

JIS

JAPANESE INDUSTRIAL STANDARD

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

JIS H 1672—1982

Translated and Published

by

Japanese Standards Association

In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

JAPANESE INDUSTRIAL STANDARD

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Method for Determination of Uranium in
Zirconium and Zirconium AlloysH 1672-1982
(Reaffirmed: 1988)1. Scope

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

2. General Matters

General matters common to the methods of analysis shall be in accordance with JIS H 1650.

3. Division of Methods

The determination method of uranium shall be conducted according to the ion exchange separation Arsenazo III absorptiometry. This method applies to a sample containing 0.00003 % and over of uranium.

4. Ion Exchange Separation Arsenazo III Absorptiometry

4.1 Summary Decompose a sample with hydrofluoric acid and hydrogen peroxide, add boric acid, let uranium and the like be adsorbed by passing the solution through a cation exchange column, and effuse the zirconium. Elute uranium by passing hydrofluoric acid, and let uranium be adsorbed by passing the eluate through an anion exchange column. Remove remaining small amount of zirconium by washing, then elute the uranium with hydrochloric acid. Add perchloric acid to the eluate, and heat it to produce white fume. Let develop colour by adding perchloric acid and Arsenazo III, and determine the absorbance.

4.2 Reagents The reagents shall be as follows: For preparation and preservation of (3) to (5), (7) and (8), a polyethylene vessel shall be used.

- (1) Hydrochloric acid (1 + 1, 1 + 120)
- (2) Perchloric Acid (70 %)
- (3) Hydrofluoric Acid (1 + 9, 1 + 25 and 1 + 250)
- (4) Hydrofluoric Acid-Hydrochloric Acid Solution Add 666 ml of hydrochloric acid to 38 ml of hydrofluoric acid, and bring it up to 1 l by adding water.

Applicable Standard:

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