

healthy human habitats.



push design

LEED Credits

Purepanel™ represents a healthy air quality core material product that meets the strictest Indoor Air Quality measures.

Purepanel™ would contribute LEED credits to LEED projects seeking IEQ credits.

**CARB Information**

Purepanel™ is not subject to the *Composite Wood Products Regulation* as defined by the California Air Quality Resources Board (CARB) since the panels consist of (recycled) paper and are not considered composite core hardwood/plywood.

Technical Data and Applications Available

Please refer to the Technical Data Information Sheet provided.

Introducing a New Generation of Non-Toxic Designer Panels

Purepanel™ Plus, the most flexible and sustainable panel solution on the market today, offers an exciting new tool for designers and builders for use as structural and non-structural wall systems, furniture, doors, casegoods, cabinetry, and other interior design applications

**Offered Exclusively by Push Design, LLC**

New to the US, a revolutionary new tool for sustainable design applications is created from 100% recycled waste paper, manufactured with a non-toxic proprietary additive, producing a mold & water resistant lightweight panel. The panels are then skinned with organic glue and either MgO board (a natural replacement for drywall) or a wide range of wood or other veneers

A Key Component of Breathable Wall Systems

When skinned with MgO board, the result is a toxin-free breathable wall component that will not mold and can dry itself if exposed to water.

Incredible Range of Applications

Usable in almost as many ways as wood itself, Purepanel™ has been effectively used for walls systems, casegoods, cabinets, doors, furnishings and many other utilities. The material's incredible strength (20,000 lb/sqft crush strength) and light weight allow for almost endless applications. Your imagination is the only limitation!

Manufactured to Your Specifications/ Easy to Install

Push Design can create finished panels manufactured to your plans and specs, including electrical & plumbing chases. Sizes available up to 4'x12'. The completed wall panels are easily installed with unskilled labor, up to 6 panels or more per hour.

Completely Non-Toxic

The proprietary process by which Purepanel™ is created uses no toxins, the material contains no VOCs (see CARB info in sidebar) and the range of applications makes it a critical advancement for designers, builders & clients who are serious about IAQ.



Available Sizes

Thicknesses available
3/4", 1", 1 3/8", 1 1/2"
2 1/4" (standard for uses
in wall application)

Additional thicknesses
available upon request and
subject to availability

Lengths and Widths

Available standard
Finished panels sizes
(47 1/2" w x 8' to 12'h)



Testing Data

All results from tests
performed on a
1 3/4" x 4' x 8' panel

Tested Panel Configuration

30 mil Purepanel core
skinned with a 6 mil & 3 mil
Magnum Board® (MgO
board) with 1 1/8" timber
framework

Standard Panel
Configuration

42 mil Purepanel core
skinned with 6 mil Magnum
board both sides with
1 5/8" timber framework

Product description

high strength, low weight
paper-based reinforced panel

Product construction

product consists of recycled
paper and organic bonding system

Weight

2.4kg/m2

Crush Strength (t=16mm)
ASTM C473-03 test method

90/m2 (20,000 lbs/sqft)

Flexural Strength (t=16mm)

55kg

Thermal Conductivity

0.05 WmK

Surface Burning Characteristics
E84-05

6MM = Classification A

Humidity resistance ASTM C473:
40deg C at 90% for 48 hrs

No visible changes, No deformation,
No warping/swelling, No fungal growth

Sound reduction

Rw=37dB, Rw=55.5dB est. in current panel configuration

Standard Test Method for
Resistance to Growth of Mold
and Mildew

ASTM D-3273 Magnum Board® is Magnum Board skin ranked 10 of
10 & exceeds the requirements of test method ASTM D-3273.

Underwriters Laboratory Fire
Rating UL263 and ASTM E119
Magnum Board® Skin

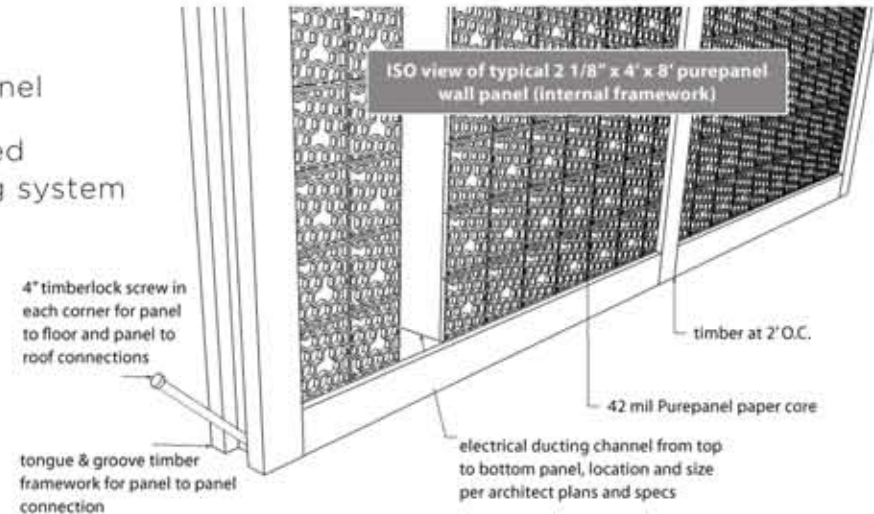
Exceeds requirements for single 12MM (15/32") layer one (1) hour
wall fire rating. File No. R26120

