

Graphene-Enhanced AAC Building Admixtures

Stronger, Lighter, and Faster-to-build

Project and Mission-Ready Construction Solutions for Sustainable
Public and Private Projects

Decarbonizing with Carbon®

NATO-COE in-field validation | CAGE Code : 9ZEX8



The 60-Second Performance Advantage

Cut construction schedules by weeks... Reduce lifecycle costs

70%

Lighter

XBLOC² weighs approximately 70% less than traditional concrete per cubic foot, reducing structural load requirements and foundation costs.

4+

Fire-rated hours

Exceeds industry fire-resistance standards. Material can exceed 4-hour rating, reducing insurance premiums by up to 80%* (*California).

>200%

Thermal Performance boost

Our proprietary graphene-ready dose packs enhance structural integrity, thermal resistance, and moisture management compared to standard AAC significantly improving the fire rating and thermal performance of the assembly.

50%

Reduced time to market

Our proprietary building solution includes AAC and Graphene-ready dose packs to accelerate the time to complete the project. Project timelines are reduced by up to 50% compared to conventional building system that adhere to the same standards.

Builders and developers today face unprecedented margin pressure on multiple fronts. XBLOC² delivers a comprehensive solution to the three most critical challenges:

- **Drastically reduces on-site labor requirements during the current skilled labor shortage and improve product performance to support faster build times.**
- **Meets or exceeds increasingly stringent building codes in one material system (Seismic, Wind, Fire, Flood, Mold, Sound Proofing)**
- **Provides superior performance in modern air quality conditions, addressing rising concerns & future requirements**

Our integrated approach means faster project completion, fewer coordination issues between trades, and significantly improved lifecycle performance for commercial and residential development projects.

ASTM, UL, TMS, UES, IBC, ACI, & Dept. of Defense approved & certified



Timber: Built-In Risk

Why Traditional Timber Building Solutions Fall Short

Combustible

Elevated fire exposure and insurance burden, increasing premiums by up to 124% in wildfire-prone regions. Timber structures face growing scrutiny from underwriters as climate change intensifies fire seasons.

Moisture-sensitive

Swelling, leaks, mold, and finish failures plague timber construction, especially in coastal and high-humidity regions. Remediation costs for moisture damage average \$33,000 per incident in multi-family projects.

Organic decay & pests

Rot, termites, and hidden damage create costly maintenance issues throughout the structure's lifecycle. Annual termite damage in the U.S. construction industry exceeds \$5 billion.

Volatile inputs


Tariffs, storms, and mill outages create budget shocks. Lumber prices have seen fluctuations of over 400% in recent years, making budgeting and forecasting extremely challenging for developers.

Labor squeeze

Carpentry shortages, variable quality, and rework requirements extend timelines and increase costs. The average carpenter wage has increased 22% since 2019, outpacing inflation.

Insurance Challenges

Securing adequate insurance coverage in high-risk zones (fire, hurricane) becomes increasingly difficult and expensive, potentially impacting project viability and long-term costs.

 **Finish risk on wood:** Stucco/stone require complex assemblies; crack and leak paths creep in, leading to warranty issues, insurance claims and reputation damage.

Applies globally; U.S. markets feel this first in wildfire, coastal, and high-humidity zones.

CMU: Built-In Friction

Why CMU Drags Schedules & Increases Costs



Labor-Intensive

The need for precision mortar joints, multiple grout lifts for reinforcement, and mandatory inspections can extend project timelines by 25-30% compared to panelized systems, impacting critical path scheduling.



Skilled-Crew Dependency

Reliance on a shrinking pool of skilled masons (a 12% decline in available labor over the last 5 years) can lead to significant project delays and an average 10-15% increase in labor expenses.



Low R-Value

CMU's typical R-value of 1.1-2.0 per inch necessitates extensive added insulation and thermal breaks to meet stringent modern energy efficiency codes, increasing material and installation costs by up to 20%.



Moisture Issues

The porous nature of CMU and its numerous mortar joints lead to moisture retention, efflorescence, and potential leak paths, resulting in an average of \$25,000 in remediation costs per moisture-related incident.



Insurance & Code Challenges

Evolving building codes for seismic, wind, and fire resistance, coupled with increasing insurance premiums (up to 30% higher in high-risk zones), can make CMU less financially viable for many new projects.



Shipping & Equipment: The high density of CMU means 2-3 times more truckloads are required per square foot of wall than lighter alternatives like AAC, significantly driving up logistical costs and on-site equipment demands by an average of 18%.

