



# There's an App for That

## Technical Standards in Compendex

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### Abstract

Technical standards are important documents that academic libraries collect to support education and research, particularly for engineering and technology programs. However, standards documents present many unique discovery and access challenges that are confusing and cumbersome for users. To help alleviate these issues, Elsevier started indexing technical standards in their Abstracting & Indexing (A&I) database Compendex in 2018. This column provides a brief overview of Compendex, a summary of the standards collections currently indexed in the database, and a discussion about using Compendex as a tool for standards discovery and access.

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### Introduction

What do smoke detectors, high chairs, engineered wood, and portable ladders have in common? All of these items are consumer products that require the use of technical standards in some way. In short, technical standards are documents that contain detailed information on a variety of topics, such as the requirements for a product's design, testing, or labeling. For example, *ASTM F404-20 Standard Consumer Safety Specification for High Chairs*, describes the performance and testing requirements for high chairs and high chair conversion kits ([ASTM International, 2020](#)).

Some technical standards, like ASTM F404, are referenced in the United States Code of Federal Regulations, making them mandatory for compliance ([Safety Standard for High Chairs, 2018](#)). Other technical standards are voluntary, but companies choose to comply for a variety of reasons, such as product interoperability, quality assurance, and global trade. Professional engineers as well as engineering and technology students need to have an understanding of the mandatory and voluntary standards that impact their designs in order to create products that are safe and legal ([Osif, 2014](#)).

The need for standards education for engineering and engineering technology (ET) students is emphasized by ABET, the primary accrediting body for engineering and ET programs in the United States. Specifically, ABET's 2020-21 Engineering Accreditation Commission (EAC) criteria *Criterion 5: Curriculum* says "the curriculum must include... d) a culminating major engineering design experience that 1) incorporates appropriate engineering standards." ([ABET, 2020a, p. 6](#)). Additionally, ABET's Engineering Technology Accreditation Commission (ETAC) 2020-21 *Criterion 5: Curriculum* says the curriculum must "include design considerations appropriate to the discipline and degree level such as: industry and engineering standards and codes." ([ABET, 2020b, p. 6](#)).

To support engineering and ET programs, many academic libraries maintain technical standards collections ([Phillips, 2019](#)), and many science and engineering librarians integrate standards content into information literacy instruction ([Cioc et al., 2021](#); [Phillips & McPherson, 2016](#); [Solomon et al., 2019](#)). However, both collecting standards and teaching about standards pose unique discovery and access challenges ([Phillips, 2019](#)). For example, a library may purchase full-text electronic access to standards directly from publishers, such as ASTM International and SAE International, or from a standards aggregator (e.g., TechStreet, IHS), or it may use a combination of purchasing strategies from publishers and aggregators to meet their specific needs. However, many standards platforms (both publisher and aggregator) don't currently integrate well with discovery layers, potentially requiring patrons to search through several platforms to discover and then access the full text of a standard. An additional discovery impediment is that standards are not currently indexed in most Abstracting and Indexing (A&I) databases or in Google Scholar.

Many libraries provide guidance for users on these challenges, such as encouraging the use of aggregator databases and freely available commercial aggregator websites (e.g., IHS Markit Standards Store) for standards discovery before going to the publisher platforms to which a library subscribes for full-text access. However, these workarounds are confusing, and require users to learn to use and toggle between multiple platforms. These challenges are especially cumbersome for students new to the topic of technical standards.

To help alleviate these issues, Elsevier started indexing technical standards in their A&I database Compendex in 2018. This column provides a brief overview of Compendex, a summary of the standards collections currently indexed in the database, and a discussion about using Compendex as a tool for standards discovery and access.

