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Feronikelj v zrnih - Vzorčenje za analizo (ISO 8049:2016)

Ferronickel shot - Sampling for analysis (ISO 8049:2016)

Ferronickelschrot - Probenahme für Analyse (ISO 8049:2016)

Ferro-nickel en grenailles - Échantillonnage pour analyse (ISO 8049:2016)

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Ferro-nickel en grenailles - Échantillonnage pour analyse (ISO 8049:2016)

Ferronickelschrot - Probenahme für Analyse (ISO 8049:2016)

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European foreword

This document (EN ISO 8049:2016) has been prepared by Technical Committee ISO/TC 155 "Nickel and nickel alloys".

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INTERNATIONAL STANDARD

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Ferronickel shot — Sampling for analysis

Ferro-nickel en grenailles — Échantillonnage pour analyse

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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).

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The committee responsible for this document is ISO/TC 155, *Nickel and nickel alloys*.

This second edition cancels and replaces the first edition (ISO 8049:1988). The following change has been made: 5.1.4 has been added.

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Ferronickel shot — Sampling for analysis

1 Scope

This International Standard defines a method of sampling for analysis of ferronickel lots in the form of shot as specified in ISO 6501 in those cases where lots are constituted either heat by heat or by taking from blended stock.

The purpose is to determine the contents of the various elements

— either from slugs by physical analysis methods (such as X-ray fluorescence or emission spectral analysis), or

— from chips by dry methods (carbon, sulfur) or chemical analysis (other elements).

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.

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ISO 513:2012, *Classification and application of hard cutting materials for metal removal with defined cutting edges — Designation of the main groups and groups of application*

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3 Form and packaging of product

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Grain size: between 3 mm and 50 mm.

Lot tonnage: equal to or greater than 5 t.

In the case of lots taken from blended stock, the nickel content range k to $(k + n)$ % of the blended heats shall be chosen as follows:

— $15 \leq k \leq 59$;

— $1 \leq n \leq 5$;

— $16 \leq k + n \leq 60$.

NOTE The case of non-blended lots (case $n \leq 1$) is not dealt with in this International Standard.

The ferronickel shot is generally delivered in bulk form in units which may be trucks, containers, or railroad cars, of which the contained masses normally range from 5 t to 30 t, although in the case of railroad cars, loads may have masses up to 60 t.

This type of ferronickel can also be delivered drum-packed (the contained mass of which may be 250 kg).

4 Principle

In a single heat, intergrain homogeneity is practically ensured. It is therefore very easy to obtain a representative "primary sample" from a small number of "primary increments".

In the case of a blended lot composed of several heats, a greater number of primary increments, N_P, should be taken, but the whole still constitutes the primary sample.

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After blending and mass division of the primary sample, an "intermediate sample" is obtained having a reasonable mass for laboratory treatment. The treatment of the intermediate sample gives a "secondary sample", which may be divided in N_s "secondary increments" not exceeding a mass of 1 kg individually.

Each secondary increment is then remelted under appropriate conditions so that no variation in composition can be observed and that N_s homogeneous small ingots be obtained (within-small-ingot homogeneity).

NOTE It is generally accepted that 1 kg is the maximum mass which can be accommodated in a laboratory furnace for re-casting under the required conditions. According to the grain size distribution of shot, it is often necessary for the secondary sample to exceed 1 kg in order to be representative. Hence, the necessity of melting several small ingots. See the statistical justification in Annex A.

The small ingots are then either used for physico-chemical analysis or machined into chips for chemical analysis. (This procedure is summed up in Figure A.1.)

5 Taking of the primary sample and then of the intermediate sample

5.1 Blended lots

5.1.1 Bulk sampling in the case of a suitable system for taking the primary sample

This can be performed, for example, by emptying the shot into a bin with reclaim by belt conveyor. From the conveyor discharge, two possibilities are as follows:

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— to have a true sampling system respecting the rules of the art for sampling of particulate material (such as a cross stream sampler);

— to take increments at regularly spaced intervals, using a power shovel with a dipper intercepting the shot stream in a representative manner.

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The mass of each primary increment shall be, in this case, not less than 20 kg, and is generally between 20 kg and 50 kg.

The number of primary increments, N_p, to be selected is shown in Table 1.

Table 1 — Minimum number of primary increments to be selected

Sample	Tonnage	Range of nickel contents, n				
		$n < 1$	$1 \leq n < 2$	$2 \leq n < 3$	$3 \leq n < 4$	$4 \leq n \leq 5$
Numbers of primary increments N_p	5 to 50	5	10	15	20	30
	50 to 200	7	12	17	22	35
	200 to 500	10	15	20	25	40
	500 to 2 500	15	20	25	30	45
Number of secondary increments N_s[a]		1	2	3	4	5

[a] This indicates the number of small ingots to be remelted in the hypothesis of 1 kg per small ingot. (If the maximum mass which can be remelted is 1lx kg, the number of small ingots to be remelted is $x \times N_s$.)

The primary sample shall then be mass-divided into smaller units, in order to obtain an intermediate sample having a mass which can reasonably be sent to the laboratory for further preparation, 20 kg to 50 kg, say.

This can be accomplished with automatic mass dividers (such as rotary dividers) of suitable size with respect to the particle size of the product being handled.

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