SLOVENSKI STANDARD
SIST EN 4382:2009

01-maj-2009

Aeronavtika - Zlitina NI-PH3601 (NiCr22Mo9Nb), odporna proti vroļ ini - Topilno ģarjenje - Nevarjene (narejene iz celega) cevi - Za uporabo v hidravliļ ne namene - D Ò50 mm, a Ò3 mm

Aerospace series - Heat resisting alloy NI-PH3601 (NiCr22Mo9Nb) - Solution treated - Seamless tubes - For hydraulic application - D Ò50 mm, a Ò3 mm

Luft- und Raumfahrt - Hochwarmfeste Legierung NI-PH3601 (NiCr22Mo9Nb) - Lº sungsgegl¿ht - Rohr, nachtlos - F¿r hydraulische Anwendungen - D Ò50 mm, a Ò3 mm

S®rie a®rospatiale - Alliage r®sistant ¨ chaud NI-PH3601 (NiCr22Mo9Nb) - Mis en solution - Tube sans soudure - Pour application hydraulique - D Ò50 mm, a Ò3 mm

Ta slovenski standard je istoveten z: **EN 4382:2006**

ICS:

49.025.99	Drugi materiali	Other materials

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 4382

December 2006

ICS 49.025.99

English Version

Aerospace series - Heat resisting alloy NI-PH3601 (NiCr22Mo9Nb) - Solution treated - Seamless tubes - For hydraulic application - D ≤ 50 mm, a ≤ 3 mm

Série aérospatiale - Alliage résistant à chaud NI-PH3601 (NiCr22Mo9Nb) - Mis en solution - Tube sans soudure - Pour application hydraulique - D ≤ 50 mm, a ≤ 3 mm

Luft- und Raumfahrt - Hochwarmfeste Legierung NI-PH3601 (NiCr22Mo9Nb) - Lösungsgeglüht - Rohr, nachtlos - Für hydraulische Anwendungen - D ≤ 50 mm, a ≤ 3 mm

This European Standard was approved by CEN on 18 October 2006.

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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 Central Secretariat has the same status as the official versions.

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

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Foreword

This document (EN 4382:2006) 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 June 2007, and conflicting national standards shall be withdrawn at the latest by June 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 4500-3.

1 Scope

This standard specifies the requirements relating to:

Heat resisting alloy NI-PH3601 (NiCr22Mo9Nb)
Solution treated
Seamless tubes
For hydraulic application
$D \leq 50$ mm, $a \leq 3$ 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 2002-20, *Aerospace series — Test methods for metallic materials — Part 20: Eddy current testing of circular cross-section tubes.* [1)]

EN 2043, *Aerospace series — Metallic materials — General requirements for semi-finished product qualification (excluding forgings and castings).* [1)]

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

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

EN 4700-3, *Aerospace series — Steel and heat resisting alloys — Wrought products — Technical specification — Part 3: Tube.* [1)]

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

EN 4382:2006 (E)

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		Tube							
4.2	Method of production		Drawn							
4.3	Limit dimension(s)	mm	$D \leq 50$, $a \leq 3$							
5	Technical specification		EN 4700-3							

6.1	Delivery condition	Solution treated
	Heat treatment	930 °C ≤ θ ≤ 1 075 °C / t ≥ 5 min / AC or faster
6.2	Delivery condition code	U
7	Use condition	Delivery condition
	Heat treatment	–

8.1	Test sample(s)				See EN 4700-3.
8.2	Test piece(s)				See EN 4700-3.
8.3	Heat treatment				Delivery condition
9	Dimensions concerned			mm	$D \leq 50$, $a \leq 3$
10	Thickness of cladding on each face			%	–
11	Direction of test piece				L
12	T	Temperature	θ	°C	Ambient
13	T	Proof stress	$R_{p0,2}$	MPa	≥ 410
14	T	Strength	R_m	MPa	≥ 830
15	T	Elongation	A	%	≥ 35
16	T	Reduction of area	Z	%	–
17	Hardness				≤ 260 HV
18	Shear strength		R_c	MPa	–
19	Bending		k	–	–
20	Impact strength				–
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

33	Flattening of tubes	–	See EN 4700-3.	
41	Flarability	–	See EN 4700-3.	
44	External defects	–	See EN 4700-3.	
		1	Visual examination	Eddy current: see EN 2002-20.
		7	–	No indication ≥ 0,2 mm
55	Deformation under pressure of tubes	–	See EN 4700-3.	
95	Marking inspection	–	See EN 4700-3.	
96	Dimensional inspection	–	See EN 4700-3.	
98	Notes	–	[a] p.p.m.	
99	Typical use	–	–	

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