## Overview of Compendex

Engineering Index (EI) is a comprehensive index of the engineering literature that dates back to 1884. According to Elsevier's "The History of EI" website, the name Compendex (COMPUTerized ENgineering inDEX) was adopted in 1969 when EI transitioned to a machine-readable monthly subscription service. In the 1990's, EI was purchased by Elsevier and Compendex was added to the Engineering Village search platform. Today, Compendex contains over 28 million bibliographic records, including journal articles, conference papers, book chapter, dissertations, and standards. Over the years several science and engineering librarians have written articles summarizing and evaluating Compendex ([Landau, 1984](#); [Lafferty & Porter, 2005](#); [Meier & Conkling, 2008](#); [Osorio, 2010](#); [Cole et al., 2018](#)).

## Standards Collections Indexed in Compendex

In 2018, Elsevier began indexing standards in Compendex, starting first with the Institute of Electrical and Electronics Engineers (IEEE), the Society of Motion Picture and Television Engineers (SMPTE) and ASTM International. Since this time, Elsevier has added standards records from nine additional Standards Developing Organizations (SDO). Table 1 summarizes the twelve standards collections currently indexed in Compendex.

Table 1: Standards collections indexed in Compendex (as of July 7, 2021)

Standards Developing Organization (SDO)	Years of Coverage
American Institute of Aeronautics and Astronautics (AIAA)	1992-2021
American Concrete Institute (ACI)	1982-2021
American Society of Civil Engineering (ASCE)	1983-2021
ASTM International (formerly the American Society for Testing and Materials)	1901-2021
American Welding Society (AWS)	1940-2021
American Water Works Association (AWWA)	1908-2021
British Standards Institution (BSI) Standards Limited (BSI / International Organization for Standardization (ISO))	1906-2021
Institute of Electrical and Electronics Engineers (IEEE)	1890-2021
The Institution of Engineering and Technology (IET)	2013-2021
SAE International (formerly the Society of Automotive Engineers)	1927-2021
Society of Motion Picture and Television Engineers (SMPTE)	1964-2021
Technical Association of the Pulp and Paper Industry (TAPPI)	1992-2021

## Using Compendex for Standards Discovery & Access

This section presents 1) options for searching and refining standards results in Compendex, 2) an example of a Compendex standard record, and 3) a brief summary of the current benefits and limitations of using Compendex for technical standards discovery and access.

### Search Options

Users can search Compendex for standards using Quick, Expert, and Thesaurus search options.

The Quick search option can be used to search for standards in variety of ways, including for specific standards, standards from particular publishers, and standards related to certain topics. Figure 1 shows a Quick search for the topic *robot safety*, limited to the document type “Standard”.

The screenshot shows the Compendex Quick search interface. At the top, there is a search bar with the text "Quick search:" followed by a dropdown menu set to "All fields", a search icon, and the search term "robot safety". Below the search bar, there are suggested terms: "Agricultural Robots" and "Agriculture". Below the search bar, there are several filters: "Databases", "Date", "Language", "Document type", "Sort by", "Browse indexes", and "Autostemming". Under "Document type", there are radio buttons for "All Document types", "Conference article", "Erratum", "Report chapter", "Article in Press", "Conference proceeding", "Journal article", "Report review", "Book", "Dissertation", "Note", and "Standard". The "Standard" option is selected. Below the filters, there is a green bar with the text "675 records found in Compendex for 1884-2022: ((robot safety) WN ALL) AND (ST WN DT)".

Figure 1: Partial screenshot of an example Quick search for standards in Compendex.

Expert search gives users more options for creating complex and specific searches. There are additional search codes available, including the code “STDID”, which is the Standard Identification number, or Standard ID. For most standards the Standard ID is the document number and identifier created by the publisher. For example, for ASTM E2992/E2992M – 17 *Standard Test Method for Evaluating Response Robot Mobility: Traverse Sand Terrain*, the STDID in Compendex is E2992/E2992M-17. Additionally, any Expert search can be limited to standards by using the code DT (document type) and ST (standard). For example, in the command line *((robot and industry and safety) WN ALL) AND (ST WN DT)* including (ST WN DT) as shown limits the result set to the document type standards.


