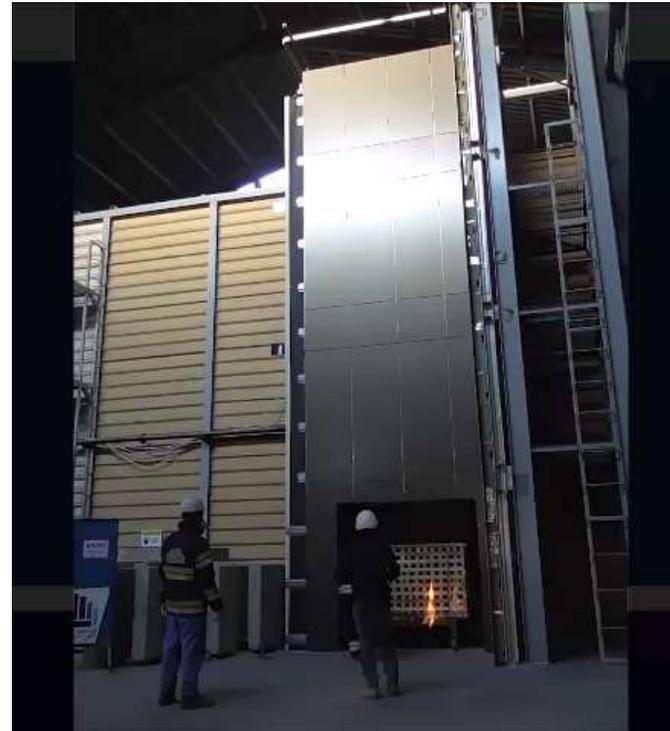
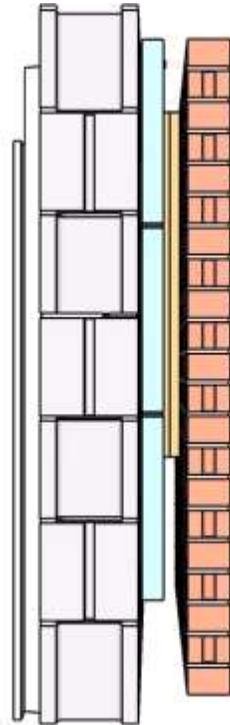
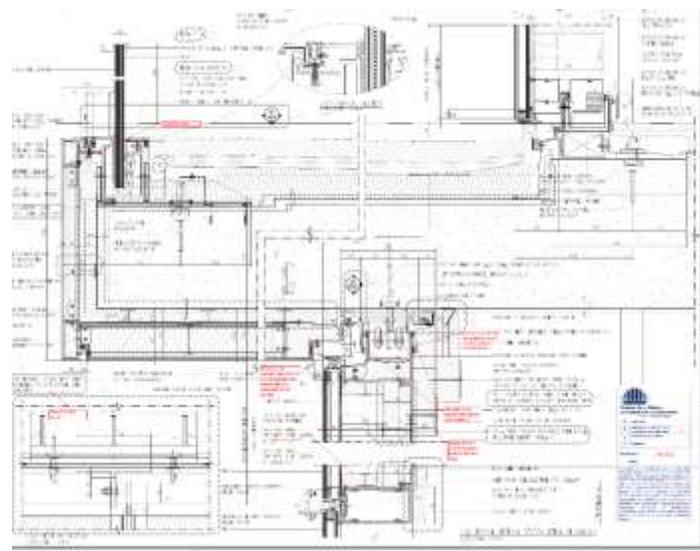


Understanding Compliance to Ensure a Fire-Safe Facades

- Fire testing of Facades
- Conformity assessment mechanisms
- Compliance Regimes and Mechanisms already in use
- Q &A



From the **Architect**
to the **Engineer**
to the **Contractor**



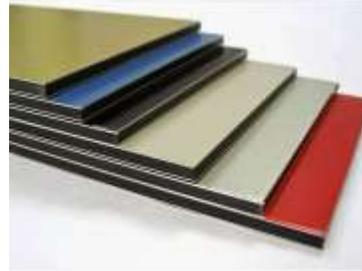
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Reaction to Fire Testing – Materials

A1 performing better than A2	Non Combustible	A1
Really Limited Contribution to fire		A2
Limited Contribution to fire		B
Medium Contribution to fire		C
High Contribution to fire		D
Highly Combustible	Combustible	E
		F



Smoke	
s1	Emission of smoke absent or weak
s2	Emission of smoke of average intensity
s3	Emission of smoke of high intensity

Droplets	
d0	No flaming droplets
d1	flaming droplets persisting not longer than 10s
d2	Not d0/d1



Reaction

Ignitability

Calorific Value

Combustibility

Flame Spread, Smoke



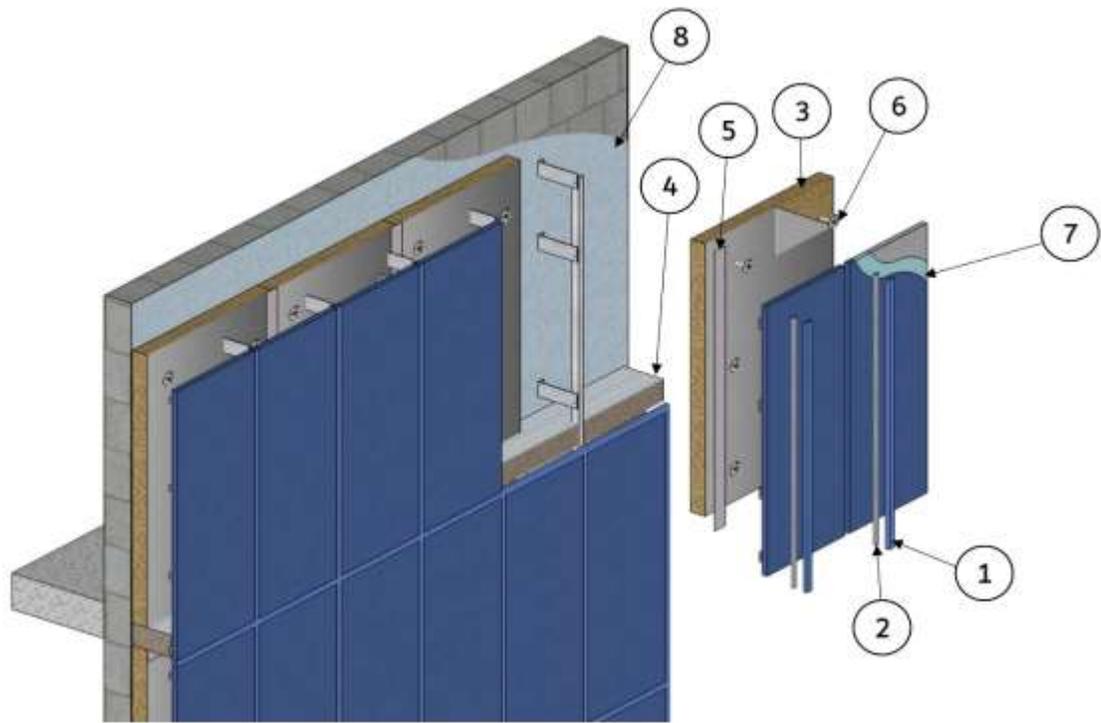
Test Standards for EN 13501-1 Classification for Construction Products							
Combination of Tests required to check for these classes	ISO 1182 & ISO 1716		EN 13823			ISO 11925-2	
	A1	A2	B	C	D	E	F
Classifications of Fire behaviour; Smoke Release and Droplets		s1s2s3	s1s2s3	s1s2s3	s1s2s3		
		d0d1d2	d0d1d2	d0d1d2	d0d1d2		