Formaldehyde

Product does not contain Formaldehyde

Moisture Movement - C1186
Magnum Board skin

Thickness	Direction	Aver Dim Chg
6MM	Machine	0.01%
	Cross	0.03%



Impactful Style at a Great Price

For standard sizes, prices start at \$275.

Discounts available for volume orders.



Standard Sizes & Prices

2068 :: \$275

2468 :: \$295

2668 :: \$305

2868 :: \$310

3068 :: \$320

(add \$100 for pre-hung, call for custom orders)

Purepanel™ Doors - The Greenest Door on the Market

Push Design is proud to introduce a significant advancement, Purepanel™ Doors. Without question, the most sustainable interior door option available today. Made with the patented 100% post-consumer recycled paper Purepanel™ core, engineered for extreme strength and durability, framed with formaldehyde-free Timberstrand® for ease of installation and finished with a stunning range of *Abet Laminati* laminates or real wood veneers. These doors are a major advancement in green building.

Finally - A Truly Sustainable Door Alternative

Knowing where the mature hardwood that was cut down to make your door was - is that really all that green? We don't think so. The components of Purepanel™ Doors make it the most sustainable option available, using waste wood / paper and water based adhesives, while delivering high strength, quality, and style.

Purepanel™ Doors can be prehung to fit any size wall system

Standard Wood Veneers



White Oak Wenge Zebrawood Maple Walnut

Standard Laminate Finishes



Wenge Legni Lucida Sei-Dui



Superior Air Quality

Purepanel™ has been exempted from the strict CARB standards, as it contains no toxins, chemicals or potentially hazardous ingredients. A key component of a truly "clean" indoor environment.

Affordable, Stylish Custom Doors Also Available

For those impactful, oversized or custom doors, there is not a better door on the market. Sizes available up to 4'x12', and the incredible light weight makes them easy to handle, install and operate.

Distribution and Retail Opportunities

Push Design is seeking established retail and wholesale partners in many markets.

Don't miss the opportunity to introduce the next generation of green door products to your local market. Contact David Mosrie at david@pushahead.com for more details.

150 Hilliard Avenue, Asheville NC 28801 :: p 828.505.7544 :: www.pushahead.com



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Durability - Built for a Lifetime

The lime binder is in a constant process of trying to turn back into stone, at once drawing carbon dioxide out of the atmosphere and creating a wall that will literally last hundreds of years.



One House = Ten Acres of Trees

It is estimated that one home built of hemp is the equivalent of planting one acre of trees in terms of the carbon sequestered.

Technical Data and Applications Available

Please refer to the Technical Data Information Sheet provided.

Hemcrete® - A Carbon Negative Revolution in Sustainable Building

Introducing one of the most revolutionary building materials the world has ever known. From Push Design, designer & builder of the first hemp home in North America, we present Tradical Hemcrete®. This carbon negative, natural and breathable product is a completely new wave in the building industry and stands alone as the most sustainable material developed world-wide to date.



Push Design and American Lime Technology - Leading the Way

We at Push Design are proud to be partnered with American Lime Technology and helping to lead the way in the American Hemp Revolution. Considered to be one of the top experts in the nation on building with this incredible new product, we offer guidance and support to all those looking to move to the forefront of the sustainable building industry by using hemp on their next project.



The Unbelievable Carbon Math of Hemp

During its growth period, the hemp plant has already sequestered over 15 tons of carbon! On merely 2.5 acres of land, one 1250 square foot home can be grown in 14 weeks. If 900 standard homes were built using hemp instead, over 45,000 tons of CO₂ would be saved during the building process.

Insulation and Thermal Mass

The thermal qualities of hemp are astounding – an R Value 2.4 per inch. The typical pour is 12 inches thick, resulting in a typical R Value of 30, before adding the cladding or interior surfaces. However, Oak Ridge National Laboratory states that it is not equitable to compare the steady-state R Value of high mass constructions, like hemp, to light frame constructions, and uses a DMBS Mass Multiplier to give additional effective R Value to the mass home due to the temperature modulating qualities of mass-based constructions, making the effective R Value of Hemcrete® much higher.

