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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 8647.9-2006

**The methods for chemical analysis of nickel -- Determination of
carbon content -- Infra-red absorption method after high
frequency induction furnace combustion**

镍化学分析方法 碳量的确定

(English Translation)

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Foreword

GB/T 8647 "The methods for chemical analysis of nickel" is divided into the following

10 parts:

GB/T 8647.1, The methods for chemical analysis of nickel -- Determination of iron content -- Sulfosalicylic acid spectrophotometric method

GB/T 8647.2, The methods for chemical analysis of nickel -- Determination of aluminium content -- Electrothermal atomic absorption spectrometric method

GB/T 8647.3, The methods for chemical analysis of nickel -- Determination of silicon content -- Molybdenum blue spectrophotometric method

GB/T 8647.4, The methods for chemical analysis of nickel -- Determination of phosphorous content -- Molybdenum blue spectrophotometric method

GB/T 8647.5, The methods for chemical analysis of nickel -- Determination of magnesium content -- Flame atomic absorption spectrometric method

GB/T 8647.6, The methods for chemical analysis of nickel -- Determination of cadmium, cobalt, copper, manganese, lead and zinc contents -- Flame atomic absorption spectrometric method

GB/T 8647.7, The methods for chemical analysis of nickel -- Determination of arsenic antimony bismuth tin and lead contents -- Electrothermal atomic absorption

spectrometric method

GB/T 8647.8, The methods for chemical analysis of nickel -- Determination of sulphur content -- Infra-red absorption method after high frequency induction furnace combustion

GB/T 8647.9, The methods for chemical analysis of nickel -- Determination of carbon content -- Infra-red absorption method after high frequency induction furnace combustion

GB/T 8647.10, The methods for chemical analysis of nickel -- Determination of arsenic cadmium lead zinc antimony bismuth tin cobalt copper manganese magnesium silicon aluminium iron contents -- Atomic emission spectrometric method

This is Part 9.

This Part is not equivalent to ISO 7524:1985 "Nickel, ferronickel and nickel alloys -- Determination of carbon content -- Infra-red absorption method induction furnace combustion".

The methods for chemical analysis of nickel - Determination of carbon content -- Infra-red absorption method after high frequency induction furnace combustion

1 Scope

This Part specifies the method for the determination of carbon content in nickel.

This Part is applicable to the determination of carbon content in nickel. Determination range: 0.0020%~0.20%.

2 Method summary

In the presence of flux, oxygen flow is introduced into the high-frequency induction furnace. The test material is burned at high temperature. Carbon generates carbon dioxide gas and enters the infrared absorption cell. The instrument automatically measures its absorption of infrared energy, calculates and displays the result.

3.7 Crucible

Ceramic crucible (Phi24 mmx24 mm). Before use, it should be burned in a furnace with air or oxygen at a temperature greater than 1100°C for 1 h~1.5 h. Take it out and place it in a non-oiled desiccator to cool it for use (valid for two days).

3.9 Standard steel sample or pure iron sample: carbon content is about 0.002%.

standard steel sample is stable within the error range.

NOTE: When selecting a standard steel sample, the carbon content should be greater than the carbon content of the specimen being tested.

5.4.1 Weigh 1.000 g of low carbon standard steel sample (3.9) and place it in a crucible

(3.7). Add flux (3.6).

5.4.2 Place the crucible on the support of the furnace. Raise it to the burning position.

Follow the "automatic" blank calibration steps in the instrument manual. Repeat for 3 to 5 steel samples to obtain an average result with good reproducibility. The mass fraction of carbon in the standard steel sample is deducted by "automatic" blank correction. The value is expressed in %. The blank value obtained is stored in the computer. (When the carbon content of the sample is > 0.001%, the blank value should be < 0.0005%. When the carbon content of the sample is > 0.1%, 5.4 is omitted)

5.4.3 After the blank value is determined, repeat the test of the standard steel sample

according to (5.3). The test result should be stable within the error range. Then select a standard sample with the same carbon content as the sample being tested for retest.

5.5.2 Place the crucible on the support of the furnace. Raise it to the combustion position.

Follow the "automatic" analysis steps in the instrument manual. The instrument automatically deducts the blank value and displays and prints the mass fraction of carbon. The value is expressed in %.

6.1 Repeatability limit

For the determination values of two independent test results obtained under repeatability conditions, the absolute difference between the two test results does not exceed the repeatability limit (r) within the range of the average values given below.

The case where the repeatability limit (r) is exceeded does not exceed 5%. The intra-laboratory repeatability is listed in Table 2.

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