Images from the Internet. All rights of image holders

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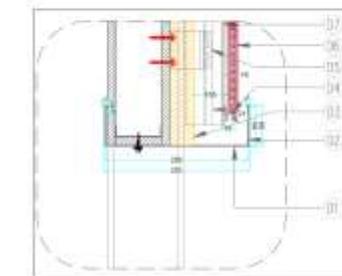
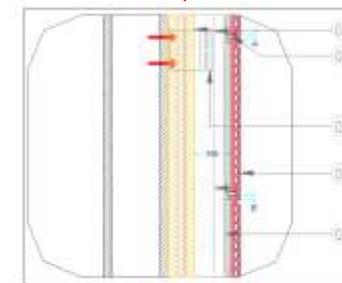
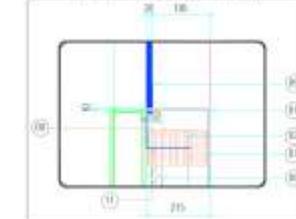
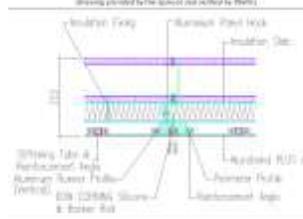
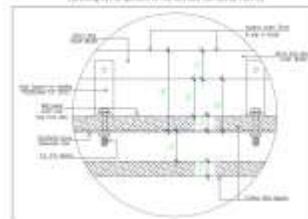
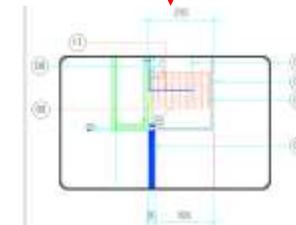
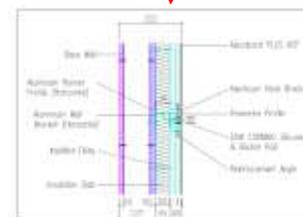
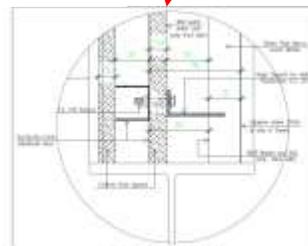
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LEGEND

- 1. Joint Sealants
- 2. Backer Rods
- 3. Exterior Insulation
- 4. Cavity Barrier
- 5. Joint Tapes
- 6. Insulation Fasteners
- 7. Coating/Coating Systems
- 8. Moisture Barrier/ Waterproofing



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Compartmentalization



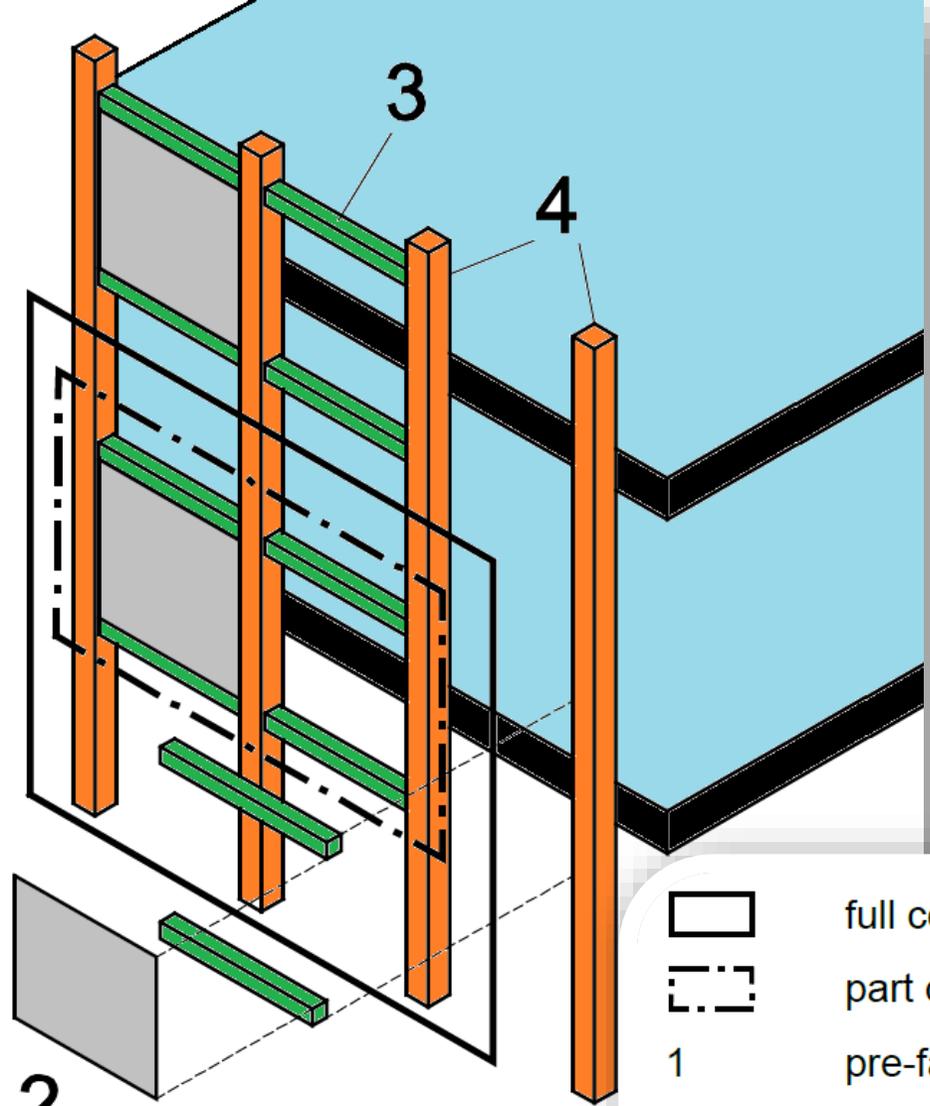
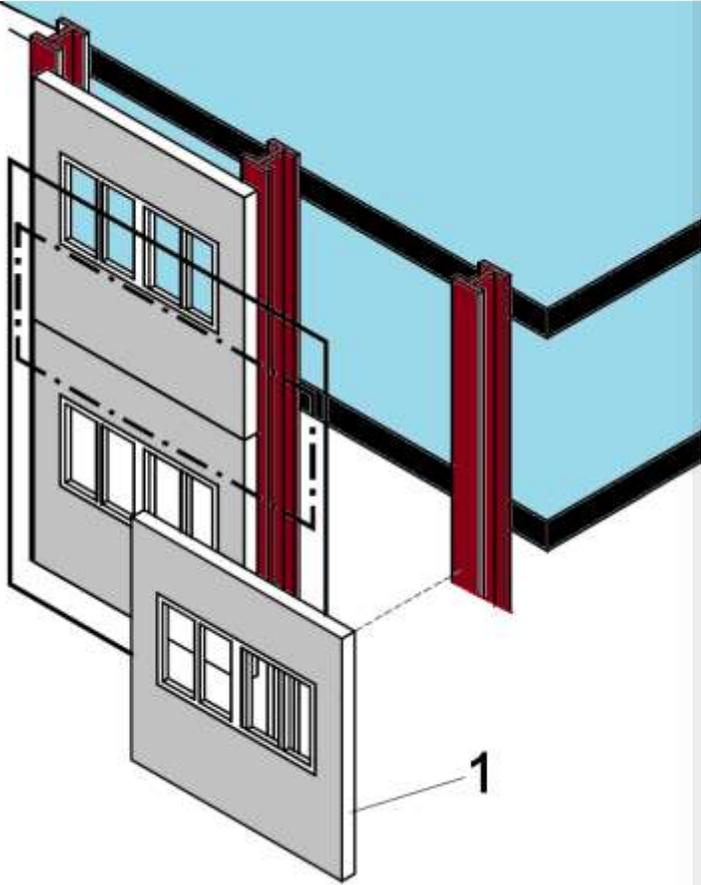
Image credit to Etex Building Performance Limited

