



# SLOVENSKI STANDARD

## SIST EN 2103-1:2001

01-januar-2001

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### Aerospace series - Steel, nickel base and cobalt base alloy remelting stock and castings - Technical specifications - Part 1: General requirements

Aerospace series - Steel, nickel base and cobalt base alloy remelting stock and castings - Technical specifications - Part 1: General requirements

Luft- und Raumfahrt - Vormaterial und Gußstücke aus Stahl, Nickel- und Kobaltlegierungen - Teil 1: Allgemeine Anforderungen

Série aérospatiale - Produits pour refusion et pièces moulées en acier et alliages base nickel et base cobalt - Spécification technique - Partie 1: Exigences générales

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Ta slovenski standard je istoveten z: EN 2103-1:1991

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#### **ICS:**

49.025.10	Jekla	Steels
49.025.99	Drugi materiali	Other materials

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 2103**

Part 1

October 1991

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English version

**Aerospace series**  
**Steel, nickel base and cobalt**  
**base alloy remelting stock and castings**  
**- Technical specification -**  
**Part 1 - General requirements**

Série aéronautique  
Produits pour refusion  
et pièces moulées en acier  
et alliages base nickel et base cobalt  
- Spécification technique -  
Partie 1 - Exigences générales

Luft- und Raumfahrt  
Vormaterial und Gußstücke  
aus Stahl, Nickel- und Kobaltlegierungen  
Technische Lieferbedingungen -  
Teil 1 - Allgemeine Anforderungen

SIST EN 2103-1:2001

This European Standard was accepted by CEN on 1990-06-28. CEN members are bound to comply with the requirements of CEN 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 Central Secretariat 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 CEN Central Secretariat has the same status as the official versions.

CEN members are the national standards organizations of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxemburg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

**CEN**

European Committee for Standardization  
Comité Européen de Normalisation  
Europäisches Komitee für Normung

Central Secretariat : Rue de Stassart, 36, B-1050 Bruxelles

## Contents

1	Scope	3
2	Field of application	3
3	References	3
4	Definitions	3
5	Quality assurance	5
6	Manufacture	6
7	Traceability	6
8	Freedom from defects	7
9	Testing	7
10	Marking	9
11	Acceptance	9
12	Inspection and test report	9
13	Packing	10
14	Wording of orders	10
	Annex A	11

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## FOREWORD

This European Standard has been prepared by the European Association of Aerospace Manufacturers (AECMA).

After inquiries and votes carried out in accordance with the rules of this Association, this Standard has successively received the approval of the National Associations and the Official Services of the member countries of AECMA, prior to its presentation to CEN.

According to the Common CEN/CENELEC Rules, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom

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## 1 Scope

This standard specifies the general requirements for the manufacture, inspection and testing of steel, nickel base or cobalt base alloy remelting stock and castings.

Particular requirements applicable to remelting stock and castings are defined in EN 2103-2 and EN 2103-3 respectively.

Unless otherwise specified on the drawing, order or inspection schedule, the reference to EN 2103 only defines one quality level which is quality level 2 in table 4 or 5 of EN 2103-3.

## 2 Field of application

Unless otherwise specified on the drawing, order or inspection schedule this standard shall be applied when referenced in the relevant EN material standard.

By agreement between the purchaser and manufacturer it may also be applied to other materials or delivery conditions not covered by EN standards. The agreements shall be formalized by reference to this standard on the drawing, order or inspection schedule.

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## 3 References

- |           |   |
|-----------|---|
| EN 2000   | Aerospace series - Quality assurance - EN aerospace products - Approval of the quality system of manufacturers<br><a href="https://standards.iteh.ai/catalog/standards/sist/fcd7Bb8-6990-4dd6-9d79-560f28107100">https://standards.iteh.ai/catalog/standards/sist/fcd7Bb8-6990-4dd6-9d79-560f28107100</a> |
| EN 2078   | Aerospace series - Manufacturing schedule, inspection schedule and inspection report - General definitions <sup>1)</sup>  |
| EN 2103-2 | Aerospace series - Steel, nickel base and cobalt base alloy remelting stock and castings - Technical specification - Part 2 - Remelting stock   |
| EN 2103-3 | Aerospace series - Steel, nickel base and cobalt base alloy remelting stock and castings - Technical specification - Part 3 - Preproduction and production castings .   |

## 4 Definitions

### 4.1 Melt

A mass of homogeneous liquid metal, the product of one or more furnaces mixed in the same furnace or ladle before pouring.

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1) Published as AECMA standard at the date of publication of this standard.

#### 4.2 Cast

Solid metal resulting from the pouring of a single melt.

#### 4.3 Parent cast

A cast of remelting stock to be used for the production of castings.

