

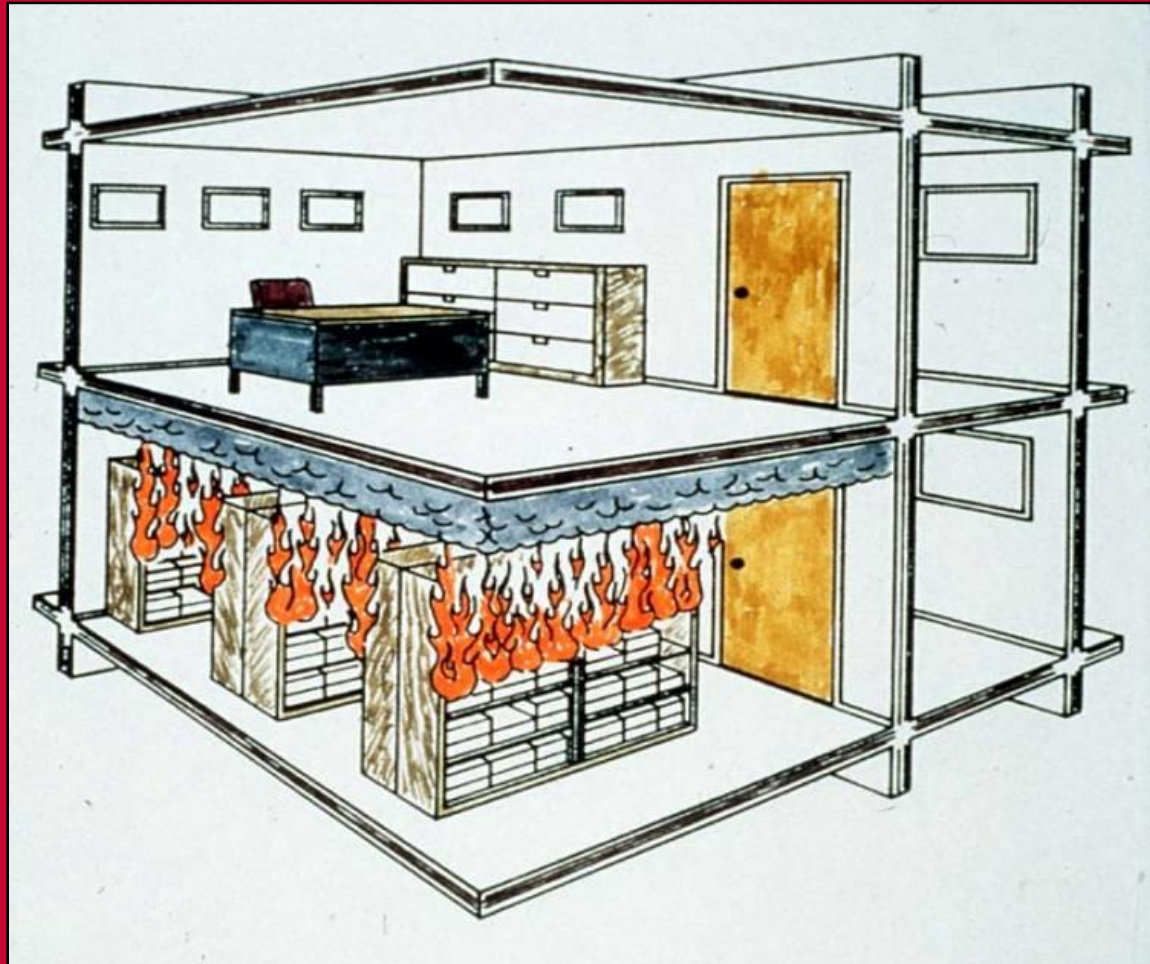
# Fire-Resistance Test Standards for Elements and Assemblies



Rich Walke

UL Codes and Regulatory Services

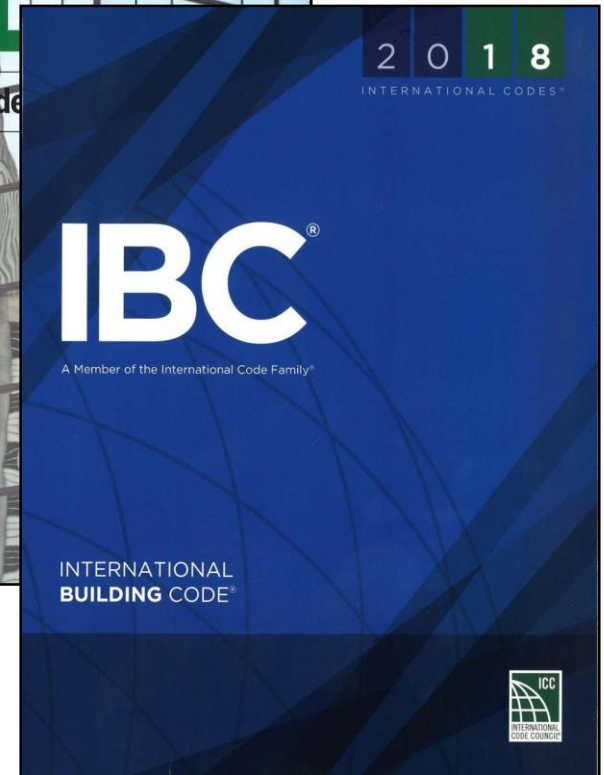
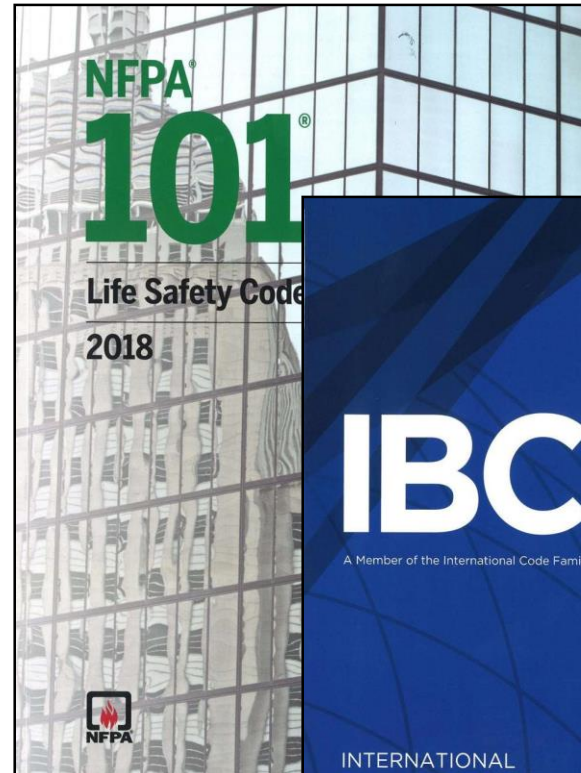
# Fire-Resistance-Rated Construction



# Fire-Resistance-Rated Construction

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Code  
Requirements  
for  
Fire-Resistance-  
Rated  
Construction



# Code Requirements

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- IBC Section 703.2 – Fire-resistance ratings shall be determined in accordance with ANSI/UL 263 or ASTM E119
- LSC 8.2.3.1 – The fire resistance of structural elements and building assemblies shall be determined in accordance with test procedures set forth in ANSI/UL 263 or ASTM E119



