
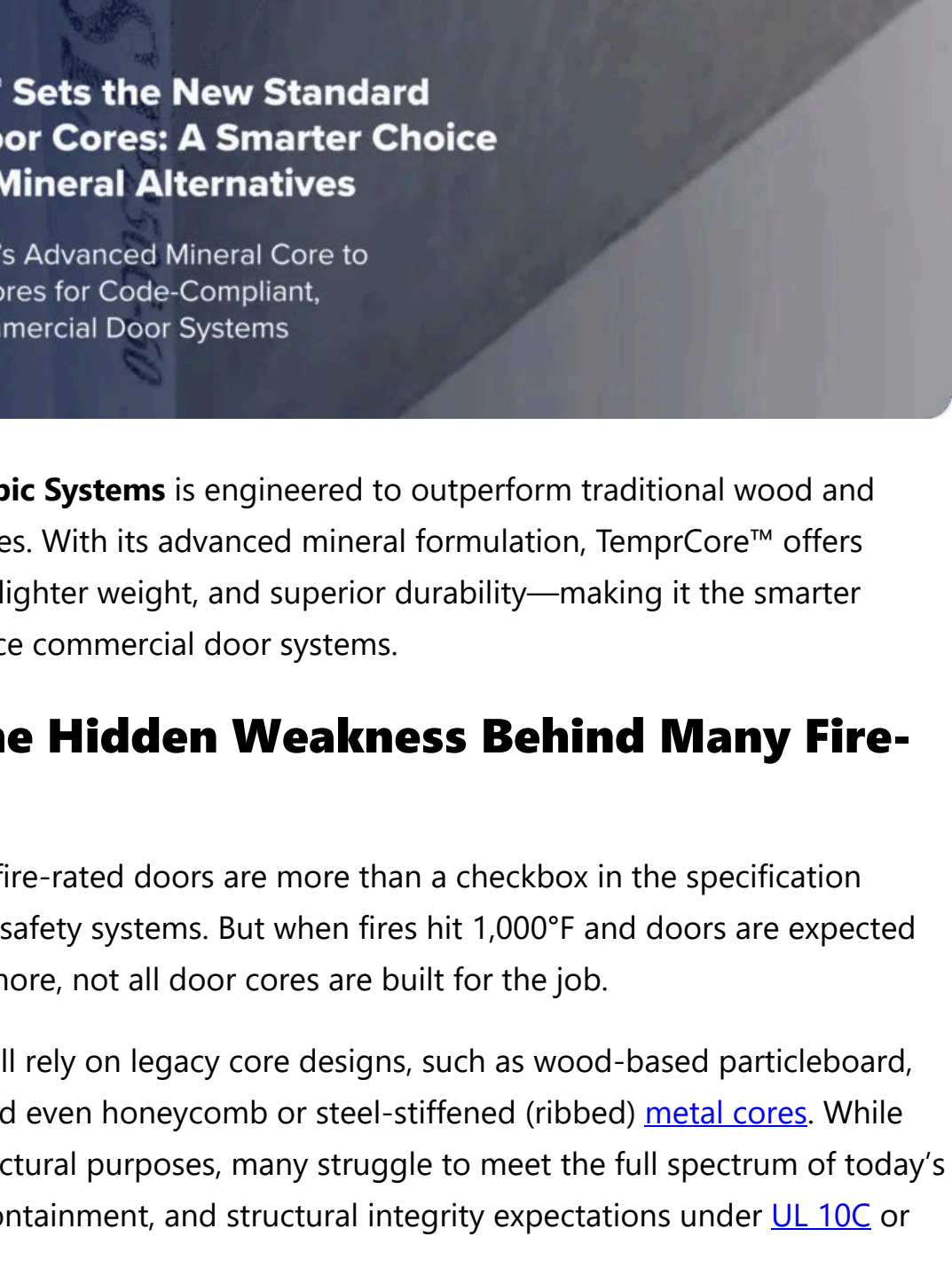


Why TemprCore™ Sets the New Standard for Fire-Rated Door Cores: A Smarter Choice Than Wood and Mineral Alternatives



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Comparing Pyrophobic's Advanced Mineral Core to Traditional Fire Door Cores for Code-Compliant, High-Performance Commercial Door Systems



TemprCore™ by Pyrophobic Systems is engineered to outperform traditional wood and mineral fire-rated door cores. With its advanced mineral formulation, TemprCore™ offers unmatched fire resistance, lighter weight, and superior durability—making it the smarter choice for high-performance commercial door systems.