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Fire Resistance Tests



-  full configuration test specimen (EN 1364-3)
-  part configuration test specimen (EN 1364-4)
- 1 pre-fabricated elements of the curtain walling
- 2 infill panel
- 3 transom
- 4 mullion

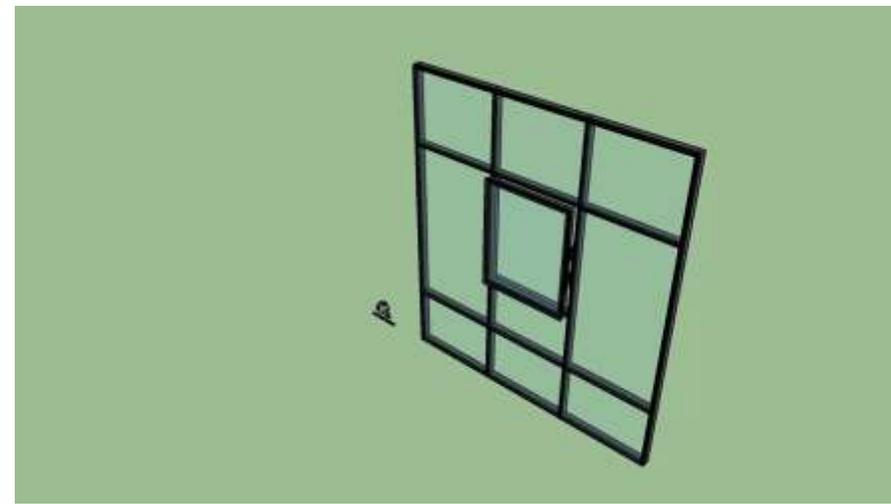
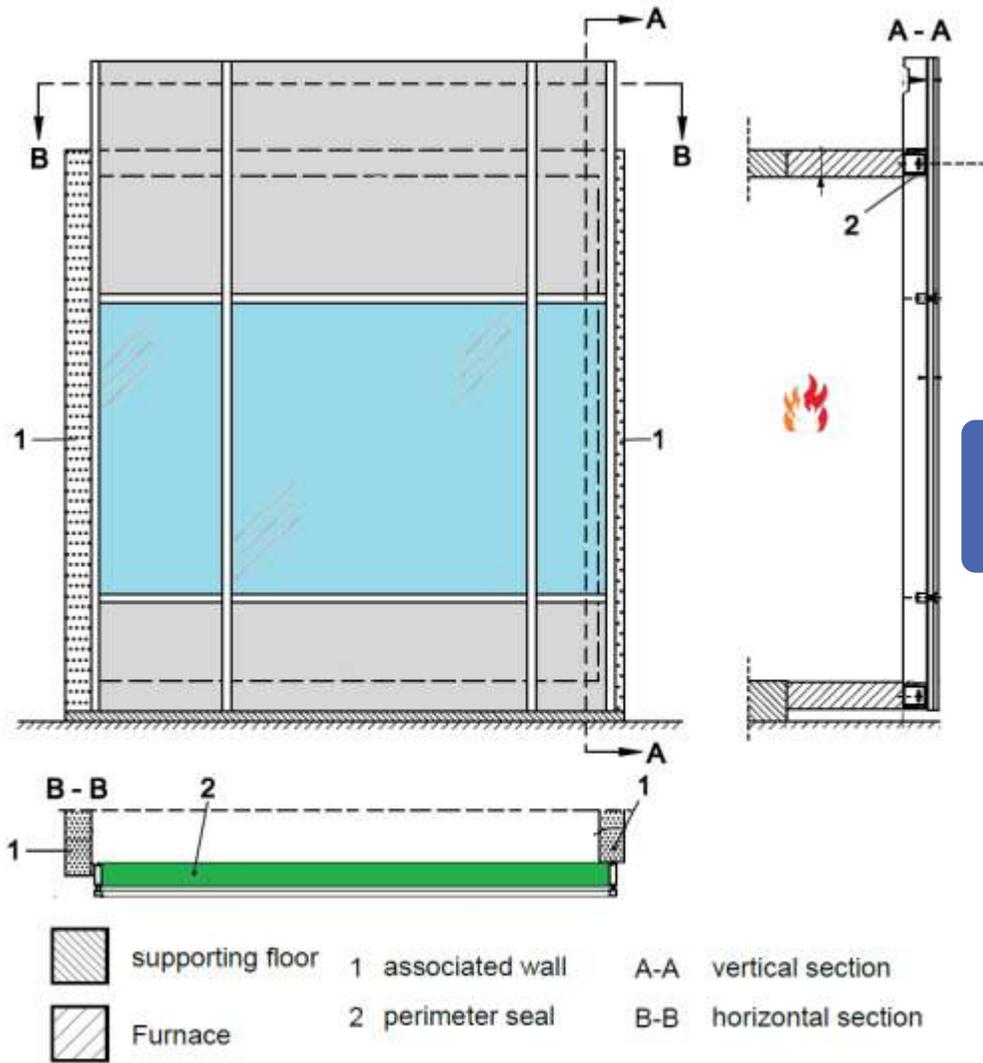
© The British Standards Institution

