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工業標準資料庫

Virginia Chen

簡報綱要

- 認識標準
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認識標準

- 一、標準的意義
- 二、標準的效益
- 三、標準的層次

標準的意義

1. 標準是一種單位、名稱、定義、符號、常數、品質、尺度、安全、試驗方法、互換性...等等的規格或標本。
2. 與交易有關之生產活動，其所訂的一切規範或標本，都可稱作標準。
3. 標準是其效力所及的組織成員，全體共同遵守之準則。

標準的效益(一)

1. 為達成某特定目的所訂之標準，
及運用這些標準的一切活動，
即為「標準化」。

標準的效益(二)

2.標準化後：

☐ 生產者可減少摸索與錯誤、提高生產效率、穩定品質、發揮經濟效益、提升產品的競爭能力外，並使交易更加圓滿。
標準訂定形成，是品質管制重要的工作。

標準的效益(三)

- ☐ 消費者可購買優良品質及價廉的產品，保障消費者權益。
- ☐ 政府可落實保障國民健康安全之政策，提高生活品質，促進工業升級與經濟效益發展，確保公共安全、排除貿易障礙等功能，並節約國家整體資源。

標準的效益(四)

如無標準化，會使產品品質不均勻、
產量減少、生產成本增加或不經濟，
甚至...降低產品使用壽命與安全性。

標準的層次(一)

- 國際標準
- 國家標準
- 團體標準

標準的層次(二)

- **國際標準**

各國標準團體共同制定的標準。

如：國際標準組織 -- ISO

國際電工委員會 -- IEC

國際電信聯盟 -- ITU

標準的層次(三)

- **國家標準**

政府機構或全國性標準組織，依一定程序所制定之標準，適用於該國領域。

如：美國國家標準 -- **ANSI**

英國國家標準 -- **BSI**

德國國家標準 -- **DIN**

中國國家標準 -- **CNS**

標準的層次(四)

- **團體標準**

各專業團體訂定之標準，適用於它所管轄的領域。

如：美國材料測試協會標準 -- **ASTM**

美國自動車工程師協會標準 -- **SAE**

美國電子電機工程師協會標準 -- **IEEE**

壹. 認識標準

標準資料查詢--其他工程相關標準

- **ASTM** 資料庫 (**ASTM**標準)
美國材料試驗協會
- **SAE** 資料庫 (**SAE**標準)
美國自動車工程師協會
- **DIN** 資料庫 (**DIN**標準)
德國國家工業標準
- **IEL** 資料庫 (**IEEE**標準)
美國電子電機工程師協會
- **AWS** 資料庫 (**AWS**標準)
美國焊接學會標準

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標準資料庫介紹

[http:// www.astm.org](http://www.astm.org)

ASTM 組織簡介

ASTM	American Society for Testing and Materials (美國材料試驗協會)
成立時間	1898 年
學會性質	非營利性的標準學術團體

ASTM 組織概況

- 主要制定**130**多個專業領域的標準
- 有**35000**名會員，來自**100**多個國家的生產者、消費者、政府機關和學術代表
- 經常組織學術討論會，舉辦實驗室專題活動，召開標準編制會議等

ASTM 工業標準資料庫

標準資料庫內容包含：金屬、石油、
紡織、化工、建築、環境、材料等領域

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ASTM Standards 標準 - 形式

- **Technical Specification** (技術規範)
- **Guidance** (指南)
- **Test Method** (試驗方法)
- **Classification** (分類法)
- **Standard Practice** (標準慣例)
- **Terminology** (術語)
- **Definition** (定義)
- **Test Report** (試驗報告)
- 還包括：試驗方法可使用性

ASTM 標準 - 主題範圍

- 第一類 鋼鐵產品
- 第二類 有色金屬
- 第三類 金屬材料試驗方法及分析程式
- 第四類 建設材料
- 第五類 石油產品、潤滑劑及礦物燃料
- 第六類 油漆、相關塗料和芳香族化合物
- 第七類 紡織品及材料

ASTM 標準 - 主題範圍

- 第八類 塑膠
- 第九類 橡膠
- 第十類 電氣絕緣體和電子產品
- 第十一類 水和環境技術
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The national standards body of Congo signed a Memorandum of Understanding (MOU) with ASTM International on May 18. Guillaume Ligongo Maliba, Director of Standardization Management, Office Congolais de Controle, and James Thomas, President, ASTM International, signed the MOU.