Thesaurus search allows users to search a list of controlled vocabulary terms used to index standards and other document types in Compendex. Figure 2 shows a Thesaurus search for the topic *solar power*, limited to the document type “Standard”.

Thesaurus search: Vocabulary search ☒ for solar power

Database: ☒ Compendex ☐ Inspec

Exact term results ^

Solar energy

☐ Solar energy 

For: Solar energy engineering; Solar power

Broader terms	Related terms	Narrower terms
<input type="checkbox"/> Renewable energy resources	<input type="checkbox"/> Artificial photosynthesis	<input type="checkbox"/> Solar chimneys
	<input type="checkbox"/> Incident solar radiation	
	<input type="checkbox"/> Power generation	
	<input type="checkbox"/> Solar cells	
	<input type="checkbox"/> Solar furnaces	
	<input type="checkbox"/> Solar ponds	
	<input type="checkbox"/> Solar power generation	
	<input type="checkbox"/> Solar power plants	
	<input type="checkbox"/> Solar radiation	
	<input type="checkbox"/> Solar refrigeration	
	<input type="checkbox"/> Sun	

Selected term(s) >

Date ^ Document type ^ Language ^ Discipline ^ Treatment ^ Sort by ^

<input type="radio"/> All Document types	<input type="radio"/> Article in Press	<input type="radio"/> Book
<input type="radio"/> Conference article	<input type="radio"/> Conference proceeding	<input type="radio"/> Dissertation
<input type="radio"/> Erratum	<input type="radio"/> Journal article	<input type="radio"/> Note
<input type="radio"/> Report chapter	<input type="radio"/> Report review	<input checked="" type="radio"/> Standard

Figure 2: Partial screenshot of an example Thesaurus search for standards in Compendex.

## Refining Results

After conducting a search for standards, there are multiple ways to refine the results, including (as shown in Figure 3) by controlled vocabulary, publisher, and status (active/inactive). The option to refine by standard status is helpful because a user may be undertaking a new project and need to identify the most current, active version of a particular standard, or they may be working on a previously completed project and have a need to access a historical / inactive standard to understand the requirements that were in place at the time the design was created.

