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ASTM International

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American Society for Testing & Materials

- 1898 年
- 140 國
- 35,000+ 位



Standard 標準

ASTM 制定了超過12,000項標準，
被廣泛的應用在不同領域的各種層面
這些標準改善了我們每天的生活。



接下來的時間我們想要為你解答的3個問題.....

1. 什麼是標準？
2. 為什麼需要ASTM標準？
3. 怎樣取得ASTM標準資源與其他出版品？



3個我們想要傳遞給你的訊息.....

1. 標準是共通的語言，是確保品質不可或缺的參考基準
2. ASTM標準能有效的提升研究品質激發組織創新能量
3. 從在學校的階段熟習掌握標準有利於與未來就業銜接



標準能做什麼？



- 強化健康、安全及生活品質
- 便利全球貿易和市場可及性
- 協助維持產品可靠性和品質
- 降低成本、提升供應商關係
- 領導商業溝通和行銷
- 發展創新與新技術研發
- 協助達成規範和相容性的目標
- 轉化技術至市場(商業化)



什麼是標準？



你是否曾經看過/聽過.....



標準的定義

- 標準是公開的文件，通過認可的機構，制定了規範和程序。
- 目的是確保材料、產品、方法或者服務符合其預期目標的宗旨並一貫的執行。
- 標準化的過程，是包含標準文件的開創、發展和應用。
- 標準是一種共同的語言，確定和建立質量安全標準。
- 如果程序標準化，成本將降低。



標準的6種類型

試驗方法(Test Method)	對產生試驗結果的材料、產品、系統或服務的一個或多個性質、特徵或性能進行辨別、測量和評估的一個確定的過程。
標準規範(Standard Specification)	材料、產品、系統或服務滿足一套要求的精確說明，也包括如何滿足每項要求的確定程式。
標準規程(Practice)	執行一個或多個不產生試驗結果的特定操作或功能的確定的過程。
標準術語(Terminology)	由術語、術語定義、術語描述、符號說明、縮寫等組成的一個檔。
標準指南(Guidance)	不推薦特定行動過程的一系列選擇或說明。
標準分類(Standard Classification)	按照相同特性將材料、產品、系統或服務系統分組。



標準編號

■ 標準代號 + 字母分類代碼 + 標準序號 + 制定年份

■ 示例：

ASTM A34-2001

ASTM C685/C685M-2001

ASTM D4595-86 (2001) ASTM F2090-01a

■ 說明：1.標準序號後帶字母M的為公制單位標準，不帶字母M的為英制單位標準；

2.制定年限後面括弧內的年代為標準重新審定的年代；

3.a.b.c.....表示修訂版次。

4.字母分類代碼見「標準分類」



標準編號分類代碼

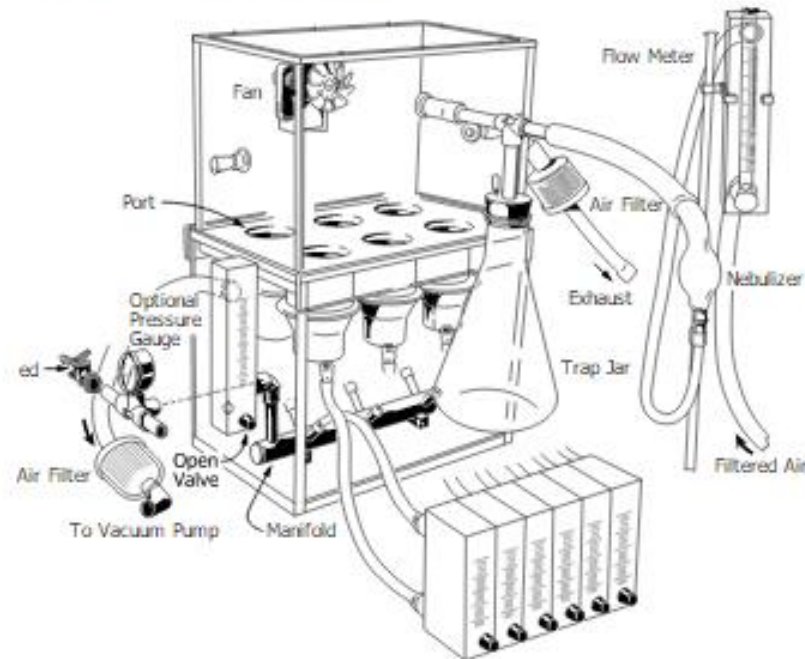
- A: 黑色金屬 Ferrous Metals (鐵，錳，鉻，合金鋼，鋼鐵等)
- B: 有色金屬 Non-ferrous Metals (銅，鋁，粉末冶金材料，導線等)
- C: 水泥，陶瓷，混凝土與磚石材料 Cementitious, Ceramic, Concrete and Masonry Materials
- D: 其他各種材料 Miscellaneous Materials (石油產品，燃料，低強塑膠等)
- E: 雜類 Miscellaneous Subjects (金屬化學分析，耐火試驗，無損試驗，統計方法等)
- F: 特殊用途材料 Materials for Specific Applications (電子材料，防震材料，外科用材料等)
- G: 材料的腐蝕，變質與降級 Corrosion, Deterioration, and Degradation of Materials



