

Engineering Standards What They are, Where & Why They're Used

Dr. Hodge Jenkins

Some Definitions:

Standard: A standard is a document that defines the characteristics of a product, process or service, such as dimensions, safety aspects, and performance requirements.

Code: Laws or regulations that specify minimum standards to protect public safety and health such as codes for construction of buildings. Voluntary standards are incorporated into building codes

Specification: A set of conditions and requirements of precise and limited application that provide a detailed description of a procedure, process, material, product, or service for use primarily in procurement and manufacturing. Standards may be referenced or included in specifications.

Technical Regulation: A mandatory government requirement that defines the characteristics and/or the performance requirements of a product, service or process (see also Regulation).

Why Standards and Codes?

- Standardization
 - Parts from different vendors fit together
 - Common design specs
 - Consistent quality
 - e.g., Pipe wall thickness, schedule 40
 - Wire sizes,
- Safety & Legal Enforcement of Safety
 - Building safety, fire prevention/protection
 - Individual & Public Safety
 - e.g., Safe drinking water, safe nuclear plants

Standards needed for function

- Functional Based
 - 110V /60Hz or 220V/50Hz
 - Piping (Schedule 40, 50, ...)
- Professional Society Based
 - ANSI & ASME (Boiler & Pressure Vessel Code)
 - IEEE communication standards

Parts Standardization

- Every mass produced product usually has a standard
- IEEE has many, many standards for electronics
- DIN, ISO, ANSI for size, shapes, etc.
- US ANSI pipe standards
 - Diameters.
 - Thickness
 - Materials
 - Flange bolt patterns

It's the law

- Legal Requirements US & Internationally
 - UL listed, CSA
 - ANSI, JIS, ISO, DIN
- EPA, USNRC
 - Code of Federal Regulations (CFR)
- Building codes, National Electrical Code, etc.

Some Background:

- The U.S. federal government is the largest single creator & user of standards: more than 45,000 (by current estimates)!
- About 210 organizations are designated Standard Development Organizations (SDO's)
- Most Standards (about 90%) come from about 20 of these SDO's
- ASTM, ASME, IEEE, AISI (ASM), ASCE, MilStd (Mil Specs), are some of the most important SDO's



Who makes Standards and Codes

- AIA Aerospace Industries Association of America
- AAI Aluminum Association, Inc
- AASHTO American Association of State Highway and Transportation Officials
- ACI American Concrete Institute
- AISC American Institute of Steel Construction
- AISI American Iron and Steel Institute
- ANSI American National Standards Institute
- ASCE American Society of Civil Engineers
- ASME American Society of Mechanical Engineers
- ASTM American Society for Testing and Materials
- AISE Association of Iron and Steel Engineers
- BOCA Building Officials and Code Administrators
- ISO International Organization for Standardization
- MIL SPEC United States Military
- NFoPA* National Forest Products Association
- NIST National Institute of Standards and Technology
- OSHA Occupational Safety and Health Administration
- SAE Society of Automotive Engineers

Taking them Global!

- **ANSI** and (U.S. National Committee (**USNC**)) are the U.S. clearing house for Standards and a founding member of **ISO**!
- Internationally there are Standards Organizations in every major Industrial Nation and several Umbrella Groups:
 - International Organization for Standardization (ISO)
 - International Electrotechnical Commission (IEC)
 - International Telecommunication Union (ITU)



How they're used:

- Standards are a “**COMMUNICATION**” tool that allows all users to speak the same language about products or processes
- They provide a “**Legal**,” or at least enforceable, means to evaluate acceptability & sale-ability of products and/or services
- They can be taught and applied globally!
- They, ultimately, are **designed to protect the public** from questionable designs, products and practices
- Thus they fall (in engineering terms) into the “**MOM AND APPLE PIE**” area of our profession!
- They teach us, as engineers, **how we can best meet environmental, health, safety and societal responsibilities**



How did standards develop?

- **Selection from competing technologies**
 - Westinghouse AC power, Edison DC power
 - Communications standards
 - Military requirements (Civil War)
- **Failures**
 - ASME Boiler & PV Code (Boston Molasses Disaster, aka the Great Molasses Flood of 1919)
 - Building fire codes
 - Tacoma Narrow Bridge failure
 - World Trade Center bombing
 - ...