AAC: lighter blocks, thin-bed placement, higher R/inch, fewer joints—accelerating wall production and reducing overall project costs.



The Industry Pain Points SOLVED with XBLOC² Building Solutions

Labor Costs ↑

Construction labor costs have increased 5.2% annually over the past five years, outpacing inflation. The average skilled tradesperson now commands \$38.48/hour, with project delays due to labor shortages costing developers an average of \$29,000 per month on mid-size projects.

XBLOC² Solution: Simplified construction system requires fewer specialty trades and accelerates building envelope completion, reducing labor dependencies by up to 40%.


Code Complexity ↑

Our AAC system meets ACI, TMS, ASTM, and UL standard, with each requirement mapped to its specific stage—design, manufacturing, installation, and fire safety. This clear standards-to-system mapping gives engineers, architects, and code officials instant code references, reducing ambiguity, speeding approvals, and ensuring full compliance—saving time, lowering risk, and accelerating construction.

Insurance Premiums ↑

Builder's risk insurance has surged 124% in wildfire-prone regions since 2020. Properties in the western U.S. now face an average 78% higher premium, with some markets seeing non-renewals increase by 400% for wood-frame construction.

XBLOC² Solution: Non-combustible AAC with enhanced fire ratings reduces insurance costs by 30-80% compared to timber construction.

 Traditional construction methods developed during eras of abundant cheap labor and less stringent building codes are increasingly misaligned with today's market realities. XBLOC² addresses these fundamental misalignments by simplifying the building solution into a single, high-performance system that requires fewer specialty trades & products and inherently meets advanced code requirements affording Better, Faster, and lower overall construction costs.

Global AAC Adoption vs. U.S. Market Opportunity

43% European Market Share

Germany (60%), Poland (55%), and United Kingdom (40%), lead adoption, with AAC the preferred material for multi-family and commercial construction.

35% Asian Market Share

China has aggressively adopted AAC (42%), with India (28%) and Thailand (26%) growing rapidly due to thermal efficiency and seismic advantages.

4% U.S. Market Share

Despite being the world's largest construction market, U.S. adoption remains minimal, creating a \$18.7B growth opportunity.

Market Opportunity

The disparity between global adoption and U.S. usage creates a once-in-a-generation market opportunity to harness this disruption. Countries facing similar labor constraints, energy costs, and extreme weather challenges have already made the transition to AAC.

The U.S. market is primed for rapid adoption as builders seek alternatives to traditional systems that are increasingly challenged by labor availability, code requirements, and insurance considerations.

Why AAC has not been readily used in USA?

- Supply chain limitations and insufficient domestic production
- Building culture habits resistant to new materials
- Code-unfamiliarity among inspectors and engineers
- Lack of market education and demonstration projects
- Historical moisture management concerns in certain climates

XBLOC² enters this market with significant advantages over previous AAC introductions: our integrated graphene technology addresses historical U.S. market concerns.

Core Attributes of AAC Technology **EXPLAINED**

Sustainable

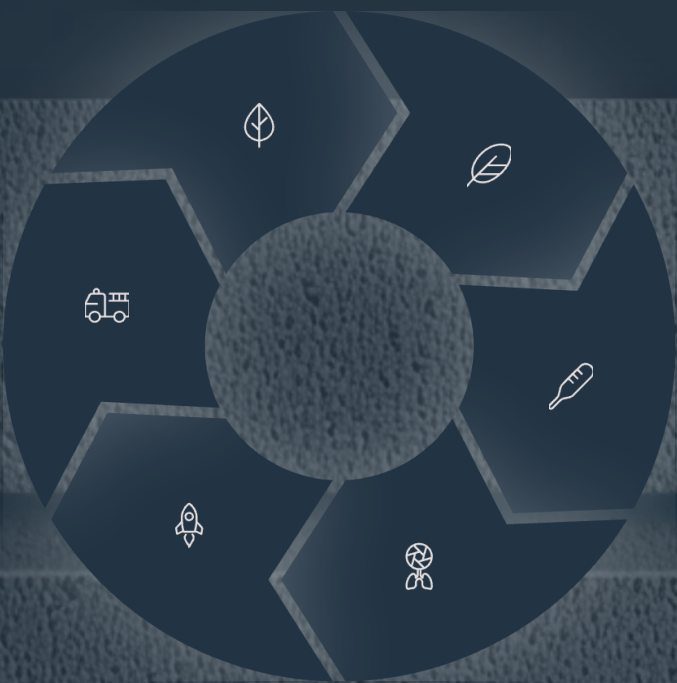
Manufactured using abundant natural resources like sand, cement, lime, and water, AAC reduces embodied carbon by up to **50%** compared to traditional concrete. Its production minimizes waste, and off-cuts can often be recycled, supporting a circular economy in construction.

