



Standards and Certification Training

Module A – Administrative A2. Standards and Certification Products

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ASME S&C Training Module A2. Standards and Certification Products



MODULE A COURSE OUTLINE

A1. Tools and Resources

A2. Standards and Certification Products

A3. Membership Maintenance

A4. Honors and Awards

A5. Publishing Codes and Standards

A6. Productive Meetings and Appropriate Ballot Comments

Module A contains six modules. This is Module A2 Standards and Certification Products

REVISIONS

<u>Date</u>	<u>Change</u>
06/19/20	Presentation was revised entirely based on current ASME Standards & Certification Products.
04/08/14	Title revised. Removed Pop Quiz material and updated the background format throughout. Updated Module Learning Objectives on Slide 3 and Module Summary on Slide 27. Revised slides 4, 14, and 15. Deleted former slides 14-17 - information is already covered in B11. Deleted former slide 20 on addenda service. Revised notes throughout.

Learning Objectives

At the end of this module, you will be able to:

- Define ASME's use of the term standard
- Identify the standardized format used on ASME Codes and Standards
- Describe how various types of inquiries are identified and handled
- Describe the difference between a standard, guide and technical report
- Identify the 4 types of conformity assessment programs available.
- Describe ASME's Learning and Development Programs

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- Describe ASME's Learning and Development Programs

MODULE OUTLINE

- I. Codes and Standards
- II. Guides/Technical Reports
- III. Conformity Assessment
- IV. ASME Learning and Development Programs

Standards and Certification is responsible for the following products:

- I. Codes and Standards
- II. Guides/ Technical Reports
- III. Conformity Assessment
- IV. ASME Learning and Development Training and Certificate Programs

I. STANDARDS

Let's begin by taking a look at the standards

STANDARD

- Definitions of the term “standard” varies depending on the source:
 - ISO/IEC Guide 2
 - OMB Circular A-119
 - ASME

- It is important to establish the definition of a standard, but it is inevitable that such a definition will vary, depending on its source.
- Let's look at definitions of a “standard” from different sources and note the similarities and differences.

DEFINITION OF A STANDARD

- ISO/IEC Guide 2: Para 3.2
 - Document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context

NOTE: Standards should be based on the consolidated results of science, technology and experience, and aimed at the promotion of optimum community benefits

ISO's definition of a standard is extremely general.

- This is due to the fact that ISO writes standards that cover a wide array of products and activities.

DEFINITION OF A STANDARD

- OMB Circular A-119:

(i) Common and repeated use of rules, conditions, guidelines or characteristics for products or related processes and production methods, and related management systems practices

(ii) The definition of terms; classification of components; delineation of procedures; specification of dimensions, materials, performance, designs, or operations; measurement of quality and quantity in describing materials, processes, products, systems, services, or practices; test methods and sampling procedures; or descriptions of fit and measurements of size or strength

(iii) Terminology, symbols, packaging, marking or labeling requirements as they apply to a product, process, or production method

The US Office of Management and Budget (OMB) Circular A-119 Federal Participation in the Development and Use of Voluntary Consensus Standards and Conformity Assessment Activities defines a standard as a:

(i) Common and repeated use of rules, conditions, guidelines or characteristics for products or related processes and production methods, and related management systems practices

(ii) The definition of terms; classification of components; delineation of procedures; specification of dimensions, materials, performance, designs, or operations; measurement of quality and quantity in describing materials, processes, products, systems, services, or practices; test methods and sampling procedures; or descriptions of fit and measurements of size or strength.

(iii) Terminology, symbols, packaging, marking or labeling requirements as they apply to a product, process, or production method.

It also

- Directs U.S. government agencies to use voluntary consensus standards in lieu of government-unique standards except where inconsistent with law or otherwise impractical
- Includes a description of what is not a standard, and the various types of standards that can coexist.

ASME's DEFINITION OF A STANDARD

- A set of technical definitions, instructions, rules, guidelines, or characteristics set forth to provide consistent and comparable results, including:
 - Items manufactured uniformly, providing for interchangeability
 - Tests and analyses conducted reliably, minimizing the uncertainty of the results
 - Facilities designed and constructed for safe operation

ASME defines a standard as:

A set of technical definitions, instructions, rules, guidelines, or characteristics set forth to provide consistent and comparable results, including:

- Items manufactured uniformly, providing for interchangeability
- Tests and analyses conducted reliably, minimizing the uncertainty of the results
- Facilities designed and constructed for safe operation

IMPACT OF STANDARDS

- Affects all interested parties for a product, work process or technology such as:
 - Manufacturers
 - Installers
 - Designers
 - Users or owners of equipment
 - Enforcing Authorities & Inspection Agencies
 - Specialists having expert knowledge
- Market impact has legal implications
- Basis for regulatory requirements

Codes and standards have multiple impacts:

- Codes and standards can have a major impact on the market for the product, work process or technology to which the code or standard applies.
- It is the potential market impact that is behind many of the legal implications that are addressed in other sessions in these training modules.
- Codes and standards often form the basis for government regulatory requirements, particularly where safety is involved.