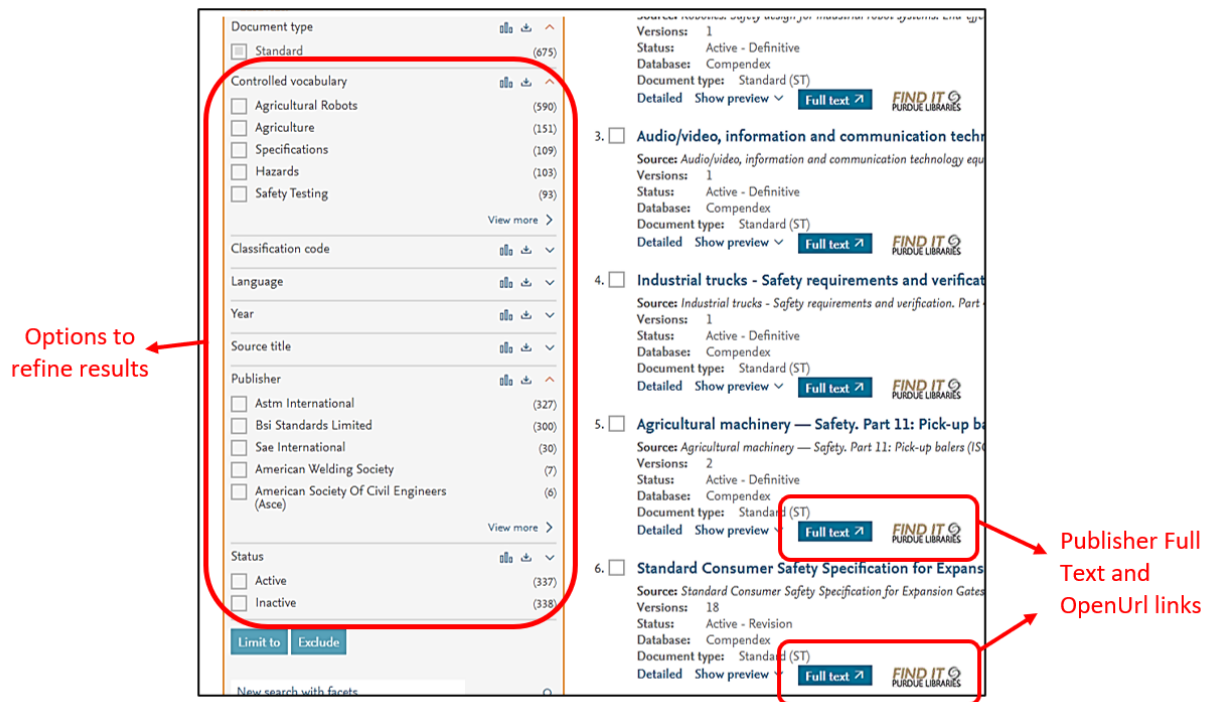


Figure 3: Partial screenshot of a Compendex standards search results page.

Additionally, as shown in Figure 3, the results page displays “Full Text” and OpenUrl link resolver (in this case, “Find it at Purdue Libraries”) options for accessing the full text of standards. If a library subscribes to standards through a publisher platform that is compatible with Compendex, such as ASTM Compass, SAE Mobilus, or IEEE Xplore, users are connected to the full text of the standard in the publisher platform in a new window using the “Full Text” link. The OpenURL link may also connect users to the full text; however, I find this to be a less reliable option. If a library does not subscribe to a particular standard through a publisher platform, users are currently directed to the publisher page with purchasing information when they use the “Full Text” link.

## Standard Record – Example

Figures 4-6 show partial screenshots of the Compendex record for *ASTM F1833 - 97(2017) Standard Test Method for Comparison of Rearfoot Motion Control Properties of Running Shoes*. Figure 4 shows there are options for a condensed “abstract” view or a “detailed” view with more fields, and that PlumX Metrics are available for standards in the database. Figure 5 illustrates the controlled vocabulary indexing and that the record contains hyperlinks to different versions of the standard, including historical and withdrawn documents. Additionally, Figure 6 displays documents that are related to the standard by shared controlled vocabulary terms or keyword search terms.



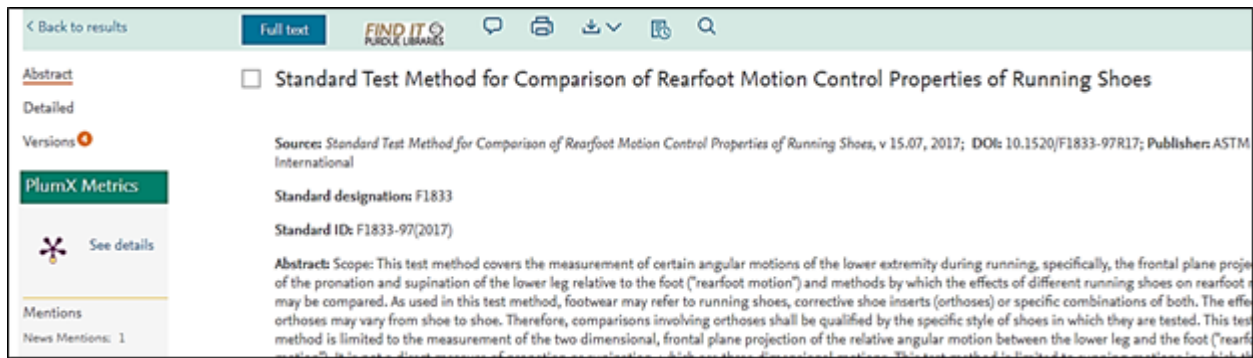


Figure 4: Partial screenshot of an abstract view standard record in Compendex.