Common, Everyday Standards

- Fasteners (#10-24 bolt, M8 bolt)
- Plumbing sizes
- Lumber sizes
- Electrical Wire sizes
- Electrical service 110 VAC, 60 Hz
- Air pollution controls: Car Inspections
- Building Codes

Standards I have used professionally

- Westinghouse Nuclear
 - ASME B&PV Code
 - US CFR & TR Laws
- USFS R&D
 - ANSI
 - Drafting standards
 - Component specs
- Fisher Scientific
 - UL & CSA
 - Appliance design: ovens, centrifuges
- Molytek, Inc., Lucent
 - ISO, DIN, JIS
 - Process & Product

The **National Institute of Standards and Technology (NIST)**, an agency of the U.S. Department of Commerce, conducted a three-year building and fire safety investigation to study the factors contributing to the collapse of the WTC Towers.

September 11, 2001, was not the first time that tragedy helped to identify the need for standards. More than a century ago, a great fire ravaged Baltimore, Maryland, for more than 30 hours in early 1904.

The fire was reported first at the John Hurst and Company building at 10:48 a.m. on Sunday morning, February 7, and quickly spread. By 1:30 p.m., units from surrounding communities were arriving. To halt the fire, officials tried to use a firewall, then dynamited buildings around the existing fire. These tactics, however, were unsuccessful and the fire continued until late afternoon on Mon., February 8. More than 1,231 firefighters were required to bring the blaze under control. One reason for the fire's duration was the lack of national standards in fire-fighting equipment. Although fire engines from Wilmington and Washington, DC, and cities as far away as Philadelphia, Atlantic City, and New York City responded, many were useless because their hose couplings failed to fit Baltimore hydrants. As a result, the fire burned over 30 hours, destroying 1,526 buildings spanning 70 city blocks.

The **National Fire Protection Association**, which had been established in 1896 after a number of disastrous large-scale fires, then set about to develop uniform sprinkler systems and standard hose couplings.



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Standards Developing Organizations

- AA - Aluminum Association
- AAMI - Association for the Advancement of Medical Instrumentation
- AKSHTO - American Association of State Highway and Transportation Officials
- AATCO - American Assoc of Textile Chemists and Colorists
- ABMA - American Bearing Manufacturers Association
- ABS - American Bureau of Shipping
- ACI - American Concrete Institute
- ADA - Americans with Disabilities Act
- AEC - AEC Construction Standards
- AECA - European Association of Aerospace Industries
- AGA - American Gas Association
- AGMA - American Gear Manufacturers Association
- IA-NAS - Aerospace Industries Association/National Aerospace Standards
- IAA - American Institute of Aeronautics and Astronautics
- AIM - Association for Information and Image Management
- AIMT - The Association For Manufacturing Technology
- ANS - American Nuclear Society
- ANSI - American National Standards Institute
- API - American Petroleum Institute
- ARNC - Aeronautical Radio, Inc.
- ARMY - Army Regulations and Pamphlets
- ASABE - American Society of Agricultural and Biological Engineers
- ASHRAE - American Society of Heating, Refrigerating, and Air-conditioning Engineers
- ASME - American Society of Mechanical Engineers
- ASQ - American Society for Quality

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American National Standards Institute: An Introduction!

Go There

ANSI

Throughout its history, ANSI has maintained as its primary goal the enhancement of global competitiveness of U.S. business and the American quality of life by promoting and facilitating voluntary consensus standards and conformity assessment systems and promoting their integrity. The Institute represents the interests of its nearly 1,000 company, organization, government agency, institutional and international members through its office in New York City, and its headquarters in Washington, D.C.

National Standardization

ANSI facilitates the development of American National Standards (ANS) by accrediting the procedures of standards developing organizations (SDOs). These groups work cooperatively to develop voluntary national consensus standards. Accreditation by ANSI signifies that the procedures used by the standards body in connection with the development of American National Standards meet the Institute's essential requirements for openness, balance, consensus and due process.

