SLOVENSKI STANDARD
SIST EN 4379:2009

01-april-2009

Aeronavtika - Zlitina NI-PH3601 (NiCr22Mo9Nb), odporna proti vroļ ini - Topilno ģarjenje, odkovki in utopno kovani odkovki De Ò200 mm

Aerospace series - Heat resisting alloy NI-PH3601 (NiCr22Mo9Nb) - Solution treated, forging De Ò200 mm

Luft- und Raumfahrt - Hochwarmfeste Legierung NI-PH3601 (NiCr22Mo9Nb) - Lº sungsgegl¿ht, Schmiedest¿cke und Gesenkschmiedest¿cke De Ò200 mm

S®rie a®rospatiale - Alliage r®sistant ¨ chaud NI-PH3601 (NiCr22Mo9Nb) - Mis en solution, pi¯ces forg®es et pi¯ces matric®es De Ò200 mm

Ta slovenski standard je istoveten z: **EN 4379:2007**

ICS:

49.025.15	Neželezove zlitine na splošno	Non-ferrous alloys in general

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EUROPEAN STANDARD

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English Version

Aerospace series - Heat resisting alloy NI-PH3601 (NiCr22Mo9Nb) - Solution treated, forging De ≤ 200 mm

Série aérospatiale - Alliage résistant à chaud NI-PH3601 (NiCr22Mo9Nb) - Mis en solution, pièces forgées et pièces matricées De ≤ 200 mm

Luft- und Raumfahrt - Hochwarmfeste Legierung NI-PH3601 (NiCr22Mo9Nb) - Lösungsgeglüht, Schmiedestücke und Gesenkschmiedestücke De ≤ 200 mm

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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

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Foreword

This document (EN 4379:2007) 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of an identical text or by endorsement, at the latest by May 2008, and conflicting national standards shall be withdrawn at the latest by May 2008.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 4500-3.

1 Scope

This standard specifies the requirements relating to:

Heat resisting alloy NI-PH3601 (NiCr22Mo9Nb) — Solution treated, forging $D_e \leq 200$ mm

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 2860-3, *Aerospace series — Heat resisting alloys — Forging stock and forgings — Technical specification — Part 3: Pre-production and production forgings*[1)]

EN 3671, *Aerospace series — Heat resisting alloy NI-PH3601 (NiCr22Mo9Nb), non heat treated — Forging stock — a or $D \leq 250$ mm*[1)]

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

EN 4500-3, *Aerospace Metallic materials — Rules for drafting and presentation of material standards — Part 3: Specific rules for heat resisting alloys*[1)]

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

1	Material designation		Heat resisting alloy NI-PH3601 (NiCr22Mo9Nb)							
2	Chemical composition %	Element	C	Si	Mn	P	S	Al	Co	Cr
		min.	–	–	–	–	–	–	–	20,0
		max.	0,10	0,50	0,50	0,015	0,015	0,40	1,00	23,0
		Element	Fe	Mo	Nb+Ta	Ti	Ag	Bi	Pb	Ni
		min.	–	8,00	3,15	–	–	–	–	Base
		max.	5,00	10,0	4,15	0,40	5[a]	1[a]	10[a]	
3	Method of melting		Consumable electrode remelted							
4.1	Form		Forging							
4.2	Method of production		Forged from forging stock EN 3671							
4.3	Limit dimension(s)	mm	$D_e \leq 200$							
5	Technical specification		EN 2860-3							

6.1	Delivery condition	Solution treated
	Heat treatment	950 °C ≤ θ = ≤ 1 040 °C / t ≥ 1 h / AC or faster
6.2	Delivery condition code	U
7	Use condition	Delivery condition
	Heat treatment	–

Characteristics

8.1	Test sample(s)			See EN 2860-3.	
8.2	Test piece(s)			See EN 2860-3.	
8.3	Heat treatment			Delivery condition	
9	Dimensions concerned		mm	$D_e \leq 100$	100 < $D_e \leq 200$
10	Thickness of cladding on each face		%	–	–
11	Direction of test piece			See EN 2860-3.	See EN 2860-3.
12	T	Temperature	θ °C	Ambient	Ambient
13	T	Proof stress	$R_{p0,2}$ MPa	≥ 410	≥ 340
14	T	Strength	R_m MPa	≥ 830	≥ 760
15	T	Elongation	A %	≥ 30	≥ 30
16	T	Reduction of area	Z %	–	
17	Hardness			≤ 290 HB	
18	Shear strength	R_c	MPa	–	
19	Bending	k	–	–	
20	Impact strength			–	
21	C	Temperature	θ °C	815	
22	C	Time	h	$t_R \geq 23$	
23	C	Stress	σ_a MPa	–	
24	C	Elongation	a %	–	
25	C	Rupture stress	σ_R MPa	114	
26	C	Elongation at rupture	A %	> 15	
27	Notes (see line 98)			a	

33	Grain size	–	See EN 2860-3.	
		7	$D \leq 100$ mm	$D > 100$ mm
			$G \geq 4$; $2 \leq G < 4$ accepted up to 5 % max. area	$G \geq 3$; $1 \leq G \leq 3$ accepted up to 10 % max. area
44	External defects	–	See EN 2860-3.	
		7	No cracks, laps, fold.	
95	Marking inspection	–	See EN 2860-3.	
96	Dimensional inspection	–	See EN 2860-3.	
98	Notes	–	[a] p.p.m	
99	Typical use	–	–	