Health and Hemp

Hemp walls filter the air in the home, and because only natural materials (hemp, lime, water) are used in its construction, they add no toxins or chemicals to the home's indoor air quality. In addition, pest and termites cannot survive and will not attack a hemp wall. Due to the breathability and the lime content, hemp walls will not mold at any point in their lifetime.





**GENERAL DATA -
TRADICAL
HEMCRETE®**

Typical Wall

12" thickness
Hemcrete® poured
around 2x4 or 2x6
2'o.c. frame wall

Ingredients

1 part industrial hemp,
2 parts hydrated lime
binder, 2 parts water

TECHNICAL INFORMATION

Typical Compressive Strength (EN 1015-11)	0.8 - 1.0 N/mm2
Typical Flexural Strength (EN 1015-11)	0.3 - 0.4 N/mm2
Fire Rating (CSTB EN1363-1)	5.53 hrs/m
Fire Resistance (CSTB EN1363-1)	1.66 hrs/300mm
Acoustic Absorption	0.6 aa / 0.2metres
Acoustic Absorption	0.7 - 0.76 a500/ 0.1metres
Mean Acoustic Absorption Coefficient	0.69 NRC
Air Permeability	0.75 gm/m2/mm hg
Vapour Permeability	24.2 gm/m2/mm hg
Q Vapour Diffusion Resistance	4.84
εΦHygric Capacity	10.2 - 15 %
Thermal Conductivity λ @ 330kg/m3 (EN 12664)	0.0697 W/mK
Heat Capacity	1400 - 1550 J/kg
Carbon Capture @ 330kg/m3 (EN14040)	108kgCO2 (equiv)/m3
Achievable Airtightness (m3/m2.hr at 50 pa)	<2

QUICK FACTS

- Humidity Modulation: Yes
- Temperature Modulation: Yes
- Breathability: Yes
- Chemical/Toxin-Free: Yes
- High Thermal Mass: Yes
- Carbon Negative: Yes
- Expected Life Span of Wall:
800 years

LEED Credits

LEED credit opportunity contributions in Energy Performance, Regional Materials, Thermal Comfort - Design, Indoor Air Quality Performance and Construction Activity Pollution Prevention



Sustainable Qualities

Liteblok™ is energy efficient, reducing operating and the size of A/C systems. Its light weight means significantly less cement is consumed during manufacture. Reduced freight loads result in less energy consumption and pollution during transport.

Technical Data and Applications Available

Please refer to the Technical Data Information Sheet provided.

Introducing Liteblok™ - A Revolutionary Aerated Concrete Block System

Push Design presents Liteblok™, an aerated, precision-molded concrete block. By combining compressed air with a non-toxic foaming agent, highly insulative lightweight interlocking blocks are created - now available for a wide range of construction applications. Unlike AAC and ICF products, Liteblok™ contains no fly ash, polystyrene, VOCs or other potentially harmful materials.



A Truly Cost-Effective Energy-Efficient Wall System

Laid without mortar, Liteblok™ offers significant savings in construction time, up to 40% compared to traditional wood frame construction, along with an impressive range of benefits in terms of health and environmental impact. Our Liteblok™ Grande 38 offers a steady-state R-Value of 35 (by REScheck) as an 8-inch thick block with no additional insulation! We at Push Design have found this material to be a great solution for budget-conscious toxin-free projects.

Contains No VOCs or Toxins

Liteblok™ contains no VOCs or potentially toxic substances such as plastics and polystyrene. Heavy use of pesticide is not required prior to construction. No ozone depleting or hazardous chemicals are used during manufacture.

Easy to Install & Simple to Work With

Liteblok™ can be cut with a hand saw, accept regular nails and screws and requires no special tools, mortars, plasters, or additional reinforcement. Blocks stack without mortar, are self-aligning and vertical holes in blocks allow for electrical wiring and plumbing. Ease of construction and simplicity of design means fewer skilled workers are required on the jobsite.

Durable, Low Maintenance & Safe

Liteblok™ does not rot and is resistant to termites and other vermin, which results in lower maintenance over time. Liteblok™ structures are strong and perform well in high winds and seismic activity. Liteblok™ will not burn or produce harmful fumes during a fire.



Advantages:

Building costs reduced by up to 30% compared to other construction methods due to:

- Material cost savings
- Labor cost reduction
- Fast construction time
- Simple construction method
 - Minimizes skilled labor requirement

Innovation

- Self-supporting structures with no need for external structural elements.
- Columns are formed in some of the holes by inserting reinforcement bars, which are subsequently grouted, the distance between them depending on structural requirements.
- Perfect fit of the blocks, no mortar required to join them.
- Perfectly smooth walls, only a layer of thin set mortar or textured paint is needed.
- Easy installation of services through the vertical holes. Blocks can be cast with electrical boxes or water taps incorporated.