ANSI is often asked about the total number of standards (and standards setting bodies) in the United States. It is estimated that in the U.S. today there are hundreds of "traditional" standards developing organizations - with the 20 largest SDOs producing 90% of the standards - and hundreds more "non-traditional" standards development bodies, such as consortia. This means that the level of U.S. participation is quite expansive as the groups themselves are comprised of individual committees made up of experts addressing the technical requirements of standards within their specific area of expertise.

At year-end 2006, about 200 of these standards developers were accredited by ANSI; there were more than 10,000 American National Standards (ANS).

In order to maintain ANSI accreditation, standards developers are required to consistently adhere to a set of requirements or procedures known as the "ANSI Essential Requirements," that govern the consensus development process. Due process is the key to ensuring that ANSAs are developed in an environment that is equitable, accessible and responsive to the requirements of various stakeholders. The open and fair ANS process ensures that all interested and affected parties have an opportunity to participate in a standard's development. It also serves and protects the public interest since standards developers accredited by ANSI must meet the Institute's requirements for openness, balance, consensus and other due process safeguards.

That is why American National Standards are usually referred to as "open" standards. In this sense, "open" refers to a process used by a recognized body for developing and approving a standard. The Institute's definition of openness has many elements, but basically refers to a collaborative, balanced and consensus-based approval process. The content of these standards may relate to products, processes, services, systems or personnel.

More than 10,000 National Standards in the USA alone

➔

Open Standards (process of developing)

➔

Learning About Them

Why Standards Matter

ANSI's first introductory level e-learning course is for those who may not be familiar with standards, ANSI or the U.S. voluntary standards and conformity assessment systems.

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• U.S. Standards – Today and Tomorrow

This course focuses on the U.S. national standards systems and is an intermediate-level course that supplements basic standards education. It provides more in-depth knowledge about the development, role and impact of domestic standards on government, business, trade and professional associations, and includes a module for university faculty and students. The courses on this website complement ANSI's instructor-led education and training courses.

The Impact of Standards on Business and Industry

Roughly 80% of global merchandise trade is affected by standards and by regulations that embody standards. This means standardization affects virtually all products and services used or traded by the U.S. while also providing the nation industrial base with opportunities to influence international markets. Standards and conformity assessment programs play a key role in the transfer of technology, from the research and development stage, to production, and ultimately to a product's success in the marketplace. Strategic utilization of these programs can simplify product development, reduce unnecessary duplication, lower costs, increase productivity, ensure safety, permit interchangeability, compatibility, and interoperability, enhance the acceptance of new products, maintain uniformity in product quality and much more.

By being part of the standards development process, industry representatives help to shape a standard so that the finished document meets their individual needs, as well as the needs of any customers they may have.

Industry participation in the standards development process, for example, can seat company representatives at the same table with their customers. Identifying customer requirements early makes it easier to plan and integrate necessary design changes. This is also much more economical than trying to retrofit a product (and its manufacturing process) after a standard is approved.



“Extracted” from an on-line lesson about Standards at ANSI Education page

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Standards in the news:

- **ISO 9000** – a quality standard used by business to say “We are QUALITY” (in US this has evolved into Q9001 as ‘nationalized’ by AQS)
- **UL** rating – used as an “international” safety rating (hence Standard)
- **ISO 14000** – the international Environmental Management Guideline (standard) – and hence the ‘de-facto’ product life cycle and sustainability standard for business, industry, and Engineering Design
- **ANSI/ASME Y14.1 and Y14.5** – international drafting standards for engineering drawings
- Even Clothes sizes are controlled by International Standards!



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Top Engineering Docs

ASTM 11.03
Occupational Health And Safety: Protective Clothing

ISO 14971
Medical Devices - Application Of Risk Management To Medical

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Standards & Regulations News - 2009

October 5, 2009

Germany Approves New Standardization Strategy
Germany's new "Standardization Policy Concept" ("Normungspolitisches Konzept") was approved by its federal government on Sept. 2 ... more

October 1, 2009

AAMI, ANSI, ASTM, DIN Develop Medical Device Standard Database
The Association for the Advancement of Medical Instrumentation (AAMI), the American National Standards Institute (ANSI), ASTM International and ... more

