International Standard 8343

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Ferronickel — Determination of silicon content — Gravimetric method

Ferro-nickel — Dosage du silicium — Méthode gravimétrique

First edition — 1985-10-15

UDC 669.243.881 : 543.21 : 546.28 **Ref. No. ISO 8343-1985 (E)**

Descriptors: nickel, ferronickel, chemical analysis, determination of content, silicon, gravimetric analysis.

Price based on 2 pages

Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8343 was prepared by Technical Committee ISO/TC 155, *Nickel and nickel alloys.*

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated..

Ferronickel — Determination of silicon content — Gravimetric method

1 Scope and field of application

This International Standard specifies a gravimetric method for the determination of silicon in ferronickel in the range 0,2 to 4,0 % (m/m).

2 Reference

ISO 5725, *Precision of test methods — Determination of repeatability and reproducibility by inter-laboratory tests.*

3 Principle

Dissolution of a test portion in nitric acid and addition of perchloric acid. Formation of insoluble silica by dehydration in perchloric acid, filtration, and weighing of the calcined precipitate. Volatilization of the silica with hydrofluoric and sulfuric acids, weighing of the residue, determination of the silica by difference and calculation of the silicon content.

4 Reagents

During the analysis, unless otherwise stated, use only reagents of recognized analytical grade and only distilled water or water of equivalent purity.

4.1 Hydrochloric acid, ϱ_{20} = 1,19 g/ml.

4.2 Hydrochloric acid, ϱ_{20} = 1,19 g/ml, diluted 1 + 9.

4.3 Hydrofluoric acid, ϱ_{20} = 1,14 g/ml.

WARNING — Hydrofluoric acid is extremely irritating and corrosive to skin and mucous membranes, producing severe skin burns which are slow to heal. In case of skin contact wash well with water and seek medical advice.

4.4 Nitric acid, ϱ_{20} = 1,41 g/ml, diluted 1 + 1.

4.5 Perchloric acid, ϱ_{20} = 1,61 g/ml [70 % (m/m)].

4.6 Sulfuric acid, ϱ_{20} = 1,83 g/ml, diluted 1 + 1.

5 Apparatus

Ordinary laboratory apparatus, and

5.1 Beaker, high form, of capacity 600 ml, unetched.

5.2 Platinum crucible, of capacity 40 ml.

5.3 Muffle furnace, capable of being maintained at 1 100 °C.

5.4 Dessicator.

6 Sampling and samples

6.1 Sampling and preparation of the laboratory sample shall be carried out by normal agreed procedures or, in case of dispute, by the relevant International Standard.

6.2 The laboratory sample normally is in the form of granules, millings or drillings and no further preparation of the sample is necessary.

6.3 If it is suspected that the laboratory sample is contaminated with oil or grease from the milling or drilling process, it shall be cleaned by washing with high purity acetone and drying in air.

6.4 If the laboratory sample contains particles or pieces of widely varying sizes, the test portion should be obtained by riffling.

7 Procedure

7.1 Test portion

7.1.1 For a silicon content greater than 1 % (m/m) weigh, to the nearest 0,001 g, 2,00 g of the laboratory sample.

7.1.2 For a silicon content between 0,25 and 1 % (m/m) weigh, to the nearest 0,002 g, 4,00 g of the laboratory sample.

7.1.3 For a silicon content less than 0,25 % (m/m) weigh, to the nearest 0,005 g, 10,00 g of the laboratory sample.