Figure 5: Partial screenshot of an abstract view standard record in Compendex.

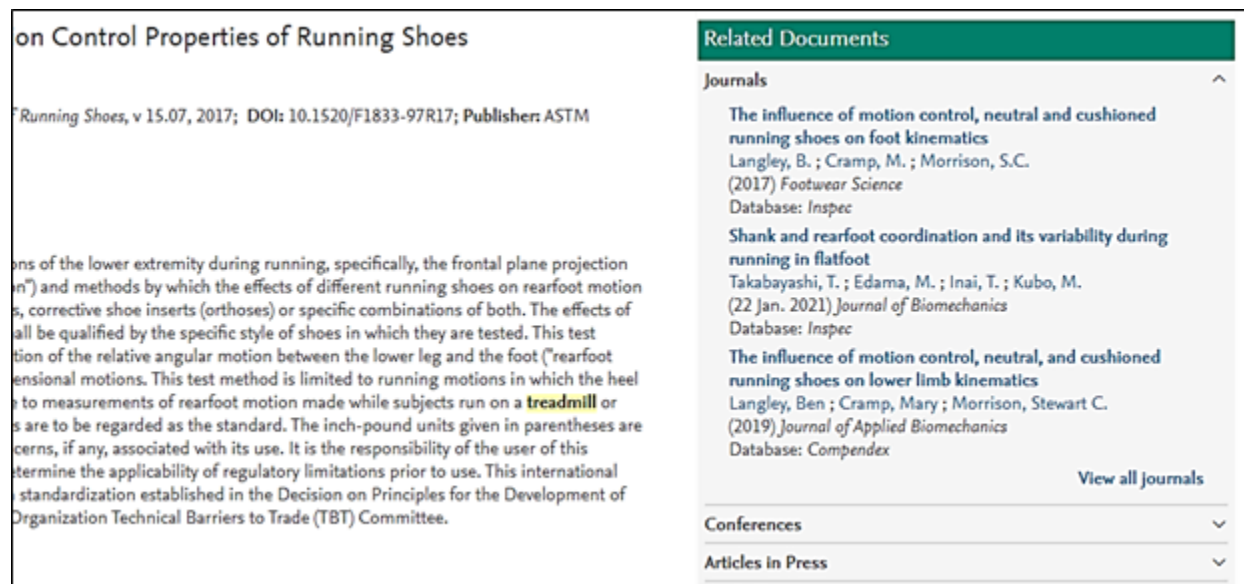


Figure 6: Partial screenshot of an abstract view standard record in Compendex.

## Current Benefits and Limitations

There are several benefits to using Compendex for standards discovery and access. First, many researchers have prior familiarity with Engineering Village since they already use this platform to search for journal articles and conference papers. Also, standards are indexed in Compendex with controlled vocabulary, allowing for more precise discoverability than keyword searching alone. Lastly, if a library also subscribes to full text standards through a compatible vendor platform (e.g., ASTM Compass, IEEE Xplore), there is one-click access to full-text documents.

However, there are also currently limitations to using Compendex for standards discovery and access. A significant one is that if a library does not subscribe to full-text standards through a compatible vendor platform, users hit a paywall when trying to connect. This may be misleading to users if the library subscribes to the full text of that standard in a platform that is not compatible with Compendex (e.g., TechStreet) or owns the standard in hard copy format. Additionally, Compendex currently does not index standards by the International Classification for Standards (ICS) system, which is used by other platforms with standards, such as IEEE Xplore and IHS Engineering Workbench. Also, Compendex currently indexes standards from a limited number (twelve) of Standards Developing Organizations (SDOs). While the collections indexed are widely utilized in academia and industry and Elsevier continues to add SDOs, there are hundreds of other SDO collections not currently indexed in the database.

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