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ASTM INTERNATIONAL
Helping our world work better

Helping our world work better with standards: Connecting the dots with ASTM International

ACI Fall Convention 2023 ● Boston, MA ● Oct 29th - Nov 02nd

Ing. Cesar A. Constantino, Ph.D., FACI, FASTM

Past Chair of the ASTM International Board of Directors
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Furniture tip-overs: A hidden hazard in our homes

Every 17 minutes someone is injured by furniture, a TV, or an appliance tipping onto them

- Consumer Product Safety Commission

ASTM International **consumer products committee** (F15) encourages participation of consumer advocates, representatives from government and testing laboratories, manufacturers, retailers and other stakeholders in the development of consumer products standards.



Image source:
<https://www.ahfa.us/regulatory-template/furniture-stability>

- Identify and document possible existing “hidden hazards”
- Securely install anti-tip furniture safety kits where needed
- Observe warning label in all new furniture
- Confirm new furniture is manufactured in compliance with a stability standard

ASTM International. Important. Every Day.



Public Health
and Safety

Consumer
Confidence

Quality
of Life

Connecting the dots with ASTM International

Introduction

- A leading, independent partner for agile, **global standards**, testing programs, and related products and services
- Established in **1898**
- **Offices**
 - ▶ Philadelphia, PA
 - ▶ Washington, DC
 - ▶ Brussels, Belgium
 - ▶ Beijing, China
 - ▶ Lima, Peru
 - ▶ London, UK
 - ▶ Ottawa, Canada
 - ▶ Singapore, Singapore
- Voluntary until reference in contracts, regulations, codes, and laws

33,000+
global ASTM
members in 155+
nations participating
in ASTM work

8,700+
ASTM standards have
been adopted, used
as a reference, or
used as the basis of
national standards
outside the USA

149
main committees
and 2,000+
subcommittees

90
industry sectors
represented and
80% of world
commodity trade
affected by standards

International standards development



WTO Technical Barriers to Trade Committee Decision

● Six principles

- ▶ Help regulators determine which standards may be considered international for the purposes of the TBT Agreement

● Does not designate specific bodies that develop international standards

- ▶ Outlines principles that should be observed when international standards are developed

Why does it matter?

Regulations based on international standards are presumed not to create unnecessary obstacles to international trade.

International standards developed according to the Decision promote trade and public-private cooperation.

WTO TBT Principles



Openness

Effectiveness and Relevance

Transparency

Coherence

Impartiality and Consensus

Consideration of
Developing Nations

International Session

Bridging the gaps:
One concrete world,
multiple standards



Does anything strike you when looking at these?



Case study: personal protective equipment

- No-Cost access to suite of ASTM PPE standards relevant to combating the COVID-19 public health emergency
- Development and subsequent publication of barrier face covering standard (F3502)
- F3502 now recommended by the WHO
- Technical white paper on quality, safety, and innovation for PPE
- Creation of Global Collaboration Forum for Personal Protective Equipment

White Paper

Global Collaboration to Advance Personal Protective Equipment (PPE) Safety, Quality, and Innovation

February 2021

About This White Paper

Personal protective equipment (PPE) plays a crucial role in controlling infection and minimizing exposure to diseases. The ongoing COVID-19 pandemic has created new challenges surrounding the quality, availability, and use of infection control PPE—including face masks, gowns, medical-grade gloves, and respirators—across the globe. As part of its mission to respond to the pandemic and promote worldwide health, the World Health Organization has issued important guidance recommending that infection control PPE meet globally recognized standards from leading organizations such as ASTM International.¹

Many groups are gaining valuable insights from widespread use of PPE and are working to address emerging challenges and needs. The situation has highlighted the need for new and modified standards that can assist in preparing for and managing future outbreaks.

In September 2020, ASTM International held a workshop on fast-tracking standards development to address PPE shortages due to COVID-19. The focus of the workshop was to outline the current state of the industry, identify gaps in standardization, and encourage participants to get involved in modifying existing standards and creating new standards. Following the workshop, ASTM interviewed the workshop organizers to identify several key takeaways, including challenges and the opportunities for ASTM involvement and leadership.

This white paper discusses the current state of standards development for infection control PPE and the formation of an ASTM-led global collaboration platform to identify and address, in an ongoing capacity, key challenges and needs. The platform will leverage the capabilities of the global PPE community to more efficiently advance consensus PPE standards.