# Fire Resistance

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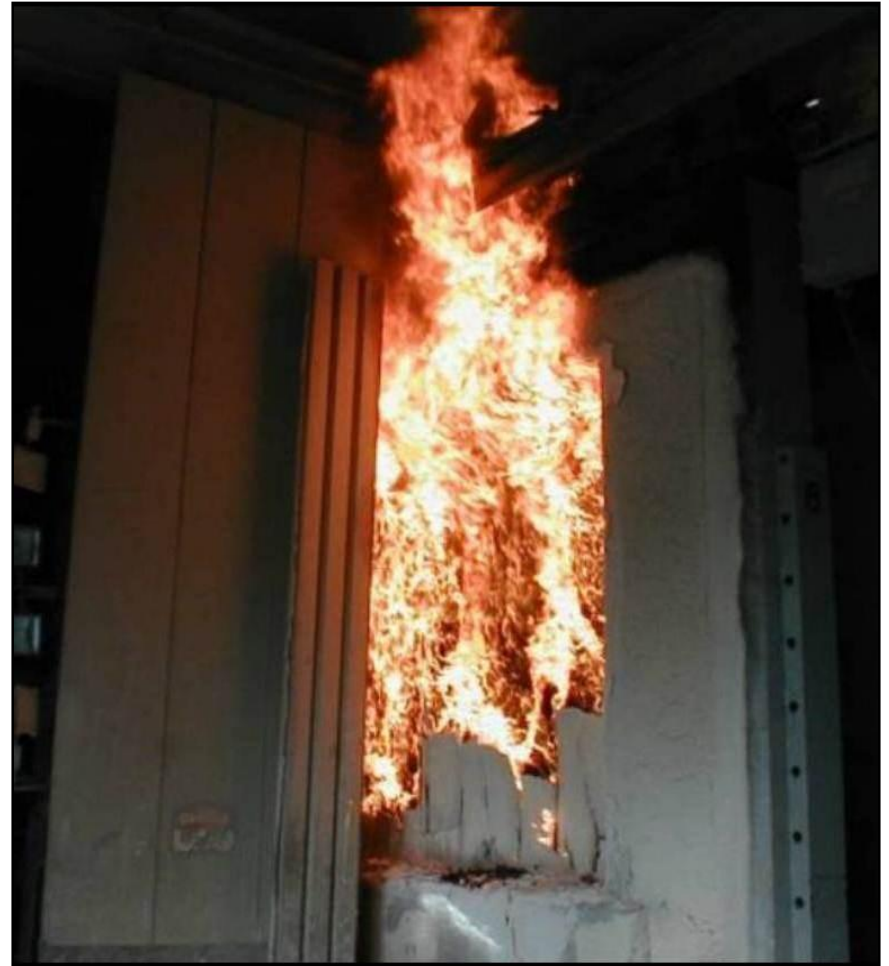
- Expressed as an Hourly Time Period
- Ratings range from 1/2 to 4 hours
- Containment of Fire to Room or Floor of Origin, and Structural Fire Resistance



# Fire-Resistance-Rated Construction

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Establishing  
Fire-Resistance  
Ratings



# Standards

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- ANSI/UL 263
- ASTM E119
- NFPA 251 (Withdrawn)



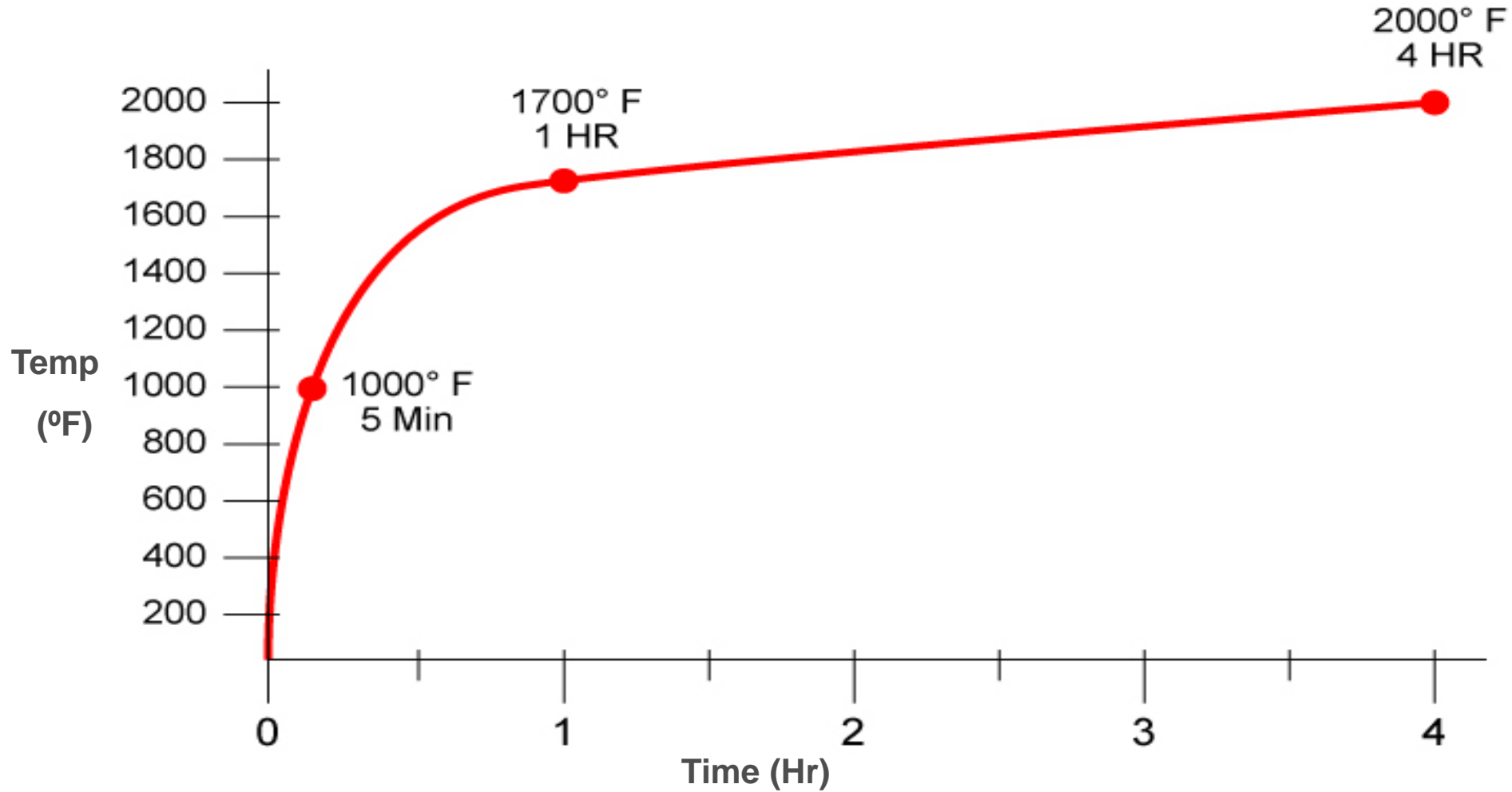
# Building Components

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- Columns
- Beams
- Floor/Ceilings or Roof/Ceilings
- Walls



# Time - Temperature Curve



# Columns

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- Sample size – Minimum 9 ft
- Tested unloaded





# Conditions of Acceptance – Columns

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- 1000°F / 1200°F







# Beams

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- Sample size – Minimum 12 ft
- Load applied – Per design

