SLOVENSKI STANDARD

SIST EN 4098:2007

01-november-2007

Aeronavtika - Jeklo FE-PL1507 (40CrMoV12) - Pretaljeni, utrjeni in mehko žarjeni izkovki De <= 50 mm, 1 250 MPa <= Rm <= 1 400 MPa

Aerospace series - Steel FE-PL1507 (40CrMoV12) - Remelted, hardened and tempered, forgings De <= 50 mm, 1 250 MPa <= Rm <= 1 400 MPa

Luft- und Raumfahrt - Stahl FE-PL1507 (40CrMoV12) - Umgeschmolzen, gehärtet und angelassen, Gesenk- und Freiformschmiedestücke De <= 50 mm, 1 250 MPa <= Rm <= 1 400 MPa

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Série aérospatiale - Acier FE-PL1507 (40CrMoV12) - Refondu, durci par trempe et revenu, pieces forgées et pieces matricées De <= 50 mm, 1 250 MPa <= Rm <= 1 400 MPa

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Ta slovenski standard je istoveten z: **EN 4098:2007**

ICS:

49.025.10 Jekla Steels

SIST EN 4098:2007 **en**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 4098

August 2007

ICS 49.025.10

English Version

Aerospace series - Steel FE-PL1507 (40CrMoV12) - Remelted, hardened and tempered, forgings De ≤ 50 mm, 1 250 MPa ≤ Rm ≤ 1 400 MPa

Série aérospatiale - Acier FE-PL1507 (40CrMoV12) - Refondu, durci par trempe et revenu, pièces forgées et pièces matricées De ≤ 50 mm, 1 250 MPa ≤ Rm ≤ 1 400 MPa

Luft- und Raumfahrt - Stahl FE-PL1507 (40CrMoV12) - Umgeschmolzen, gehärtet und angelassen, Gesenk- und Freiformschmiedestücke De ≤ 50 mm, 1 250 MPa ≤ Rm ≤ 1 400 MPa

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

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Foreword

This document (EN 4098:2007) 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of an identical text or by endorsement, at the latest by February 2008, and conflicting national standards shall be withdrawn at the latest by February 2008.

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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-PL1507 (40CrMoV12) — Remelted, hardened and tempered, forgings $D_e \leq 50$ mm, 1 250 MPa $\leq R_m \leq$ 1 400 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.

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EN 2157-3, *Aerospace series — Steel — Forging stock and forgings — Technical specification — Part 3: Pre-production and production forgings*

EN 3971, *Aerospace series — Steel FE-PL 1507 (40CrMoV12), consumable ecetrode remelted, annealed — Forging stock, a or $D \leq 350$ mm*

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EN 4258, *Aerospace series — Metallic materials — General organization of standardization — Links between types of EN standards and their use*

EN 4436, *Aerospace series — Steel — Test methods — Determination of δ ferrite content*[1)]

EN 4500-5, *Aerospace series — Metallic materials — Rules for drafting and presentation of material standards — Part 5: Specific rules for steels*[1)]

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

1	Material designation		Steel FE-PL1507 (40CrMoV12)										
2	Chemical composition %	Element	C	Si	Mn	P[a]	S	Cr	Mo	Ni	Sn[a]	V	Fe
		min.	0,35	0,10	0,40	–	–	3,00	0,80	–	–	0,15	Base
		max.	0,43	0,35	0,70	0,015	0,010	3,50	1,10	0,30	0,025	0,25	
3	Method of melting		Consumable electrode remelted										
4.1	Form		Forgings										
4.2	Method of production		Forged from forging stock EN 3971										
4.3	Limit dimension(s)	mm	$D_e \leq 50$										
5	Technical specification		EN 2157-3										

6.1	Delivery condition	Normalized and annealed	Hardened and tempered
	Heat treatment	910 °C / AC + 750 °C / AC or OQ	920 °C ≤ θ ≤ 940 °C / OQ + θ ≥ 600 °C / OQ or AQ
6.2	Delivery condition code	A	U
7	Use condition	Hardened and tempered	Delivery condition
	Heat treatment	920 °C ≤ θ ≤ 940 °C / OQ + θ ≥ 600 °C / OQ or AQ	–

Characteristics

8.1	Test sample(s)			See EN 2157-3	
8.2	Test piece(s)			See EN 2157-3	
8.3	Heat treatment			Normalized and annealed	Use condition
9	Dimensions concerned		mm	–	$D_e \leq 50$
10	Thickness of cladding on each face		%	–	–
11	Direction of test piece			–	L
12	T	Temperature	θ °C	Ambient	Ambient
13	T	Proof stress	$R_{p0,2}$ MPa	–	≥ 1 030
14	T	Strength	R_m MPa	–	1 250 ≤ R_m ≤ 1 400
15	T	Elongation	A %	–	≥ 10
16	T	Reduction of area	Z %	–	≥ 35
17	Hardness			≤ 277 HB	375 ≤ HB ≤ 401
18	Shear strength	R_c	MPa	–	–
19	Bending	k	–	–	–
20	Impact strength			–	KV ≥ 30 J; Notch direction T[b c]
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)			a, b, c	

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34	Grain size	–	See EN 2157-3
		2	First article
		7	$G \geq 7$
44	External defects	–	See EN 2157-3
51	Macrostructure (Grain flow)	–	See EN 2157-3
		2	First article
82	Batch uniformity	–	See EN 2157-3
95	Marking inspection	–	See EN 2157-3
96	Dimensional inspection	–	See EN 2157-3
98	Notes	–	[a] P + Sn ≤ 0,025 [b] Value after blank nitriding: 500 °C ± 10 °C / t = 24 h. The ”capability clause“ applies. [c] IZOD is optional test and shall achieve 20 Ft. lbf minimum.
99	Typical use	–	Low alloy general purpose steel; suitable for nitriding

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