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Test combinations



Classifications

- E
- EW
- EI

Framing Materials

- Aluminium
- Steel
- S. Steel
- Timber

Transom/Mullion

- Depth
- Width

Relationships

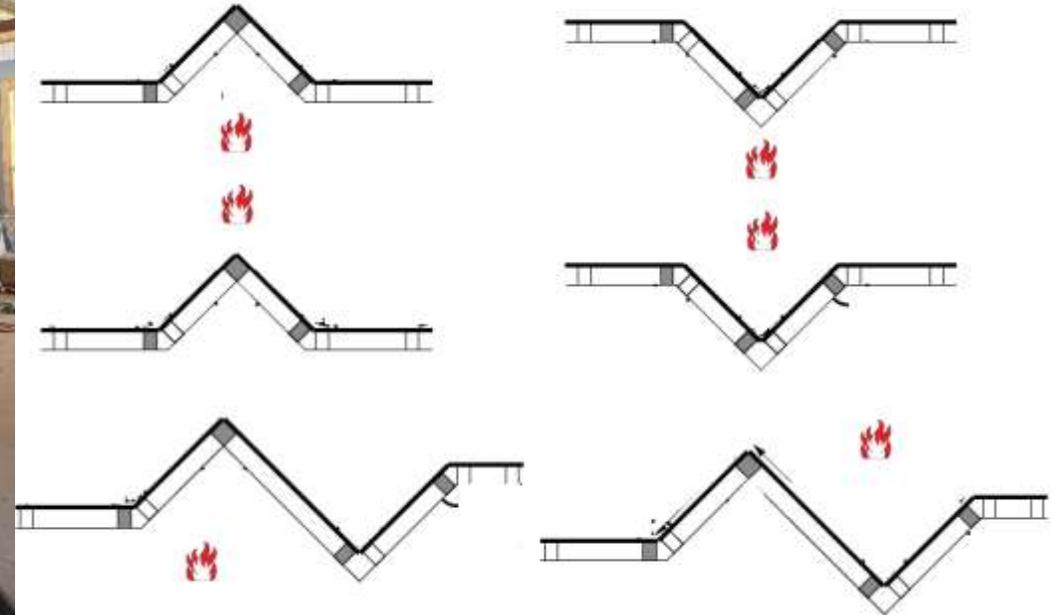
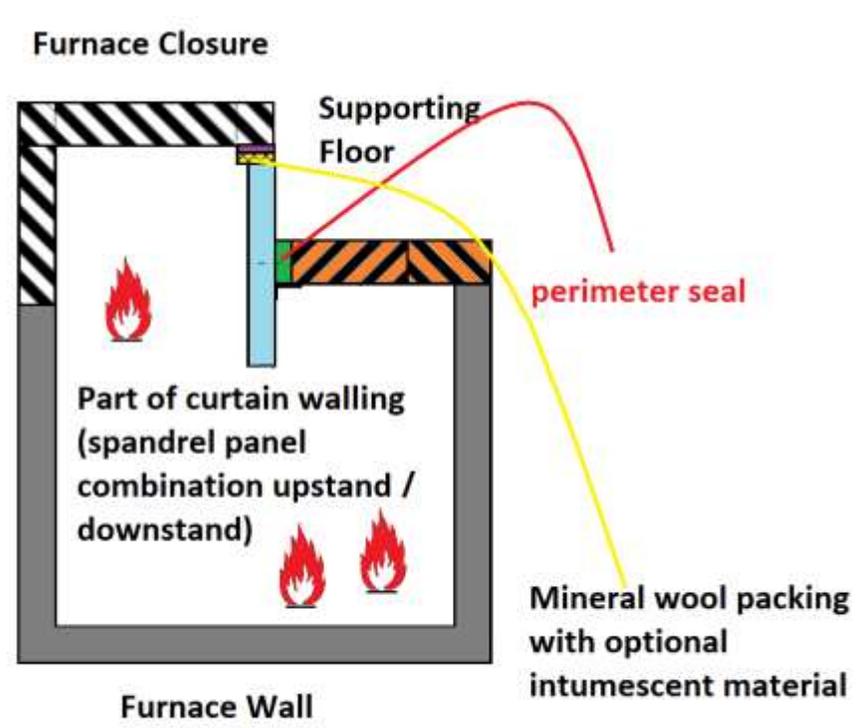
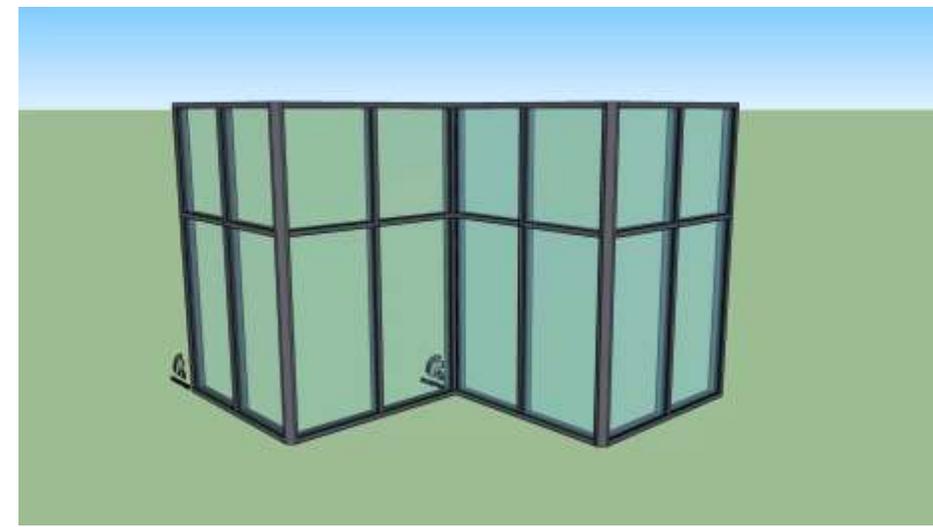
- Connections Geometry
- Between Members
- Timber grouping
- Coatings etc.
- Infill Panels

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Test & results

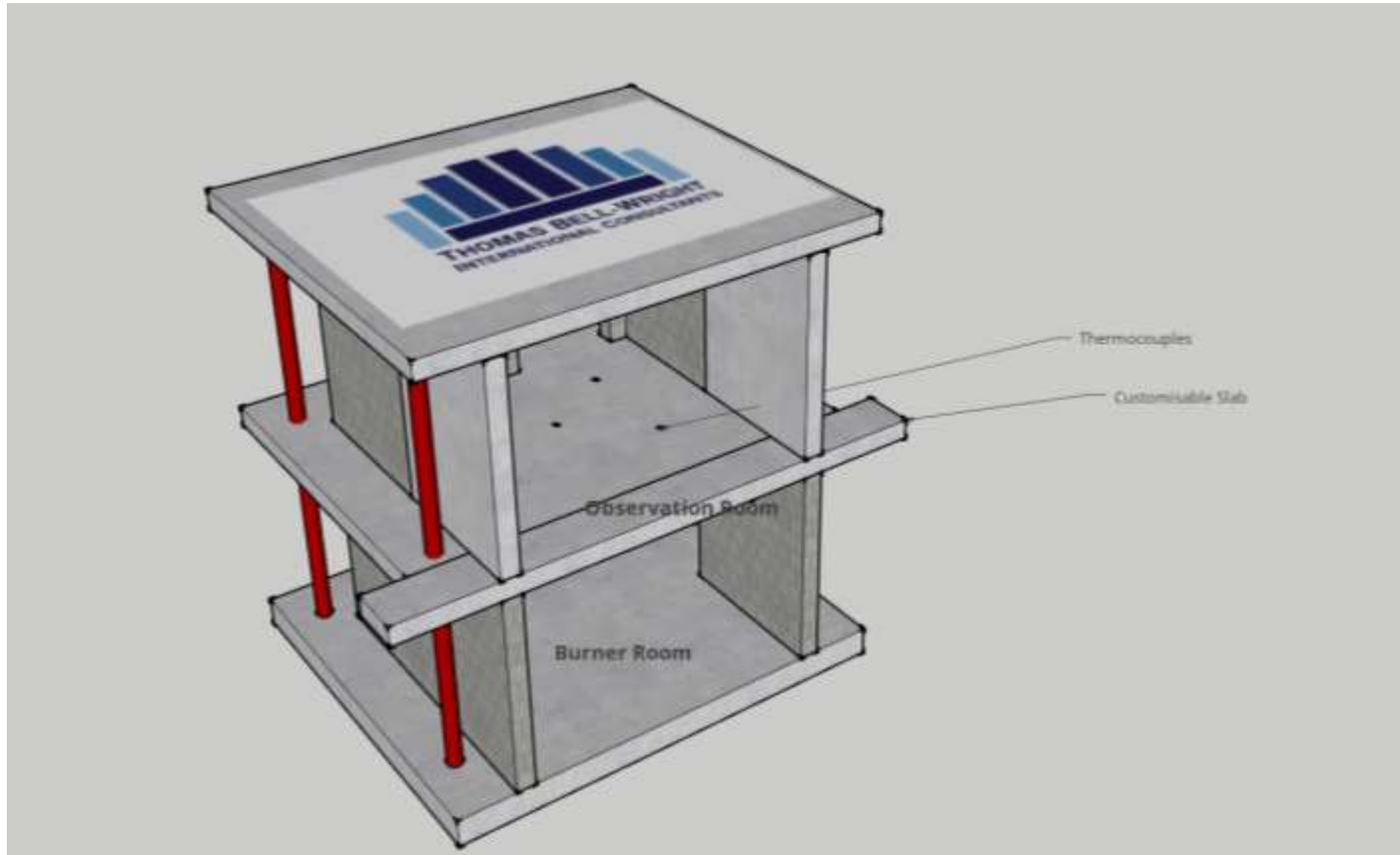


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Fire-Test of a Building Spandrel-Panel Assembly Due to External Spread of Fire – ASTM E2307