Introduction: The Hidden Weakness Behind Many Fire-Rated Doors

OEM Engineers know that fire-rated doors are more than a checkbox in the specification manual, they're critical life-safety systems. But when fires hit 1,000°F and doors are expected to hold for 90 minutes or more, not all door cores are built for the job.

Many commercial doors still rely on legacy core designs, such as wood-based particleboard, traditional mineral core, and even honeycomb or steel-stiffened (ribbed) [metal cores](#). While each serves specific architectural purposes, many struggle to meet the full spectrum of today's fire performance, smoke containment, and structural integrity expectations under [UL 10C](#) or [NFPA 252](#) test conditions.*

This is where [TemprCore™](#) from Pyrophobic Systems sets a new benchmark: a [UL 10C](#) certified, fiberglass-reinforced mineral core engineered for **1.5 and 3-hour fire-rated steel doors**. Let's explore why [TemprCore™](#) is becoming the new industry standard.


Why Fire Door Certifications Matter for OEMs

For OEM engineers, compliance isn't just a regulatory hurdle; it's a competitive advantage. Certifications like [UL 10C](#), [NFPA 252](#), [UL 1784](#), and [ULC CAN4-S104-M80](#) are vital because they validate a fire-rated door's real-world performance under extreme conditions, fire exposure, pressure differentials, and smoke migration. Specifying cores that meet these standards reduces liability, accelerates Authority Having Jurisdiction (AHJ) approvals, and simplifies listing submissions through [Intertek](#), [UL](#), or WHI. [TemprCore™](#) empowers OEMs to meet these requirements with confidence, without the need for secondary blocking or workarounds, helping teams build safer doors, faster.

Core Comparisons: Wood, Mineral & TemprCore™

Comparison of fire-rated door cores: particleboard, traditional mineral core, and [TemprCore](#) .

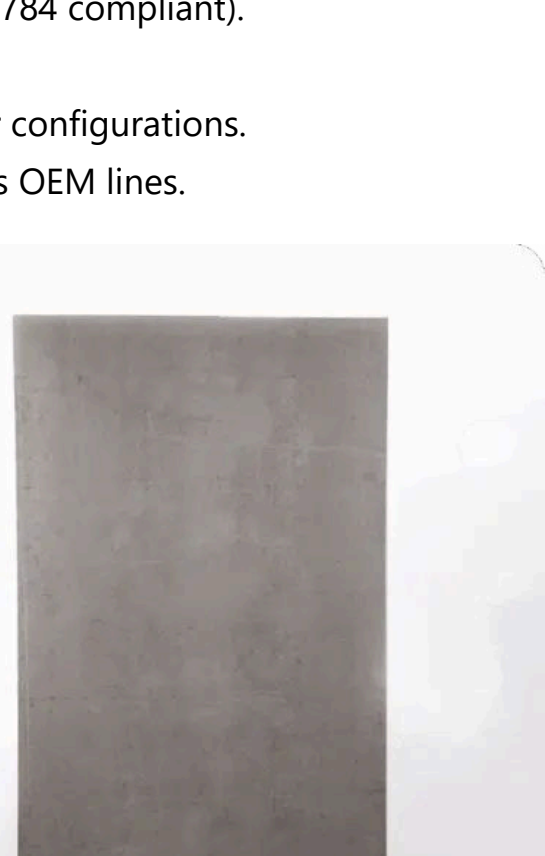
Property	Particleboard / Agrifiber	Traditional Mineral Core	Honeycomb / Steel Rib	TemprCore™ (Pyrophobic)
Fire Rating	20–60 mins	Up to 90 mins	Variable (up to 90 mins)	Up to 3 hours (UL 10C)
Smoke Containment	Weak (non-sealing)	Moderate	Weak (non-sealing)	UL 1784 Certified
Positive/Negative Pressure	Rare	Partial	Not rated	UL 10C , NFPA 252 Tested
Screw Retention	Poor	Moderate	Variable	150 psi tensile strength
Reinforcement Needed	Yes	Often	Often (blocking or stiffeners)	None required
Certifications	Some UL ratings	Limited assemblies	Non-uniform across manufacturers	Full suite: UL, WHI, ULC



Want to know more about how TemprCore™ can contribute to your projects?