ASME STANDARDS

- Developed under the ANSI-accredited Procedures for ASME Codes and Standards Development Committees
 - The standards development process is covered under Module B5 - Consensus Process for Standards Development
- Key content characteristics include:
 - Standardized format
 - Clear consistent style
 - Well-defined scope
 - Realistic and Enforceable Requirements

- ASME Codes and Standards are developed using the key principles of the consensus process discussed further in Module B5 - Consensus Process for Standards Development including:
 - 1) Openness
 - 2) Transparency
 - 3) Balance of Interest
 - 4) Due Process
- ASME standards include these key characteristics:
 - A standardized format
 - They are written in a clear consistent style that makes them suitable for repeated use.
 - They have a well-defined scope, but provide complete coverage of the topics within that scope.
 - They define realistic requirements suited to the intended purpose of the standard
 - Realistic requirements are not arbitrary or overly restrictive.
 - They define enforceable requirements.
 - The requirements allow auditors (e.g., inspector, purchaser) to clearly determine where the standard has been followed.

CONTENTS OF AN ASME STANDARD

- Front Matter may include:
 - Copyright Page, Table of Contents, Foreword, Committee Roster, Committee Correspondence, and Summary of Changes
- Body of a Standard may include:
 - Chapters, Sections
- Back Matter may include:
 - Appendices (Mandatory and Nonmandatory), Annexes, Informational pages

The contents of an ASME Standard includes the following:

- Front Matter such as copyright page, table of contents, foreword, roster, committee correspondence and summary of changes.
- Body that is divided into Chapters, sections and paragraphs for easy reference.
- Back matter such as Appendices (Mandatory and Nonmandatory), Annexes, Informational pages

REQUESTS to ASME STANDARDS DEVELOPMENT COMMITTEES

Due to the impact ASME Standards have on various industries, standards development committees receive the following requests:

- Interpretations
- Cases
- Proposed Revisions

Due to the impact ASME Standards have on various industries, standards development committees receive a request for interpretations, cases and proposed revisions.

Interpretations are formal responses to written inquiries. They clarify ambiguous language in the standard. Cases are used to provide alternatives to the existing requirements of the standard, such as to grant permission for the use of new materials. Proposed revisions will be covered in the next slide.

For more details on Interpretations and cases, please see Module B11 - Standards Inquiries, Interpretations and Cases.

REQUESTS FOR REVISION

- Requests may be initiated:
 - Committee member(s)
 - General Public
 - ASME Staff
- Standards development committees require request for revisions to adhere to a-specific format
- All requests are forwarded to the appropriate staff contact of the committee for consideration

- Requests for Revision can be initiated by committee members, general public or ASME Staff
- Standards Development Committees may have specific format requirements for revisions requests. These requirements may be outlined in the front matter of the Standard or on the C&S Connect Standard Development Committee Page.
- Requests for revision of the standard, such as proposed technical changes, editorial changes or errata, are sent to the appropriate staff contact of the committee for consideration.

REQUESTS FOR REVISION

- Technical Revisions
 - Substantive revisions that impact the requirements of a standard
- Editorial Revisions
 - Non-substantive revisions that do not change the requirements
- Errata
 - Typographical errors or misspellings, publication errors (omission by staff, printer errors)
 - Errata are posted online

Requests for revision can fall into one of three categories; technical revisions, editorial revisions or errata.

Technical revisions are changes that impact the requirements of the standard. Editorial revisions are changes that *do not* change the requirements of the standard. Errata include the following:

- Typographical errors or misspellings, regardless of origins
- Publication of items that were approved but incorrectly published, including staff or printer's errors, and omission of approved revisions and,
- Incorrect publication of an item that did not receive the necessary approvals

The changes described in Errata apply retroactively. Errata are posted online for each ASME Standard. Individuals may subscribe to receive an email when a new errata is posted for an ASME Standard.

II. GUIDES & TECHNICAL REPORTS

Now that we have covered one of ASME's primary products and the ancillary products used to update and expand on them.

Let's move on to another important category of products: Guides and Reports.