October 1, 2009

ASTM B964 Measures Flow Rate of Metal Powders Using Carney Funnel
ASTM International published ASTM B964 - Test Methods for Flow Rate of Metal Powders Using the Carney Funnel. ... more

October 1, 2009

ISO 26000 Draft Standard Gives Guidance on Social Responsibility
The International Organization for Standardization (ISO) published ISO 26000 - Guidance on social responsibility as a draft international standard ... more

September 11, 2009

BSI Proposes Study of ISO Asset Management Standards
The British Standards Institution (BSI) submitted a proposal to the International Organization for Standardization (ISO) for a justification ... more

September 8, 2009

USDA Proposes Consumer Label for Biobased Products
The U.S. Department of Agriculture (USDA) proposed a voluntary labeling program for biobased consumer products, called the BioPreferred labeling ... more

September 8, 2009

ASTM Offers Proficiency Test Program for Thermal Analyses of Plastics
The ASTM International Proficiency Testing Center will offer a 2010 proficiency testing program (PTP) on thermal analyses of plastics. ... more

September 8, 2009

FDA Proposes Mandatory Electronic Safety Reporting
The U.S. Food and Drug Administration (FDA) proposed two rules to amend post-market safety reporting regulations, which would require the reports ... more

August 25, 2009

http://engineers.ihs.com/document/abstract/HEVGCACAAAAA

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ISO 14119 AMD 1 Safety of Ma... x

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A Specific Example of an ISO Standard (of design)

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ISO 14119 AMD 1 Safety of Machinery - Interlocking Devices Associated with Guards - Principles for Design and Selection AMENDMENT 1: Design to minimize defeat possibilities

Document ISO 14119 AMD 1 is offered by IHS as part of an **online subscription**. This subscription contains many documents on the same topic.
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ISO 14119 AMD 1 Document Information:
Title
Safety of Machinery - Interlocking Devices Associated with Guards - Principles for Design and Selection AMENDMENT 1: Design to minimize defeat possibilities
International Organization for Standardization
Publication Date:
May 15, 2007

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ASTM E2248, ASTM E2298 Detail Charpy Impact Tests
June 13, 2009 // Published as a news service by IHS

ASTM International Committee E28 on Mechanical Testing approved ASTM E2248 Test Method for Impact Testing of Miniaturized Charpy V-Notch Specimens and ASTM E2298 Test Method for Instrumented Impact Testing of Metallic Materials.

"Conventional noninstrumented Charpy tests give useful comparative information but generally do not offer any detailed insight into the failure mechanisms or provide quantifiable material properties," said Enrico Lucon, senior researcher, Institute of Nuclear Material Science at the Belgian Nuclear Research Center.

"Particularly for structural integrity evaluations, using instrumented Charpy impact test data can improve the understanding of failure mechanisms at high loading rates," said Lucon. "On the other hand, in the case of thin-walled structures or for optimizing material consumption, miniature Charpy specimens may represent an attractive option."

Lucon said instrumenting the machine striker to measure and record the force on the notched sample during impact, as described in ASTM E2298, gives a clearer picture of the events occurring, providing additional insight into the behavior of material under impact loading.

Testing procedures described in ASTM E2248 will be helpful for users who need to reduce the size of Charpy specimens either because the investigated component is thin or because the available material is limited in quantity.

Source: *ASTM International*.

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Where they may Play into your Projects, Examples: (drafting Standard)

The screenshot shows the NSSN Search Engine for Standards interface. The search term '14.1' has been entered, and 28 records were found. The results table lists various ASME standards related to engineering drawings and lettering.