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A new ASTM International standard will provide a method to consistently address indoor air quality complaints in residential buildings, as well as to guide IAQ investigations in an efficient manner. D 7297, Practice for Evaluating Residential Indoor Air Quality Concerns, is under the

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Atmospheric Analysis	Nondestructive Testing
Biotechnology	Nuclear Technology
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Business Copy Products	Paper & Packaging
Carbon	Petroleum
Catalysts	Physical Measurement
Cement & Concrete	Physical & Mechanical Testing
Chemicals: Paint & Coatings	Plastics
Chromatography	Plastic Pipe
Coal & Gas	Quality Control
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Copper	Roofing
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Durability of Nonmetallic Materials	Safety: Medical Services
Electrical Insulating Materials	Safety: Medical Services
Electrical and Magnetic Conductors	Sensory Evaluation
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ACTIVE STANDARD: A153/A153M-05 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

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Developed by Subcommittee: [A05.13](#)
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1. Scope

1.1 This specification covers zinc coatings applied by the hot-dip process on iron and steel hardware. The hot-dip galvanizing process consists of parts being immersed in molten zinc for a sufficient time to allow a metallurgical reaction between iron from the steel surface and the molten zinc, resulting in the formation of Zn/Fe alloy layers bonding the coating to the steel surface.

2. Referenced Documents

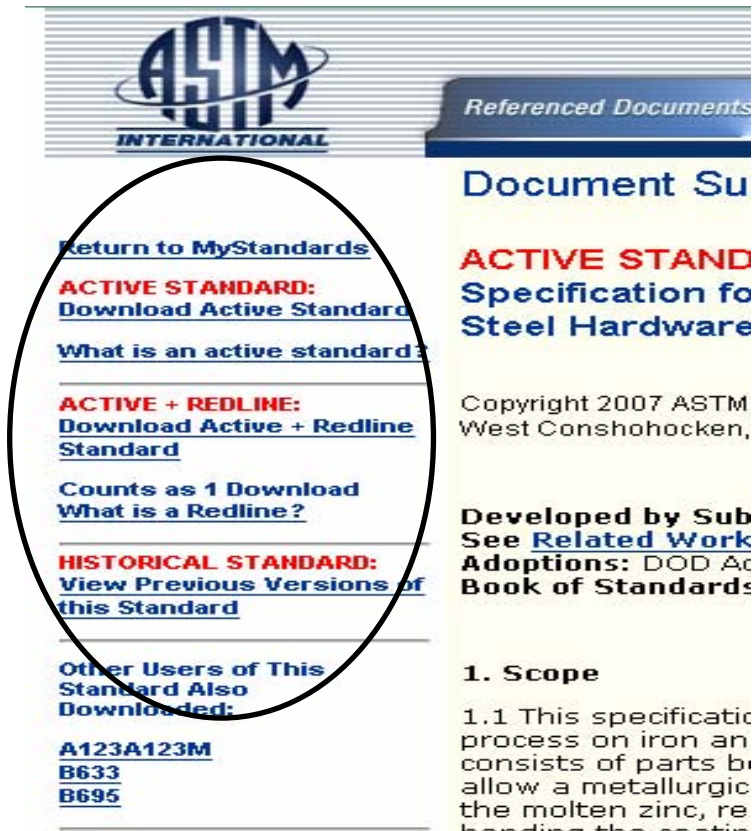
[A780](#) Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
[A90/A90M](#) Test Method for Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles
[A902](#) Terminology Relating to Metallic Coated Steel Products
[B487](#) Test Method for Measurement of Metal and Oxide Coating Thicknesses by Microscopical Examination of a Cross Section
[B6](#) Specification for Zinc (Slab Zinc)
[E376](#) Practice for Measuring Coating Thickness by Magnetic-Field or Eddy-Current (Electromagnetic) Test Methods
[F1470](#) Guide for Fastener Sampling for Specified Mechanical Properties and Performance Inspection
[F1789](#) Terminology for F16 Mechanical Fasteners
[A143](#) Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement

Index Terms

coatings, zinc; galvanized coatings; steel hardware, zinc coated; steel products, metallic coated; zinc coatings, steel products; 91.190; 91.190

透過摘要可察看：1. 標準全名 2. 範圍 3. 相關標準 4. 關鍵字

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1. Scope

1.1 This specification covers the process on iron and steel which consists of parts by which the surface is treated to allow a metallurgic bond between the molten zinc, resulting in a bonding the coating.