Images from <https://www.buntingarchitecturalmetals.com/> and <https://www.ceicomposites.com/>

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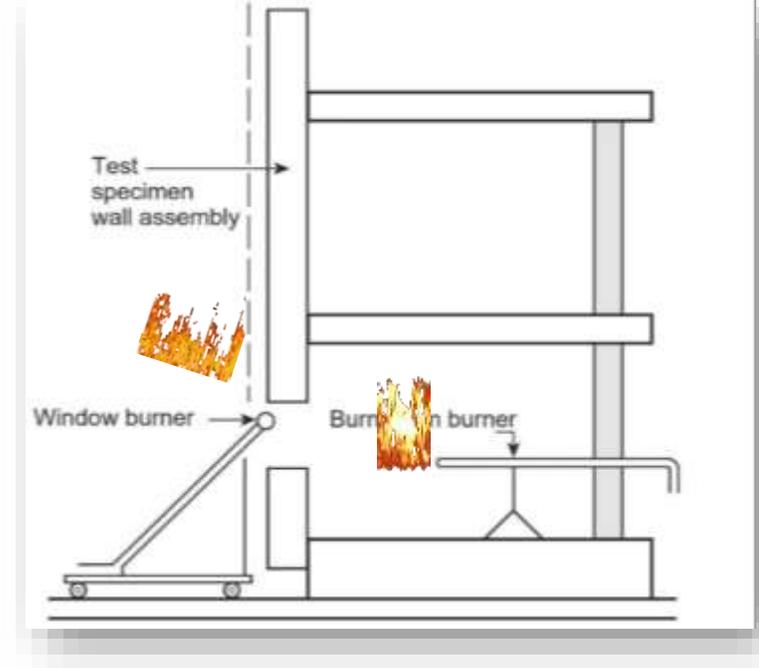
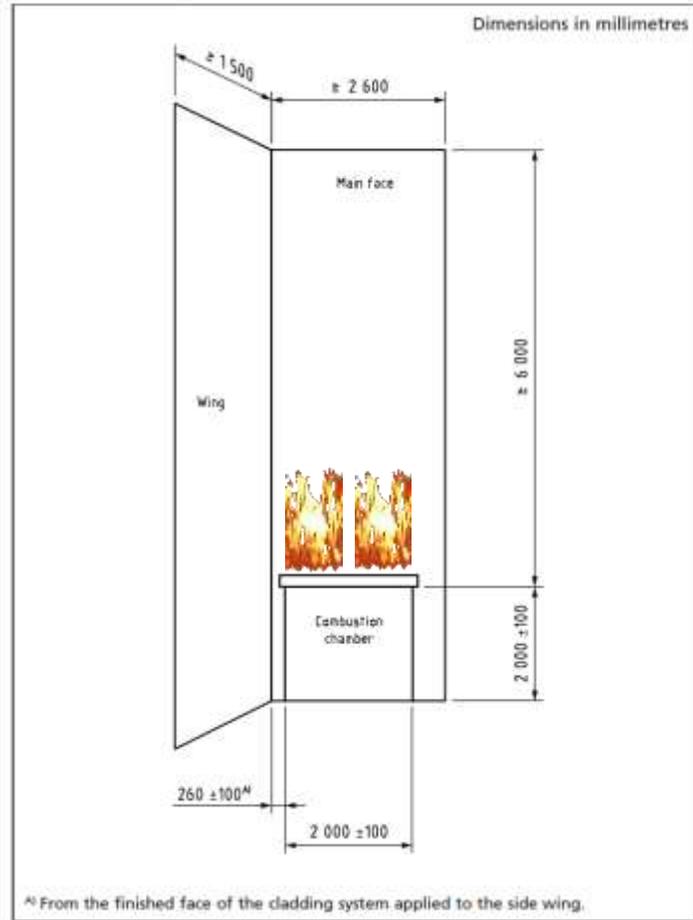
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NFPA 285 for Cladding Systems



Schematic of test apparatus



Fire Performance Of
External **Cladding**
Systems as per
BS 8414

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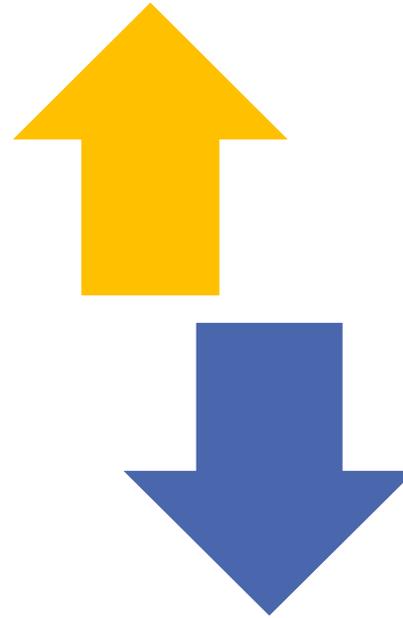
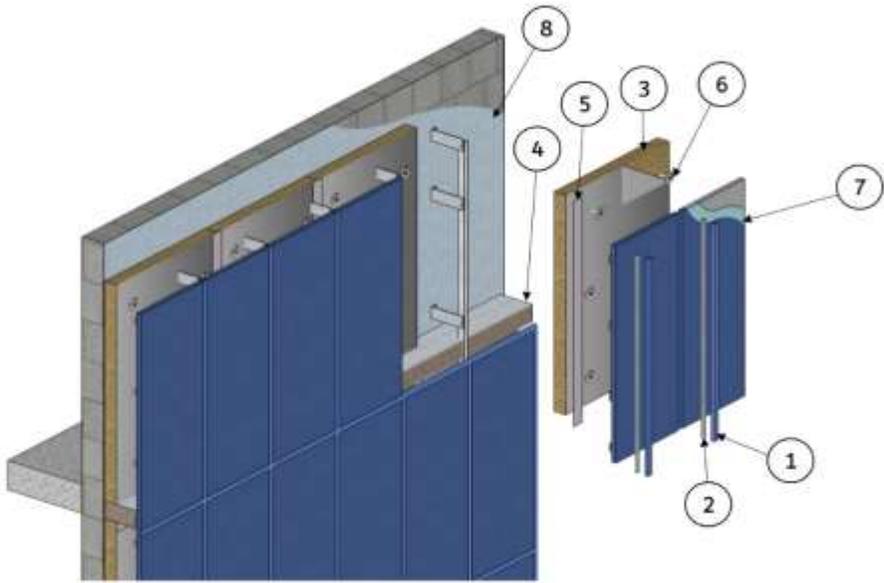
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Material Tests Versus System Tests

