INTERNATIONAL STANDARD

ISO 6283

Third edition
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Refined nickel

Nickel raffiné

Reference number
ISO 6283:2017(E)

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 155, *Nickel and nickel alloys*.

The third edition cancels and replaces the second edition (ISO 6283:1995), which has been technically revised. Grade NR9997 has been added.

Refined nickel

1 Scope

This document specifies the designation and chemical composition of grades of refined nickel.

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.

ISO 6372, *Nickel and nickel alloys — Terms and definitions*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6372 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
refined nickel

metallic nickel that is produced by refining processes such as electrolytic, carbonyl decomposition, reduction or precipitation processes

4 Designation

The designations of the different grades of refined nickel as given in Table 1 are NR9980, NR9990, NR9995 and NR9997.

5 Composition

5.1 The different grades of refined nickel shall comply with the requirements given in Table 1.

5.2 The chemical composition given shows the minimum content for nickel and the maximum limits for the most common impurities. If the purchaser requires lower limits for specified elements and/or limits for elements not specified, these shall be agreed upon between supplier and purchaser.

5.3 For the purpose of determining compliance with the specified composition limits, the values of the reported analysis shall be rounded to the same number of decimal places as those used in defining the specified limit in the table. The rounding rules shall be as follows.

5.3.1 If the figure immediately after the last figure to be retained is less than 5, the last figure to be retained shall be kept unchanged.

5.3.2 If the figure immediately after the last figure to be retained is equal to or greater than 5, the last figure to be retained shall be increased by one.

6 Forms

The form of the refined nickel shall be as specified by the purchaser. Typical forms include briquettes, cathodes, granules, pellets, powders, squares or shot. The terms and definitions of different forms of nickel are given in ISO 6372.

NOTE Forms are generally related to the refining process and thus not all forms may be available for each of the designations given in Table 1.

Table 1 — Chemical composition, % (mass fraction)

Designation	NR9980	NR9990	NR9995	NR9997
Ni min.	99,80	99,90	99,95	99,97
Ag max.	—	0,001	0,000 1	0,000 1
Al max.	—	0,001	0,000 5	0,000 5
As max.	0,004	0,004	0,000 1	0,000 1
Bi max.	0,004	0,000 2	0,000 05	0,000 02
C max.	0,03	0,015	0,015	0,005
Cd max.	—	0,001	0,000 1	0,000 1
Co max.	0,15	0,05	0,000 5	0,000 5
Cu max.	0,02	0,01	0,001	0,001
Fe max.	0,02	0,015	0,015	0,015
Mn max.	0,004	0,004	0,000 5	0,000 5
N max	—	—	—	0,000 3
P max.	0,004	0,002	0,000 2	0,000 2
Pb max.	0,004	0,001	0,000 1	0,000 1
S max.	0,01	0,002	0,001	0,000 5
Sb max.	0,004	0,000 5	0,000 1	0,000 1
Se max.	—	0,001	0,000 1	0,000 1
Si max.	0,004	0,002	0,001	0,001
Sn max.	0,004	0,000 1	0,000 1	0,000 1
Te max.	—	0,000 1	0,000 05	0,000 05
Tl max.	—	0,000 1	0,000 05	0,000 05
Zn max.	0,004	0,001 5	0,000 5	0,000 5

7 Sampling

Sampling of refined nickel at the producer's refinery is normally done by routine procedures.

Sampling of other lots or shipments of refined nickel shall be agreed between the interested parties.

8 Analysis

For the provision of a certificate of conformity from the refinery, the analysis shall be carried out using recognized wet chemistry methods or instrumental techniques, at the discretion of the producer.

For shipments not direct from a refinery the methods of analysis to be used shall be recognized analytical procedures as mutually agreed by the interested parties.

In cases of dispute, the method of analysis shall be an appropriate International Standard. If no such standard exists, a method shall be agreed upon by the disputing parties.

9 Packing and traceability

The refined nickel shall be securely packaged to prevent contamination in storage or transit. Each shipment, lot or package shall be identified to provide traceability to the refinery lot or batch number(s).

10 Documentation

10.1 Information to be given by the purchaser

Orders for refined nickel conforming to this document shall include the following information:

a) the number of this document, i.e. ISO 6283:2017;

b) the designation of the refined nickel required (see Clause 4);

c) the form of the refined nickel required (see Clause 6);

d) any additional requirements.

10.2 Information to be given by the supplier

The supplier shall provide a certificate of conformity with each delivery. This certificate shall contain sufficient information to ensure traceability to the batch of material to which it relates.

ICS 77.120.40

Price based on 3 pages