Current Landscape

WORKSHOP SUMMARY

The workshop on fast-tracking PPE standards development was jointly sponsored by ASTM Committees F04 (Medical and Surgical Materials and Devices) and F23 (Personal Protective Clothing and Equipment). The workshop provided a forum for engineers, scientists, and medical professionals worldwide to exchange ideas and identify areas for needed standards development. The workshop's two-day schedule consisted of 26 presentations from leading international experts, covering the following topics:

- Response to the pandemic
- Protective clothing and face shields
- Respirators and face masks
- Reprocessing and reuse of PPE
- Conformity assessments
- Modeling and additive manufacturing



Scope

Standards used in the PPE infection control supply chain including masks; respirators; gloves; gowns; face shields; barriers to biological agents; infrared thermometers;

ASTM International: Over a century of openness

About ASTM International standards

- Worldwide acceptance and trust comes from the principle of openness
- Experts, individuals, organizations, academia, governments, trade associations, consultants and consumers come together
- Exchanging expertise and knowledge
- Timely and relevant. Fully representative of sectors. An aid to innovation, not a hurdle to overcome
- Volunteer members drive standards development process



Bridging the World: Commercial spaceflight

Committee F47 formed in 2016

- Standards for design, manufacturing, and operational use of vehicle for spaceflight
- Experts from all areas
 - ▶ Vehicle operations, designers and parts manufacturers, regulators, National Air Space users, spaceport operators, medical professionals, crew and occupants safety

Collaboration NASA, Canadian Space Agency, European Space Agency, Japanese Space Agency, Russian Space Agency, and others.



- Guide for storage, use, and handling of liquid rocket propellants
- Standard terminology relating to commercial spaceflight
- Specification for failure tolerance for occupant safety of suborbital vehicles

Bridging the Atlantic: CEN CENELEC and ASTM



cen CENELEC

← ALL NEWS SHARE

POSTED: 2022-06-09

ASTM and CEN extend and expand Cooperation Agreement

Press release CEN-CENELEC


Brussels 9 June 2022 - CEN, the European Committee for Standardization, and ASTM International have agreed to extend and expand a Technical Cooperation Agreement from 2019 with the objective to broaden and facilitate global dialogue and coordination in specific standardization areas of mutual interest.



The updated Agreement affirms and reinvigorates a framework agreed in 2019 for technical cooperation and information exchange between the two organizations, thus facilitating dialogue and coordination...

CEN	↔	ASTM
CEN/TC 249 'Plastics'		D02 on "Petroleum Products, Liquid Fuels, and Lubricants"
CEN/TC 19 'Gaseous and liquid fuels, lubricants and related products of petroleum, synthetic and biological origin'		D20.95 on "Recycled Plastics"
CEN/TC 411 'Bio-based products'		D20.96 on "Environmentally Degradable Plastics and Biobased Products"
CEN/TC 366 'Materials obtained from End-of-Life Tyres (ELT)'		D36 on "Recovered Carbon Black" and D11 on "Rubber and Rubber-like materials"

The case of ASTM International by the Organization for Economic Co-operation and Development



 International Regulatory Co-operation and International Organisations
The Case of ASTM International



