		–			
17	Hardness		$\leq 372\text{ HB}$					$510 \leq HV \leq 600$		$510 \leq HV \leq 600$						
18	Shear strength	R_c	MPa		–					–						
19	Bending	k	–		$3; \alpha = 180^\circ$					–						
20	Impact strength		–													
21	Temperature	θ	°C		–							–				
22	Time		h		–							–				
23	C	Stress	σ_a	MPa		–							–			
24		Elongation	a	%		–							–			
25		Rupture stress	σ_R	MPa		–							–			
26		Elongation at rupture	A	%		–							–			
27	Notes (see line 98)		–													