Fire Resistant

As a non-combustible material, AAC offers superior fire ratings, typically exceeding **3-4 hours**, depending on thickness. This inherent fire resistance significantly enhances occupant safety, often resulting in reduced insurance premiums (up to **30% lower**) for building owners.

Fast-Build

AAC's larger block sizes and simplified thin-bed mortar application accelerate construction timelines by up to **30%**. Reduced trade coordination and a cleaner assembly process lead to quicker building envelope completion and earlier project handover.



Lightweight

Weighing approximately **20-25%** of traditional concrete (e.g., 1/4 the density of CMU), AAC significantly reduces structural requirements and foundation costs by up to **15-20%**. This lighter weight also enables faster, easier handling on-site, decreasing labor fatigue.

Insulation

With an R-value ranging from **R-1.25 to R-1.5 per inch**, AAC provides superior thermal mass and insulative properties. This translates to buildings that can reduce energy consumption for heating and cooling by **20-30%**, often exceeding modern energy efficiency codes.

Strength

Engineered for structural performance, AAC boasts a high strength-to-weight ratio, with compressive strengths typically ranging from **300 to 800 psi**. This makes it suitable for load-bearing applications, capable of supporting multi-story structures without compromise.

i These six core attributes represent just over half of AAC's comprehensive benefits. The complete wheel also includes inherent Sound Isolation, Versatility in design and application, remarkable Dimensional Accuracy, and proven Durability over long lifecycles.

Each attribute has been rigorously tested and proven in international markets for over a century yet remains critically under-leveraged in U.S. construction. Our detailed specification sheets provide technical validation for each performance claim, and our XBLOC² Graphene Admixture line further expands and optimizes these attributes for even greater performance and faster construction times.

Xbloc² Dose Pack Admixture Line

What is the preblended dry admixture?

By classification it's a Rheology Modifying Admixture (RMA) used as a code conforming delivery system to dose nano materials (e.g. n-Graphene) as well as specialty construction fibers to maximize the cost/performance ratios of preblended packaged cement building materials.

**Package for illustration only.*

Xbloc² revolutionary dose pack solution allows for seamless integration or "dosing" of the code accepted admixtures into your AAC construction processes. The results are higher performing, less expensive, locally available premium products that reduce construction time, overall costs, and claims.



Sustainability

One pallet of Xbloc2 dose pack admixtures will dose and treat an entire truckload of preblended bag products drastically reducing the CO2 emissions associated with shipping.



No Capex

Xbloc2 Admixtures do NOT require specialized equipment to use and maintain current mixing and application procedures to support innovation without compromise.



AAC Compatible

Each Xbloc2 product was formulated specifically for compatibility with the unique properties of AAC material, ensuring optimal performance and longevity.



WE DON'T MAKE CEMENT—WE MAKE MIXES BETTER WITH ADMIXTURES

Our proprietary graphene technology transforms ordinary construction products into extraordinary building solutions



ASTM & UL Certified Performance | Independent Laboratory Verified



The Additive Advantage: Elevating Construction Materials



Not a Manufacturer, but an Enabler

Xbloc² supplies advanced additive technology that transforms raw materials like cement, sand, and water into superior, high-performance building products, rather than producing the base materials themselves.



Precision Dosing for Superior Mixes

Our innovative dosing technology is engineered to significantly enhance existing mix designs, leading to improved compressive and flexural strength (MoR), while also effectively reducing permeability for long-lasting durability.



From Economy to Premium Performance

Xbloc² technology elevates standard pre-blended products and foundational mix designs to premium performance levels. This advancement offers an unparalleled cost-to-performance ratio, making high-quality construction more accessible.



Balance of Tradition and Innovation

We seamlessly integrate cutting-edge material science with established mixing equipment and application methods. This approach ensures our solutions deliver superior results without disrupting existing construction workflows.