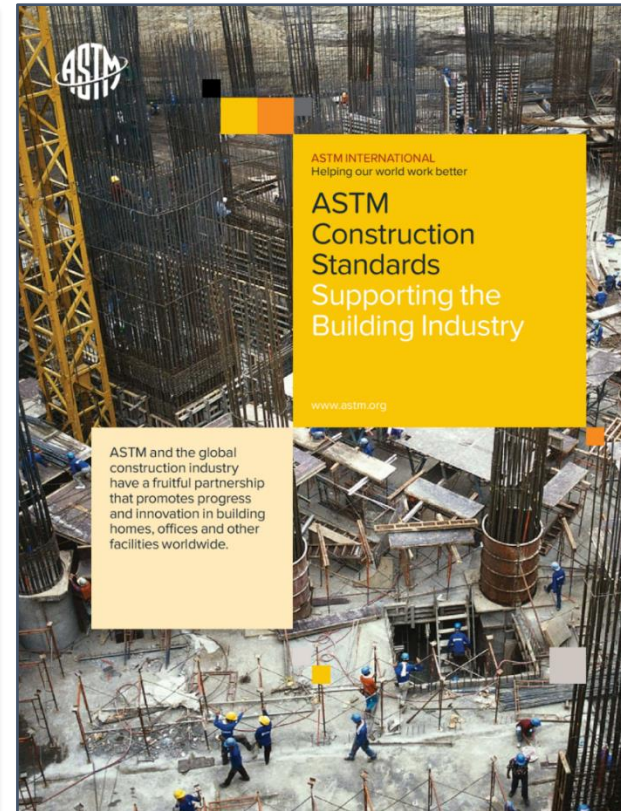
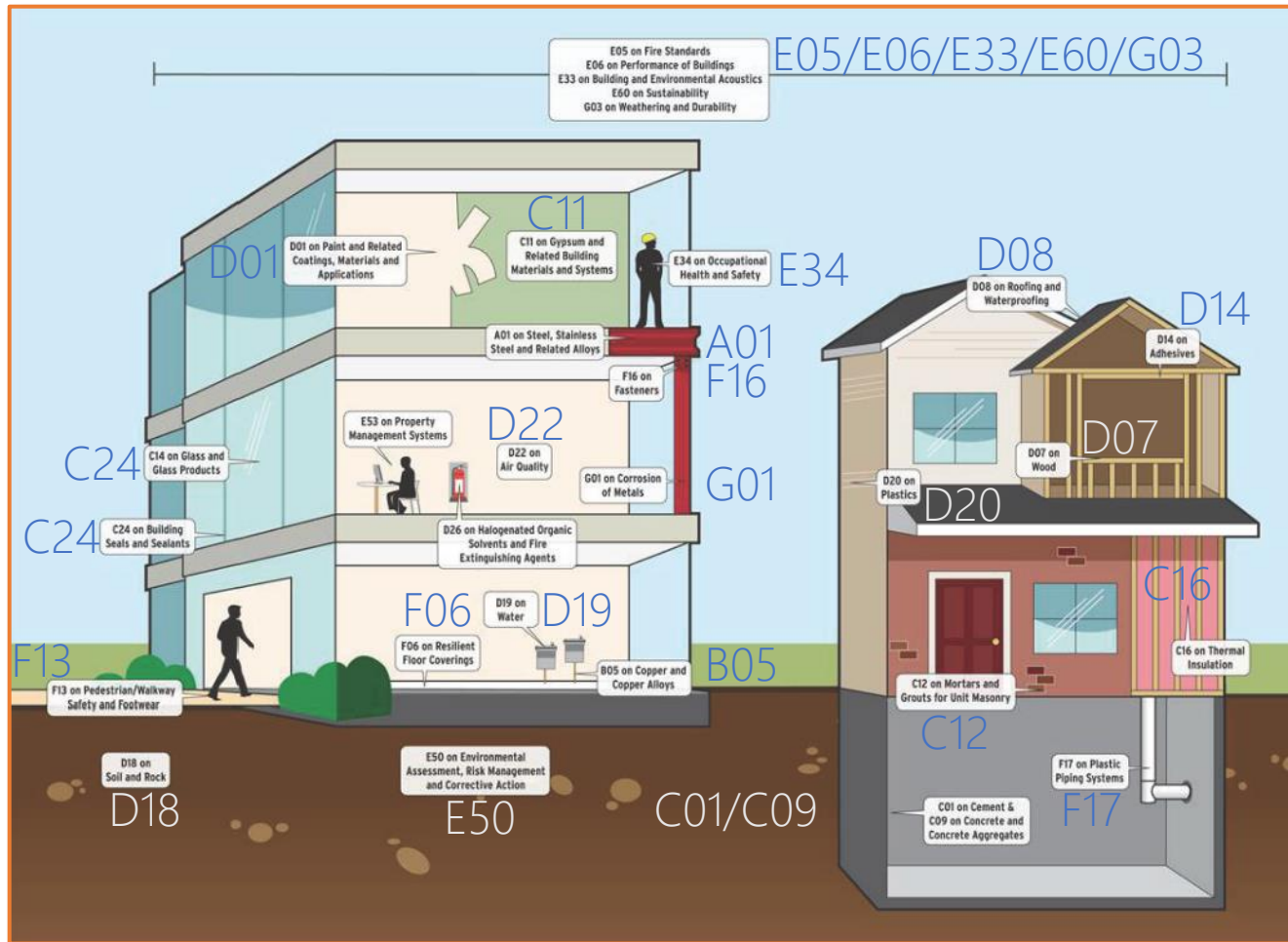
5 ASTM standards: experience from key sectors	66
New Technology: Additive Manufacturing	66
Standard setting activities around sustainable aviation fuels	69
Sustainable Construction	70
6 Assessment of the impact and success of regulatory co-operation through ASTM International	72
Benefits, costs and challenges of regulatory co-operation through ASTM standards	72
Assessment of ASTM International's success	74

The OECD is an intergovernmental organization with 38 member countries, founded in 1961 to stimulate economic progress and world trade.

Headquarters: Paris, France

Founded: September 30, 1961

ASTM International standards address most aspects in Sustainable Construction



In 2012, ASTM International became a Program Operator for developing product category rules (PCRs) and verifying EPDs in response to the growing need to understand the real environmental impact of products — from raw material extraction to disposal and recycling.

ASTM's cement and concrete technical committees

- **Cement (C01)**

- ▶ Established in 1902
- ▶ 532 members
- ▶ 58 active standards

- **Concrete and Concrete Aggregates (C09)**

- ▶ Established in 1914
- ▶ 1497 members
- ▶ 184 active standards



Technical experts in ASTM Committees develop new standards or modify existing ones to fill industry needs



- **C1709-22:** Standard Guide for Evaluation of **Alternative Supplementary Cementitious Materials** (ASCM) for Use in Concrete
- **C1866/C1866M-22:** Standard Specification for **Ground-Glass Pozzolan** for Use in Concrete
- **C1897-20:** Standard Test Methods for Measuring the **Reactivity of Supplementary Cementitious Materials** by Isothermal Calorimetry and Bound Water Measurements
- **E3183-19:** Standard Guide for **Harvesting Coal Combustion Products Stored in Active and Inactive Storage Areas** for Beneficial Use
- **WK60809:** New Specification for **Colloidal Silica** for Use in Concrete