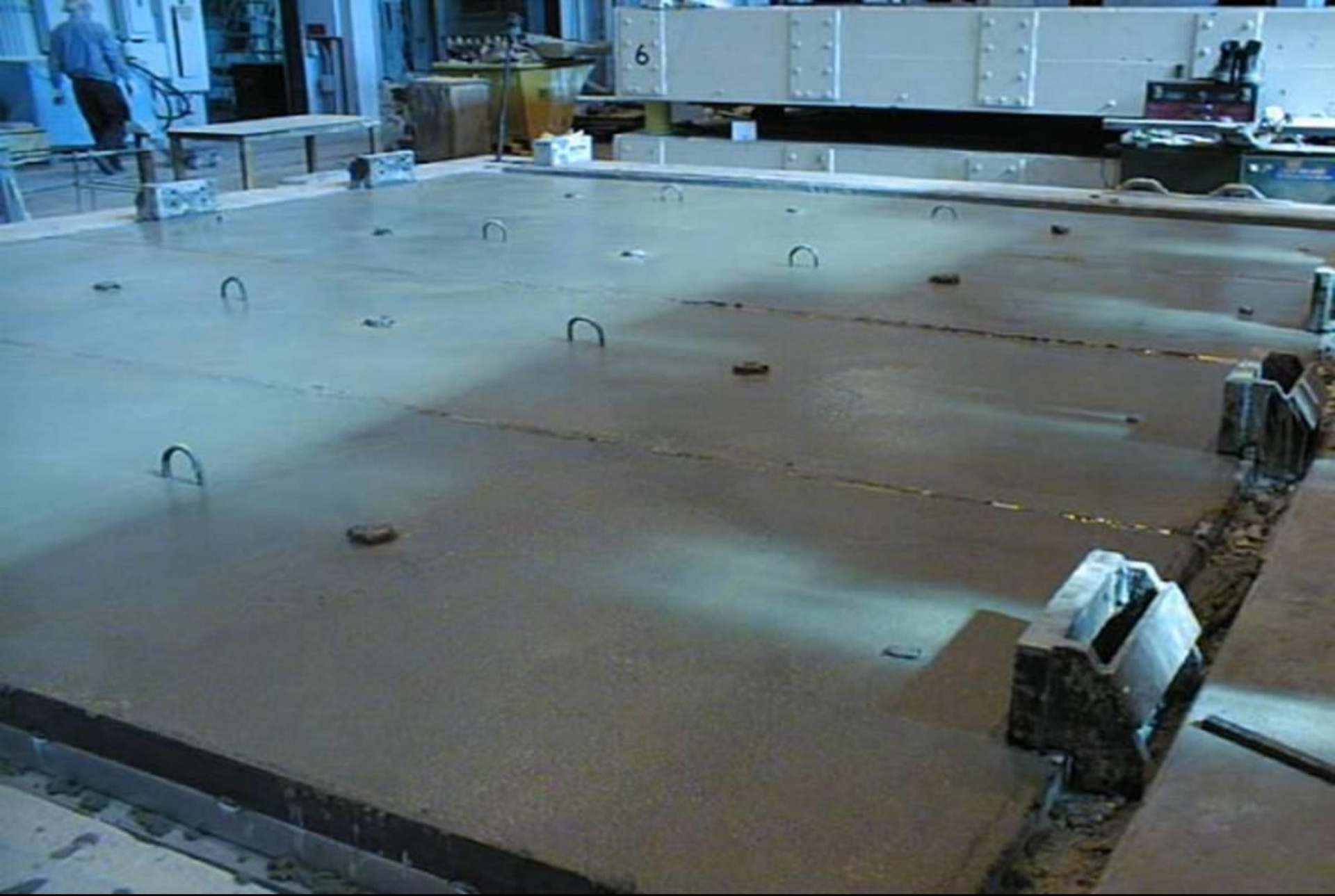




















# Conditions of Acceptance – Beams

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- Support load
- 1100°F / 1300°F

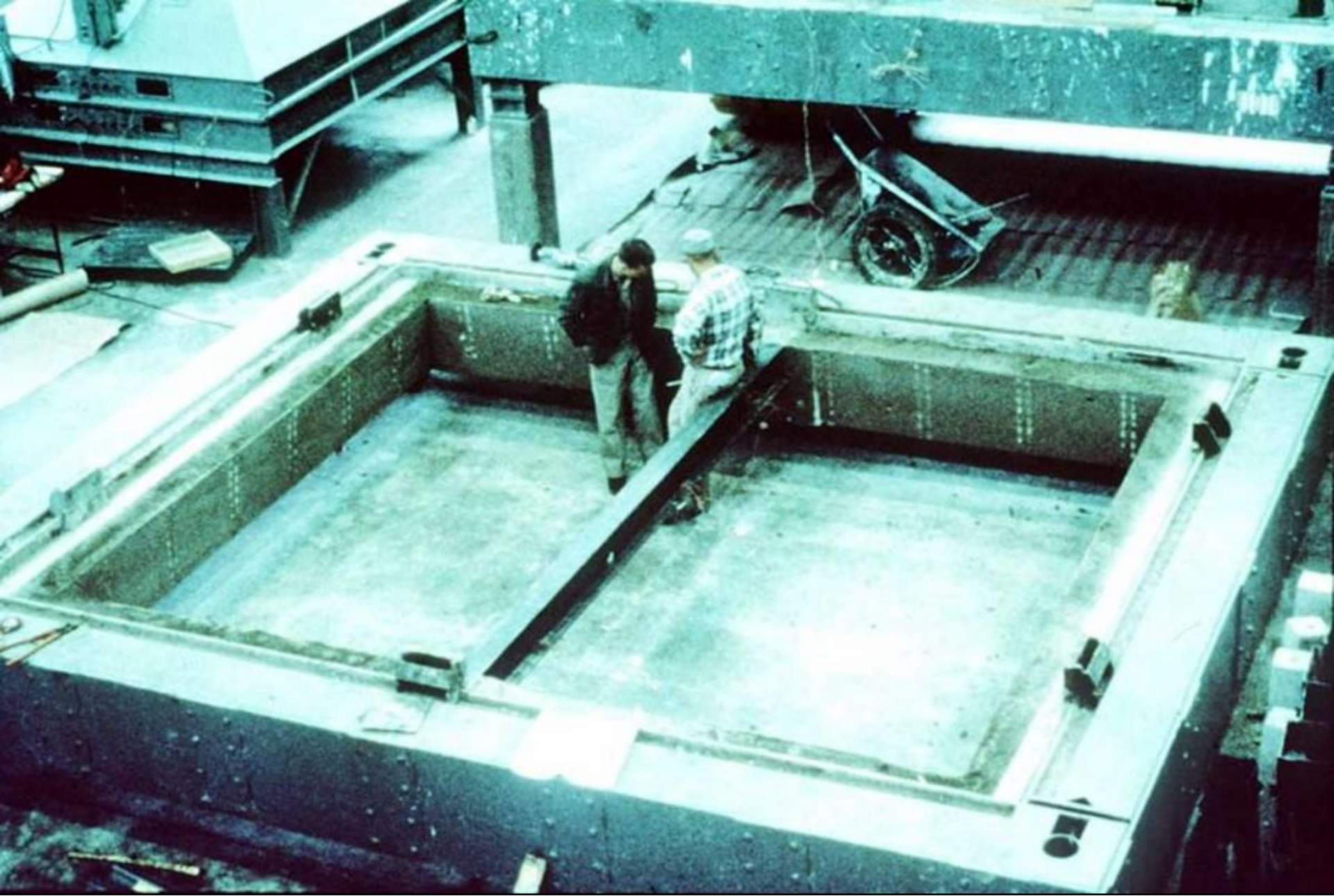
# Floor/Ceiling or Roof/Ceilings

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- Sample size – 180 sq ft / 12 ft
- Load applied – Per design







































# Conditions of Acceptance Floor/Ceilings or Roof/Ceilings

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- Support load
- Flame passage
- 250°F / 325°F
- Support temperatures