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ASTM Designation: A 153/A 153M - 05 American Association of State Highway and Transportation Officials AASHTO M 282B

Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware¹

This standard is issued under the fixed designation A 153/A 153M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last approval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or approval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope²

1.1 This specification covers zinc coatings applied by the hot-dip process on iron and steel hardware. The hot-dip galvanizing process consists of parts being immersed in molten zinc for a sufficient time to allow a metallurgical reaction between iron from the steel surface and the molten zinc, resulting in the formation of Zn/Fe alloy layers bonding the coating to the steel surface.

1.2 This specification is intended to be applicable to hardware items that are centrifuged or otherwise handled to remove excess galvanizing bath metal (free zinc). Coating thickness grade requirements reflect this.

1.3 This specification is applicable to orders in either inch-pound units (as A 153) or in SI units (as A 153M). Inch-pound units and SI units are not necessarily exact equivalents. Within the text of this specification and where appropriate, SI units are shown in brackets. Each system shall be used independently of the other without combining values in any way. In the case of orders in SI units, all testing and inspection shall be done using the metric equivalent of the test or inspection method as appropriate. In the case of orders in SI units, such shall be stated to the galvanizer when the order is placed.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*²

- A 90/A 90M Test Method for Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles
- A 143 Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement
- A 789 Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
- A 902 Terminology Relating to Metallic Coated Steel Products
- B 6 Specification for Zinc (Slab Zinc)
- B 487 Test Method for Measurement of Metal and Oxide Coating Thicknesses by Microscopical Examination of a Cross Section
- E 376 Practice for Measuring Coating Thickness by Magnetic-Field or Eddy-Current (Electromagnetic) Test Methods
- F 1470 Guide for Fastener Sampling for Specified Mechanical Properties and Performance Inspection
- F 1789 Terminology for F16 Mechanical Fasteners

3. Terminology

3.1 *Definitions:*

3.1.1 The following terms and definitions are specific to this specification. Terminology A 902 contains other terms and definitions relating to metallic-coated steel products. Terminology F 1789 contains other terms and definitions relating to mechanical fasteners.

¹This specification is under the jurisdiction of ASTM Committee A15 on Metallic-Coated Iron and Steel Products and is the direct responsibility of Subcommittee A15.13 on Structural Shapes and Hardware Specifications. Current edition approved April 1, 2005. Published May 2005. Originally approved in 1933. Last previous edition approved in 2004 as A 153/A 153M - 04.

²For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For Annual Book of ASTM Standards volume information, refer to the standard's title page summary page on the ASTM website.

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2

A 153/A 153M – 05

shall be made in accordance with Practice **A 780**. The galvanizer shall make repairs unless directed by the purchaser to deliver items unrepaired for subsequent renovation by the purchaser.

501 to 1200
1201 to 3200
3201 to 10 000
10 001 and over

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- 美國材料試驗協會 American Society For Testing and Materials (ASTM)。
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This screenshot is similar to the previous one, but the search dropdown menu is open, showing options for 'Entire Library', 'Index Library', 'STPs', 'Journals', and 'Manuals'. The search input field contains the word 'mold'. The rest of the page layout, including the navigation tabs and browse-by categories, remains the same.