- Recycling of aggregates
- Recycling of freshly mixed concrete
- Recycling of crushed concrete
- Water quality for use in concrete
- Limestone as a cement addition

The scope of ASTM Committee C01 on Cement includes “other inorganic cements” (besides hydraulic cements)



- New ASTM **Subcommittee C01.14 Non-Hydraulic Cements** was formed
- Initial ballots for new specifications are following the traditional standards development process:
 - ▶ **Non-Hydraulic Cements that Harden by Carbonation**
 - ▶ **Alkali-Activated Cements**
- Ballots for **new test methods** to support new (proposed) specifications are also in the agendas of current committee/subcommittee activities
- All C01 subcommittees to review test methods under their jurisdiction and where appropriate, ballot changes to scope statements to reference “other inorganic” cements

New approaches to standards development

Innovation and standards

- Lack of interaction between innovation and standards communities.
- Lead to standardization gaps, delayed development time, and industries would miss out.
- Developed a White Paper that focused on three primary strategies:
 - ▶ Early Engagement
 - ▶ Robust Participation
 - ▶ Leveraging the Strengths of Standards Developing Organizations
- When strategies combined we saw synergy. Innovation feeds off consensus standards.

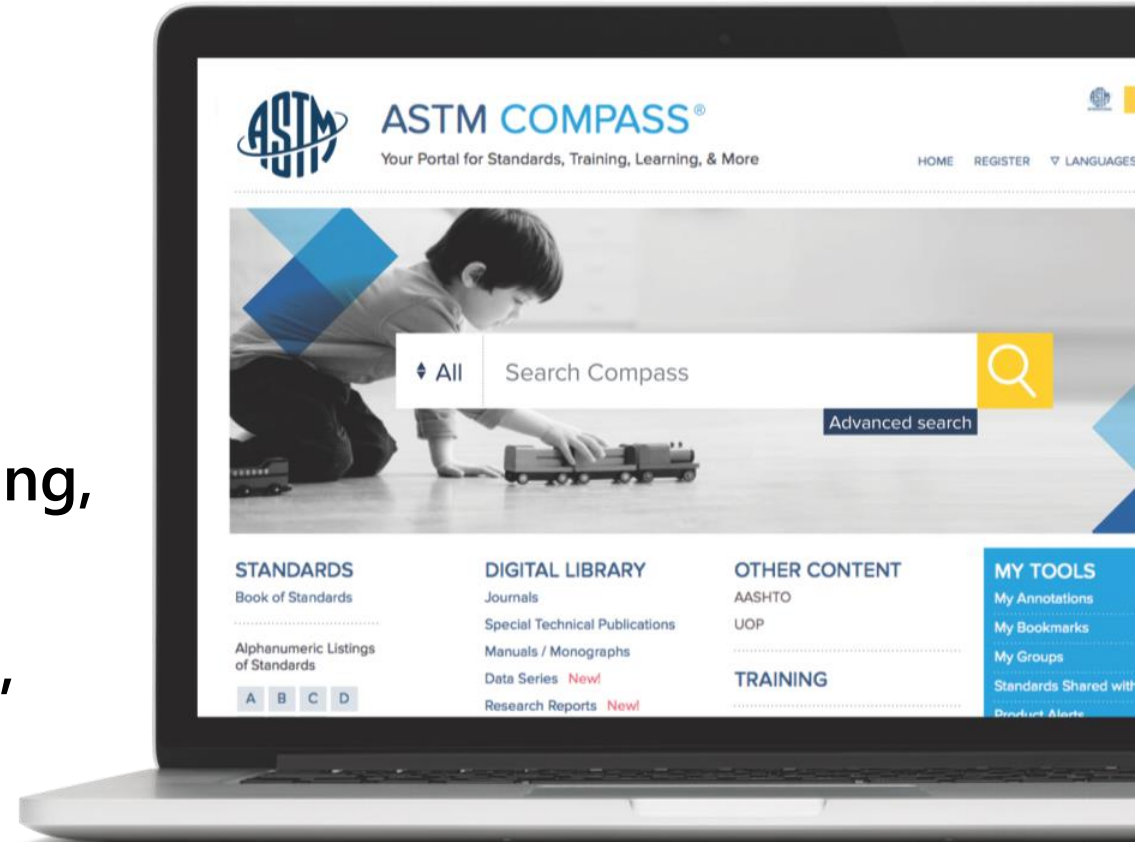


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- Frontmatter
- Chapter 1 - General
- Chapter 2 - Notation and Terminology
- Chapter 3 - Referenced Standards
- Chapter 4 - Structural System Requirements
- Chapter 5 - Loads
- Chapter 6 - Structural Analysis
- Chapter 7 - One-Way Slabs
- Chapter 8 - Two-Way Slabs
- Chapter 9 - Beams
- Chapter 10 - Columns
- Chapter 11 - Walls
- Chapter 12 - Diaphragms
- Chapter 13 - Foundations
- Chapter 14 - Plain Concrete
- Chapter 15 - Beam-Column and Slab-Column Joints
- Chapter 16 - Connections Between Members
 - GHOST - Chapter Ghost - 1 column
 - 16.1 - Scope
 - 16.2 - Connections of precast members
 - 16.3 - Connections to foundations
 - 16.4 - Horizontal shear transfer in composite concrete flexural members

