



SLOVENSKI STANDARD
oSIST prEN 3523:2021

01-april-2021

Aeronavtika - Jeklo 15CrMoV6 (1.7334) - Taljeno - Utrjeno in mehko žarjeno - Palice za obdelavo - De ≤ 100 mm - 1080 MPa ≤ Rm ≤ 1280 MPa

Aerospace series - Steel 15CrMoV6 (1.7334) - Air melted - Hardened and tempered - Bar for machining - De ≤ 100 mm - 1 080 MPa ≤ Rm ≤ 1 280 MPa

Luft- und Raumfahrt - Stahl 15CrMoV6 (1.7334) - Lufterschmolzen - Gehärtet und angelassen - Stange zur spanenden Bearbeitung - De ≤ 100 mm - 1 080 MPa ≤ Rm ≤ 1 280 MPa

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Série aérospatiale - Acier 15CrMoV6 (1.7334) - Élaboré à l'air - Trempé et revenu - Barres pour usinage - De ≤ 100 mm - 1 080 MPa ≤ Rm ≤ 1 280 MPa

<https://standards.iteh.ai/catalog/standards/sist/03b80538-22c6-4bc1-a618-1f7ad317dd4a/osist-pren-3523-2021>

Ta slovenski standard je istoveten z: prEN 3523

ICS:

49.025.10 Jekla Steels

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 3523

February 2021

ICS 49.025.10

Will supersede EN 3523:2007

English Version

**Aerospace series - Steel 15CrMoV6 (1.7334) - Air melted -
Hardened and tempered - Bar for machining - $De \leq 100$
mm - $1\ 080\ \text{MPa} \leq R_m \leq 1\ 280\ \text{MPa}$**

Série aérospatiale - Acier 15CrMoV6 (1.7334) - Élaboré
à l'air - Trempé et revenu - Barres pour usinage - $De \leq$
100 mm - $1\ 080\ \text{MPa} \leq R_m \leq 1\ 280\ \text{MPa}$

Luft- und Raumfahrt - Stahl 15CrMoV6 (1.7334) -
Lufterschmolzen - Gehärtet und angelassen - Stange
zur spanenden Bearbeitung - $De \leq 100\ \text{mm}$ - $1\ 080\ \text{MPa}$
 $\leq R_m \leq 1\ 280\ \text{MPa}$

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee ASD-STAN.

If this draft becomes a European Standard 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.

This draft European Standard was established by CEN 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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European foreword

This document (prEN 3523:2021) 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 document is currently submitted to the CEN Enquiry.

This document will supersede EN 3523:2007.

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prEN 3523:2021 (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 4500-005.

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1 Scope

This document specifies the requirements relating to:

Steel 15CrMoV6 (1.7334)
Air melted
Hardened and tempered
Bar for machining
 $D_e \leq 100$ mm
 $1\ 080\ \text{MPa} \leq R_m \leq 1\ 280\ \text{MPa}$

for aerospace applications.

W.nr: 1.7334.

ASD-STAN designation: FE-PL1505.

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

EN 4700-002, *Aerospace series — Steel and heat resisting alloys — Wrought products — Technical specification — Part 002: Bar and section¹*

EN ISO 642, *Steel — Hardenability test by end quenching (Jominy test) (ISO 642)*

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 <http://www.electropedia.org/>

4 Requirements

See Table 1.

¹ Published as ASD-STAN Standard at the date of publication of this standard by AeroSpace and Defence industries Association of Europe — Standardization (ASD-STAN), <http://www.asd-stan.org/>

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Table 1 — Requirements for steel 15CrMoV6 (1.7334)

| 1 | Material designation | | Steel 15CrMoV6 (1.7334) | | | | | | | | |
|-----|-------------------------|---------|-------------------------|------|------|-------|-------|------|------|------|------|
| 2 | Chemical composition % | Element | C | Si | Mn | P | S | Cr | Mo | V | Fe |
| | | min. | 0,12 | — | 0,80 | — | — | 1,25 | 0,80 | 0,20 | Base |
| | | max. | 0,18 | 0,20 | 1,10 | 0,020 | 0,015 | 1,50 | 1,00 | 0,30 | |
| 3 | Method of melting | | Air melted | | | | | | | | |
| 4.1 | Form | | Bar for machining | | | | | | | | |
| 4.2 | Method of production | | — | | | | | | | | |
| 4.3 | Limit dimension(s) | mm | $D_e \leq 100$ | | | | | | | | |
| 5 | Technical specification | | See EN 4700-002. | | | | | | | | |

