

JIS

JAPANESE INDUSTRIAL STANDARD

**Method for Determination
of Boron in Zirconium and
Zirconium Alloys**

JIS H 1670—1982

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JAPANESE INDUSTRIAL STANDARD

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Method for Determination of Boron in Zirconium and Zirconium Alloys H 1670-1982
(Reaffirmed: 1988)1. Scope

This Japanese Industrial Standard specifies the method for determination of boron in zirconium and zirconium alloys.

2. General Matters

General matters common to the methods for determination shall be in accordance with JIS H 1650.

3. Division of Methods

The determination method of boron shall be in accordance with the distillation separatory crucumin absorptiometry (rossocyanine method). This method applies to the sample containing 0.00001 % and over of boron.

4. Distillation Separatory Crucumin Absorptiometry (Rossocyanine Method)

4.1 Summary Heat to decompose the sample with sulfuric acid, ammonium sulfate and water. Add methyl alcohol, distil boron as methyl borate, and cause the methyl borate to be absorbed by sodium hydroxide. Evaporate the methyl alcohol from the absorption solution, and after evaporation to dryness, dissolve the obtained salts in a mixture of hydrochloric acid and acetic acid. Add crucumin sulfuric acid and methyl alcohol to cause colour to be produced, and then measure the absorbance.

4.2 Reagents Reagents shall be as follows: The reagents (1), (3) to (6), (9) and (10) shall be stored in polyethylene bottles.

(1) Water The water distilled by using a quartz distillating apparatus.

(2) Sulfuric Acid Take 50 ml of sulfuric acid in a platinum dish (No. 100), add 2 to 3 ml of hydrofluoric acid, and after heating the solution till it vigorously develops a white fume, let it stand to cool. Transfer the solution to a quartz beaker (100 ml) and store it so as not to absorb humidity.

(3) Mixed Acid (1 Part Hydrochloric Acid and 2 Parts Acetic Acid)

Applicable Standard:

JIS H 1650-General Rules for Chemical Analysis of Zirconium and Zirconium Alloys