SLOVENSKI STANDARD
SIST EN 4374:2023

01-marec-2023

Aeronavtika - Toplotno odporna zlitina NI-PH1301 (NiCr19Co18Mo4Ti3Al3) - Topilno žarjena in izločevalno utrjena - Palice in profili - De ≤ 200 mm

Aerospace series - Heat-resisting alloy NI-PH1301 (NiCr19Co18Mo4Ti3Al3) - Solution treated and precipitation treated - Bars and sections - De ≤ 200 mm

Luft- und Raumfahrt - Hochwarmfeste Legierung NI-PH1301 (NiCr19Co18Mo4Ti3Al3) - Lösungsgeglüht und ausscheidungsgehärtet - Stangen und Profile - De ≤ 200 mm

Série aérospatiale - Alliage résistant à chaud NI-PH1301 (NiCr19Co18Mo4Ti3Al3) - Mis en solution et précipité - Barres et profilés - De ≤ 200 mm

Ta slovenski standard je istoveten z: **EN 4374:2022**

ICS:

49.025.99	Drugi materiali	Other materials
77.140.60	Jeklene palice in drogovi	Steel bars and rods

SIST EN 4374:2023 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 4374

December 2022

ICS 49.025.99

English Version

Aerospace series - Heat-resisting alloy NI-PH1301 (NiCr19Co18Mo4Ti3Al3) - Solution treated and precipitation treated - Bars and sections - De ≤ 200 mm

Série aérospatiale - Alliage résistant à chaud NI-PH1301 (NiCr19Co18Mo4Ti3Al3) - Mis en solution et précipité - Barres et profilés - De ≤ 200 mm

Luft- und Raumfahrt - Hochwarmfeste Legierung NI-PH1301 (NiCr19Co18Mo4Ti3Al3) - Lösungsgeglüht und ausscheidungsgehärtet - Stangen und Profile - De ≤ 200 mm

This European Standard was approved by CEN on 24 July 2022.

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, Türkiye 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

Ref. No. EN 4374:2022 E

Contents

Page

European foreword

This document (EN 4734:2022) 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 document has received the approval of the National Associations and the Official Services of the member countries of ASD-STAN, 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 2023, and conflicting national standards shall be withdrawn at the latest by June 2023.

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.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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, Türkiye and the United Kingdom.

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.

1 Scope

This document specifies the requirements relating to:

Heat-resisting alloy NI-PH1301 (NiCr19Co18Mo4Ti3Al3)
Solution treated and precipitation treated
Bars and sections
$D_e \leq 200$ 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 2043, *Aerospace series — Metallic materials — General requirements for semi-finished product qualification (excluding forgings and castings)*

EN 4700-002, *Aerospace series — Steel and heat resisting alloys — Wrought products — Technical specification — Part 002: Bars and sections*

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 https://www.iso.org/obp
— IEC Electropedia: available at https://www.electropedia.org/

4 Requirements

According to Table 1.

Table 1 — Requirements for heat-resisting alloy NI-PH1301 (NiCr19Co18Mo4Ti3Al3)

1	Material designation		Heat-resisting alloy NI-PH1301 (NiCr19Co18Mo4Ti3Al3)																	
2	Chemical composition %	Element	C	Si	Mn	P	S	Al	B	Co	Cr	Cu	Fe	Mo	Ti	Zr	Ag	Bi	Pb	Ni
		min.	0,03	—	—	—	—	2,50	20*	13	15	—	—	3,00	2,50	—	—	—	—	Base
		max.	0,12	0,75	0,75	0,015	0,015	3,25	80*	20,0	20,0	0,10	4,00	5,00	3,25	0,060	5*	0,5*	5*	
3	Method of melting		Consumable electrode remelted																	
4.1	Form		Bars and sections																	
4.2	Method of production		Wrought																	
4.3	Limit dimension(s)	mm	$D_e \leq 200$																	
5	Technical specification		EN 4700-002																	

6.1	Delivery condition	Solution treated
	Heat treatment	$\theta = 1\,175$ °C ± 10 °C/$t = 2$ h/AC + $\theta = 1\,080$ °C ± 10 °C/$t = 1$ h/AC or faster
6.2	Delivery condition code	W
7	Use condition	Solution treated and precipitation treated
	Heat treatment	Delivery condition + $\theta = 850$ °C ± 10 °C/$t = 24$ h/AC + $\theta = 760$ °C ± 10 °C/$t = 16$ h/AC

Characteristics

8.1	Test sample(s)				According to EN 4700-002.
8.2	Test piece(s)				According to EN 4700-002.
8.3	Heat treatment				Use condition
9	Dimensions concerned			mm	$D_e \leq 200$
10	Thickness of cladding on each face			%	—
11	Direction of test piece				According to EN 4700-002.
12	T	Temperature	θ	°C	—
13	T	Proof stress	$R_{p0,2}$	MPa	—
14	T	Strength	R_m	MPa	—
15	T	Elongation	A	%	—
16	T	Reduction of area	Z	%	—
17	Hardness			HB	≥ 340
18	Shear strength		R_c	MPa	—
19	Bending		k	—	—
20	Impact strength				—
21	C	Temperature	θ	°C	815
22	C	Time		h	$t_R \geq 30$
23	C	Stress	σ_a	MPa	—
24	C	Elongation	a	%	—
25	C	Rupture stress	σ_R	MPa	370
26	C	Elongation at rupture	A	%	≥ 8
27	Notes (see line 98)				*

30	Microstructure	—	According to EN 4700-002.
		2	The “capability clause” applies.
		7	Homogeneous structure – No pronounced segregation
34	Grain size	—	According to EN 4700-002.
		7	$G \geq 2, 0 \leq G < 2$ accepted up to 5 % max. area
44	External imperfections	—	According to EN 4700-002.
51	Macrostructure	—	According to EN 4700-002.
		7	No harmful imperfections.
61	Internal imperfections	—	According to EN 4700-002.
		7	Class 3
95	Marking inspection	—	According to EN 4700-002.
96	Dimensional inspection	—	According to EN 4700-002.
98	Notes	—	* p.p.m.
99	Typical use	—	—

100	—	Product qualification	—	According to EN 2043.
				Qualification programme shall be agreed between manufacturer and purchaser.