



# SLOVENSKI STANDARD

## SIST EN 4575:2020

01-april-2020

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**Aeronavtika - Toplotno odporna zlitina X12CrNiCoMoW21-20 - Topilno žarjena in dekapirana - Pločevina in plošče - 3 mm < a ≤ 50 mm**

Aerospace series - Heat resisting alloy X12CrNiCoMoW21-20 - Solution treated and descaled - Sheets and plates - 3 mm < a ≤ 50 mm

Luft- und Raumfahrt - Hochwarmfeste Legierung X12CrNiCoMoW21-20 - Lösungsgeglüht und entzundert - Bleche und Platten - 3 mm < a ≤ 50 mm

Série aérospatiale - Alliage résistant à chaud X12CrNiCoMoW21-20 - Mis en solution et décalaminé - Tôles et plaques - 3 mm < a ≤ 50 mm

<https://standards.iteh.ai/catalog/standards/sist/fl147a98-dc7e-43c1-8abd-2b5a6fb4fa54/sist-en-4575-2020>

**Ta slovenski standard je istoveten z: EN 4575:2020**

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**ICS:**

49.025.05      Železove zlitine na splošno      Ferrous alloys in general

**SIST EN 4575:2020**

**en,fr,de**

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EUROPEAN STANDARD

EN 4575

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2020

ICS 49.025.05

English Version

## Aerospace series - Heat resisting alloy X12CrNiCoMoW21-20 - Solution treated and descaled - Sheets and plates - 3 mm < a ≤ 50 mm

Série aérospatiale - Alliage résistant à chaud  
X12CrNiCoMoW21-20 - Mis en solution et décapé -  
Tôles et plaques - 3 mm < a ≤ 50 mm

Luft- und Raumfahrt - Hochwarmfeste Legierung  
X12CrNiCoMoW21-20 - Lösungsgeglüht und gebeizt -  
Bleche und Platten - 3 mm < a ≤ 50 mm

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

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.

**iTeh STANDARD PREVIEW**

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 4575:2020) 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 4575:2020 (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 and descaled  
Sheets and plates  
 $3 \text{ mm} < a \leq 50 \text{ mm}$

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

## 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 <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

## 4 Requirements

See Table 1.

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## EN 4575:2020 (E)

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 <sub>2</sub>	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 plates													
4.2	Method of production		Hot rolled													
4.3	Limit dimension(s)	mm	3 < a ≤ 50													
5	Technical specification		EN 4700-001													

6.1	Delivery condition		Solution treated													
	Heat treatment		1 100 °C ≤ q ≤ 1 180 °C/t > 12 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)		EN 4700-001														
8.2	Test piece(s)		EN 4700-001														
8.3	Heat treatment		Use condition														
9	Dimensions concerned	mm	3 < a ≤ 50														
10	Thickness of cladding on each face	%	—														
11	Direction of test piece		See EN 3235-2														
12	Temperature	θ	°C	Ambient													
13	Proof stress	R <sub>p0,2</sub>	MPa	≥ 305													
14	T	Strength	R <sub>m</sub>	MPa	690 ≤ R <sub>m</sub> ≤ 880												
15		Elongation	A	%	A <sub>50 mm</sub> ≥ 40												
16		Reduction of area	Z	%	—												
17		Hardness	HV		≤ 235												
18	Shear strength	R <sub>c</sub>	MPa	—													
19	Bending	k	—	1 ; α = 180 <sup>oa</sup>													
20	Impact strength		—														
21	Temperature	θ	°C	815													
22	Time		h	t <sub>R</sub> ≥ 30													
23	C	Stress	σ <sub>a</sub>	MPa	—												
24		Elongation	a	%	—												
25		Rupture stress	σ <sub>R</sub>	MPa	125												
26		Elongation at rupture	A	%	A <sub>50 mm</sub> ≥ 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.	
		7	Grain size number	% of area
			$G \geq 3$	$\geq 95$
			$0 \leq G < 3$	$< 5$
$G < 0$	Not acceptable			
44	External imperfections visual testing (VT)	—	See EN 4700-001.	
61	Internal imperfections ultrasonic testing (UT)	—	See EN 4700-001.	
		6	$3 \text{ mm} < a \leq 20 \text{ mm}$	
		7	Class 4	
95	Marking inspection	—	See EN 4700-001.	
96	Dimensional inspection	—	See EN 4700-001.	
98	Notes	—	<sup>a</sup> For $3 \text{ mm} < a \leq 6 \text{ mm}$	
99	Typical use	—	—	
100	—	Product qualification	See EN 4700-001.	
			Qualification programme to be agreed between manufacturer and purchaser.	

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