The screenshot shows the search results page for the keyword 'mold'. The search bar at the top contains 'mold' and the text 'Searched for mold'. Below the search bar, there are three search results listed. Each result includes a title, authors, publication date, and source information. The first result is 'Influence of Mold Coverage upon the Notch Strength of R25 Sheet...' by Shirrell CD, Onachuk MG, published in January 1986, with source STP907. The second result is 'Solution to Moisture, Mold and Mildew Problems in a Central...' by Delaney RL, Goldsmith CB, published in January 1998, with source STP1314. The third result is 'Stainless Steel Investment Castings' by Chandley GD, published in January 1982, with source STP756. Each result has links for 'Abstract' and 'PDF'.

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Characterizing Fatigue Response of Nickel-Titanium Alloys by Rotary Beam Testing

Patel Mitesh

Abstract

Fatigue information has been reliable in predicting wire critical structural integrity. The aim of this study is to expound on the characterization technique of rotary beam fatigue testing (RBT). By alternating tension and compression stress states through RBT, it is possible to determine the life expectancy of Nitinol monofilament round wires. Fatigue testing has been employed to characterize the influence of subtle changes in inclusion content, chemistry variations of raw material, ingot transformation temperatures of Nitinol (NiTi), and surface finish conditions for implant grade wires. Currently, an ASTM standard does not exist that concentrates solely on fatigue testing shape memory alloys. By exploiting part geometry, this testing technique serves to compliment other characterization methods. Evaluation of fracture surfaces has proven useful in diagnosing the factors influencing failures. The utilization of fatigue data and fracture mechanics compliments tensile testing in providing information to the design engineer. Results from studying flexural endurance, statistical Weibull life assessment analysis, fracture analysis, and a determination of stress/strain levels at the site of failure have proven useful in determining desired material properties for next generation medical devices.

Keywords

關鍵字

Nitinol, round wire, rotary beam, fatigue, fracture, =1, controlled strain

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Mitesh M. Patel¹

Characterizing Fatigue Response of Nickel-Titanium Alloys by Rotary Beam Testing

ABSTRACT: Fatigue information has been reliable in predicting wire critical structural integrity. The aim of this study is to expound on the characterization technique of rotary beam fatigue testing (RBT). By alternating tension and compression stress states through RBT, it is possible to determine the life expectancy of Nitinol monofilament round wires. Fatigue testing has been employed to characterize the influence of subtle changes in inclusion content, chemistry variations of raw material, ingot transformation temperatures of Nitinol (NiTi), and surface finish conditions for implant grade wires. Currently, an ASTM standard does not exist that concentrates solely on fatigue testing shape memory alloys. By exploiting part geometry, this testing technique serves to compliment other characterization methods. Evaluation of fracture surfaces has proven useful in diagnosing the factors influencing failures. The utilization of fatigue data and fracture mechanics compliments tensile testing in providing information to the design engineer. Results from studying flexural endurance, statistical Weibull life assessment analysis, fracture analysis, and a determination of stress/strain levels at the site of failure have proven useful in determining desired material properties for next generation medical devices.

KEYWORDS: Nitinol, round wire, rotary beam, fatigue, fracture, $R = -1$, controlled strain

Introduction

Some common fatigue test methods include axial, bending, and torsion ducted using a wire diameter of 0.267 mm to investigate the impact performance [1]. This research compared the melting practices, final setting heat treatment in the metal; however, fatigue lives did not differ bending strains of 0.72, 0.84, 1.0, 1.2, 1.7, and 2.5 %. Figures 1(a) and inclusions found in Supplier A and Supplier B, two common Nitinol specimens, electron microscopy (SEM). Longitudinal mounts along the

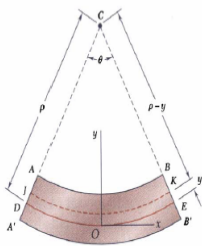


FIG. 4—Neutral axis DE with radius of curvature p as noted [5].

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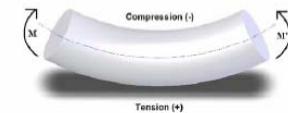


FIG. 3—Solid wire in pure bending.

PATEL ON FATIGUE RESPONSE OF NITI ALLOYS 5

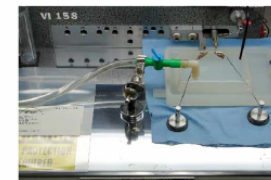


FIG. 6—Valley Instruments rotary beam spin fatigue tester.

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