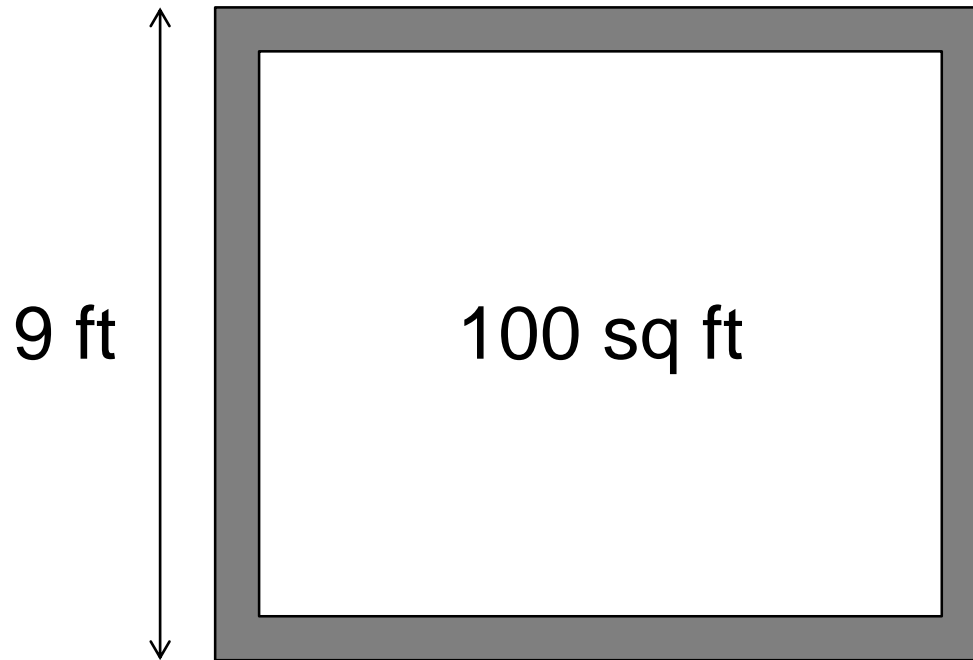


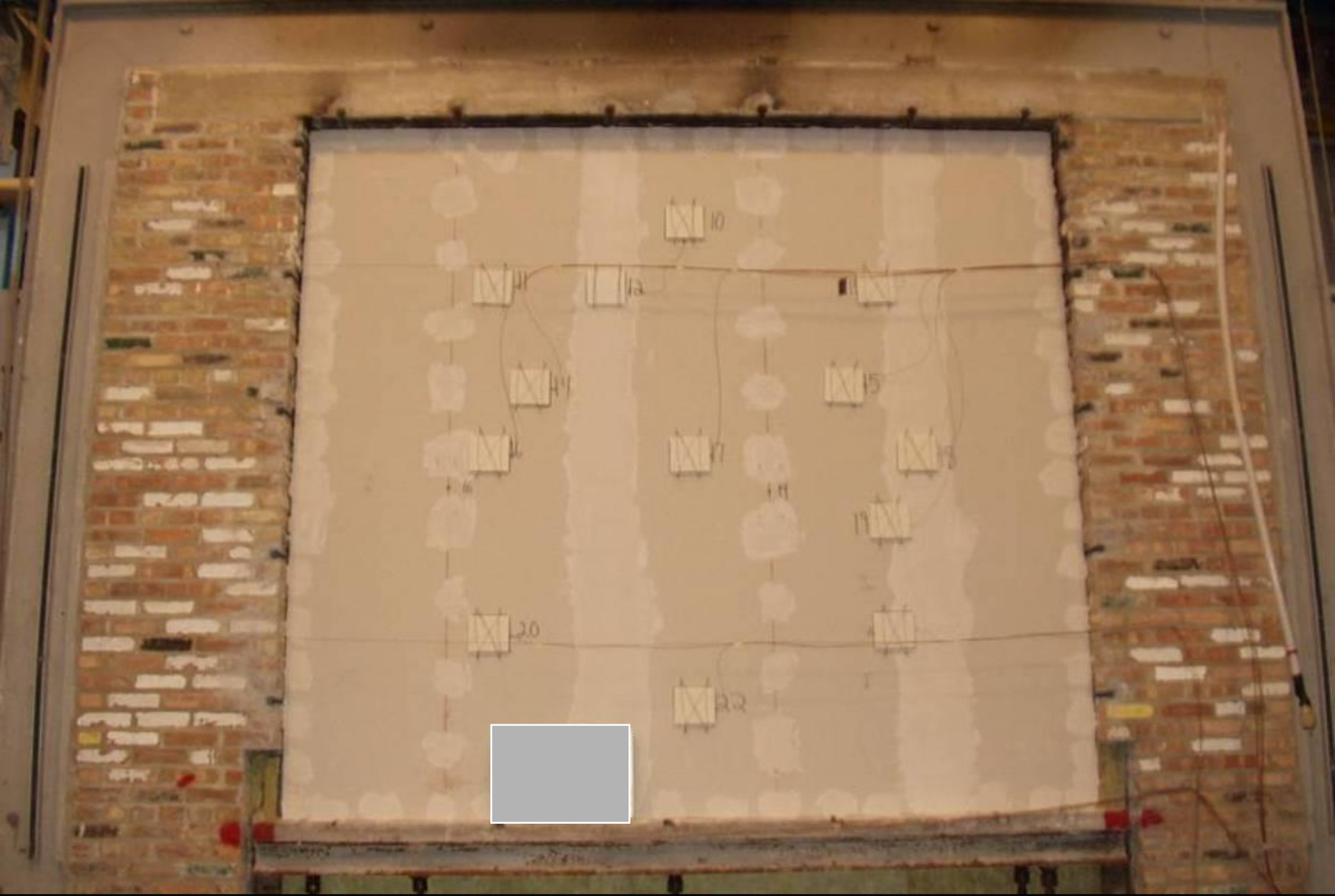


# Walls

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- Sample size - 100 sq ft / 9 ft
- Load applied - Per design