GUIDES

- Provide recognized and generally accepted good engineering practices
- Provide suggestions, alternatives rather than directives
- Occasionally revised

Guides are recommended engineering practices that are recognized and generally accepted. They are less authoritative and definitive than a standard, but are typically an ancillary product to a standard. Guides provide recommended procedures for common engineering problems and are similar to a standard, they can be use repetitively within their clearly defined scopes, and are occasionally updated.

TECHNICAL REPORTS

- Informational in nature
 - Technical research reports
 - Tutorials
 - Factual Data
 - Methods for applying a standard
- Periodically reviewed for continued relevance

Technical reports are **informational in nature** that may include technical research, tutorials, factual data, information on the “state of the art” in a particular area, or methods for application of a related standard. These reports are generally reviewed periodically for continued relevance.

III. CONFORMITY ASSESSMENT

Part III of this module will cover ASME's Conformity Assessment Programs.

CONFORMITY ASSESSMENT

Types of ASME Conformity Assessment Programs:

- Accreditation
- Product Certification
- Personnel Certification
- Quality Program Certification

To facilitate demonstration of compliance by users of some ASME standards, ASME develops and administers programs to assess conformity with some of its standards. ASME Standards and Certification issues conformity assessment certificates in four areas: -

- Accreditation
- Product Certification,
- Personnel Certification and
- Quality Program Certification

These programs are administered by ASME Conformity Assessment under the Board on Conformity Assessment (BCA). An associated Accreditation or Certification Committee is typically formed under BCA to provide guidance for the program. Let's take a brief look at each of these.

NOTE: For more information on ASME's Conformity Assessment Programs, please see Training Modules B3, Conformity Assessment: Committees and Staff Roles and Responsibilities and B9, ASME Conformity Assessment Programs.

CONFORMITY ASSESSMENT

Accreditation

- ASME assesses and verifies an organization's qualification to perform a particular activity.
- ASME-accredited organization may develop and administer a conformity assessment activities (e.g., testing, inspection, or certification) in accordance with program requirements contained in an ASME standard.
- Certificate of Accreditation awarded for successful review and organizations are referred to as "ASME-accredited".

ASME Accreditation is an independent assessment and verification of an organization's qualification to perform a particular activity. The accreditation assessment is performed by an ASME audit team which reviews quality system documentation and verifies implementation. The ASME-accredited organization may develop and administer a conformity assessment activities (e.g., testing, inspection, or certification) in accordance with program requirements contained in an ASME standard developed through the consensus process.

A "Certificate of Accreditation" is typically issued, and organizations are referred to as "ASME accredited".

An example of an accreditation program is the Pressure Relief Device Laboratories (PRD) which accredits testing laboratories to perform capacity verification tests as required by the BPV Code. Tests are required to be conducted as specified in the ASME PTC 25 standard.

CONFORMITY ASSESSMENT

Product Certification

- ASME certifies that a manufacturer is capable of constructing equipment and fulfilling requirements of an ASME standard.
- Supplier is responsible for ensuring that individual products meet the requirements on which the certification is based.
- ASME “Certificate of Authorization” is issued where there is a certification mark (stamp) and product designator that may be placed on the product.

ASME certification related to products means that a manufacturer is capable of constructing equipment and fulfilling requirements of a certain ASME standard. Certification is performed by an ASME audit team which reviews quality systems documentation and verifies implementation. The supplier is responsible for ensuring that individual products meet the requirements on which the certification is based. An ASME “Certificate of Authorization” is issued where there is a certification mark and product designator that may be placed on the product.

An example of product certification is the Boiler and Pressure Vessel (BPV-non nuclear) - ASME BPV certification is a means of complying with the laws and regulations in most of the U.S. and Canada, as well as other countries throughout the world. There is a separate ASME certification designator used in conjunction with the certification designator for each type of equipment covered by the BPV Code.

CONFORMITY ASSESSMENT

Personnel Certification

- Certifies that an individual meets the qualification criteria specified in an ASME standard.
- Evaluation includes an examination or series of examinations.
- Individual receives a Certificate upon successful completion and is referred to as a “Certificant” or “Certified Individual.”
- All certified individuals are listed on ASME’s public certificate holder list.

ASME Personnel Certification means that an individual’s qualifications have been reviewed, proficiency has been demonstrated, and the individual has been accepted by ASME as meeting all requirements of the relevant ASME Standard. ASME serves as the conformity assessment (certification) body and assesses the conformity of the personnel to requirements of the certification criteria document (an ASME standard), which includes independent job-specific assessment of an individual’s qualification (knowledge, skills, and abilities). Documented training and experience prerequisites are typically established to become eligible for the certification. Written and practical assessment examinations are utilized and based on the required body of knowledge and skills contained in the referenced certification criteria document. An individual receives a Certificate upon successful completion and is referred to as a “Certificant” or “Certified Individual.”

