SN

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SN/T 3321.2-2013

Limestone and dolomite - Part 2: Determination of carbon and sulfur content - High frequency combustion with infrared absorption method

石灰石、白云石 第 2 部分：碳、硫含量的测定 高频燃烧红外吸收法

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1 Scope

This Part of SN/T 3321 specifies the high-frequency combustion with infrared absorption method, for the determination of carbon and sulfur content in limestone and dolomite.

This Part applies to the determination of carbon and sulfur content in limestone and dolomite, in which the determination range (mass fraction) of carbon content is 10% ~ 15%, the determination range (mass fraction) of sulfur content is 0.02% ~ 0.2%.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this standard.

GB/T 2007.2 General rules for the sampling and sample preparation of minerals in bulk - Manual method of sample preparation

3 Method summary

The specimen is heated and burned in the oxygen flow of the high-frequency induction furnace; the generated carbon dioxide (or carbon monoxide) and sulfur dioxide are carried by the oxygen, to the measuring chamber of the infrared analyzer. The carbon dioxide (or carbon monoxide) and sulfur dioxide absorb infrared energy of a certain wavelength. The absorption energy is proportional to its concentration; then the carbon and sulfur content can be measured, according to the change of the energy received by the detector.

concentrations of oxygen can cause fires, in confined spaces.

7.1 Instrument debugging

Assemble the instrument, according to the manufacturer's instructions. Prepare it for operation. Check the air tightness of the combustion unit and the measuring unit. Before calibrating and measuring specimens, it is necessary to check and debug the instrument, to ensure that the instrument is in a normal and stable working state; meanwhile determine the best analysis conditions.

7.2 Blank test

A blank test is performed along with the specimen analysis. According to the analysis method of the specimen, add the corresponding pure iron flux and tungsten particles. Carry out at least three blank tests. Blanks are subtracted from subsequent specimen measurements.

7.3 Calibration

7.3.1 Carbon calibration with calcium carbonate purity standards

Weigh 0.05 g of calcium carbonate purity standard (4.3), accurate to 0.0001 g. Place it in a crucible (5.2), that has been burned and covered with 0.2 g of pure iron flux (4.1). Then cover 1.2 g of tungsten particles (4.2). Make at least three measurements. Perform linear adjustment of the system.

7.3.2 Sulfur calibration with limestone and dolomite standards

According to the sulfur content of the specimen to be tested, weigh 0.2 g of the appropriate standard (4.4), accurate to 0.0001 g. Place it in a crucible (5.2), that was burnt and covered with 0.2 g of pure iron flux (4.1). Then cover 0.2 g of pure iron flux (4.1) AND 1.2 g of tungsten particles (4.2). Make at least three measurements. Perform linear adjustment of the system.

7.4 Analysis of specimen

7.4.1 Determination of carbon content

Weigh 0.05 g of the specimen, accurate to 0.0001 g. Place it in a crucible (5.2), that has been burned and covered with 0.2 g of pure iron flux (4.1). Then cover 1.2 g of tungsten particles (4.2). Use the same test conditions, procedures, operations as the measurement of standard sample, to make measurement.

7.4.2 Determination of sulfur content

Weigh 0.2 g of the specimen, accurate to 0.0001 g. Place it in a crucible (5.2), that has been burned and covered with 0.2 g of pure iron flux (4.1). Then cover 0.2 g of pure iron flux (4.1) AND 1.2 g of tungsten particles (4.2). Use the same

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