Document #	Title	Developer	Ordering Information
ANSI/ASME Y14.24-1999	Types and Applications of Engineering Drawings	ASME	ANSI ESS
ANSI/ASME Y14.29-1992 (R2003)	Line Conventions and Lettering	ASME	ANSI ESS
ANSI/ASME Y14.32.1M-1994 (R1999)	Chassis Frames Passenger Car and Light Truck Ground Vehicle Practices	ASME	ANSI ESS
ANSI/ASME Y14.34M-1995 (R2002)	Associated Lists	ASME	ANSI ESS
ANSI/ASME Y14.35M-1997 (R2003)	Revision of Engineering Drawings and Associated Documents	ASME	ANSI ESS
ANSI/ASME Y14.35M-1995 (R2003)	Surface Texture Symbols	ASME	ANSI ESS
ANSI/ASME Y14.41-2003	Product Definition Data Set Practices - Digital	ASME	ANSI ESS
ANSI/ASME Y14.40-1989 (R1999)	Pictorial Drawing	ASME	ANSI ESS
ANSI/ASME Y14.5.1M-1994 (L1994)	Dimensioning and Tolerances Mathematical Definitions of Principles	ASME	ANSI ESS
ANSI/ASME Y14.8-2001	Screw Thread Representation	ASME	ANSI ESS

found using a search engine available at ANSI with URL:
<http://www.nssn.org/search/IntelSearch.aspx>

... And Internationally ISO 1101 Geometric Dimension and Tolerancing Standard

The screenshot shows the NSSN Search Engine for Standards interface with the search term 'iso 1101 drafting standard GDT'. 9 records were found. The results table lists international standards from ISO and CEN.

Document #	Title	Developer	Ordering Information
ISO 1101/DAmD1	Representation of specifications in the form of a 3D model	ISO	Dev Phone: Development Project; No document available.
ISO 1101/NP AmD2	Indication of special specification operators for form, orientation, location and run-out	ISO	Dev Phone: Development Project; No document available.
ISO 1101:2004	Geometrical Product Specifications (GPS) -- Geometrical tolerancing -- Tolerances of form, orientation, location and run-out	ISO	ANSI ESS
ISO 11012:2009	Heavy commercial vehicles and buses - Open-loop test methods for the quantification of on-centre handling - Weave test and transition test	ISO	ANSI ESS
ISO 11014:2009	Safety data sheet for chemical products - Content and order of sections	ISO	ANSI ESS
ISO 11016:1999	Oil of star anise, Chinese type (Illicium verum Hook. f.)	ISO	ANSI ESS
ISO 11019:1998	Oil of roots of lovage (Levisticum officinale Koch)	ISO	ANSI ESS
EN ISO 1101	Geometrical Product Specifications (GPS) - Geometrical tolerancing -- Tolerances of form, orientation, location and run-out	CEN	Buy from hardware resellers
ONORM EN ISO 1101:2006	Geometrical Product Specifications (GPS) - Geometrical tolerancing -- Tolerances of form, orientation, location and run-out (ISO 1101:2004)	ON	ANSI ESS

NSSN also Has Advanced Search Capabilities to find standards that may be relevant to your project:

NSSN SEARCH ENGINE FOR STANDARDS
Powered by ANSI

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ADVANCED SEARCH
5 records were found.

Search Terms:

Fields to Search:

Search Criteria:

Filter by Developer:

Max Number of Records Returned:

Page Size:

5 records were found.

Page 1 of 1

Document #	Title	Developer	Ordering Information
ISO 10303-238:2003	Industrial automation systems and integration - Product data representation and exchange - Part 238: Application protocol: Application interpreted model for computerized numerical controllers	ISO	ANSI ESS
SAE J 2370-2003 (SAE J2370-2003)	Geometric Dimensions and Tolerancing for Curved Hose	SAE	ANSI ESS
ANSI/ASME Y14.43-2003	Dimensioning and Tolerancing Principles for Gages and Fixtures	ASME	ANSI ESS
ASME Y14.5-2009	Dimensioning and Tolerancing	ASME	ANSI ESS
ASME Y14.5.2-2000	Certification of Geometric Dimensioning and Tolerancing Professionals	ASME	ANSI ESS

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Advanced Search is Thorough – Try it for your project!

ADVANCED SEARCH
91 records were found.

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Max Number of Records Returned:

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91 records were found.