Let's talk.

Contact Us



Why Wood Cores Aren't Enough for Today's Fire Doors

Wood-based door cores like **particleboard**, **agrifiber**, or **stave core** are common in 20- and 45-minute doors. They're affordable and lightweight, but present serious challenges in higher ratings.

Problems OEMs Face with Wood Door Cores:

- **Low resistance to heat and flame spread**
- **Inadequate smoke containment**, risking building [code failure](#)

The Problem with Honeycomb and Steel Rib Cores

While honeycomb and steel stiffened cores are widely used in architectural doors for their lightweight or high-impact properties, they often fall short in critical fire protection benchmarks:

- Honeycomb cores, typically made from kraft paper or steel, can collapse under high heat due to a lack of fire-resistive fillers.
- [Steel](#) ribbed doors offer physical durability but require heavy gauge reinforcement and added fire barriers to meet stringent [UL 10C](#) and smoke containment ratings.
- Neither design consistently delivers the integrated thermal insulation, temperature rise limits, or smoke protection needed for modern commercial fire doors.

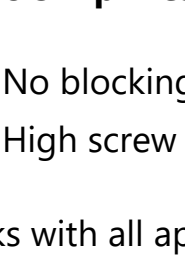
[TemprCore™](#) eliminates this compromise by integrating structural strength, temperature rise performance, and passive intumescent behavior in a single core, without added blocking or reinforcement.

The TemprCore™ Advantage: Firepower Meets Flexibility

[TemprCore™](#) is not just a mineral core, it's an engineered composite system that integrates thermal insulation, mechanical stability, and passive fire expansion in a single, scalable design. Unlike traditional cores that rely on layered materials (e.g., wood, mineral boards, steel stiffeners, or honeycomb paper), [TemprCore™](#) uses a proprietary formulation reinforced with fiberglass, offering a monolithic structure that resists delamination, controls temperature rise, maintains hardware anchorage under heat, and expands to seal gaps when exposed to fire.


This results in:

- Superior fire and smoke performance ([UL 10C](#) and UL 1784 compliant).
- No need for internal blocking or reinforcements.
- Consistent performance across large and complex door configurations.
- Lower installation variability and higher reliability across OEM lines.




Ready to Eliminate Fire Door Design Compromises?


TemprCore™ helps OEMs streamline production while exceeding UL, NFPA, and building code fire resistance requirements.



Certified for 1.5 and 3-hour Steel Doors.