Turning Local Economy Preblended Products into Premium Solutions



DOSE INSTRUCTIONS

Step 1: Source Local Materials

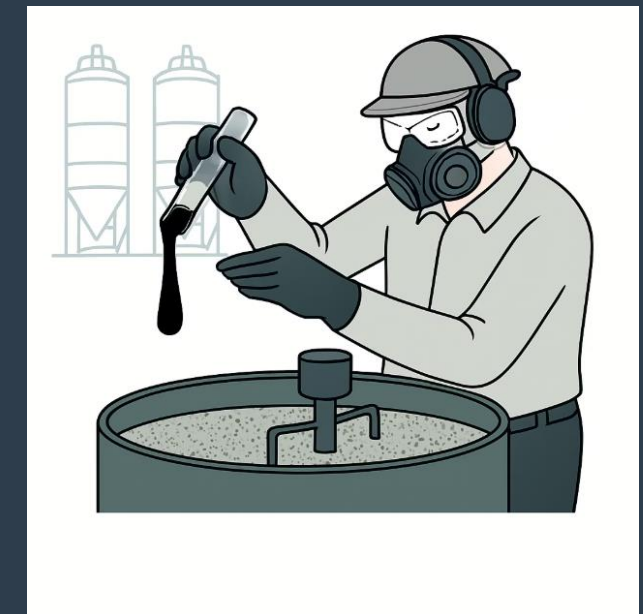
Begin with standard locally-sourced construction materials like Type N mortar, joint compound, or repair mixes. This reduces shipping costs and carbon footprint while supporting local economies.

Our admixtures are compatible with most standard ASTM-compliant construction materials available at building supply centers nationwide.

Step 2: Add Xbloc2 Dose Pack

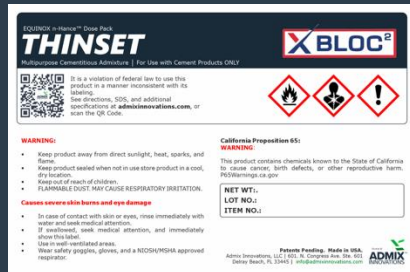
Simply add the pre-measured Xbloc2 Dose Pack to your mix following the included instructions. Each pack is designed for specific applications and optimized for AAC construction.

The proprietary graphene technology instantly transforms ordinary materials into high-performance building solutions with minimal additional mixing time.

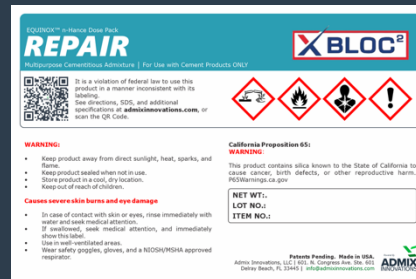


- ✔ No specialized equipment required: Xbloc2 Dose Packs work with standard construction mixing equipment, eliminating the need for capital investment. Workers with basic training can successfully implement the system with minimal learning curve.

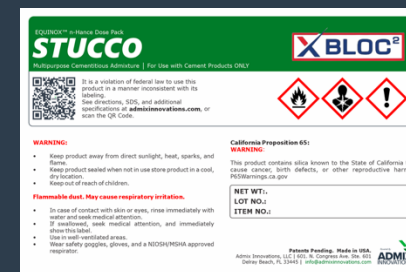
Xbloc2 Graphene Dose Packs – Building Solutions



Simple Dry admixture dose packs improve the half-life affording a longer application time, leveling, and superior bonding performance to assemble each block course of your structure resulting in increased assembly performance and overall project development expenses.



Convert simple Mortar to a high-performance Repair to support reductions in overall time to construct the Xbloc2 building systems. Electric, Plumbing, and raceway repairs are directly applied to cavity and safely sealed and repaired. Can also use to repair any block that may have been damaged in transport.



Convert simple economy preblended Type N-Mortar to a premium code conforming fiber and graphene reinforced Stucco product specific enhanced for compatibility with AAC material at a lower cost per lbs. This product will reduce waste, improve durability, bond, finish-ability, pump-ability, and overall performance to shorten the overall time to mix, apply, and cure the building envelop scratch & brown costs (base layers).



Final finish coat that brings unique thermal deflection and finish capabilities. Can stamp, texture, extrude, shape, and pigment create a wide offering to support custom finishes and designs supporting modern design demands.



The only non-graphene formula in the catalog, this dose pack was designed to upscale a bucket of multi-purpose joint compound to accelerate the interior finish of your structure.



Combine to create AAC Graphene Envelope

Combine the products to complete your building with a faster, better performing building envelop designed to save you time and money.