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Customization

Repeat Designs

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Assessing Compliance

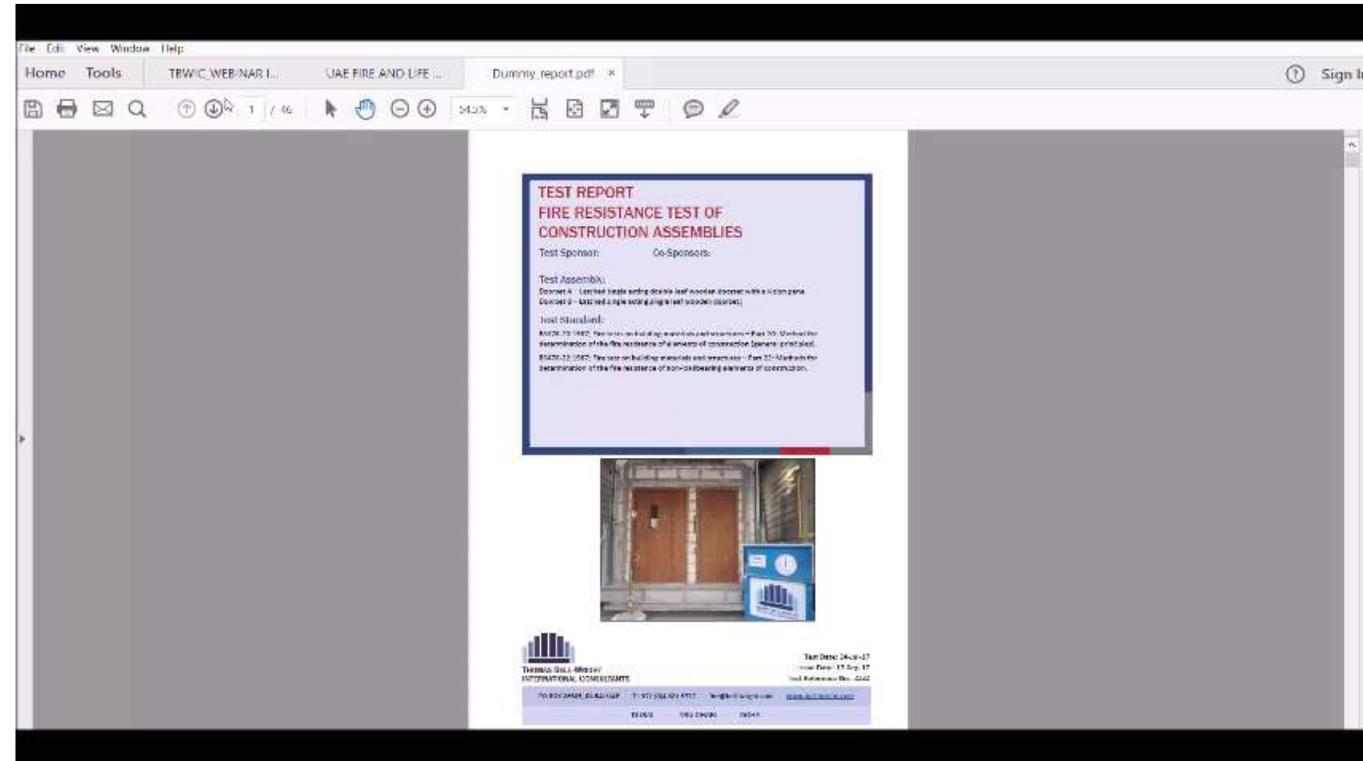
Reliance on Test reports

Link between test reports and supply?

When was the test done?

How many failure runs before a pass and why?

Validity of a test report?



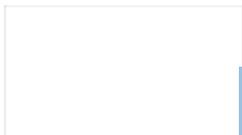
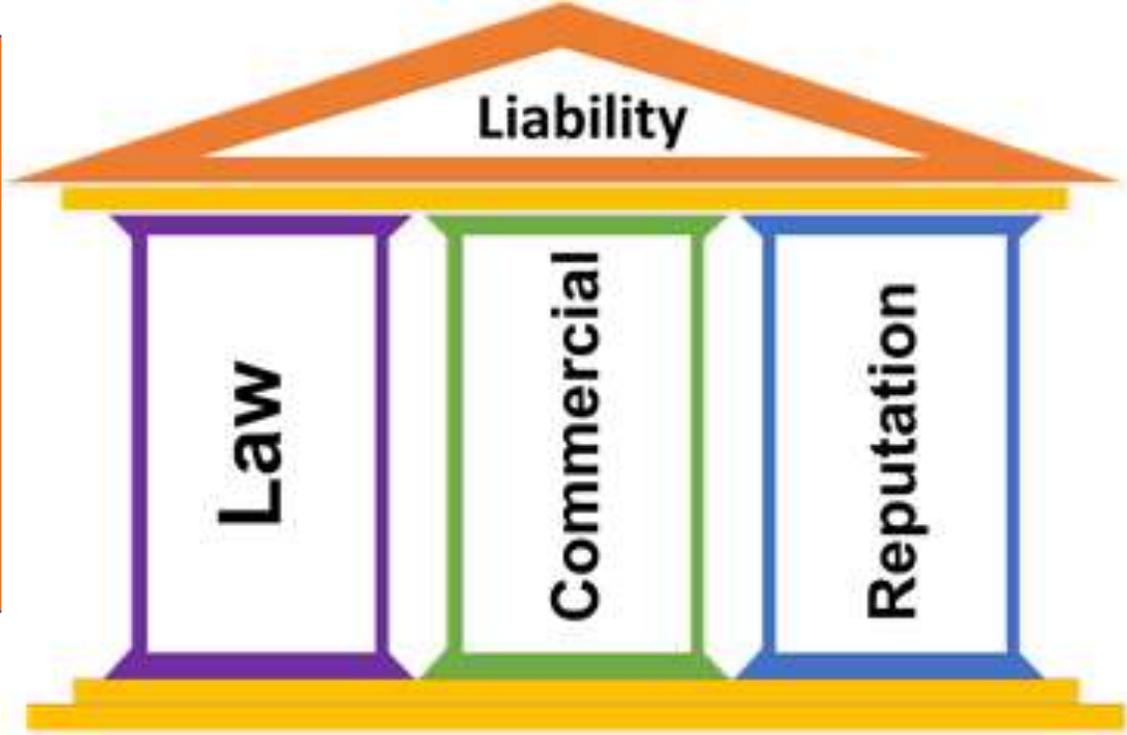
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Compliance



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Table 18.9.: Testing Laboratory Responsibilities

ITEMS	REQUIREMENTS
4. ISO GUIDE 67	i. The different certification systems covered in ISO Guide 67 are tabulated below. But the one which has been adopted by Civil Defence is System 5.

