BRITISH STANDARD

BS EN
3479:2007

Aerospace series — Steel FE-PM1802 (X5CrNiCu15-5) — Consumable electrode remelted — Solution treated and precipitation treated — Plate — 6 mm < a ≤ 20 mm — 1 070 MPa ≤ Rm ≤ 1 220 MPa

The European Standard EN 3479:2007 has the status of a British Standard

ICS 49.025.10

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British Standards

National foreword

This British Standard was published by BSI. It is the UK implementation of EN 3479:2007.

The UK participation in its preparation was entrusted by Technical Committee ACE/61, Metallic materials for aerospace purposes, to Panel ACE/61/-/15, Steels.

A list of organizations represented on ACE/61/-/15 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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English Version

Aerospace series - Steel FE-PM1802 (X5CrNiCu15-5) - Consumable electrode remelted - Solution treated and precipitation treated - Plate - 6 mm < a ≤ 20 mm - 1 070 MPa ≤ Rm ≤ 1 220 MPa

Série aérospatiale - Acier FE-PM1802 (X5CrNiCu15-5) - Refondu à l'électrode consommable - Mis en solution et vieilli - Plaques 6 mm < a ≤ 20 mm - 1 070 MPa ≤ Rm ≤ 1 220 MPa

Luft- und Raumfahrt - Stahl FE-PM1802 (X5CrNiCu15-5) - Mit selbstverzehrender Elektrode umgeschmolzen - Lösungsgeglüht und ausgelagert - Platten - 6 mm < a ≤ 20 mm - 1 070 MPa ≤ Rm ≤ 1 220 MPa

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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

Foreword

This document (EN 3479:2007) 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of an identical text or by endorsement, at the latest by September 2007, and conflicting national standards shall be withdrawn at the latest by September 2007.

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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-PM1802 (X5CrNiCu15-5)
Consumable electrode remelted
Solution treated and precipitation treated
Plate
6 mm < a ≤ 20 mm
1 070 MPa ≤ R_m ≤ 1 220 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 4050-4, *Aerospace series — Test method for metallic materials — Ultrasonic inspection of bars, plates, forging stock and forgings — Part 4: Acceptance criteria.* [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 alloy — Wrought products — Technical specification — Part 1: Plate, sheet and strip*. [1)]

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

1	Material designation		Steel FE-PM1802 (X5CrNiCu15-5)										
2	Chemical composition %	Element	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	Nb + Ta	Fe
		min.	–	–	–	–	–	14,0	–	3,5	2,5	5 × C	Base
		max.	0,07	1,00	1,00	0,030	0,005	15,5	0,50	5,5	4,5	0,45	
3	Method of melting		Consumable electrode remelted										
4.1	Form		Plate										
4.2	Method of production		–										
4.3	Limit dimension(s)	mm	$6 < a \leq 20$										
5	Technical specification		EN 4700-1										

6.1	Delivery condition	Solution treated	Solution treated and precipitation treated
	Heat treatment	1 025 °C ≤ θ ≤ 1 055 °C / t ≥ 30 min / AC or faster + cool to θ ≤ 30 °C	1 025 °C ≤ θ ≤ 1 055 °C / t ≥ 30 min / AC or faster + cool to θ ≤ 30 °C + 535 °C ≤ θ ≤ 565 °C / t ≥ 4 h / AC
6.2	Delivery condition code	W	U
7	Use condition	Solution treated and precipitation treated	Delivery condition
	Heat treatment	Delivery condition + 535 °C ≤ θ ≤ 565 °C / t ≥ 4 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	$6 < a \leq 20$	$6 < a \leq 20$		
10	Thickness of cladding on each face		%	–	–	–	
11	Direction of test piece			–	L	T	
12	T	Temperature	θ	°C	–	Ambient	Ambient
13	T	Proof stress	$R_{p0,2}$	MPa	–	≥ 1 000	≥ 1 000
14	T	Strength	R_m	MPa	–	1 070 ≤ R_m ≤ 1 220	1 070 ≤ R_m ≤ 1 220
15	T	Elongation	A	%	–	≥ 11	≥ 7
16	T	Reduction of area	Z	%	–	≥ 45	≥ 27
17	Hardness				HB ≤ 363	321 ≤ HB ≤ 375	321 ≤ HB ≤ 375
18	Shear strength		R_c	MPa	–	–	–
19	Bending		k	–	–	–	–
20	Impact strength				Impact strength + KV ≥ 25 J	KV ≥ 80 J; Notch direction T + KV ≥ 35 J, at – 30 °C; Notch direction T	KV ≥ 55 J; Notch direction L + KV ≥ 25 J, at – 30 °C; Notch direction L
21	C	Temperature	θ	°C	–		
22	C	Time		h	–		
23	C	Stress	σ_a	MPa	–		
24	C	Elongation	a	%	–		
25	C	Rupture stress	σ_R	MPa	–		
26	C	Elongation at rupture	A	%	–		
27	Notes (see line 98)				–		

30	Microstructure	–	See EN 4700-1.
		7	The δ ferrite content shall not exceed 2 %
34	Grain size	–	See EN 4700-1.
		7	G ≥ 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 4
61	Internal defects	–	See EN 4700-1.
		1	EN 4050-4
		7	Class 3
95	Marking inspection	–	See EN 4700-1.
96	Dimensional inspection	–	See EN 4700-1.
98	Notes	–	–
99	Typical use	–	–

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

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W4 4AL