American National Standard

for Nuclear Materials –
Uranium Hexafluoride –
Packaging for Transport

ANSI N14.1-2001

Approved American National Standard
ANSI

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for Nuclear Materials –

Uranium Hexafluoride – Packaging for Transport

Secretariat

Institute of Nuclear Materials Management

Approved February 1, 2001

American National Standards Institute, Inc.

American National Standard

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Foreword (This foreword is not part of American National Standard ANSI N14.1-2001.)

This standard was developed under the procedures of the American National Standards Institute by Subcommittee N14-8 (later changed to N14-1) of Accredited Standards Committee N14 on Transportation of Fissile and Radioactive Materials. The secretariat of N14 is presently held by the Institute of Nuclear Materials Management. At the time this standard was being developed, it was held by the American Insurance Association.

The N14 Committee has the following scope:

Standards for the packaging and transportation of fissile and radioactive materials but not including movement or handling during processing and manufacturing operations.

Packaging of uranium hexafluoride (UF_6) for transport is an essential part of a safe and economical nuclear industry. This standard presents information on UF_6 cylinders, valves, protective packages, and shipping.

The packaging and transport of UF_6 is subject to regulation by government agencies having jurisdiction over packaging and transport. This standard does not take precedence over applicable U.S. Nuclear Regulatory Commission (NRC), U.S. Department of Energy (DOE), U.S. Department of Transportation (DOT), or other governmental regulations.

This standard covers only those standard cylinders that meet all of the acceptance criteria for UF_6 handling and is recommended for all new cylinder construction. Cylinders currently in service and not in accordance with this standard are acceptable for continued use, provided that they are inspected, tested, and maintained so as to comply with the intent of this standard and are used within their original design limitations.

It should be noted that some technical regulatory material has been restated in this standard. It was determined by the subcommittee that this is appropriate and convenient and would assist the user of the standard. For more detailed information, the user is encouraged to use the appropriate regulatory document.

Suggestions for improvement of this standard will be welcome. They should be sent to the Institute of Nuclear Materials Management, 60 Revere Drive, Suite 500, Northbrook, IL 60062.

This standard was processed and approved for submittal to ANSI by Accredited Standards Committee on Transportation of Fissile and Radioactive Materials, N14. Committee approval of the standard does not necessarily imply that all committee members voted for its approval. At the time this revision of the standard was approved, the N14 Committee had the following members:

John W. Arendt, Chair
Rick Rawl, Vice Chair
L. Paul Crawford, Secretary

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Alan Zimmer

Subcommittee N14.1 on Packaging of Uranium Hexafluoride, which developed this revision, had the following members:

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W. M. Arnold
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American National Standard for Nuclear Materials –

Uranium Hexafluoride – Packaging for Transport

1 Scope and Purpose

1.1 Scope

This standard provides criteria for packaging of uranium hexafluoride (UF_6) for transport. It includes specific information on design and fabrication requirements for the procurement of new UF_6 packagings. This standard also defines the requirements for in-service inspections, cleanliness, and maintenance for packagings in service. Packagings currently in service and not specifically defined in this standard are acceptable for use, provided they are used within their original design limitations and are inspected, tested, and maintained so as to comply with the intent of this standard. Also included are cylinder loadings, shipping details, and requirements for valves and valve protectors.

1.2 Purpose

This standard is intended to provide guidance and criteria for shipment of UF_6. It will assist in providing for compatibility of UF_6 packaging among different users within the nuclear industry.

2 Normative references

The following standards and references contain provisions, which, through reference in this text, constitute provisions of this American National Standard. At the time of publication, the editions indicated were valid. All standards and references are subject to revision, and parties to agreements based on this American National Standard are encouraged to investigate the possibility of applying the most recent editions of the standards and references indicated below.

ANSI N14.30-1992, *Nuclear Materials- Semi-Trailers Employed in the Highway Transport of Weight-Concentrated Radioactive Loads- Design, Fabrication, and Maintenance.*

ANSI/ASME *Boiler and Pressure Vessel Code 1998*

ANSI/ASME B1.1-1989, *Unified Inch Screw Threads (UN and UNR Thread Form)*[*]

ANSI/ASME B1.5-1997, *Acme Screw Threads*

ANSI/ASME B1.20.1-1983, *Pipe Threads, General Purpose (Inch)*

ANSI/ASME B16.11-1996, *Forged Steel Fittings, Socket-Welding and Threaded*

ANSI/ASME NQA-1-2000, *Quality Assurance Program Requirements for Nuclear Facilities*

ANSI/AWS A5.1-1991 (R1999), *Specification for Covered Carbon Steel Arc Welding Electrodes*

ANSI/AWS A5.8-1992, *Specification for Filler Metals for Brazing*

ANSI/AWS A5.14-97, *Specification for Nickel and Nickel Alloy Bare Welding Electrodes and Rods*

ANSI/AWS A5.17-97, *Specification for Carbon Steel Electrodes and Fluxes for Submerged Arc Welding*

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[*] The 1989 edition of this standard is available in archive format. Although the standard was administratively withdrawn it has been submitted as a new standard and is currently undergoing the approval process.