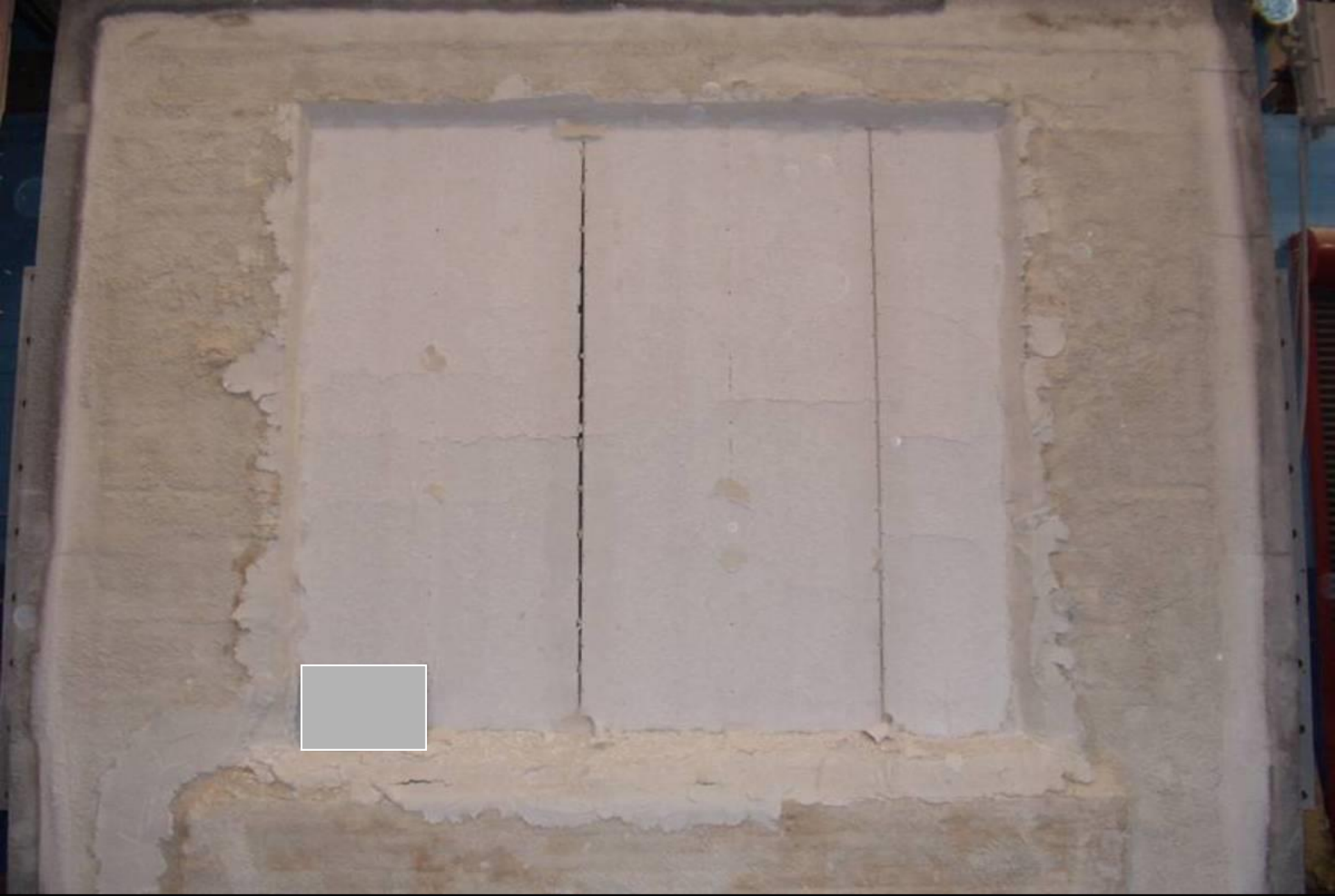


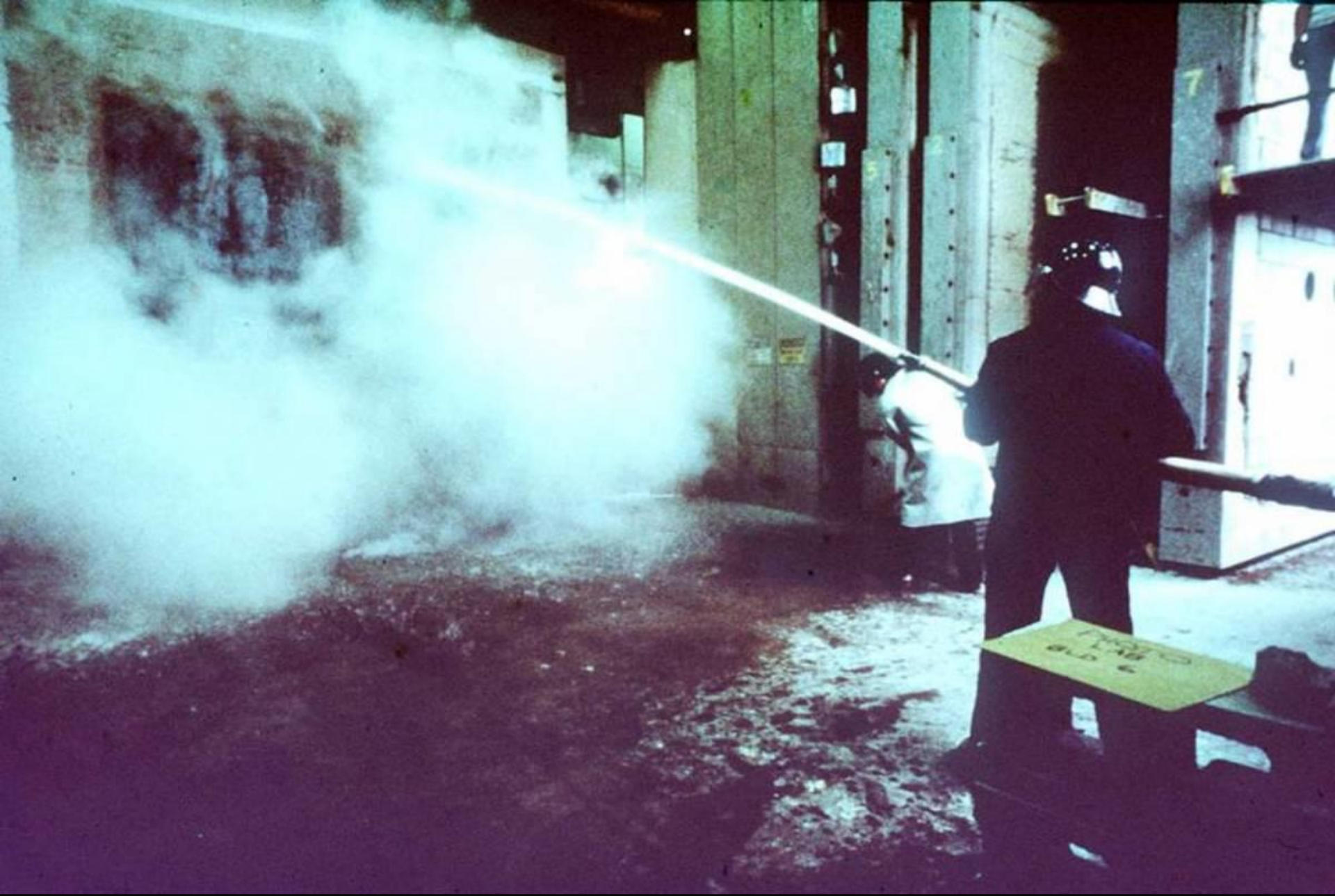
















# Conditions of Acceptance – Walls

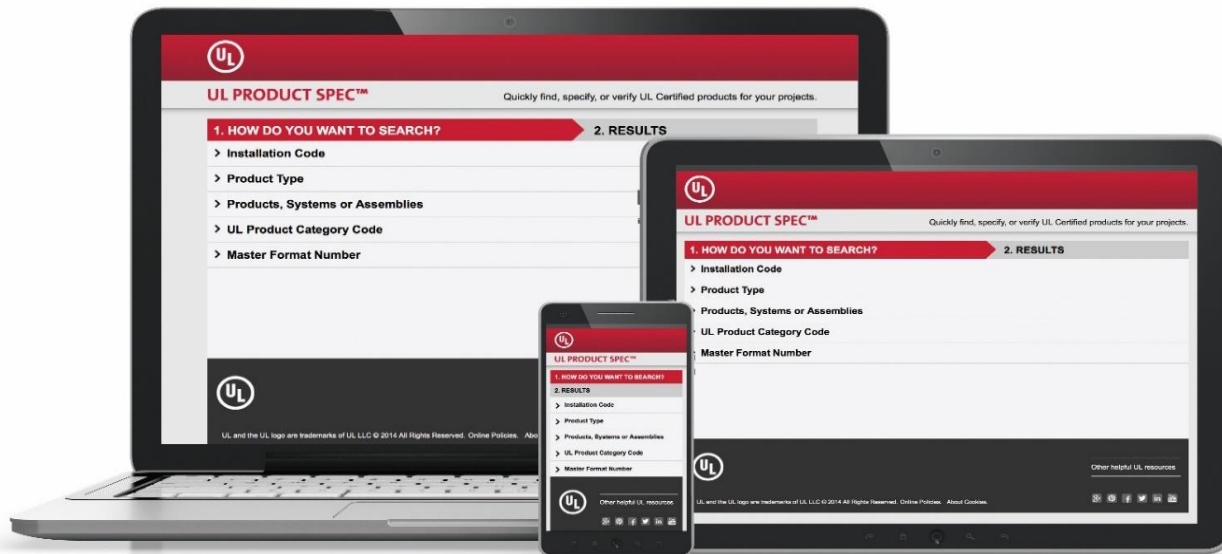
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- Flame passage
- 250°F / 325°F
- Support load
- Hose stream



# Where Can I Find The Most Current Listing?

UL Product iQ on  
[www.ul.com](http://www.ul.com)



# Breaches in Fire-Resistance-Rated Construction

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- Penetrations
- Joint Systems
- Opening Protectives
- Ducts and Air Transfer Openings



# Breaches in Fire-Resistance-Rated Construction Cont.

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Do breaches really impact the performance of a fire-resistance-rated assembly?

