



SLOVENSKI STANDARD

SIST EN 4572:2020

01-april-2020

Aeronavtika - Toplotno odporna zlitina X12CrNiCoMoW21-20 - Topilno žarjena - Pločevina in trakovi - $a \leq 3$ mm

Aerospace series - Heat resisting alloy X12CrNiCoMoW21-20 - Solution treated - Sheets and strips - $a \leq 3$ mm

Luft- und Raumfahrt - Hochwarmfeste Legierung X12CrNiCoMoW21-20 - Lösungsgeglüht - Bleche und Bänder - $a \leq 3$ mm

Série aérospatiale - Alliage résistant à chaud X12CrNiCoMoW21-20 - Mis en solution - Tôles et bandes - $a \leq 3$ mm

<https://standards.iteh.ai/catalog/standards/sist/b370e10d-f87b-49ea-8447-69972647432/en-en-4572-2020>

Ta slovenski standard je istoveten z: EN 4572:2020

ICS:

49.025.05 Železove zlitine na splošno Ferrous alloys in general

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EUROPEAN STANDARD

EN 4572

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2020

ICS 49.025.05

English Version

Aerospace series - Heat resisting alloy X12CrNiCoMoW21-20 - Solution treated - Sheets and strips - $a \leq 3$ mm

Série aérospatiale - Alliage résistant à chaud
X12CrNiCoMoW21-20 - Mis en solution - Tôles et
bandes - $a \leq 3$ mm

Luft- und Raumfahrt - Hochwarmfeste Legierung
X12CrNiCoMoW21-20 - Lösungsgeglüht - Bleche und
Platten - $a \leq 3$ mm

This European Standard was approved by CEN on 8 December 2019.

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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 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 4572:2020) 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 4572:2020 (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 X12CrNiCoMoW21-20
Solution treated
Sheets and strips
 $a \leq 3 \text{ mm}$

for aerospace applications.

ASD-STAN designation: FE-PA4901.

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 4700-001, *Aerospace series — Steel and heat resisting alloys — Wrought products — Technical specification — Part 001: Plate, sheet and strip*

3 Terms and definitions (standards.iteh.ai)

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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Table 1 — Requirements for heat resisting alloy X12CrNiCoMoW21-20

1	Material designation		Heat resisting alloy X12CrNiCoMoW21-20													
2	Chemical composition %	Element	C	Si	Mn	P	S	Co	Cr	Cu	Mo	Nb	Ni	N ₂	W	Fe
		min.	0,08	—	1,00	—	—	18,5	20,0	—	2,50	0,75	19,0	0,10	2,00	Base
		max.	0,16	1,00	2,00	0,020	0,015	21,0	22,5	0,50	3,50	1,25	21,0	0,20	3,00	
3	Method of melting		Air or vacuum melted													
4.1	Form		Sheets and strips													
4.2	Method of production		Cold rolled													
4.3	Limit dimension(s)	mm	$a \leq 3$													
5	Technical specification		EN 4700-001													

6.1	Delivery condition		Solution treated													
	Heat treatment		$1\ 100\ ^\circ\text{C} \leq \theta \leq 1\ 180\ ^\circ\text{C} / t = 10\ \text{min/AC}$													
6.2	Delivery condition code		U													
7	Use condition		Delivery condition													
	Heat treatment		—													

Characteristics

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8.1	Test sample(s)		Cut from sheet or strip														
8.2	Test piece(s)		See EN 4700-001.														
8.3	Heat treatment		Delivery condition														
9	Dimensions concerned	mm	$1,3 < a \leq 3$														
10	Thickness of cladding on each face	%	—														
11	Direction of test piece		See EN 4700-1.							See EN 4700-1.							
12	Temperature	θ	°C	Ambient							Ambient						
13	Proof stress	$R_{p0,2}$	MPa	≥ 305							≥ 305						
14	T Strength	R_m	MPa	$690 \leq R_m \leq 880$							$690 \leq R_m \leq 880$						
15	Elongation	A	%	$A_{50\ \text{mm}} \geq 40^a$							$A_{50\ \text{mm}} \geq 40$						
16	Reduction of area	Z	%	—							—						
17	Hardness	HV		≤ 235							≤ 235						
18	Shear strength	R_c	MPa	—							—						
19	Bending	k	—	$0,5; \alpha = 180^\circ$							$1; \alpha = 180^\circ$						
20	Impact strength		—														
21	Temperature	θ	°C	815							815						
22	Time		h	$t_R \geq 30$							$t_R \geq 30$						
23	Stress	σ_a	MPa	—							—						
24	C Elongation	a	%	—							—						
25	Rupture stress	σ_R	MPa	125							125						
26	Elongation at rupture	A	%	$A_{50\ \text{mm}} \geq 15^a$							$A_{50\ \text{mm}} \geq 15$						
27	Notes (see line 98)		a														

30	Microstructure	—	See EN 4700-001.
		7	To be agreed between manufacturer and purchaser.
34	Grain size	—	See EN 4700-001.
		5	Delivery condition $+ 1\ 150\ ^\circ\text{C} \leq \theta \leq 1\ 180\ ^\circ\text{C}/t \geq 10\ \text{min/AC}$
		7	$G \geq 3$
44	External imperfections visual testing (VT)	—	See EN 4700-001.
95	Marking inspection	—	See EN 4700-001.
96	Dimensional inspection	—	See EN 4700-001.
98	Notes	—	^a $a \geq 0,8\ \text{mm}$
99	Typical use	—	—
100	—	Product qualification	—
			See EN 2043. Qualification programme to be agreed between manufacturer and purchaser.

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