標準範例 – 以原子能顯微鏡測試奈米分子大小 (標準指南)

- **ASTM E2859 – 11 Standard Guide for Size Measurement of Nanoparticles Using Atomic Force Microscopy**

FIG. 1 Exposure Chamber



適用領域：醫療器材
無菌測試

適用企業：醫療器材
檢測相關企業



ASTM標準為什麼可以受到廣泛的認同？



為什麼我們說ASTM是個國際級的標準發展組織？

- ASTM遵照由國際貿易組織WTO所訂定的標準制定原則
- 超過5,400項 ASTM標準是超過全球70多個國家的規範參考來源或是國家標準基礎
- 會員來自全球140國
- ASTM 標準幾乎在全球各國國家都被使用
- 52% 的ASTM標準是銷售至美國之外



ASTM 主要涵蓋領域

- 鋼鐵產品
- 有色金屬
- 金屬材料試驗方法及分析程式
- 建設材料
- 石油產品、潤滑劑及礦物燃料
- 油漆、相關塗料和芳香族化合物
- 紡織品及材料
- 塑膠 & 橡膠
- 電氣絕緣體和電子產品
- 水和環境技術
- 核能，太陽能
- 醫療設備和服務
- 儀器儀錶及一般試驗方法
- 通用工業產品、特殊化學製品和消耗材料



ASTM標準制定特色

- 標準由會員制定，ASTM提供架構、流程及步驟
- 經由一致化的流程，由義務服務者由下而上制定、而非由上操控
- 根據市場需求及產業實務制定
- 近48%為依循科學及統計學研究的測試方法
- 會員申請開放



嚴謹透明的標準發展制定流程



開放透明



跨越國境的標準

平等的參與權



專業會員義工



如何取得ASTM標準資源與其他出版品?



ASTM SEDL標準與數位圖書館

ASTM電子資源 幫助您 教學與研發
是檢驗測試與研究必備的參考工具

- ASTM現行標準資源
- 學術單位12,500+ 篇ASTM標準
- 16,800+ 篇 ASTM 期刊
- 1,500+ ASTM 手冊(Manual/ Monograph) 、數據報告(Data series)
- 47,000+ ASTM 會議論文(Symposia paper)與技術報告(STP's)



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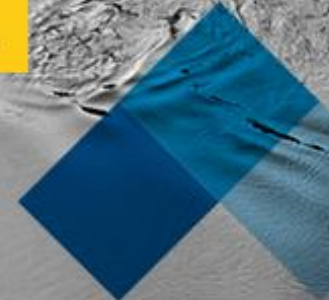


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檢索頁面



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ASTM F2678-10 Standard Practice for Preparing Panel Underlayments, Thick Poured Gypsum **Concrete** Underlayments, Thick Poured Lightweight Cellular **Concrete** Underlayments, and Concrete Subfloors with Underlayment Patching Compounds to Receive Resilient Flooring

Active Standard (Latest Version)

This practice provides minimum recommendations for preparing and smoothing panel underlayments, thick poured gypsum **concrete** underlayments, thick poured lightweight cellular **concrete** underlayments. [More](#)

- Historical Versions - previous version(s) of standard
- Work Items - proposed revision to a standard

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ASTM M-08(2013) Standard Test Methods for In-Place Compacted and Hardened **Concrete**, Including Roller Compacted **Concrete**, By Nuclear Methods

Active Standard (Latest Version)

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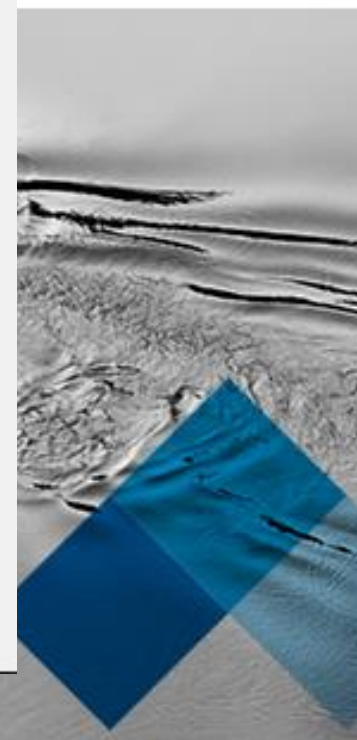
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Standard Test M Metallic Materi

