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Titanium and titanium alloys — Determination of carbon — Infrared absorption method after combustion in an induction furnace

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Foreword

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This document was prepared by Technical Committee ISO/TC 79, *Light metals and their alloys*, Subcommittee SC 11, *Titanium*.

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Titanium and titanium alloys — Determination of carbon — Infrared absorption method after combustion in an induction furnace

1 Scope

This document specifies an infrared absorption method after combustion in an induction furnace under oxygen atmosphere for the determination of carbon in titanium and titanium alloys.

The method is applicable to carbon contents between 0,003 % (mass fraction) and 0,050 % (mass fraction).

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Principle

A test portion is combusted in presence of an accelerator at a high temperature in a high-frequency induction furnace in a current of pure oxygen.

Carbon is transformed into carbon dioxide and/or carbon monoxide. Measurement is by infrared absorption of the carbon dioxide and/or carbon monoxide carried by a current of oxygen.

5 Reagents

During analysis, unless otherwise stated, use only reagents of recognized analytical grade.

5.1 Magnesium perchlorate, $Mg(ClO_4)_2$ (commercial name: anhydrone), used to absorb moisture. Use purity specified by the manufacturer of the instrument.

5.2 Inert ceramic (attapulgus clay) or silica impregnated with sodium hydroxide or potassium hydroxide, used to absorb carbon dioxide. Use purity specified by the manufacturer of the instrument.

5.3 Accelerator, of tungsten, iron or tin with a particle size above 0,15 mm. Use purity specified by the manufacturer of the equipment.

5.4 Oxygen, with high purity as specified by the manufacturer of the equipment. An oxidation catalyst[copper(ll) oxide or platinum] tube heated to a temperature above 600 °C followed by suitable carbon dioxide and water absorbents shall be used when the presence of organic contaminants is suspected in the oxygen.

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