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**Aeronavtika - Toplotno odporna zlitina FE-PM1708 - Obločno pretaljeno v vakuumu - Toplotno neobdelana (nekovana) - Kovni material - De ≤ 300 mm**

Aerospace series - Heat resisting alloy FE-PM1708 - Vacuum arc remelted - As forged - Forging stock - De ≤ 300 mm

Luft- und Raumfahrt - Hochwarmfeste Legierung FE-PM1708 - Lichtbogenvakuumschmelzen - Schmiedezustand - Schmiedevormaterial - De ≤ 300 mm

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Série aérospatiale - Alliage résistant à chaud FE-PM1708 - Refondu sous vide par arc - Non traité - Produits destinés à la forge - De ≤ 300 mm

<https://standards.iteh.ai/catalog/standards/sist/81460fd2-8379-4ffb-9dfb-57202d7026f6/sist-en-4245-2020>

**Ta slovenski standard je istoveten z: EN 4245:2020**

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**ICS:**

49.025.05      Železove zlitine na splošno      Ferrous alloys in general

**SIST EN 4245:2020**

**en,fr,de**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 4245**

February 2020

ICS 49.025.99

English Version

**Aerospace series - Heat resisting alloy FE-PM1708 -  
Vacuum arc remelted - As forged - Forging stock -  $De \leq 300$   
mm**

Série aérospatiale - Alliage résistant à chaud FE-  
PM1708 - Refondu sous vide par arc - Brut de forge -  
Produits destinés à la forge -  $De \leq 300$  mm

Luft- und Raumfahrt - Hochwarmfeste Legierung FE-  
PM1708 - Lichtbogenvakuumerschmolzen -  
Schmiedezustand - Schmiedevormaterial -  $De \leq 300$   
mm

This European Standard was approved by CEN on 18 November 2019.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## European foreword

This document (EN 4245:2020) 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 August 2020, and conflicting national standards shall be withdrawn at the latest by August 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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EN 4245:2020 (E)

## Introduction

This document 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 document has been prepared in accordance with EN 4500-003.

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## 1 Scope

This document specifies the requirements relating to:

Heat resisting alloy FE-PM1708  
Vacuum arc remelted  
As forged  
Forging stock  
 $D_e \leq 300$  mm

for aerospace applications.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 2860-2, *Aerospace series — Heat resisting alloys — Forging stock and forgings — Technical specification — Part 2: Forging stock* <sup>1)</sup>

EN 2957, *Aerospace series — Method of preparation of forged samples*

## 3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

## 4 Requirements

See Table 1.

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1) Published as ASD-STAN Standard at the date of publication of this document by AeroSpace and Defence industries Association of Europe — Standardization (ASD-STAN), <http://www.asd-stan.org/>

## EN 4245:2020 (E)

Table 1 — Requirements for heat resisting alloy FE-PM1708

1	Material designation		Heat resisting alloy FE-PM1708														
2	Chemical composition %	Element	C	Si	Mn	P	S	B	Co	Cr	Mo	Nb	Ni	N <sub>2</sub>	V	Nb + 2 V 9C	Fe
		min.	0,060	0,10	0,60	—	—	40*)	5,00	9,80	0,50	0,20	0,20	0,010	0,10	—	Base
		max.	0,11	0,70	1,15	0,030	0,020	120*)	7,00	11,2	1,00	0,48	0,80	0,035	0,35	1,40	
3	Method of melting		Vacuum arc remelted														
4.1	Form		Forging stock														
4.2	Method of production		—														
4.3	Limit dimension(s)	mm	$D_e \leq 300$														
5	Technical specification		EN 2860-2														

6.1	Delivery condition	As forged															
	Heat treatment	—															
6.2	Delivery condition code	<i>U</i>															
7	Use condition	Delivery condition															
	Heat treatment	—															

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Characteristics  
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8.1	Test sample(s)		In accordance with EN 2957															
8.2	Test piece(s)		SIST EN 4245:2020 —															
8.3	Heat treatment		Reference heat treatment: see line 29															
9	Dimensions concerned	mm	$D_e \leq 125$							$D_e > 125$								
10	Thickness of cladding on each face	%	—															
11	Direction of test piece		<i>L</i>							<i>T</i>								
12	Temperature	$\theta$	°C	Ambient							Ambient							
13	Proof stress	$R_{p0,2}$	MPa	$\geq 880$							$\geq 880$							
14	T Strength	$R_m$	MPa	$1\ 000 \leq R_m \leq 1\ 140$							$1\ 000 \leq R_m \leq 1\ 140$							
15	Elongation	<i>A</i>	%	$\geq 12$							$\geq 8$							
16	Reduction of area	<i>Z</i>	%	$\geq 40$							$\geq 30$							
17	Hardness	HB		$321 \leq HB \leq 352$							$321 \leq HB \leq 352$							
18	Shear strength	$R_c$	MPa	—														
19	Bending	<i>k</i>	—	—														
20	Impact strength	—	J	—														
21	Temperature	$\theta$	°C	590														
22	Time	h		$t_R \geq 60$														
23	Stress	$\sigma_a$	MPa	—														
24	C Elongation	<i>a</i>	%	—														
25	Rupture stress	$\sigma_R$	MPa	400														
26	Elongation at rupture	<i>A</i>	%	—														
27	Notes (see line 98)		*)															



29	Reference heat treatment	—	Quenched and tempered 1 170 °C ± 10 °C/t ≥ 30 min/OQ + 610 °C ± 5 °C/2 h ≤ t ≤ 5 h/AC + 610 °C ≤ θ ≤ 640 °C/2 h ≤ t ≤ 5 h/AC		
44	External imperfections (visual testing – VT)	—	See EN 2860-2		
51	Macrostructure	—	See EN 2860-2		
		7	To be defined on the order		
61	Internal imperfections (ultrasonic testing – UT)	—	See EN 2860-2		
		7	$D_e \leq 150$ mm	150 mm < $D_e$ < 250 mm	$D_e > 250$ mm
			Class 5	Class 4	Class 3
97	Designation	—	See the relevant drawing		
98	Notes	—	*) p.p.m.		
99	Typical use	—	—		
100	Product qualification	—	—		
			Qualification programme to be agreed between manufacturer and purchaser.		

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