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DESIGNATION: E8/E8M - 13a

註解將立刻被記錄於該份標準文件的目次中間且標註日期時間與作者。

American Association State Highway and Transportation O AASHTO No.: T68An America

Standard Test Methods for Tension Testing of Metallic Materials¹

此標準文件為基本拉伸試驗之標準，在實驗前須熟知步驟與過程。 - Annotation Made By: Andrew Cheng Mon Dec 15 01:17:57 EST 2014

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C418-12 - Standard Test Method for Abrasion Resistance of Concrete by Sandblasting	DELETE
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R0030-undefined - Manual of Aggregate and Concrete Testing (This is not an ASTM standard; available as PDF, only)	DELETE UPDATE TO NEWEST VERSION



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Group Owner: Andrew Cheng

Group Description: searching with ASTM standards

Group Standards:

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- A125-96(2013)e1 - Standard Specification for Steel Springs, Helical, Heat-Treated
- A128/A128M-93(2012) - Standard Specification for Steel Castings, Austenitic Manganese

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PRINT STANDARD

DESIGNATION: C40/C40M - 11

Standard Test Method for Organic Impurities in Fine Aggregates for Concrete¹

Active Standard ASTM C40/C40M | Developed by Subcommittee: C09.20

Book of Standards Volume: 04.02

project 12 for Prof. Wang - Annotation Made By: Andrew Cheng Wed Feb 19 23:12:20 EST 2014

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A free, weekly email listing new and revised standards and standards development activities.

Customize the alerts you receive - either for newly approved standards, new work items (drafts), or both.

You pick your technical areas of interest, ranging from all ASTM standards to just one standard.

Standards Tracked

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- Papers from GTJ, Geotechnical Testing Journal
- Papers from ACEM, Advances in Civil Engineering Materials
- Papers from MPC, Materials Performance and Characterization

SUBMIT



ASTM標準可以有哪些應用？
為什麼我們說ASTM標準與你相關？



那些族群最常使用ASTM?

- 學術單位
- 研究機構
- 私人企業
- 政府組織
- 國家標準局



Where in the World is ASTM?

A sampling of success stories from the more than 140 countries where ASTM has members and partners.

Canada

Amusement rides are thrilling — and safe — with the support of ASTM standards for design, manufacture, operation, maintenance and inspection.

Trinidad & Tobago

Paving material produced by Lake Asphalt of Trinidad and Tobago is supported by ASTM standards such as a specification for asphalt binders (D6626).

Ghana

Through ASTM's Technical Visitor Program, a representative of the Ghana Standards Authority learned more about the role of standards for **steel and corrosion in maintaining petroleum pipelines**.

Zimbabwe

Zimbabwe uses ASTM petroleum standards for mandatory **fuel blending**.

Singapore

Companies in Singapore report increased sales from using ASTM standards for **playground equipment and outdoor fitness equipment**.



Colombia

Government agency officials in Colombia have attended ASTM training on **aviation fuels**, which help them conduct ASTM tests.

Uruguay

To ensure the safety of **biofuels**, the Uruguay standards body is using ASTM standards, including a specification for ethanol fuel blends (D5798).

Kosovo

A representative of the Kosovo Standardization Agency came to ASTM to learn more about construction standards that will assist his country improve **infrastructure quality**.

Pakistan

The Pakistan Standards and Quality Control Authority has developed a standard based on an ASTM specification for **chemical admixtures used in concrete** (C1017).

Philippines

The Bureau of Philippine Standards has adopted a dozen standards for degradable **plastics and bio-based products**.



各產業使用ASTM標準

- **Petrochem** - Petronas, Pertamina, TOTAL Indonesia, Chinese Petroleum Corp, JGC
- **Aerospace** - Aerospace Ind Dev Corp, Messier Svcs Asia, Korean Aerospace Ind Corp, Fuji, IHI
- **Engineering** - Crompton Graeves, POSCO Eng & Const, CECI Eng Consultants, Daelim Industrial
- **Energy** - Taiwan Power Co, Inst For Nuclear Energy Res, Korean Hydro & Nuclear Power Co
- **Government & Defense** - Mitsubishi, Many Ministry of Defense Departments
- **Construction** - Technip Geoproduction, Hanwha Eng & Construction, Doosan Heavy Industries
- **Automotive** - Toyota, Hyundai Motor Co, Kawasaki, Tata Motors
- **Consumer Electronics** – Toshiba, Samsung, Hitachi
- **Aviation** - China Airlines, Evergreen Aviation, All Nippon Airways, Korean Airlines
- **Iron & Steel** – POSCO Iron & Steel, JFE Steel Corp, Nippon Steel, Kobe Steel
- **Academia** - Hundreds of Universities Worldwide



27個國家的學術單位使用ASTM



- ◆ Australia
- ◆ Brazil
- ◆ Canada
- ◆ Chile
- ◆ China
- ◆ Columbia
- ◆ Costa Rica
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- ◆ Peru
- ◆ Philippines
- ◆ Puerto Rico
- ◆ Russia
- ◆ Switzerland
- ◆ **Taiwan**
- ◆ Thailand
- ◆ Turkey
- ◆ United Kingdom
- ◆ United States



還有這些單位也在用ASTM標準.....