PROCEDURE (CARRIED OUT BY THE CERTIFICATION BODY)	ISO GUIDE 67 COMMON SYSTEM TYPES						
	1a	1b	2	3	4	5 (Adopted System)	6
1. Selection (sampling), as applicable	✓	✓	✓	✓	✓	✓	✗
2. Determination of characteristics, as applicable by:							
a) Testing	✓	✓	✓	✓	✓	✓	✓
b) Inspection	✓	✓	✓	✓	✓	✓	✓
c) Design appraisal	✓	✓	✓	✓	✓	✓	✓
d) Assessment of services	✓	✓	✓	✓	✓	✓	✓
3. Review (evaluation)	✓	✓	✓	✓	✓	✓	✓
4. Decision on certification	✓	✓	✓	✓	✓	✓	✓
5. Licensing (attestation)	✗	✓	✓	✓	✓	✓	✓
6. Ongoing surveillance, as applicable by:							
a) Testing of samples selected from the open market	✗	✗	✓	✗	✓	✓	✗
b) Inspection of samples selected from the open market	✗	✗	✓	✗	✓	✓	✗
c) Testing of samples selected from the factory	✗	✗	✗	✓	✓	✓	✗
d) Inspection of samples selected from the factory	✗	✗	✗	✓	✓	✓	✗
e) Quality system audits combined with random tests or inspections	✗	✗	✗	✗	✗	✓	✓
f) Assessment of the production process or service	✗	✗	✗	✓	✓	✓	✓

9- Copy of the passports and vis



Chapter 18

RESPONSIBILITIES OF STAKEHOLDERS

INTERNATIONAL STANDARD

ISO/IEC 17067

First edition 2013-08-01

Conformity assessment — Fundamentals of product certification and guidelines for product certification schemes

uring lice
se.
wner passport.
cense registration
of compliance (CO
ertificate.
ficate.
se license (for rene

7. Construction Material Test Standards, Approval and registration.

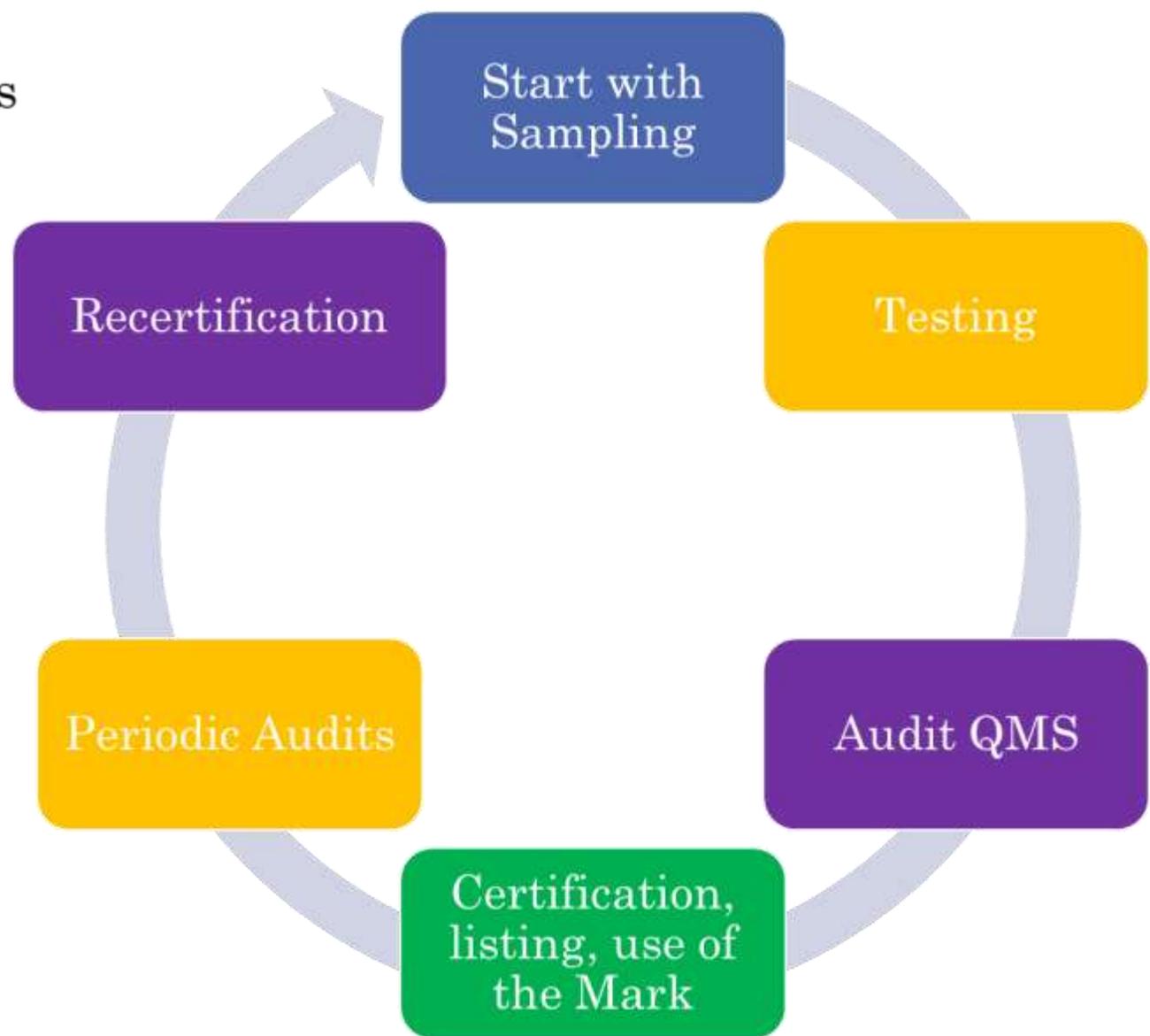
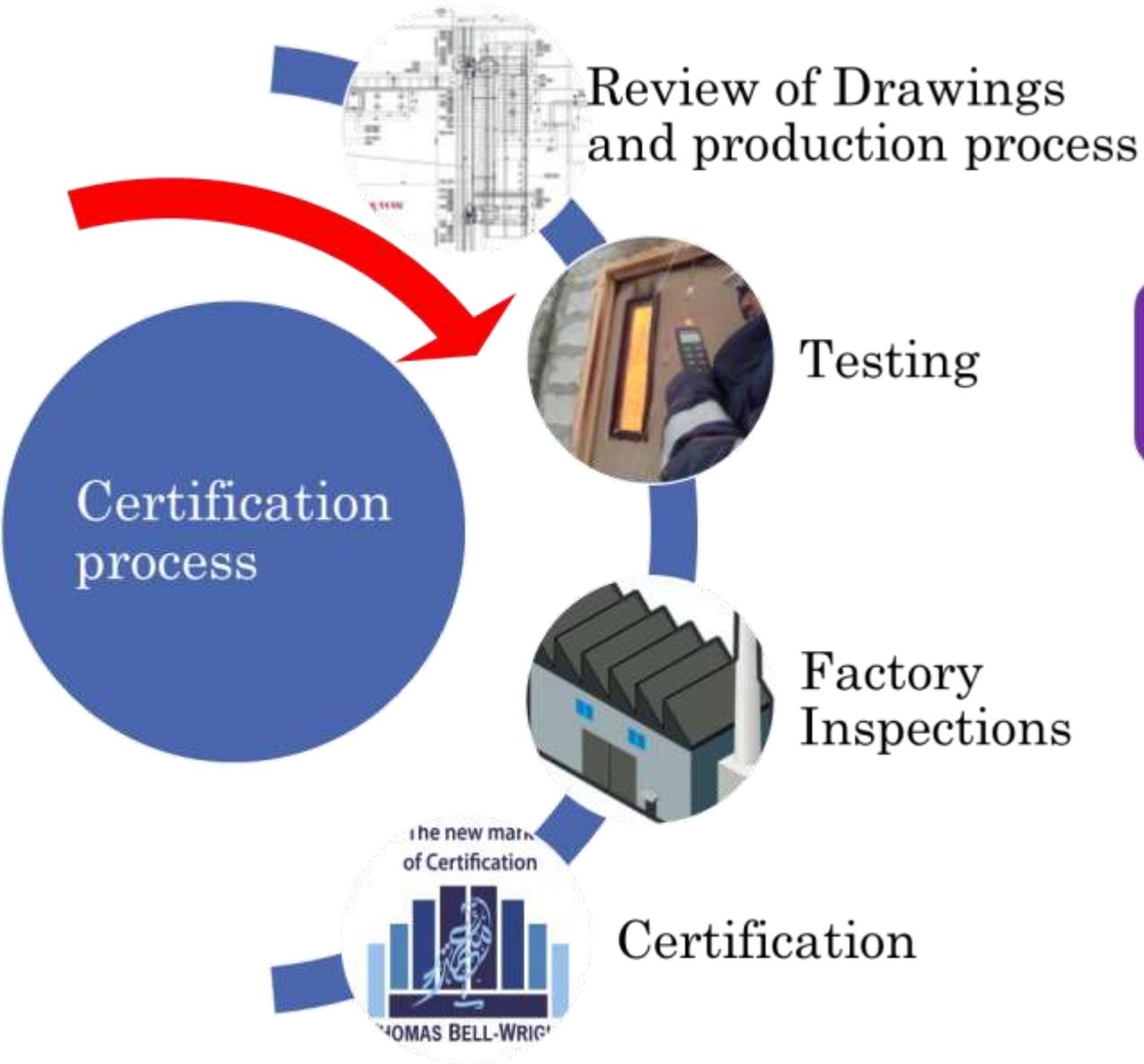
7.1. Acceptable Test Standards and criteria