ACI CODE-318-19: Building Code Requirements for Structural Concrete and Commentary

Code

Commentary

User Notes

Additional requirements for freezing-and-thawing exposure

Additional requirements for freezing-and-thawing exposure

Note set: **Reinforced Concrete I**

19.3.3.1

R19.3.3.1



Show hotspots Show in TOC Current State:0 Markup Workflow : Published Sort: 8 L:54933 D:9 C:130 S:275 P:5951

Concrete subject to freezing-and-thawing Exposure Classes F1, F2, or F3 shall be air entrained. Except as permitted in 19.3.3.6, air content shall conform to Table 19.3.3.1.

A table of required air contents for concrete to resist damage from cycles of freezing and thawing is included in the Code, based on guidance provided for proportioning concrete mixtures in [ACI 211.1](#). Entrained air will not protect concrete containing coarse aggregates that undergo disruptive volume changes when frozen in a saturated condition.

Table 19.3.3.1—Total air content for concrete exposed to cycles of freezing and thawing

Nominal maximum aggregate size, in.	Target air content, percent	
	F1	F2 and F3
3/8	6.0	7.5
1/2	5.5	7.0
3/4	5.0	6.0
1	4.5	6.0
1-1/2	4.5	5.5
2	4.0	5.0
3	3.5	4.5

Note set: **Reinforced Concrete I**

19.3.3.2

R19.3.3.2



Show hotspots Show in TOC Current State:319 Markup Workflow : Published Sort: 9 L:86389 D:9 C:130 S:275 P:5952

Concrete shall be sampled in accordance with [ASTM C172](#), and air content shall be measured in accordance with [ASTM C231](#) or [ASTM C173](#).

The sampling of fresh concrete for acceptance based on air content is usually performed as the concrete is discharged from a mixer or a transportation unit (for example, a ready mixed concrete truck) to the conveying equipment used to transfer the concrete to the forms. ASTM C172 primarily covers sampling of concrete as it is discharged from a mixer or a transportation unit, but recognizes that specifications may require sampling at other points such as discharge from a pump. Table 19.3.3.1 was developed for testing as-delivered concrete. ASTM C231 is applicable to normalweight concrete and ASTM C173 is applicable to normalweight or lightweight concrete.

Note set: **Reinforced Concrete I**

If the licensed design professional requires measurement of air content of fresh concrete at additional sampling locations, such requirements should be stated in the construction documents, including the sampling protocol, test methods to be used, and the



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Title: ASTM C172/C172M-17, "Standard Practice for Sampling Freshly Mixed Concrete."

Author(s): ASTM Subcommittee C09.60 on Testing Fresh Concrete

Publication: 318Reference

Volume:

Issue:

Appears on pages(s):

Keywords:

DOI: 10.1520/C0172_C0172M-17

Date: 10/1/2017

Abstract:

This practice covers procedures for obtaining representative samples of fresh concrete as delivered to the project site on which tests are to be performed to determine compliance with quality requirements of the specifications under which the concrete is furnished (Note 1). The practice includes sampling from stationary, paving and truck mixers, and from agitating and nonagitating equipment used to transport central-mixed concrete and from continuous mixing equipment as described in Specification C685/C685M.

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Standard Active Last Updated: Nov 02, 2017 Track Document

ASTM C172/C172M-17 Standard Practice for Sampling Freshly Mixed Concrete

Significance and Use

3.1 This practice is intended to provide standard requirements and procedures for sampling freshly mixed concrete from different containers used in the production or transportation of concrete. The detailed requirements as to materials, mixtures, air content, temperature, number of specimens, slump, interpretation of results, and precision and bias are in specific test methods.

Scope

1.1 This practice covers procedures for obtaining representative samples of fresh concrete as delivered to the project site on which tests are to be performed to determine compliance with quality requirements of the specifications under which the concrete is furnished (Note 1). The practice includes sampling from stationary, paving and truck mixers, and from agitating and nonagitating equipment used to transport central-mixed concrete and from continuous mixing equipment as described in Specification C685/C685M.

