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AMERICAN SOCIETY FOR TESTING AND MATERIALS
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Standard Specification for Uranium Ore Concentrate[1]

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INTRODUCTION

This specification is intended to provide the nuclear industry with a general standard for uranium ore concentrate. Material conforming to this specification will generally meet the requirements for conversion to uranium hexafluoride. However, the converter may relax or supplement this specification upon mutual agreement with the customer.

1. Scope

1.1 This specification covers uranium ore concentrate containing a minimum of 65 weight % uranium.

1.2 This specification does not include requirements for health and safety. Observance of this specification does not relieve the user of the obligation to be aware of and conform to all applicable international, national, state, and local regulations pertaining to possessing, shipping, or using source nuclear material (see 2.2).

1.3 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

2. Referenced Documents

2.1 *ASTM Standards:*

C 859 Terminology Relating to Nuclear Materials[2]

C 1022 Test Methods for Chemical and Atomic Absorption Analysis of Uranium-Ore Concentrate[2]

C 1075 Practices for Sampling Uranium-Ore Concentrate[2]

2.2 *U.S. Government Documents:*

Nuclear Materials Licensing Code of Federal Regulations (latest edition) Title 10, Chapter 1, Nuclear Regulatory Commission[3]

Nuclear Materials Licensing Code of Federal Regulations, Title 49, *Transportation* Chapter 1, Materials Transportation Bureau[4]

Nuclear Materials Licensing Code of Federal Regulations, Energy Part 50 (10CFR 50) Licensing of Domestic Production and Utilization Facilities[3]

2.3 *ANSI Standard:*

ANSI/ASME NQA-1 Quality Assurance Requirements for Nuclear Facilities[5]

3. Terminology Definitions

3.1 Except as otherwise defined herein, definitions of terms are as given in Terminology C 859.

4. Chemical Composition

4.1 *Uranium Content*—The uranium content, as received, shall be a minimum of 65 weight %.

4.2 *Isotopic Content*—The isotopic content shall be that of naturally occurring uranium (0.7105 to 0.7115 % ^{235}U).

4.3 *Insoluble Uranium*—The uranium insoluble in nitric acid shall be a maximum of 0.10 weight % on a uranium basis.

4.4 *Extractable Organic*—The extractable organic shall be a maximum of 0.10 weight % on an as-received basis of an undried sample.

4.5 *Impurity Content*—The impurity content shall be less than the maximum limits specified in Table 1.

5. Physical Properties

5.1 *Particle Size*—All of a representative sample (Section 6) shall pass through a sieve with an aperature of 6.35 mm (¼ in.).

5.2 *Ability to Flow*—Concentrate shall be sufficiently free-flowing to permit sampling.

5.3 *Foreign Matter*—Concentrate shall be free of all materials and objects that: (*a*) are not produced as a constituent of concentrates in the milling of uranium ore, or, (*b*) would or could be detrimental to the sampling of concentrates or to the equipment used in such sampling.

6. Sampling

6.1 The lot size and number of tests (and retests when required) shall be as mutually agreed.

[1] This specification is under the jurisdiction of ASTM Committee C-26 on Nuclear Fuel Cycle and is the direct responsibility of Subcommittee C26.02 on Fuel and Fertile Material Specifications.

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[2] *Annual Book of ASTM Standards*, Vol 12.01.

[3] Available from the Nuclear Regulatory Commission, 1717 H Street, N. W., Washington, DC 20555.

[4] Available from the Materials Transportation Bureau, 400 Seventh St., Washington, DC, 20590.

[5] Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.