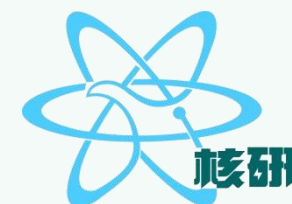
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台灣玩具暨兒童用品研發中心
Taiwan Children's Commodities R & D Center



長 榮 集 團
EVERGREEN GROUP



臺灣省土木技師公會



核研



經濟部標準檢驗局

BUREAU OF STANDARDS, METROLOGY AND INSPECTION, M.O.E.A.

台灣標檢局**2005**
年與ASTM簽訂協
議備忘錄



AUO 友達光電
AU Optronics



台灣中油股份有限公司
CPC Corporation, Taiwan



財團法人全國認證基金會
Taiwan Accreditation Foundation

案例1：鋼鐵採購



posco

案例2：工程營建材料檢測

CECI  台灣世曦
工程顧問股份有限公司



標準範例 – 混凝土用化學摻料分類

- **ASTM C94/C94M – 15 Standard Specification for Ready-Mixed Concrete**

TABLE 1 Total Air Content for Air-Entrained Concrete Exposed to Cycles of Freezing and Thawing

Exposure Condition (See Note 5)	Total Air Content, %						
	Nominal Maximum Sizes of Aggregate, in. [mm]						
	$\frac{3}{8}$ [9.5]	$\frac{1}{2}$ [12.5]	$\frac{3}{4}$ [19.0]	1 [25.0]	$1\frac{1}{2}$ [37.5]	2 [50.0]	3 [75.0]
Moderate	6.0	5.5	5.0	4.5	4.5	4.0	3.5
Severe	7.5	7.0	6.0	6.0	5.5	5.0	4.5

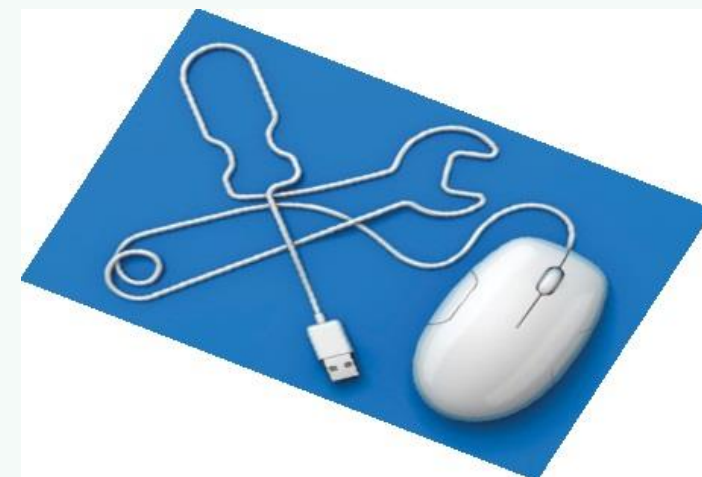
適用領域：土木工程

適用企業：土木營造
企業-中鼎工程、台灣
世曦工程。



ASTM標準幫助你提早熟悉產業模式，做好就業準備

- 在全球關鍵科技領域中，獲取最新的研究發現。
- 對於金屬、材料科學、能源、環境、土木建築、石油、油漆、塑膠等領域的研究者，標準是必備的參考資料。
- 標準對於業界有其重要性，學生可在畢業就業之前，熟悉標準規範，事先認識了解，幫助快速融入職場。



ASTM標準改善了我們每天的生活



- 強化健康、安全及生活品質
- 便利全球貿易和市場可及性
- 協助維持產品可靠性和品質
- 降低成本、提升供應商關係
- 領導商業溝通和行銷
- 發展創新與新技術研發
- 協助達成規範和相容性的目標
- 轉化技術至市場(商業化)



再說一次...3個我們想要傳遞給你的訊息.....

1. 標準是共通的語言，是確保品質不可或缺的參考基準
2. ASTM標準能有效的提升研究品質激發組織創新能量
3. 從在學校的階段熟習掌握標準有利於與未來就業銜接