Absolutely!!!



# Breaches in Fire-Resistance-Rated Construction Cont.

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- Unsealed or improperly sealed breaches cost lives and property!
  - MGM Grand, Las Vegas, NV – Fire confined to 1<sup>st</sup> floor. Eighty-four fatalities, most on upper floors.
  - Hilton Hotel, Las Vegas, NV – Fire spread from 8<sup>th</sup> to 23<sup>rd</sup> floor in 25 minutes at exterior of building. Eight fatalities.
  - First Interstate Bank, Los Angeles, CA – Fire spread from 12<sup>th</sup> to 16<sup>th</sup> floor through improperly protected penetrations and through unprotected perimeter joint. One fatality.
  - One Meridian Plaza, Philadelphia, PA – Fire spread from 22<sup>nd</sup> to 30<sup>th</sup> floor through improperly protected penetrations and through perimeter joint. Three fatalities.

# IBC Requirements

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- IBC – Breaches shall be protected
  - Section 714 – Penetrations
  - Section 715 – Fire-Resistant Joint Systems
  - Section 716 – Opening Protectives
  - Section 717 – Ducts and Air Transfer Openings



# LSC Requirements

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- LSC – Breaches shall be protected
  - Penetrations
  - Joint Systems
  - Opening Protectives
  - Ducts and Air Transfer Openings

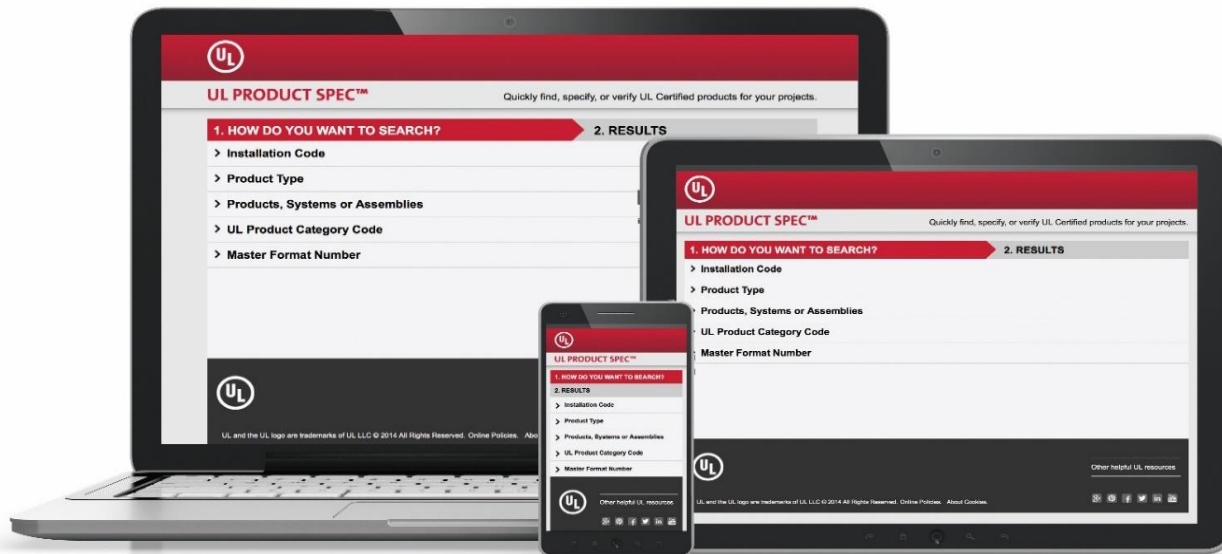
# Code Requirements

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- Each type of breach has a unique fire test standard associated with it which compliments ANSI/UL 263 and ASTM E119
- Where breach occurs in, through or between assemblies intended to restrict the movement of smoke, the code also sets limits on the leakage through the breach

# Where Can I Find The Most Current Listing?

UL Product iQ on  
[www.ul.com](http://www.ul.com)





# Fire Resistive Construction

## UL's Product iQ Online Directory



# Product iQ – UL's New Online Directory

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- Replaces the old Online Certifications Directory which was developed in 1999
- Helps you achieve code compliance
- Is continuously updated
- Requires registration to create user account
- Basic Service – no charge for use



# Product iQ – UL's New Online Directory

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- Paid Subscription Service provides more features
  - Save Searches
  - Tags and Groups
  - Confirmation Letters
- Same listing information as the old platform
- No impact on testing results or certifications
- <https://iq.ulprospector.com/en/>





# UL Product iQ – www.ul.com



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Engineers, product developers and other professionals can use Product iQ to verify UL certification of products and components, locate UL guide information and search for alternative products they can trust.

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Whether you're looking for technical data, product documentation, global supplier contact lists or wanting to request product samples, Prospector has you covered.

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As one of the world's leading databases to identify credible and sustainable products, SPOT® makes it easy to source the right products for your next project.