Version: C0172_C0172M-17 Active
Language: English (United States)
Format: PDF
Price: \$50.00
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ASTM License Agreement

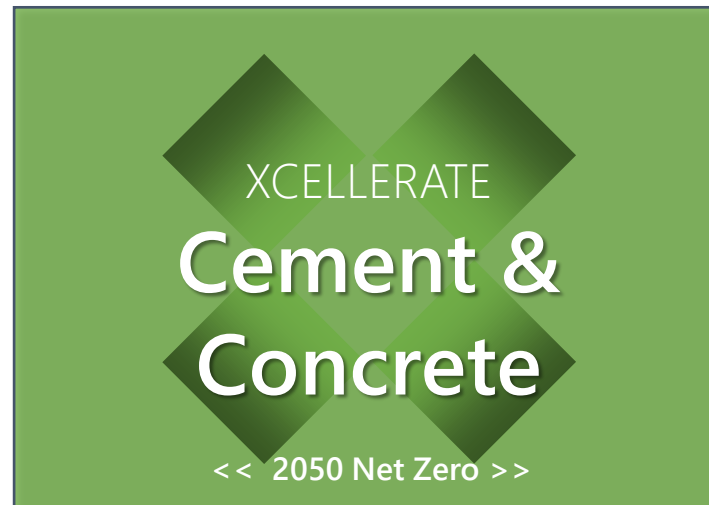
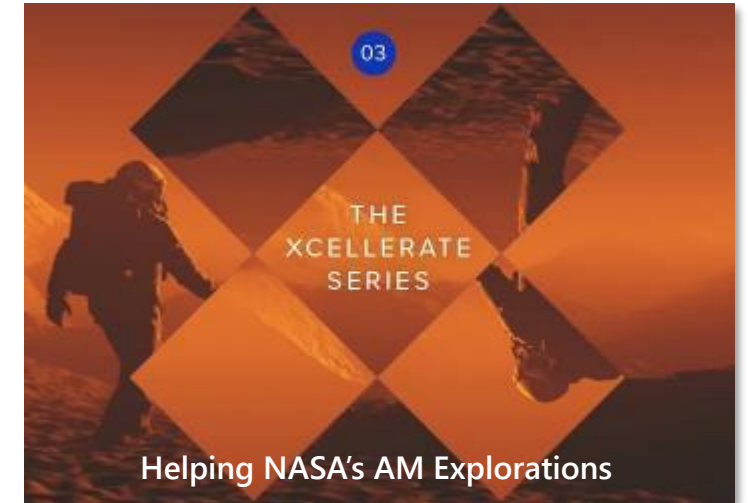
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ASTM International Xcellerate

- This is standards **engaging** and **at work** with emerging technologies.
- Focus on the effective use of standards by bridging the R&D process with the standards development process.
- Aim: **excellence** and **accelerating** speed to market.
- An “umbrella” housing all ASTM International current and future emerging technology activities.



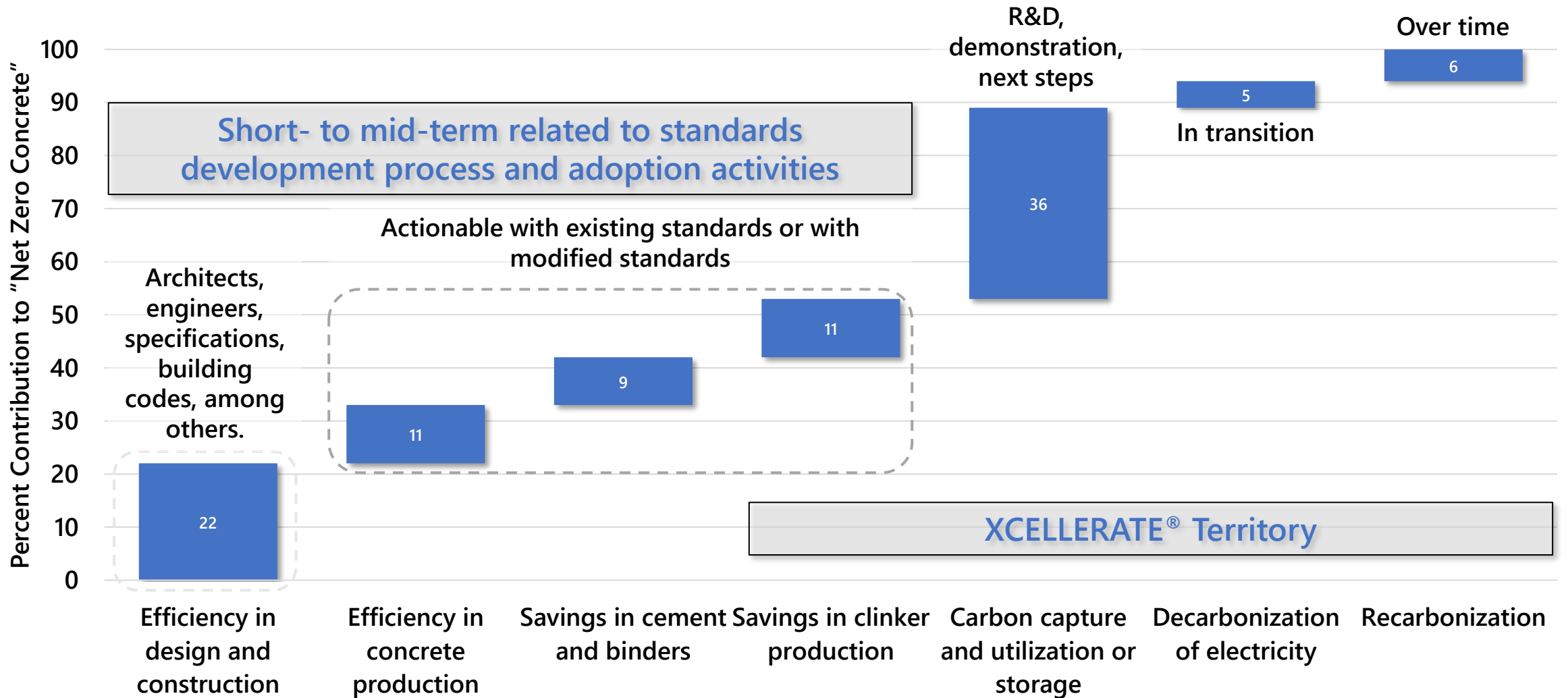
Research to Standards (R2S)