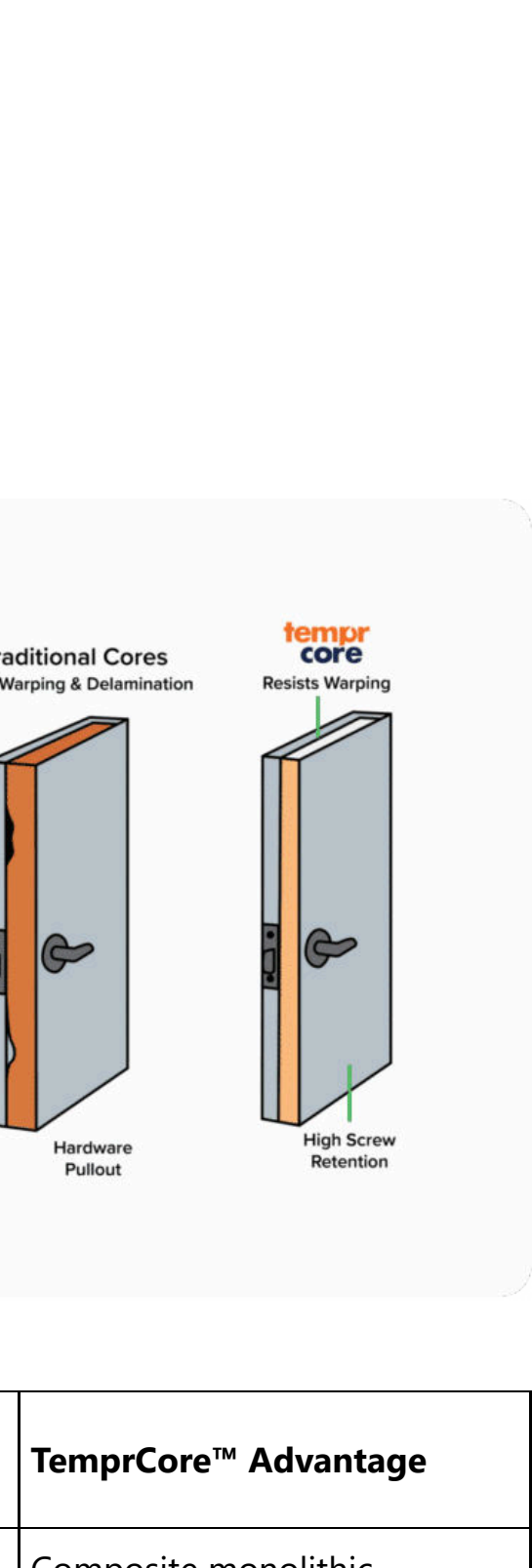
Eliminates Blocking and Layered Reinforcements.



Boosts Hardware Retention Long-Term Reliability.

Contact our team and let's build your next fire-rated door system with performance that scales.

Contact Us



Certified Performance That Exceeds Industry Benchmarks

Test Standard	Applies To	Purpose	TemprCore™ Status
UL 10C	Positive/Negative Pressure Fire Doors	Simulates real fire exposure, including air pressure differences across the door	✅ Passed (1.5 & 3-hour rated)
NFPA 252	Fire Door Assemblies	Measures ability of complete door assembly to resist fire	✅ Approved for full door systems
UL 1784	Smoke Leakage	Evaluates how well the door core prevents smoke penetration	✅ Certified for smoke containment
UBC 7-2 Part I	Temperature Rise	Limits the temperature on the unexposed side during a fire	✅ 250°F at 30 mins (US rating)
ULC CAN4-S104-M80	Canadian Fire Resistance	Canadian equivalent of UL 10C & NFPA tests for fire-resistive assemblies	✅ Compliant (250°C @ 60 mins)

Built for Versatile OEM Door Design

[TemprCore™](#) supports the most common commercial configurations:

- **Single Steel Doors:** up to 4' × 8'.
- **Standard Double Doors:** up to 8' × 8' (requires astragal for listing compliance).
- **Double-Egress Pairs:** up to 8' × 8' with vertical rods, fire exit hardware & astragal.
- **Vision Panels:** maximum **100 sq in**, typically up to 5" × 20" glaze size.
- **Steel Skins Supported:** flush steel, **20-gauge to 16-gauge**.
- **Core Jointing:** up to **3 panels per door** (e.g., vertical/horizontal butt joints).
- **Thickness (core panel):** standard at **1.656" (42 mm)**; overall door thickness 1¾".
- **Weight/Density:** ~55 lb per core; **21–24 lb/ft³ density**.
- **Tensile Strength:** ~150 psi core retention strength.


[TemprCore™](#) can support **engineered alternatives**, subject to testing and engineering review:

- **Oversized doors** beyond 4'×8' single or 8'×8' pair.
- **Higher gauge skins** (e.g. 14-gauge or 18-gauge steel) under special-engineered conditions.
- **Custom hardware configurations** including top/bottom vision lites, sidelites, transoms, or multiple glazing.
- **Acoustic-rated assemblies** or lead-lined cores, especially for healthcare or high-security installations.


These require **custom UL fire labeling** or submittal reviews.