Page 1 of 10

Document #	Title	Developer	Ordering Information
ASTM A1020/A1020M-02(2007)	Standard Specification for Steel Tubes, Carbon and Carbon Manganese, Fusion Welded, for Boiler, Superheater, Heat Exchanger and Condenser Applications	ASTM	ANSI ESS
ASTM A1048/A1048M-08	Standard Specification for Pressure Vessel Forgings, Alloy Steel, Higher Strength Chromium-Molybdenum-Tungsten for Elevated Temperature Service	ASTM	ANSI ESS
ASTM A178/A178M-02(2007)	Standard Specification for Electric-Resistance-Welded Carbon Steel and Carbon-Manganese Steel Boiler and Superheater Tubes	ASTM	ANSI ESS
ASTM A192/A192M-02(2007)	Standard Specification for Seamless Carbon Steel Boiler Tubes for High-Pressure Service	ASTM	ANSI ESS
ASTM A209/A209M-03(2007)	Standard Specification for Seamless Carbon-Molybdenum Alloy-Steel Boiler and Superheater Tubes	ASTM	ANSI ESS
ASTM A210/A210M-02(2007)	Standard Specification for Seamless Medium-Carbon Steel Boiler and Superheater Tubes	ASTM	ANSI ESS
ASTM A213/A213M-09a	Standard Specification for Seamless Ferritic and Austenitic Alloy-Steel Boiler, Superheater, and Heat-Exchanger Tubes	ASTM	ANSI ESS
ASTM A248/A248M-08	Standard Specification for Welded Austenitic Steel Boiler, Superheater, Heat-Exchanger, and Condenser Tubes	ASTM	ANSI ESS
ASTM A250/A250M-05	Standard Specification for Electric-Resistance-Welded Ferritic Alloy-Steel Boiler and Superheater Tubes	ASTM	ANSI ESS


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Another Example (noise control)

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SEARCH RESULTS


ASA	Acoustical Society of America
Document #:	ANSI S12.19-1996 (R2006)
Title:	Measurement of Occupational Noise Exposure
Scope:	Presents methods that can be used to measure a person's noise exposure received in work place. The method have been developed to provide uniform procedures and repeatable results for the measurement of occupational noise exposure.
Keywords:	
Committee:	
SDO Approval Date:	Not Available
ANSI Approval Date:	Not Available
Date File Updated in Database	Aug 28 2009 8:08AM
Ordering Information:	ANSI ESS ANSI Customer Service Phone: 212 642-4900 Email: ansionline@ansi.org



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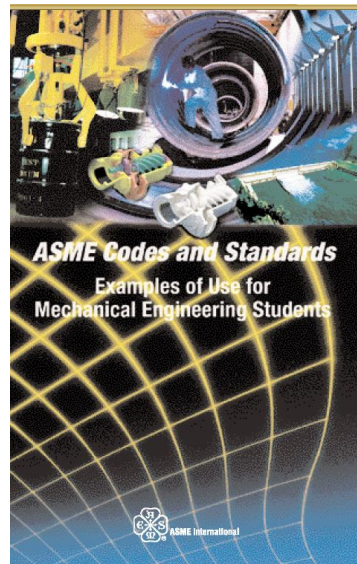


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Take a Look at the Professional Societies Pages too!

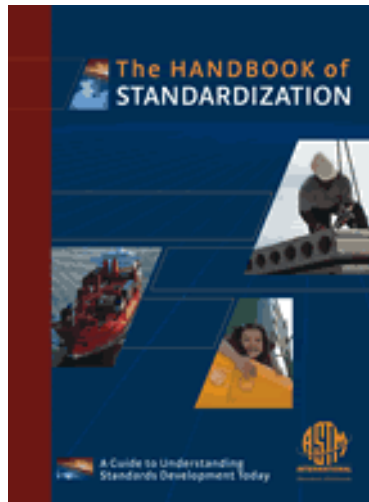
This is a 20 page introduction to standards available from ASME (for students)

It available as a pdf document at:
<http://files.asme.org/ASMEORG/Publications/Codes/5134.pdf>



Lets Go there – to review at:

<http://www.astm.org/NEWS/handbook02/images/Handbook02.pdf>



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And Thinking Forward: ISO 140xx series of Environmental Standards:

Life cycle assessment

Contents (hide)