- 7.1.1. All the Materials, Components, Systems, Assemblies, equipment, Products and Accessories, referred to in this chapter with respect to construction and Life Safety, Fire Safety and Emergency Services shall be Listed, Approved and Registered by the Civil Defence Material Approval Department.
- 7.1.2. There is no year of edition mentioned against any test standards. It is the intent of Civil Defence to convey to the customers seeking material tests and the test laboratories to follow the "LATEST EDITION OF THE TEST STANDARD, AS AND WHEN THEY ARE UPGRADED/REVISED/AMENDED, TO THE DATE."



ICS > 03 > 03.120 > 03.120.20

ISO/IEC 17065:2012
Conformity assessment — Requirements for bodies certifying products, processes and services



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UL Product iQ™

Dashboard Search GSYX.R10555 - Swinging-type Fire Doors | UL Product iQ

GSYX.R10555 - Swinging-type Fire Doors

DETAILS

File No.: R10555

UL Category (CCN): [GSYX](#)

Document Type: Listing

Parent Category (CCN): [GSNY](#)

RESOURCES

- [UL Confirmation Letter](#)
- [Guide Info \(GSYX\)](#)

TAGS

Add Tag

Document Company Information

Swingi

See General Information for Swinging-type Fire Doors

AVON WHOLESALE SUPPLY INC
1790 FARMINGTON AVE
P O BOX 545
UNIONVILLE, CT 06085 USA

Max Rating Opening Ty

Future - Medium Ideas about Future Adobe - Install Ado... UL 55A - Google Se... FMAPPROVAL 4880...

Google

Search Google or type a URL

bpdirectory.intertek.com/pages/DLP_Search.aspx

CSI Code: Nothing selected

Standard: UL 10(c)

Keywords:

CCRR #:

Trade/Brand Name:

Spec ID:

CDC #:

Design Document:

Limit results to listings with code compliance research reports (CCRRs)

Limit results to listings with certificates of compliance (COCs)

SEARCH **RESET**

Company	Listed Product	Spec ID	Standard
0877658 B.C. Ltd. dba Stilewood International Door & Window	Stilewood "C1" 20 Minute Wood Door Frame	30087	ASTM E152-81a; ASTM E2074 (2000); CAN / ULC S104 (2010); CAN / ULC S104 1980 (R1985); NFPA 252 (2003); NFPA 252 (2012); UBC 7-2 (1994); UBC 7-2 (1997); UL 10(b) (1997); UL 10(b) (2009); UL 10(c) (1998); UL 10(c) (2009)

Inbox (1,594) All

Wright Intern... Google Maps

Certificate holder: REWE-Zentral AG

Test Mark Number: **0000042726**

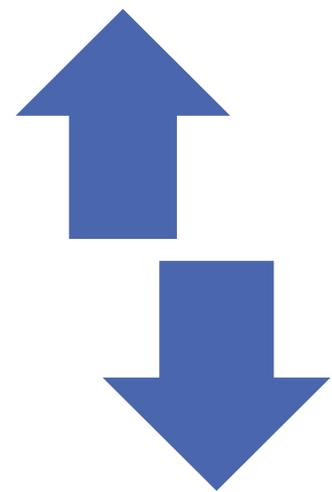
Info: www.tuv.com
ID: 0000042726

- Safety Tested
- Functionality Tested
- Production Monitored

Show certificate data ...

Customize

SSIONALISM



Product Test
System / Mock-up
Test

Now What?



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Ensuring that certified material is being installed as per tested and proven designs?



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Inspections



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3 Point Plan for Façade Fire Safety



Risk Assessment

Fire Consultant | Façade Specialist | Contractor

Inspection

Assembly
test or tests

Material
Reaction to
Fire Tests

Certification
& Listing



Ignitability



Combustibility



Calorific Value



Flame Spread,
Smoke



Assembly



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3 Point Plan for Façade Fire Safety

Regulation
Or
Contract

Risk Assessment

Fire Consultant | Façade Specialist | Contractor

Inspection

Assembly
test or tests

Material
Reaction to
Fire Tests

Certification
& Listing

ISO/IEC 17025 (requirements
for the competence of testing and
calibration laboratories)

ISO/IEC 17065
(Requirements for bodies
certifying products, processes and
services)

ISO/IEC 17020
(Requirements for the operation of
various types of bodies performing
inspection)
ISO/IEC 17024 (General
requirements for bodies operating
certification of persons)

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Customizations

Review and Compare drawings

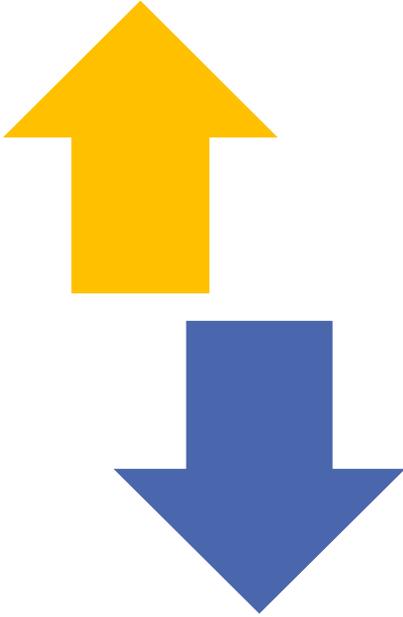
Validate using System tests

Repeat Designs

Review and Compare drawings

Compare with Listing evidence

If no go to Customization



Customization

Repeat Designs

Images from ny-engineers.com and CTBUH listings

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Answering Questions and Queries



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