ACI and GCCA have launched centers of excellence and accelerator programs for carbon neutral concrete

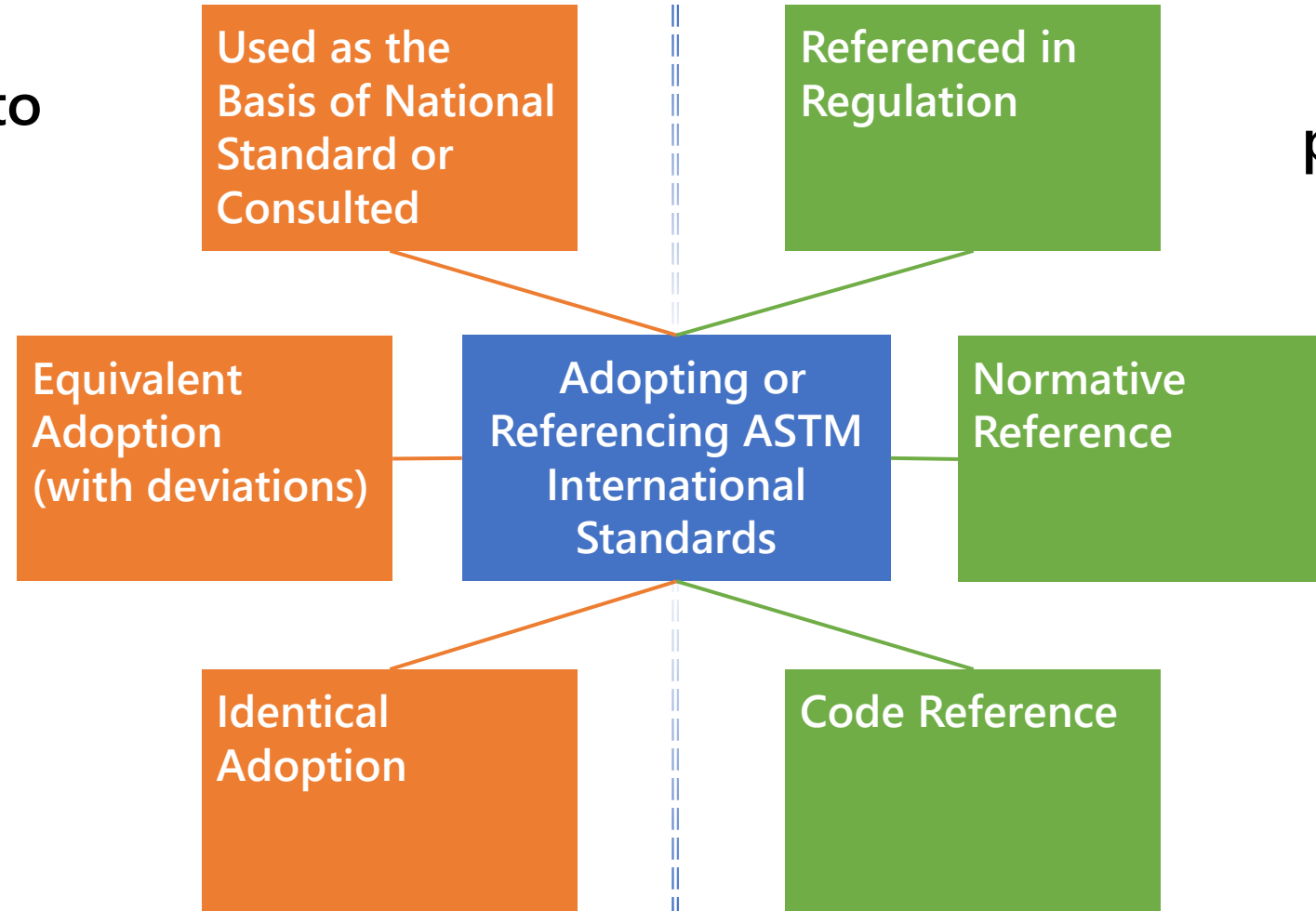


GCCA's 2050 roadmap for Net Zero Concrete; a call for international standards development