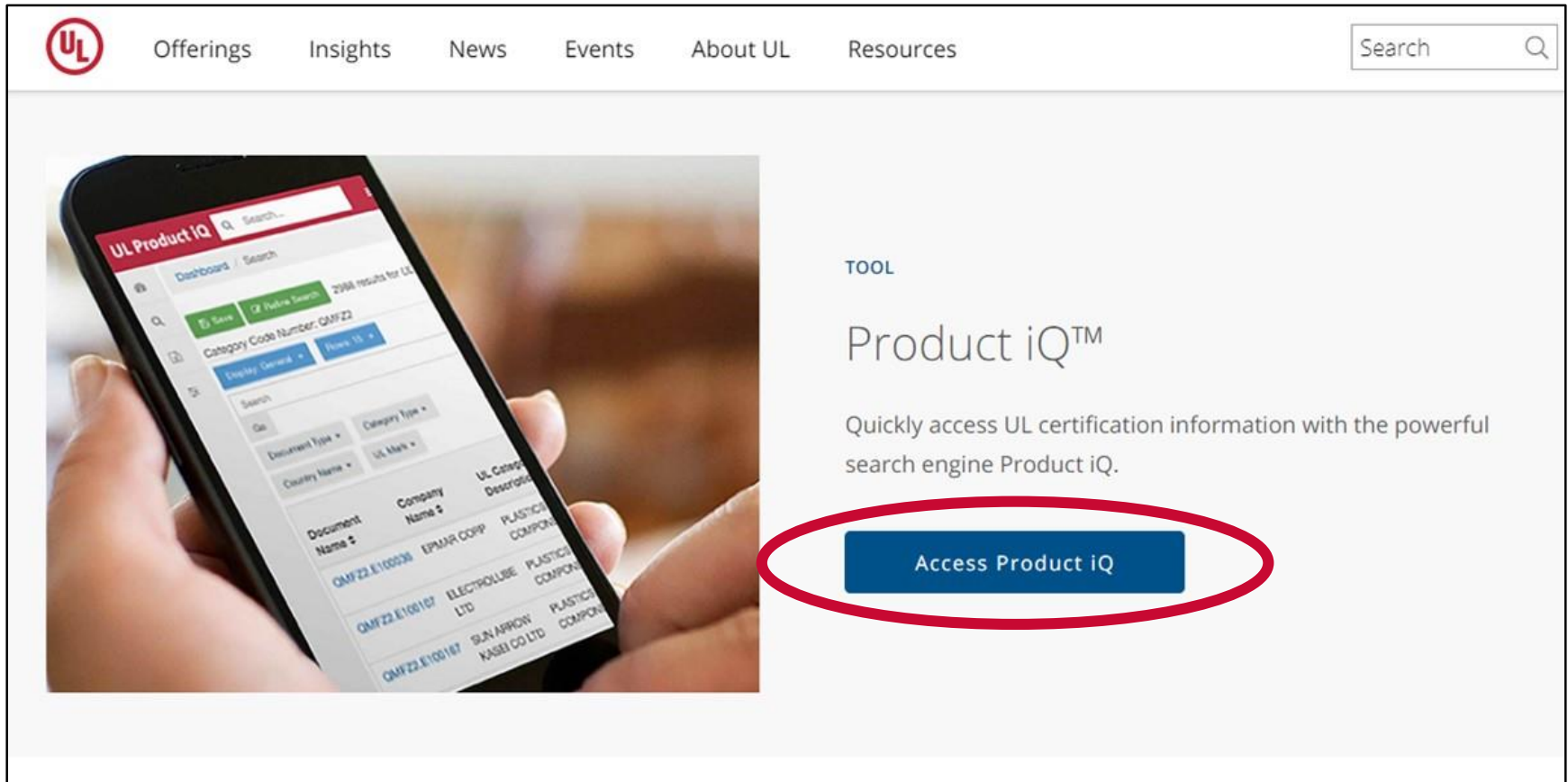
**TOOL**

### myUL™ Client Portal

myUL is a secure, self-service tool designed to provide increased visibility into your UL projects and services. The myUL Client Portal is replacing myHome.



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UL

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Search

UL Product iQ

Dashboard / Search

2988 results for UL

Category Code Number: QMF22

Document Type Category Type

Country Name UL Mark

Document Name #	Company Name #	UL Categ. Description
QMF22.E100036	EPMAR CORP	PLASTIC COMPON
QMF22.E100107	ELECTROLUBE LTD	PLASTIC COMPON
QMF22.E100167	SUN ARROW KASEI CO LTD	PLASTIC COMPON

TOOL

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Quickly access UL certification information with the powerful search engine Product iQ.

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# UL Product iQ Cont.

UL Product iQ™

English

LOG IN CONTACT US

## Trusted Data. Modern Design.

UL Product iQ marries the longstanding UL safety certification information relied upon by millions of users with the intuitive design and user-friendliness of a modern search engine.

HAVE AN ACCOUNT?

LOG IN

CREATE YOUR ACCOUNT


REGISTER FOR FREE

The background image shows a close-up of a UL safety certification label with technical specifications: 100-10P30S830/24, 100-127V, 10W 95mA 50/60Hz, and China G.



# UL Product iQ Cont.

## UL Product iQ

English

Product iQ is a commercial platform for product information, including UL's safety certifications. This registration form is tailored to industry professionals. If you are a non-commercial user, please read the information prompts for help completing certain fields. [Additional information regarding free accounts.](#)

Upon submission of this form, you will receive an email with an activation link. Click the link and receive immediate access to Product iQ. If you do not receive the email within a few minutes, please check your spam folder.

### CREATE YOUR ACCOUNT

<b>First Name *</b>	<b>Last Name *</b>
<input type="text" value="First Name"/>	<input type="text" value="Last Name"/>
<b>Company Email * ?</b>	
<input type="text" value="user@yourcompany.com"/>	<input type="text"/>
<b>Company Name * ?</b>	
<input type="text" value="Company Name"/>	<input type="text"/>
<b>Job Title * ?</b>	
<input type="text" value="Job Title"/>	

#### Helpful Hints

Read the information prompts for help completing certain fields.

After submitting this form, check your inbox for an email with your activation link to access this site.

If you are missing the activation email, look in your email spam folder.

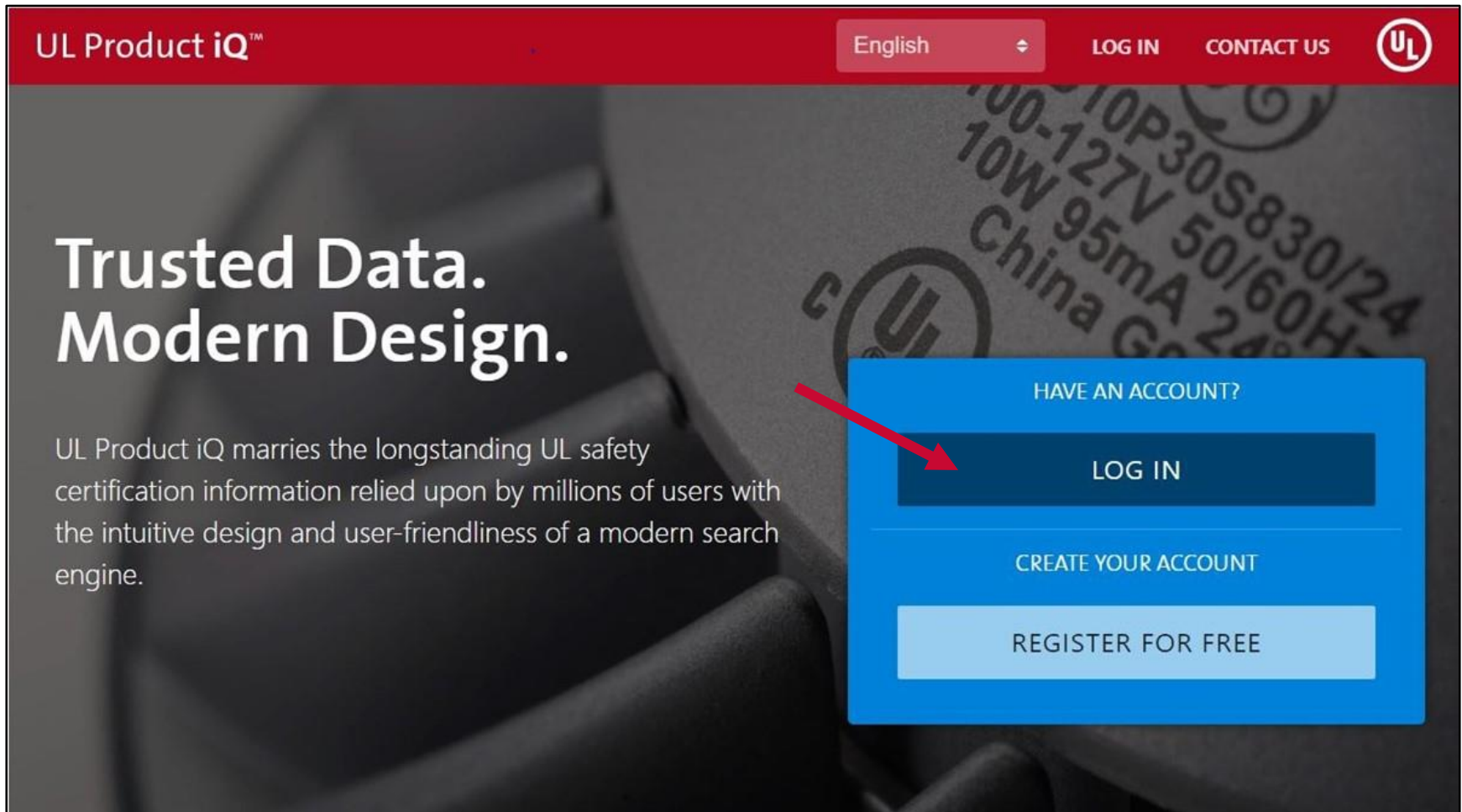


## UL Product iQ Cont.





# UL Product iQ Cont.



The screenshot displays the UL Product iQ website interface. At the top, a red navigation bar contains the text "UL Product iQ™" on the left, a language dropdown menu set to "English" in the center, and "LOG IN" and "CONTACT US" links on the right. The main content area features a dark background with a close-up image of a UL-certified electrical component. The text "Trusted Data. Modern Design." is prominently displayed in white. Below this, a paragraph describes the platform's features. A blue modal box is overlaid on the right side, containing the text "HAVE AN ACCOUNT?" and three buttons: "LOG IN" (highlighted with a red arrow), "CREATE YOUR ACCOUNT", and "REGISTER FOR FREE".