 **No specialized equipment required:** Xbloc2 Dose Packs work with standard construction mixing equipment, eliminating the need for capital investment. Workers with basic training can successfully implement the system with minimal learning curve.

TRL-8 Readiness, Performance Gains up to...

200%

Strength Increase

Independent ASTM C39 verified strength gain versus control samples

400%

Permeability Reduction

4× lower according to ASTM C1202 testing, creating more resilient structures

100%

Flexural Increase

Independent C78 Flexural strength gains versus control samples

Our Technology Readiness Level designation indicates that the system has been proven to work in its final form under expected conditions and for commercial scale production. This represents a significant milestone in bringing revolutionary construction technology to market.

Verified Testing Protocols

- ASTM C39 Compressive Strength of Cylindrical Concrete Specimens
- ASTM C1202 Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration
- ASTM C78 Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
- UL Fire Resistance Testing
- NATO Center of Excellence Field Validation

📄 All data collected under field conditions with certified labs collecting specimens and conducting tests. Performance varies by mix design and intended use case.

From Homes to Barracks to Blast Walls



Forward Operating Base Housing & Secure Installations

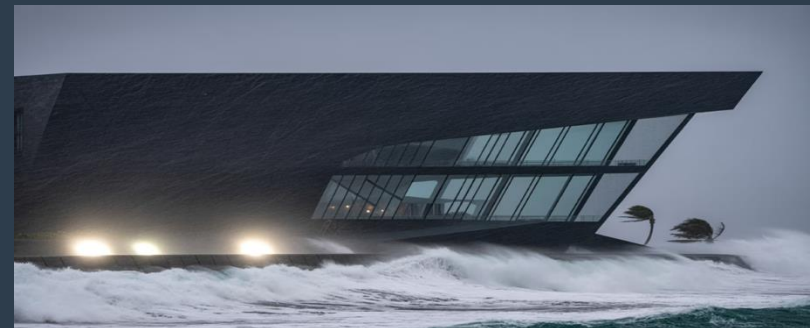
Rapidly deployable structures with enhanced thermal performance, reduced operating expenses, improved service life, shortened construction timelines to accelerate construction in hostile environments.

30% reduction in HVAC load requirements compared to conventional structures.



Embassy Perimeter Upgrades

Enhanced ballistic, EMP, and armor protections with lighter weight cladding structures, facilitating faster installation with fewer personnel. Provides improvement in blast resistance, armoring, signal transfer and operating expenses.



Climate-Resilient Coastal Fortifications

Superior saltwater and storm surge resistance with lower permeability. Withstands Category 5 hurricane forces, seismic events, wildfires, and flooding when built to specification.

Ideal for critical infrastructure in disaster-prone regions.



Disaster-Relief Modular Shelters

Modular "kit" assembly supports pre-engineered components for emergency response scenarios. <60-day off-grid sustainable habitability with minimal equipment requirements and complete containers that include the tooling.

Estimated 30% lifecycle cost savings compared to conventional CMU construction methods across all application categories.

Deploy Graphene AAC on Your Next Mission

Stronger. Lighter. Ready.

XBLOC² Graphene AAC admixtures revolutionize construction by making building materials **stronger**, **lighter**, and more **resilient**. Our TRL-8 proven technology delivers superior performance in strength, permeability, and flexural resistance, offering cost-effective and rapidly deployable solutions for diverse applications—from homes to critical fortifications.

It's time to transform your projects with advanced, high-performance building solutions.

① Our team is prepared to conduct on-site demonstrations and training for qualified projects. Contact us today to schedule your personalized consultation and discover how XBLOC² can transform your construction capabilities.

01

Secure Technical Briefing

Schedule a confidential briefing with our TS/SCI-cleared team to explore how Graphene AAC can meet your specific mission requirements.

Reach out to Shah Aryana for details.

CAGE Code: 9ZEX8

02

Reserve Production Slots

Secure your limited pilot production slot for Q3/4-2025 projects. Early adopters will gain priority access to advanced formulations and dedicated technical support for new product launches.

03

Request Full Documentation

Access comprehensive data and MIL-STD test plans. Full documentation is available after securing necessary security agreements, initiating a trial project, and establishing escrow funds.

Contact Us



Ready to revolutionize your construction projects with XBLOC² Graphene AAC admixtures? We're here to answer your questions and help you get started. Reach out to our team today!

General Inquiries

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Contact: Andy Cohen

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Phone: (954) 325-8206

📄 For security briefings, full documentation requests, or technical test data please refer to the previous slide or contact Shah Aryana directly.