KYOTO ELECTRONICS MANUFACTURING CO.,LTD.

TIN-97001enL

Application Memo

Cobalt in Cemented Carbide

Industry	Iron and steel
Instrument	Automatic potentiometric titrator
Measurement method	Redox titration
Standards	CIS 032B (Former Japan Cemented Carbide Tool Manufacturer's Association's standards)

1. Overview

After the sample is dissolved in the nitric acid and hydrofluoride acid, add pure water, ammonium citrate, and ammonia water to it. After cooling, cobalt in the sample solution is measured by titration with 1/30mol/L potassium ferricyanide up to the endpoint, which is the maximum inflexion on the titration curve. Cobalt concentration is calculated from the titration volume of potassium ferricyanide. The principle is quantification by oxidizing cobalt (II) to cobalt (III) in strong ammonia solution using potassium ferricyanide.

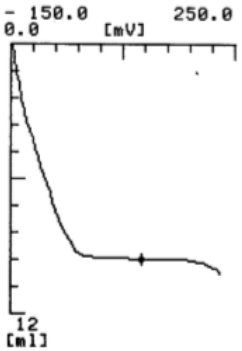
2. Apparatus

Main unit	Automatic potentiometric titrator (preamplifier STD)
Electrode	Platinum electrode Ceramic reference electrode

3. Reagents

Titrant	1/30mol/L potassium ferricyanide (potassium hexacyanoferrate (III)) solution
Solvent	Pure water, Nitric acid (1+1), Hydrofluoride acid, Ammonia water, Ammonium citrate

4. Example



—Titration curve—

—Measurement results—

	Sample (g)	Titer (mL)	Cobalt (%)
1	0.2370	9.6125	8.054
2	0.2265	9.1946	8.061
3	0.2410	9.7968	8.072
Average			8.062
SD			0.009
RSD(%)			0.1

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