Designation: B39 – 79 (Reapproved 2013)

Standard Specification for Nickel[1]

This standard is issued under the fixed designation B39; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers refined nickel primarily produced from ore or matte or similar raw material. The principal commercial forms are cathodes, briquettes, and pellets.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to become familiar with all hazards including those identified in the appropriate Material Safety Data Sheet (MSDS) for this product/material as provided by the manufacturer, to establish appropriate safety and health practices, and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

E39 Methods for Chemical Analysis of Nickel (Withdrawn 1995)[3]

3. Ordering Information

3.1 Orders for material under this specification shall include the following information:

3.1.1 Name of material (nickel),

3.1.2 ASTM designation (E39),

3.1.3 Form (state whether cathodes, briquettes, or pellets), and

3.1.4 Size (Section 5).

4. Chemical Composition

4.1 The nickel shall conform to the requirements of Table 1.

4.2 More restrictive compositions for certain products may be available. The user is referred to his nickel supplier.

5. Dimensions and Permissible Variations

5.1 The various forms and sizes commercially available are as follows:

Form	Size
Cathodes	1½ by 1¼ by ⅝ in. (38 by 32 by 16 mm)
Briquettes	pillow shaped, about by in. (38 by 32 by 16 mm)
Pellets	roughly spherical, about ¼ in. (6.3 mm) diameter

6. Sampling

6.1 *Cathodes*—Cathodes may be sampled using either of the following procedures:

6.1.1 *Template Drilling Procedure:*

6.1.1.1 Sampling of electronickel cathodes is done on one cathode removed for this purpose from every 60 cathodes produced. A template is used to drill successive cathodes diagonally from corner to corner. Using a suitable drill, one ⅝-in. (16-mm) hole is drilled through each cathode, starting at the first hole in the template and progressing diagonally, with holes at 3¼-in. (83-mm) centers. No lubricants shall be used. The drill shall be clean and the drilling speed shall be regulated to avoid excessive heating.

6.1.1.2 The 4 to 8-in. (102 to 203-mm) drilling spirals are cut to ¼-in. (6-mm) pieces. These cuttings are washed in boiling distilled water then quartered to provide the sample.

6.1.2 Alternatively, sheared cathodes may be sampled by taking pieces at random from the bottom, middle, and top of each package or container. The following number of pieces shall be taken from each drum (containing 500 to 700 lb (227 to 317 kg)):

Shipment Lot	1-in. (25.4-mm) squares	2-in. (50.8-mm) squares	4-in. (101.6-mm) squares and larger sizes
20 to 25 tons (18 000 to 23 000 kg)	4	2	1
15 to 20 tons (14 000 to 18 000 kg)	4	2	1
10 tons (9000 kg)	5	3	2
5 tons (4500 kg)	6	4	3

[1] This specification is under the jurisdiction of ASTM Committee B02 on Nonferrous Metals and Alloys and is the direct responsibility of Subcommittee B02.07 on Refined Nickel and Cobalt and Their Alloys.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] The last approved version of this historical standard is referenced on www.astm.org.