- 1 Goals and purpose of LCA
- 2 Four main phases
 - 2.1 Goal and scope
 - 2.2 Life cycle inventory
 - 2.3 Life cycle impact assessment
 - 2.4 Interpretation
- 3 LCA uses and tools
- 4 Variants
 - 4.1 Cradle-to-grave
 - 4.2 Cradle-to-gate
 - 4.3 Cradle to cradle
 - 4.4 Gate-to-gate
 - 4.5 Well-to-wheel
 - 4.6 Economic Input-Output Life Cycle Assessment
- 5 Life cycle energy analysis
 - 5.1 Energy production
 - 5.2 LCA criticism
- 6 Critiques
- 7 See also
- 8 References
- 9 Further reading
- 10 External links

‘CRADLE –TO-GRAVE’ Thinking for an Engineer

3R Concepts

- Waste Mgmt Hierarchy
 - Reduce
 - Reuse
 - Recycle
- Barter
- Dematerialization
- Dumpster diving
- EcoDesign
- Ethical consumerism
- Freeganism
- Extended producer responsibility
- Industrial ecology
- Industrial metabolism
- Material flow analysis
- Product stewardship
- Simple living
- Zero waste

Recyclable materials (WIKI)

This box: view - talk - edit

Goals and purpose of LCA [\[edit\]](#)

The goal of LCA is to compare the full range of environmental and social damages assignable to products and services, to be able to choose the least burdensome one. At present it is a way to account for the effects of the cascade of technologies responsible for goods and services. It is limited to that, though, because the similar cascade of impacts from the commerce responsible for goods and services is unaccountable because what people do with money is unrecorded. As a consequence LCA succeeds in accurately measuring the impacts of the technology used for delivering products, but not the whole impact of making the economic choice of using it.

The term 'life cycle' refers to the notion that a fair, holistic assessment requires the assessment of raw material production, manufacture, distribution, use and disposal including all intervening transportation steps necessary or caused by the product's existence. The sum of all those steps - or phases - is the life cycle of the product. The concept also can be used to optimize the environmental performance of a single product (ecodesign) or to optimize the environmental performance of a company.

Lest we also forget: Ethics in Engineering!

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Health & Safety Stds. too!

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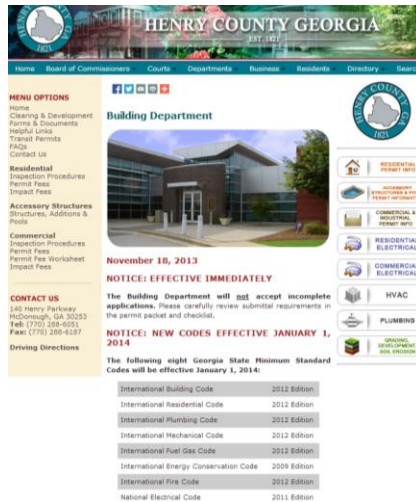
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Building Codes are like Standards too (but are legally binding) :



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Driving Directions

Building Department



November 18, 2013
NOTICE: EFFECTIVE IMMEDIATELY

The Building Department will **not** accept incomplete applications. Please carefully review submittal requirements in the permit packet and checklist.

NOTICE: NEW CODES EFFECTIVE JANUARY 1, 2014

The following eight Georgia State Minimum Standard Codes will be effective January 1, 2014:

International Building Code	2012 Edition
International Residential Code	2012 Edition
International Plumbing Code	2012 Edition
International Mechanical Code	2012 Edition
International Fuel Gas Code	2012 Edition
International Energy Conservation Code	2009 Edition
International Fire Code	2013 Edition
National Electrical Code	2011 Edition

RESIDENTIAL PERMIT INFO
ACCESSORY STRUCTURES & POOLS PERMIT INFORMATION
COMMERCIAL & INDUSTRIAL PERMIT INFO
RESIDENTIAL ELECTRICAL
COMMERCIAL ELECTRICAL
HVAC
PLUMBING
SPRING DEVELOPMENT PERMITS

Finally:

- There's plenty here to consider – but it's part of the professional engineering job!
- Make Standards part of your Life-long Learning process – check often for changes as they will effect your products and processes as an engineer or manager
- Find out what is appropriate for your project/product
 - Part of your specification
- As a test case, Each team **MUST** include a section in their team's **PDR Document** (brief but relatively thorough) on applicable standards and specifications applicable to their project
 - *Which are applicable*
 - *How they were used*

