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Standard Specification for Uranium Ore Concentrate¹

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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 mass % 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*:²

C859 [Terminology Relating to Nuclear Materials](#)

C1022 [Test Methods for Chemical and Atomic Absorption Analysis of Uranium-Ore Concentrate](#)

C1075 [Practices for Sampling Uranium-Ore Concentrate](#)

C1380 [Test Method for the Determination of Uranium Content and Isotopic Composition by Isotope Dilution Mass Spectrometry](#)

2.2 *U.S. Government Documents*:

Nuclear Materials Licensing Code of Federal Regulations, [Energy](#) Title 10, Chapter 1, Nuclear Regulatory Commission³

Nuclear Materials Licensing Code of Federal Regulations, Title 49, [Transportation](#) Chapter 1, Materials Transportation Bureau⁴

Nuclear Materials Licensing Code of Federal Regulations, Energy Part 50 (10CFR 50) Licensing of Domestic Production and Utilization Facilities⁵

2.3 *ANSI Standard*:⁵

ANSI/ASME NQA-1 [Quality Assurance Requirements for Nuclear Facility Applications](#)

3. Terminology Definitions

3.1 Except as otherwise defined herein, definitions of terms are as given in Terminology C859.

4. Chemical Composition

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

4.2 *Isotopic Content*—The isotopic content shall be that of naturally occurring uranium (0.711 ± 0.001 g ²³⁵U per 100 g (see Note 1). The ²³⁴U content shall not exceed the limits in Table 1.

NOTE 1—For ore concentrate from verifiable source (for example, through the seller's quality assurance records), the ²³⁵U analysis is not normally

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from the Nuclear Regulatory Commission, Washington, DC, 20555-0001, www.nrc.gov.

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

⁵ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.