UL Product iQ™

English

LOG IN CONTACT US

## Trusted Data. Modern Design.

UL Product iQ marries the longstanding UL safety certification information relied upon by millions of users with the intuitive design and user-friendliness of a modern search engine.

HAVE AN ACCOUNT?

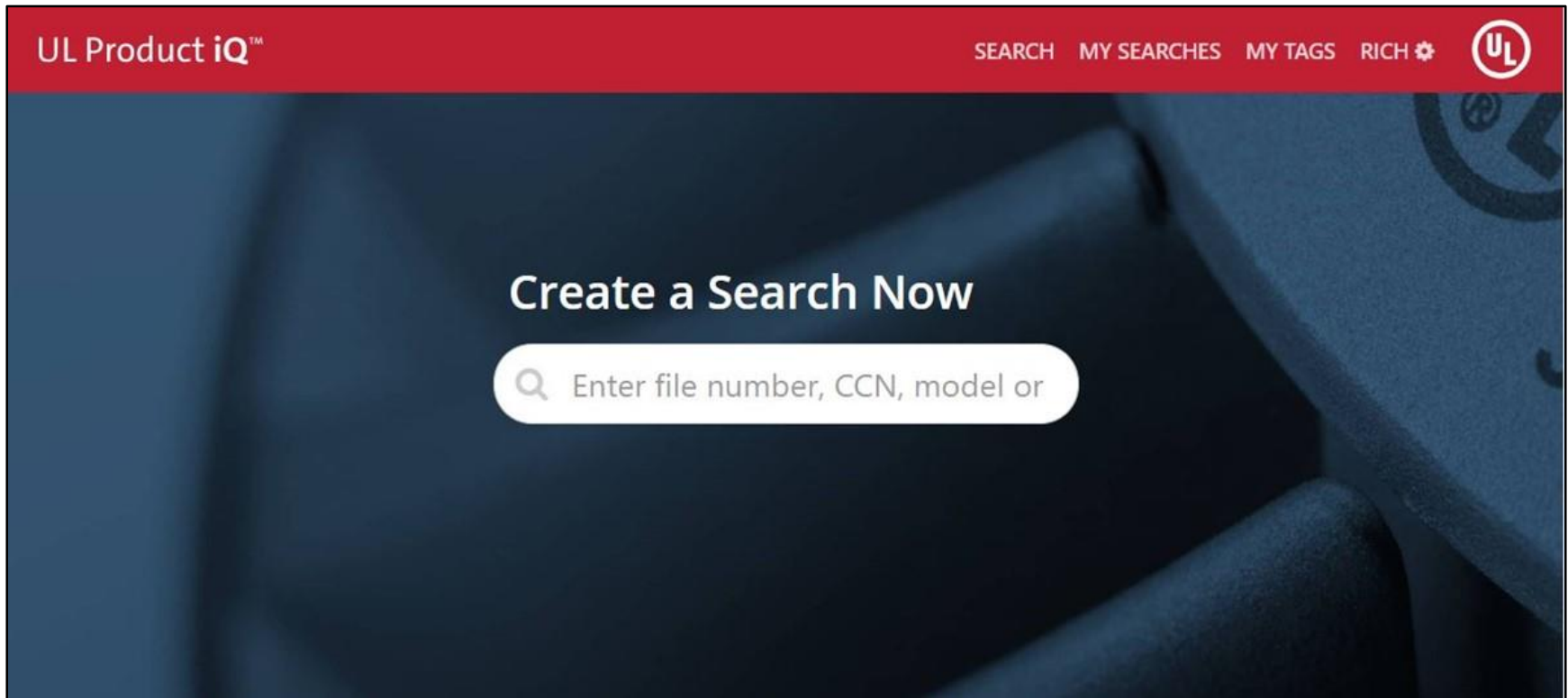
LOG IN

CREATE YOUR ACCOUNT

REGISTER FOR FREE



# UL Product iQ Cont. Smart Search



# UL Product iQ Cont. iQ Plus Search

The screenshot displays the UL Product iQ Plus Search interface. At the top, a red navigation bar contains the text "UL Product iQ™" on the left, and "SEARCH", "MY SEARCHES", "MY TAGS", and "RICH ⚙️" on the right, followed by the UL logo. The main content area is divided into several sections:

- Left Column:**
  - iQ™ Family of Databases:** For enhanced search functionality.
  - UL Architectural Services:** Find enhanced information related to fire rated walls, floors, roofs, beams, columns, joints and firestops.
  - Product iQ tip:** Confirmation Letters. Shareable document confirming a Product iQ listing. Includes a "LEARN MORE" button.
- Center Column:**
  - IQ PLUS SEARCH TOOLS ⓘ**
    - Authorized Service Providers >
    - Building Materials and Systems >
    - Other >
  - PIQ DATABASE INFO**
    - Icons for document, refresh, and grid.
- Right Column:**
  - Image of a smartphone displaying the app interface with the text: "Tools to give you greater control and flexibility." and a "CHECK THEM OUT!" button.

# UL Product iQ Cont. iQ Plus Search

The screenshot displays the UL Product iQ website interface. At the top, a red navigation bar contains the text 'UL Product iQ™' on the left and 'SEARCH MY SEARCHES MY TAGS RICH ⚙️' on the right, along with the UL logo. Below the navigation bar, the main content area is divided into a left sidebar and a central main section. The sidebar features a dark blue box for 'UL Architectural Services' and a yellow box for 'Product iQ tip Confirmation Letters'. The main section is titled 'Building Materials and Systems' and lists several categories with brief descriptions: 'Dampers', 'Electrical Circuit Protective Systems (FHIT)', 'Fire Door and Fire Window Related Certifications', 'Fire Rated Roofs, Walls, Floors, Beams and Columns', 'Fire-rated Grease Duct Assemblies', and 'Fire-resistance Ratings of Structural Steel Used in Petrochemical Facilities'.

UL Product iQ™

SEARCH MY SEARCHES MY TAGS RICH ⚙️

UL

**UL Architectural Services**  
Find enhanced information related to fire rated walls, floors, roofs, beams, columns, joints and firestops.

**Product iQ tip**  
**Confirmation Letters**  
Shareable document confirming a Product iQ listing  
[LEARN MORE](#)

**Building Materials and Systems**

Search for designs, systems, assemblies, and products that include, or are related to, hourly fire-resistance ratings.

**Dampers**  
The category Dampers for Fire Barrier and Smoke Applications covers fire dampers, smoke dampers (leakage-rated dampers), combination fire and smoke dampers (fire and leakage-rated dampers), and corridor dampers.

**Electrical Circuit Protective Systems (FHIT)**  
Electrical Circuit Protective Systems consist of components and materials that are intended for installation as protection for specific electrical wiring systems, with respect to the disruption of electrical circuit integrity upon exterior fire exposure.

**Fire Door and Fire Window Related Certifications**  
Fire door assemblies and window assemblies are construction details and the fire ratings for fire door assemblies and fire window assemblies that are more complex than those typically associated with these assemblies.

**Fire Rated Roofs, Walls, Floors, Beams and Columns**  
This category covers floor-ceilings, roof-ceilings, beams, columns, walls and partitions investigated for an hourly fire-resistance rating.

**Fire-rated Grease Duct Assemblies**

**Fire-resistance Ratings of Structural Steel Used in Petrochemical Facilities**  
This category covers hourly fire-resistance ratings of steel columns intended for use in petrochemical facilities investigated using a rapid rise fire exposure.





# Questions / Comments



# Thank You for Attending!!!

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