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

GB/T 34176-2017

**Chemical analysis methods for determination of Fe²⁺ and Fe³⁺
in refractory products by the spectral photometric method with
1, 10-phenanthroline**

邻二氮杂菲分光光度法测定耐火材料中的二价和三价铁离子化学分析方法
(English Translation)

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the redrafted law Amendment uses ISO 14719:2011 "refractory, glass and glaze chemical analysis methods O-nitrogen Phenanthrene spectrophotometric determination of divalent and ferric ions. " this standard compared with ISO 14719:2011 more structural adjustment, Appendix B lists the standard and ISO 14719:2011 Chapter number control list.

This standard compared with ISO 14719:2011 there are technical differences, Appendix C lists the standard ISO 14719:2011 and technology Technical differences and their causes list.

Please note that some of this document may be patentable. The issuing agencies of this document do not bear the responsibility of identifying these patents.

This standard by the National Refractory Standardization Technical Committee (SAC/TC193) and focal point.

This standard drafting unit. Sinosteel Luoyang Refractory Research Institute Co., Ltd., Ruitai Technology Co., Ltd..

1 Scope

This standard specifies the phenanthroline spectrophotometric determination of refractory Fe²⁺ and Fe³⁺, Fe²⁺ and Fe³⁺ measuring range (quality Volume fraction). The sum of the two is less than 8%.

This standard applies to materials such as feldspar, kaolinite, clay, limestone and quartz, other related materials can also be measured with reference to this standard set. This standard does not apply to reducing materials, such as silicon carbide, magnesium carbon brick.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 4513.2 amorphous refractory part 2. Sampling (GB/T 4513.2-2017, ISO 1927-2:2012, IDT) GB/T 6682 analytical laboratory water specifications and test methods (GB/T 6682-2008, ISO 3696:1987, MOD) GB/T 8322 molecular absorption spectrometry terms (GB/T 8322-2008, ISO 6286:1982, NEQ) GB/T 10325 Shaped refractory products sampling inspection rules (GB/T 10325-2012, ISO 5022:1979, NEQ) GB/T 12806 laboratory glassware single standard line volumetric flask (GB/T 12806-2011, ISO 1042:1998, NEQ) GB/T 12808 laboratory glassware single standard pipette (GB/T 12808-2015, ISO 648:1977, NEQ) GB/T 17617 refractory raw materials and amorphous refractory samples (GB/T 17617-1998, neqISO 8656-1.1988) Refractory materials - X - ray fluorescence spectrometric chemical analysis Casting glass method (GB/T 21114-2007, ISO 12677. 2003, MOD)

GB/T 32179 refractory chemical analysis wet method, atomic absorption spectrometry (AAS) and inductively coupled plasma atomic emission General requirements for spectrometry (ICP-AES) (GB/T 32179-2015, ISO 26845:2008, MOD)

3 Terms and definitions

GB/T 32179 defined terms and definitions apply to this document.

4 Principle

Sample under nitrogen, with hydrofluoric acid and sulfuric acid mixed acid digestion treatment. In a weak acid solution, ferrous iron ions with adjacent two Azepine phenanthrene generate orange complex, this complex is very stable, the color depth is proportional to the content of ferrous ions, in the spectrophotometer Measured at a wavelength of 510nm at its absorbance; ferric ion is reduced to ferrous ions can also generate phenanthroline network Compound. The sum of the contents of ferrous ions and ferric ions in the solution corresponds to the total iron content in the sample. As₅/As₃, Sb₅/Sb₃ and other multivalent elements and barium sulfate, lead sulfate and other sediments may affect the determination.