Mode / Feature	Standard Listed Limit	Custom Capabilities (with review/testing)
Single Doors	Up to 4'×8'	Oversized single doors possible
Standard Double Doors	Up to 8'×8' (with astragal)	Doors >8' possible with engineering approval
Double Egress Doors	Up to 8'×8' with vertical rods & hardware	Higher dimensions or alternate rod systems possible
Vision Panels	Max 100 in² (e.g. 5"×20")	Custom glazing layouts under review
Steel Skin Gauge	Flush skins, 20–16 gauge	14 or higher gauge possible with customization
Core Panel Thickness	1.656" standard	Adjustable per spec
Jointing	Max 3 core panels per door	Special larger cores possible
Hardware Anchoring	Supports standard ANSI-A115 hardware	Custom anchor patterns feasible

[TemprCore™](#) is engineered for **standard configurations up to 4' × 8' single doors, up to 8' × 8' standard and egress double doors (with declared vision lites and skin gauges)**. While these represent typical tested limits, custom configurations, such as oversized doors, higher gauge skins, sidelites, or acoustic/lead-lined doors, are available upon engineering review and additional fire-label testing.



See full specs on the TemprCore™ Data Sheet



A Smarter Specification for OEM Engineers


[TemprCore™](#) helps OEMs meet and exceed:

- [ASTM E119 fire resistance rating](#)
- [UL 1479 / ASTM E814 tested](#)
- **Building code firestop material requirements**

It also simplifies production:


- No blocking
- High screw retention

Works with all approved door hardware




Why Fire Doors Fail (and How TemprCore™ Solves It)


Even fire-labeled doors can fail when real fires strike. Here are the most common failure modes seen in traditional wood, mineral, and hybrid core doors, and how TemprCore™ addresses them head-on:




Traditional Cores
Core Warping & Delamination




Smoke Leakage



Hardware Pullout



temprCore
Resists Warping



High Screw Retention

Common Failure Mode	Cause	TemprCore™ Advantage
Core Warping & Delamination	Wood and layered mineral boards absorb moisture or lose cohesion under heat	Composite monolithic structure resists thermal deformation and moisture
Smoke Leakage	No intumescent seal or poor integration between core and skin	UL 1784 certified with intumescent expansion for air-tight fire barriers
Hardware Pullout	Weak screw retention in particleboard/mineral core	150 psi tensile screw retention, no blocking needed
Temperature Rise Failure	Non-insulated cores allow heat to transfer to safe side	250°F @ 30 mins / 450°F @ 60 mins compliance (UBC 7-2)
Inconsistent Fire Ratings	Variability in multi-panel assemblies and edge blocking	Factory-controlled density and fiberglass reinforcement ensure uniformity

Fire Door Core FAQs: Installation & Compatibility

Q: Can TemprCore™ be used with panic hardware or fire exit devices?

A: Yes. TemprCore™ has been tested and certified for use with standard panic hardware and fire exit devices, including vertical rod and rim exit systems. Its high screw retention (150 psi) eliminates the need for internal blocking.

Q: What steel skin gauges are compatible with TemprCore™?

A: TemprCore™ supports 20-gauge to 16-gauge steel skins in standard configurations. Heavier gauges (e.g. 14-gauge) may be possible in custom-engineered assemblies.

Q: Is TemprCore™ compatible with double egress doors?

A: Yes. Double egress doors up to 8' × 8' with vertical rods and fire exit hardware are supported under UL and Warnock Hersey listings. Astragals may be required depending on swing direction and code requirements.

Q: Does TemprCore™ meet smoke seal requirements for hospitals or schools?

A: Absolutely. TemprCore™ is UL 1784 certified, meeting smoke and air leakage requirements required by IBC and [NFPA 105](#) for healthcare, education, and commercial occupancies. When paired with compliant perimeter seals, it satisfies smoke partition ratings for corridor doors and cross-corridor egress.

Q: Does TemprCore™ help with temperature rise compliance in rated doors?

A: Yes. TemprCore™ is designed to meet strict temperature rise door requirements under UBC 7-2 and IBC Section 716, delivering 250°F @ 30 mins and 450°F @ 60 mins to help protect safe-side egress routes in stairwells and corridors.

Want to have this information with you?
Download the PDF version here.

Ready to Upgrade Your Core?

TemprCore™ is built for OEM Engineers who demand performance, reliability, and code compliance.

Let's talk about your next project.

Contact us so we can develop a personalized solution to your needs and project specifications.

Contact Us