#### 4.4 Approved scrap

Scrap used for the production of remelting stock. It arises from the manufacturer's own production or from that of the purchaser. Scrap used for the production of castings shall be restricted to runners and risers, rejected castings and heavy fettling scrap but shall exclude machining chips, turnings or small particles.

Scrap shall be the subject of preparation and evaluation by approved procedures and facilities which shall include verification of chemical composition, freedom from contamination and the absence of foreign material.

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#### 4.5 Product

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In this standard the term product covers remelting stock as well as castings.

#### 4.6 Remelting stock

Metal supplied in cast or wrought form, the composition of which has been established by chemical analysis.

#### 4.7 Casting

Part manufactured by either :

##### 4.7.1 Sand casting

Process involving the moulding of a re-usable pattern with a bonded sand (excluding castings made by the centrifugal process).

##### 4.7.2 Centrifugal casting

Process in which a mould in metal or sand rotates around the pouring axis.

#### 4.7.3 Precision casting

Process involving a ceramic mould formed around a disposable pattern (e.g. lost wax process).

#### 4.8 Batch

**4.8.1** A batch of remelting stock consists of material of the same form, the same nominal dimensions and from the same melt.

**4.8.2** A batch of castings consists of items of the same drawing number, coming from the same melt and if heat treated, heat treated together.

**4.8.3** A batch of scrap consists of material of the same type (see clause 4.4), of the same chemical composition and if appropriate, submitted to the same conditioning operations.

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#### 4.9 Pre-production castings (standards.iteh.ai)

Castings produced to a particular design which qualify the method of manufacture and mould configuration and demonstrate that the requirements of the purchaser can be met.

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#### 4.10 Inspection schedule

See EN 2078.

#### 4.11 Manufacturing schedule

See EN 2078.

#### 4.12 Inspection and testing report

See EN 2078.

### 5 Quality assurance

See EN 2000.

## 6 Manufacture

6.1 The method of melting employed for the production of remelting stock or castings shall be as specified by the material standard, order or drawing.

6.2 The details of manufacture shall be recorded in the manufacturing schedule.

6.3 Having established the manufacturing schedule, no change shall be made without the written approval of the purchaser.

6.4 The product shall be supplied in the heat treatment condition specified in the material standard. If otherwise agreed or if there is more than one heat treatment condition in the material standard, the condition of supply shall be specified on the order, drawing or manufacturing schedule.

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6.5 If a specific heat treatment temperature (value and tolerance) is stated, that temperature shall be mandatory.

If a heat treatment temperature range is stated, a temperature within that range, reduced by the furnace tolerances, shall be selected to give the required properties.

Unless otherwise specified, the furnace charge shall be maintained at that temperature subject to the following tolerances in table 1, for the periods stated.

Table 1

Selected temperature $\theta$ °C	Tolerances °C
$< 550$	$\pm 5$
$550 \leq \theta \leq 1250$	$\pm 10$
$> 1250$	$\pm 15$

## 7 Traceability

Remelting stock and each casting shall be identifiable as to their melt and parent-cast and if appropriate, to its heat treatment batch at all stages of manufacture and delivery.



## 8 Freedom from defects

The products shall be free from harmful defects and notwithstanding previous acceptance of products complying with this standard, any product that is found, at a later stage, to contain such defects may be rejected.

## 9 Testing

The tests required by the material standard, the order or inspection schedule shall be made in accordance with the requirements of the appropriate test standard. If a test standard does not exist, the method to be used shall be agreed between manufacturer and purchaser.

Unless otherwise specified on the order, drawing or inspection schedule, the frequency of sampling shall be as given in EN 2103-2 or EN 2103-3.

The location of test samples shall be as indicated on the drawing or inspection schedule.

The test samples and associated test pieces shall be marked in such a manner as to ensure that their identity and location with respect to the product and the batch is maintained.

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## 9.1 Chemical composition (standards.iteh.ai)

9.1.1 The chemical composition of the delivered product shall comply with the requirements of the relevant material standard and the order.

9.1.2 The chemical composition of each melt or parent-cast shall be determined, except as qualified by EN 2103-3, clause 6.2. The samples taken for analysis shall be representative of the melt or the parent-cast. The method of analysis shall be selected by the manufacturer but in case of dispute, the method set out in the relevant ISO standard shall be used. If no ISO standard exists, a fundamental method of chemical analysis shall be used.

9.1.3 Elements not quoted in the material standard shall not be intentionally added to the alloy without the agreement of the purchaser, except those needed for the purpose of deoxidation, degassing or grain refinement of the melt. Precautions shall be taken to prevent inclusions as a result of added elements during manufacture and to avoid contamination of the products.

For special applications the purchaser, by agreement with the manufacturer, may set a limit to the amount of one or more such elements and may require the amount to be stated on the certificate of conformity.

The operations carried out for deoxidation, degassing or grain refinement shall be included in the manufacturing schedule.