Connecting the dots with ASTM International

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Available to all public and private standards' users

GOVERNMENT NOTICES

SOUTH AFRICAN REVENUE SERVICE

No. R. 1334

**CUSTOMS AND EXCISE ACT, 1964.
AMENDMENT OF SCHEDULE NO. 1 (No. 1/1/1367)**

Under section 48 of the Customs and Excise Act, 1964, Part 1 of Schedule No. 1 to the said Act is hereby amended, with effect from 1 January 2009, to the

SCHEDULE

By the substitution for the ADDITIONAL NOTES to CHAPTER 27 of the following:

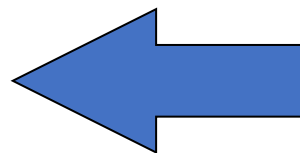
ADDITIONAL NOTES:

1. Specifications:

In this Chapter the following expressions shall be deemed to refer to hydrocarbon fuels and oils which are liquid at normal temperature and pressure (20°C) all of the specifications hereunder assigned thereto or with any other specifications accepted or determined by the Commissioner (unless otherwise stated, determined by the methods specified below) provided the intended uses of such fuels and oils are considered by the Commissioner in every case to be as such and oils.

Methods to determine Specification Properties:

Distillation: ASTM D86/IP123
Density: ASTM D1298/4052
Knock Rating: ASTM D2700/IP236
Smoke Point: ASTM D1322/IP57
Sulphur Content: ASTM D2622/IP336
Kinematic Viscosity: ASTM D445/IP71



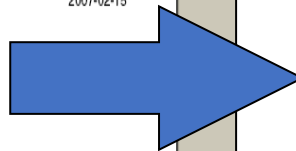
INTERNATIONAL
STANDARD

ISO
13947

First edition
2007-02-15

**Metallic powders — Test method for the
determination of non-metallic inclusions
in metal powders using a powder-forged
specimen**

*Poudres métalliques — Détermination de la teneur en inclusions non
métalliques dans les poudres métalliques à l'aide d'une éprouvette
forgée de poudre*



such that the core region contains porosity. At the magnification used for this test method, residual porosity is hard to distinguish from inclusions. Too much residual porosity makes a meaningful assessment of the inclusion population impossible.

This test method may be applied to materials that contain manganese sulfide (admixed or prealloyed), provided the near-neighbour separation distance is changed from 30 µm to 15 µm.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/TR 14321:1997, *Sintered metal materials, excluding hardmetals — Metallographic preparation and examination*

ASTM B 796-02, *Standard test method for nonmetallic inclusion content of powders intended for powder forging (P/F) applications*

ASTM E 3-01, *Standard practice for preparation of metallographic specimens*

ASTM E 768-99, *Standard practice for preparing and evaluating specimens for automatic inclusion assessment of steel*

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1

**PHILIPPINE NATIONAL
STANDARD**

PNS ASTM C 1048:2013
(ASTM published 2012
with Amendment 1:2013)
ICS 81.040.20

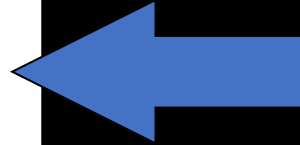
Standard Specification for Heat-Strengthened and
Fully Tempered Flat Glass



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DEPARTMENT OF
TRADE AND INDUSTRY
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**MALAYSIAN
STANDARD**

MS 2360:2010

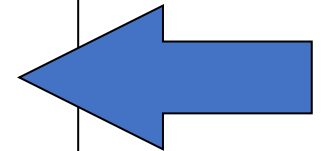
**TEST METHOD FOR RATE OF BURNING
AND/OR EXTENT AND TIME OF BURNING
OF PLASTICS IN A HORIZONTAL POSITION
(FIRST REVISION)**

ICS: 83.080.01

Descriptors: plastics, test, small-scale laboratory screening, rate of burning, horizontal position

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Closing remarks... Helping our world work better...

In summary

- ASTM International work and standards influence every aspect of daily life
- ASTM International is global, practical and relevant
 - ▶ the first choice for companies, organizations, and governments around the world
- Value-added business services ensure that ASTM International standards are used to maximum effect

Conclusion... ASTM:

- Is ready to innovate
- Values good sense
- Is willing to share and be accountable
- Is committed to helping our world work better





Thank you!



ASTM INTERNATIONAL
Helping our world work better

**Bridging the gaps:
One concrete world,
multiple standards.**