

SLOVENSKI STANDARD

SIST EN 4629:2014

01-februar-2014

Nadomešča:
SIST EN 4629:2008

Aeronavtika - Jeklo X4CrNiMo16-5-1 (1.4418) - Taljeno - Utrjeno in mehko žarjeno - Material za kovanje - De ≤ 300 mm

Aerospace series - Steel X4CrNiMo16-5-1 (1.4418) - Air melted - Softened - Forging stock - De ≤ 300 mm

Luft- und Raumfahrt - Stahl X4CrNiMo16-5-1 (1.4418) - Lufterschmolzen - Gehärtet- und angelassen - Schmiedestücke - De ≤ 300 mm

Série aérospatiale - Acier X4CrNiMo16-5-1 (1.4418) - Élaboré à l'air - Adouci - Demi-produits pour forgeage - De ≤ 300 mm

Ta slovenski standard je istoveten z: EN 4629:2013

ICS:

49.025.10 Jekla

Steels

SIST EN 4629:2014

en

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 4629

February 2013

ICS 49.025.10

Supersedes EN 4629:2007

English Version

**Aerospace series - Steel X4CrNiMo16-5-1 (1.4418) - Air melted
- Softened - Forging stock - De ≤ 300 mm**

Série aérospatiale - Acier X4CrNiMo16-5-1 (1.4418) -
Élaboré à l'air - Adouci - Demi-produits pour forgeage - De
≤ 300 mm

Luft- und Raumfahrt - Stahl X4CrNiMo16-5-1 (1.4418) -
Lufterschmolzen - Weichgeglüht - Schmiedestücke - De ≤
300 mm

This European Standard was approved by CEN on 24 August 2012.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

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Foreword

This document (EN 4629:2013) 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 2013, and conflicting national standards shall be withdrawn at the latest by August 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 4629:2007.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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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 4500-005.

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1 Scope

This European Standard specifies the requirements relating to:

Steel X4CrNiMo16-5-1 (1.4418)
 Air melted
 Softened
 Forging stock
 $D_e \leq 300$ mm

for aerospace applications.

NOTE Other designation: Z 8 CND 17-04.
 Only the chemical composition of this standard must be considered.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 2950, *Aerospace series - Test method - Wrought heat resisting alloys Semi-finished products and parts - Conditions for macrographic and micrographic examination - Atlas of structures and defects*

prEN 2951, *Aerospace series — Metallic materials — Test method — Micrographic determination of content of non-metallic inclusions*

EN 4050-4, *Aerospace series — Test method for metallic materials — Ultrasonic inspection of bars, plates, forging stock and forgings — Part 4: Acceptance criteria*

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

EN 4500-005, *Aerospace series — Metallic materials — Rules for drafting and presentation of material standards — Part 005: Specific rules for steels*

EN 4700-005, *Aerospace series — Steel and heat resisting alloys — Wrought products — Technical specification — Part 005: Forging stock*

EN ISO 643, *Steels — Micrographic determination of the apparent grain size (ISO 643)*

AMS 2315, *Determination of delta ferrite content* ¹⁾

1) Published as SAE National (US) Society of Automotive Engineers (<http://www.sae.org/>).

EN 4629:2013 (E)

1	Material designation		Steel X4CrNiMo16-5-1 (1.4418)									
2	Chemical composition %	Element	C	Si	Mn ^a	P ^b	S ^b	N	Cr	Mo	Ni	Fe
		min.	–	–	–	–	–	0,020	15,00	0,80	4,00	Base
		max.	0,06	0,70	1,50	0,030	0,005	–	17,00	1,50	6,00	
3	Method of melting		Air melted									
4.1	Form		Forging stock									
4.2	Method of production		–									
4.3	Limit dimension(s)	mm	$D_e \leq 300$									
5	Technical specification		EN 4700-005									

6.1	Delivery condition		Softened									
	Heat treatment		–									
6.2	Delivery condition code		U									
7	Use condition		Delivery condition									
	Heat treatment		–									

Characteristics

8.1	Test sample(s)			See EN 4700-005.			See EN 4700-005.		
8.2	Test piece(s)			See EN 4700-005.			See EN 4700-005.		
8.3	Heat treatment			Use condition			Reference (see line 29).		
9	Dimensions concerned	mm		$D_e \leq 300$			$D_e \leq 300$		
10	Thickness of cladding on each face	%		-			-		
11	Direction of test piece			-			L		LT
12	T	Temperature	θ	°C		Ambient		Ambient	
13		Proof stress	$R_{p0,2}$	MPa		-		≥ 700	
14		Strength	R_m	MPa		-		$900 \leq R_m \leq 1\,050$	
15		Elongation	A	%		-		≥ 16	≥ 12
16		Reduction of area	Z	%		-		-	
17	Hardness			$HBW \leq 293$			$269 \leq HBW \leq 331$		
18	Shear strength	R_c	MPa		-		-		
19	Bending	k	-		-		-		
20	Impact strength	KV	J		-		≥ 120 J at 20 °C Notch direction T ≥ 70 J at - 40 °C Notch direction T		≥ 60 J at 20 °C Notch direction L ≥ 35 J at - 40 °C Notch direction L
21	C	Temperature	θ	°C		-			
22		Time		h		-			
23		Stress	σ_a	MPa		-			
24		Elongation	a	%		-			
25		Rupture stress	σ_R	MPa		-			
26		Elongation at rupture	A	%		-			
27	Notes (see line 98)			a, b					

29	Reference heat treatment	–	Hardened and tempered $1\,010\text{ °C} \leq \theta \leq 1\,060\text{ °C}$ / OQ or WQ + $550\text{ °C} \leq \theta \leq 620\text{ °C}$
30	Microstructure	–	EN 4700-005
		1	See AMS 2315.
		7	The δ ferrite content shall not exceed 5 %.
44	External defects (visual)	–	EN 4700-005
50	Cleanliness/inclusion content (micro cleanness)	–	EN 4700-005
		1	See EN 2951.
		7	Category 2
51	Macrostructure (grain flow)	–	EN 4700-006
		1	See EN 2950.
61	Internal defects	–	EN 4700-006
		1	See EN 4050-4.
		7	Class 4