An example of personnel certification is the Geometric Dimensioning and Tolerancing Professionals (GDTP) program. Criteria for this program is contained in ASME Y14.5.2, Certification of Geometric Dimensioning and Tolerancing Professionals.

CONFORMITY ASSESSMENT

Quality Program Certification

- Certifies the organization's quality management system, **not its products**
- ASME audit team reviews system documentation and implementation

Quality Program Certification means an organization's management system (e.g., quality assurance program) has been reviewed and accepted by ASME as meeting the requirements of the relevant standard. Certification involves an ASME audit team reviewing system documentation and implementation.

ASME NQA-1 (Quality Assurance Requirements for Nuclear Facility Applications) is an example of this type of program.

IV. ASME LEARNING & DEVELOPMENT

In this last part of this module, we'll cover ASME Learning and Development Programs.

ASME LEARNING & DEVELOPMENT

Courses & Programs

- **Live Courses**
 - In-Person: Taught by industry leaders with practical experience and insight into the latest trends and professional innovation.
 - Virtual Classroom: live online courses with world-class instructors, 24-7 access to valuable job resources, and forums to collaborate with peers.
- **On-Demand Courses**
 - Self-study: Structured in an easily digestible modules culminating in an assessment.
 - Instructor-Supported: Self-study courses with email access to experts.
- **Certificate and Qualification Programs**
 - Certificate Programs: a comprehensive series of courses which include a certificate of completions after successful demonstration of attainment of courses outcomes.
 - Qualification Programs: recognized as qualified to carry out specific job functions by demonstrating mastery of knowledge, skills and competencies.

ASME's Learning and Development offers numerous courses and programs. Some of which are:

Live Courses. These courses are offered in person or a virtual classroom. For live courses that are offered in-person are taught by industry leaders with practical experience and inside into the latest trends and professional innovation. Live courses that are held in a virtual classroom are live online courses with world-class instructors, 24-7 access to valuable job resources, and forums to collaborate with peers.

On-Demand Courses. These courses are offered either by self-study or instructor-supported. The self-study on-demand courses are structured in an easily digestible modules culminating in an assessment. Instructor-supported on-demand courses are self-study courses with email access to experts.

Certificate Programs are comprehensive series of courses which include a certificate of completions after successful demonstration of attainment of courses outcomes. Qualification Programs are recognized as qualified to carry out specific job functions by demonstrating mastery of knowledge, skills and competencies.

ASME LEARNING & DEVELOPMENT

Solutions for Teams

- Group training held at a company's site in-person or virtually, tailored to address a company's specific challenges. Any combination of ASME courses (Live, On-Demand, Programs).

L&D Community

- Authorized Training Providers and Authorized Training Instructors work with ASME to develop and deliver official ASME training programs to their local markets.
- Instructors and course developers, many of which are also ASME volunteers serving on code committees, share their extensive industry experience with engineers around the world.

Group training are offered by ASME L&D which can be held at a company's site in-person or virtually. These sessions are tailored to address a company's specific challenges.

Within the L&D community, Authorized Training Providers and Authorized Training Instructors work with ASME to develop and deliver official ASME training programs to their local markets.

Instructors and course developers, many of which are also ASME volunteers serving on code committees, share their extensive industry experience with engineers around the world.

MODULE SUMMARY

- Standards are a set of technical definitions, instructions, rules, guidelines, or characteristics set forth to provide consistent and comparable results.
- Guides are recommended engineering practices that are recognized and generally accepted.
- Technical reports are informational in nature that may include technical research, tutorials, factual data or methods for application of a related standard.
- Conformity Assessment covers 4 areas; Accreditation, Product Certification, Personnel Certification, and Management Systems Certification.
- ASME Training and Certificate Programs are training-based individual credentialing programs.

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- Conformity Assessment covers 4 areas; Accreditation, Product Certification, Personnel Certification, and Management Systems Certification
- ASME Training and Certificate Programs are training-based individual credentialing programs.

REFERENCES

- ISO / IEC Guide 2:2004, Standardization and related activities - General vocabulary
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- OMB Circular A-119
<https://www.whitehouse.gov/wp-content/uploads/2017/11/Circular-119-1.pdf>
- ASME Policies, Procedures, and Guides
<https://cstools.asme.org/csconnect/CommitteePages.cfm?Committee=A01000000&Action=7609>
- ASME's Public Certified Individuals List
<https://asme.learningbuilder.com/Public/MemberSearch/Search>
- ASME's Public Certificate Holders List
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