



ANSI N14.1-2012

American National Standard

***For Nuclear Materials —
Uranium Hexafluoride –
Packagings for Transport***



ANSI®
N14.1-2012

American National Standard
for Nuclear Materials —

Uranium Hexafluoride – Packagings for Transport

Secretariat

Institute for Nuclear Materials Management

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Foreword

(This foreword is not part of American National Standard N14.1–2012.)

The accredited Standards Committee on Packaging and Transportation of Radioactive and Non-Nuclear Hazardous Materials, N14, under whose jurisdiction this standard was developed, has the following scope.

Standards for the packaging and transportation of fissile and radioactive materials, non-nuclear hazardous materials, including waste and mixed materials, but not including movement or handling during processing and manufacturing operations.

This standard supersedes *American National Standard for Nuclear Materials – Uranium Hexafluoride – Packaging for Transport*, ANSI N14.1–2001, Addendum 1-2002, Addendum 2-2004, and Addendum 3-2005.

Packaging of uranium hexafluoride (UF₆) for transport is an essential part of a safe and economical nuclear industry. This standard presents information on UF₆ cylinders, valves, outer protection, and shipping.

The packaging and transport of UF₆ 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, U.S. Department of Energy, U.S. Department of Transportation, or other governmental regulations.

The Committee recognizes that this standard is also used for international transportation of UF₆, where international transport regulations, based on IAEA TS-R-1 (*Regulations for the Safe Transport of Radioactive Material*), apply. TS-R-1 uses ISO 7195 as reference for packaging of UF₆ for transport. ISO 7195 has been developed from and is based on previous issues of this standard and covers the same standard cylinders. The Committee has participated and will continue to participate in the development and maintenance of ISO 7195.

This standard includes references to regulatory material. For more detailed information, the user of this standard is encouraged to use the appropriate regulatory document.

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

This standard was prepared and approved for submittal to ANSI by the accredited Standards Committee on Packaging and Transportation of Radioactive and Non-Nuclear Hazardous Material, N14. Committee approval of the standard does not necessarily imply that all committee members voted for its approval. At the time it approved this standard, the N14 Committee comprised the following members.

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AMERICAN NATIONAL STANDARD

ANSI N14.1-2012

American National Standard for Nuclear Materials – Uranium Hexafluoride – Packaging for Transport

1. Scope and Purpose

1.1 Scope

This standard provides criteria for packaging used for transport of uranium hexafluoride (UF₆). It includes specific information on design and fabrication requirements for the procurement of new UF₆ packaging for transportation of 0.2205 lb (0.1 kg) or more of UF₆. This standard also defines the requirements for in-service inspections, cleanliness, and maintenance for packaging in service. Packaging currently in service and not specifically defined in this standard are acceptable for use, provided that 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 requirements, and requirements for valves, plugs, and valve protectors.

Imperial units shown in this standard may be converted to metric units and rounded when not in conflict with the functional specification.

1.2 Purpose

This standard is intended to provide for compatibility of UF₆ packaging among different users within the nuclear industry. It will assist in providing guidance and criteria for shipment of UF₆.

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. Codes and standards with corresponding versions using metric units may be used interchangeably.

With respect to this standard, American Society of Mechanical Engineers (ASME) material and filler metal specifications, identified by the prefix "S," are interchangeable with corresponding ASTM International (ASTM) and American Welding Society (AWS) specifications referenced herein.

ASNT SNT-TC-1A-2001, *Personnel Qualification and Certification in Nondestructive Testing*

ANSI/API Std 527, *Seat Tightness of Pressure Relief Valves*

ANSI/ASME, *Boiler and Pressure Vessel Code 2007*

ANSI/ASME B1.1-2003, *Unified Inch Screw Threads, (UN and UNR Thread Form)*