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| | | | | | | | | | | |
|-----|-------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|----------------------------------------------------------------------------------------------------------------|--|--|--|
| 6.1 | Delivery condition | | Softened | | | | Hardened and tempered | | | |
| | Heat treatment | | oSIST prEN 3523:2021 https://standards.iteh.ai/catalog/standards/sist/03b80538-22c6-4bc1-a618-1f7ad317dd4a/osist-pren-3523-2021 | | | | $955\text{ °C} \leq \theta \leq 995\text{ °C/WQ}$ or OQ $+ 595\text{ °C} \leq \theta \leq 645\text{ °C/AC}$ | | | |
| 6.2 | Delivery condition code | | A | | | | U | | | |
| 7 | Use condition | | Hardened and tempered | | | | Delivery condition | | | |
| | Heat treatment | | Delivery condition $955\text{ °C} \leq \theta \leq 995\text{ °C/WQ}$ or OQ $+ 595\text{ °C} \leq \theta \leq 645\text{ °C/AC}$ | | | | — | | | |

Characteristics

| | | | | | | | | | | | |
|-----|------------------------------------|----|---------------------|--|--|--|---------------------|--|--|--|--|
| 8.1 | Test sample(s) | | See EN 4700-002. | | | | | | | | |
| 8.2 | Test piece(s) | | See EN 4700-002. | | | | | | | | |
| 8.3 | Heat treatment | | Softened | | | | Use condition | | | | |
| 9 | Dimensions concerned | mm | a or $D \leq 250$ | | | | a or $D \leq 100$ | | | | |
| 10 | Thickness of cladding on each face | % | — | | | | — | | | | |
| 11 | Direction of test piece | | — | | | | L | | | | |

| | | | | | | | | | | | | |
|----|-----------------------------|-----------------------|------------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----|----|----|----|----|---|
| 12 | | Temperature | θ | °C | — | Ambient | | | | | | |
| 13 | | Proof stress | $R_{p0,2}$ | MPa | — | ≥ 930 | | | | | | |
| 14 | T | Strength | R_m | MPa | — | $1\ 080 \leq R_m \leq 1\ 280$ | | | | | | |
| 15 | | Elongation | A | % | — | ≥ 10 | | | | | | |
| 16 | | Reduction of area | Z | % | — | — | | | | | | |
| 17 | Hardness | | | HB | ≤ 235 | $321 \leq HB \leq 380$ | | | | | | |
| 18 | Shear strength | | R_c | MPa | — | — | | | | | | |
| 19 | Bending | | k | — | — | — | | | | | | |
| 20 | Impact strength | | KV | J | — | KV ≥ 30 ; Notch direction T | | | | | | |
| 21 | C | Temperature | θ | — | iTeh STANDARD PREVIEW (standards.itech.ai) oSIST prEN 3523:2021 https://standards.itech.ai/catalog/standards/sist/03b80538-22c6-4bc1-a618-1f7ad317dd4a/osist-pren-3523-2021 | | | | | | | |
| 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) | | | | — | | | | | | | |
| 31 | Hardenability (Jominy test) | | | — | See EN 4700-002. | | | | | | | |
| | | | | 1 | See EN ISO 642. | | | | | | | |
| | | | | 2 | The “capability clause” applies. | | | | | | | |
| | | | | 7 | Distance in mm | 1,5 | 5 | 9 | 15 | 25 | 40 | |
| | | | | | HRC min. | 38 | 37 | 35 | 32 | 31 | 29 | |
| 34 | Grain size | | | — | See EN 4700-002. | | | | | | | |
| | | | | 7 | $G \geq 5$ | | | | | | | |
| 44 | External defects | | | — | See EN 4700-002. | | | | | | | |
| | | | | 7 | Visual | | | | | | | |

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|-----|-------------------------------|-----------------------|---|------------------------------------------------------------------------------------------------------------|
| 50 | Cleanliness/inclusion content | | — | See EN 4700-002. |
| | | | 1 | See EN 2951. |
| | | | 7 | Category 1 |
| 61 | Internal defects | | — | See EN 4700-002. |
| | | | 6 | <i>a</i> or <i>D</i> ≤ 100 mm may be tested either on the product or at an earlier stage of manufacturing. |
| | | | 7 | Class 2 |
| 95 | Marking inspection | | — | See EN 4700-002. |
| 96 | Dimensional inspection | | — | See EN 4700-002. |
| 98 | Notes | | — | — |
| 99 | Typical use | | — | — |
| 100 | — | Product qualification | — | See EN 2043. |
| | | | — | Qualification programme to be agreed between manufacturer and purchaser. |