Push Design's Liteblok™ Integrated Building System is a precision, fire-resistant interlocking building block which requires no mortar and requires little skill to lay. The perfect fit of the blocks due to the shape will give you perfect alignment and right angle geometry, without mortar. Since there are no external structural elements required (columns and beams), the construction is incredibly simple, fast and economical. The blocks are precise, dimensionally accurate and are perfectly aligned.

Typical Block Properties

Color	Block Weight	Fire Resistance	Density	Compressive Strength	Thermal Conductivity
Gray	5 lb.	> 4 hrs.	38 lbs/cu ft	290 psi	0.759 BTU-in/hr-ft2-°F

Testing Standards

- Liteblok's™ Aerated Concrete complies with ASTM, BS, European and Australian Concrete Construction Standards.
- The material has been fire tested to Australian and various International Standards.

Water Absorption

Liteblok's™ Aerated Concrete has a marginally lower moisture absorption rate by weight than regular concrete, being 10-12%. Considering that the weight of our product is 50% to 75% less than regular concrete, however, the total moisture uptake is reduced in the same proportions, meaning it is only 25% to 50% of what regular concrete would retain.

Eco-Friendly

Liteblok™ is an environmentally-friendly and sustainable construction method that does not use any petrochemical- or solvent-based products. Due to the aeration process, considerably less raw material is required when compared to regular concrete construction. Very significant energy savings are achieved during the lifetime of such structures due to the insulating properties of the material, requiring far less energy for heating or cooling.

Construction Method

- The Liteblok's™ Integrated Building System is a seismically-resistant building method.
- It features high compressive strength, has a high insulation capacity due to its low density, has a high sound absorption value and is vermin- and termite-resistant.

Health Facts

Magnum Board®, per the U-Pitt Protocol, is non-toxic, and contains no carcinogens, silica or formaldehyde. It produces no off-gassing.

Engineering and Testing Information

For comprehensive engineering and testing data, please refer to our Magnum Board® Data Sheet.

**Magnum Board®**

products can have a positive impact on your family's health and safety while extending the life of your investment.

Magnum Board® is a mineral-based green builder product, and it is homogenous – no de-lamination.

Magnum Board® - The Natural Alternative to Sheetrock and OSB

Magnum Board®, or MgO as its known, is a critical element of every project we do at Push Design. The range of applications and material qualities of this product are essential to reaching our goal of toxin-free and breathable wall systems. A mineral-based product, MgO is the high performance alternative of choice to sheetrock, OSB, and other modern sheetgood applications.

**Durability That Dates Back to Ancient Times**

Magnesium is basic material that has been used throughout history and across civilizations due to its strength, from the Great Wall of China to the grand cathedrals of medieval Europe.

Breathability is the Key

Magnum Board®, as with other Magnesium-based materials, absorbs and desorbs water, and is a key element in any breathable wall system. Push Design is a major proponent of breathable walls systems as a means of mold prevention.

An Essential Element in Any Health-Based Project

Due to the enormous range of applications, and the absence of any modern material that has equivalent properties, we use Magnum Board® as a core building material in all our building projects.

Merging Health and High-Performance

Magnum Board® is a technologically advanced building material that offers superior performance in every category when compared to traditional wood, gypsum and cement based products. It is virtually impervious to fire, water and insects, non-toxic, non-flammable, non-combustible and is extremely durable, even when wet.



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R Value

Magnum Board® :: 1.2/in
 Cement Board :: .8/in
 Gypsum Wallboard :: .9/in
 Plywood :: 1.2/in
 OSB :: 1/in

Water Absorption

23% (12mm)

UL Fire Rating

Exceeds requirements for single 12mm (15/32") layer one (1) hour wall fire (UL 263 & ASTM E119) rating. File No. R26120

Combustibility

Certified non-combustible, exceeds the test criteria presented in ASTM E136

Flammability

Certified non-flammable, exceeds the test criteria presented in ASTM E84

Flexural Testing

Thickness	MPa
6mm	13.245
10mm	13.516
12mm	10.51
15mm	8.88
18mm	7.426

Health Related Data

Toxicity

Magnum Board® exceeds the combustion toxicity protocol developed at the University of Pittsburgh, and the requirements for interior finish.



Silica Content

None

Asbestos

None

Carcinogens

None

Formaldehyde

None

Off Gassing

None

Mold/ Mildew

Magnum Board® is ranked 10 of 10 and exceeds the requirements of test method ASTM D-3273. The material is not a nutrient for mold or mildew.



Sizes Available (Specialty Products Not Listed)

Thickness		Sizes
4mm	3/16"	4x8,9,10
5mm	1/5"	4x8,9,10
6mm	1/4"	3x5,4x8,9,10
8mm	5/16"	4x8,9,10
9mm	11/32"	4x8,9,10
10mm	3/8"	4x8,9,10
11mm	7/16"	4x8,9,10
12mm	15/32"	3x5,4x8,9,10
14mm	17/32"	4x8,9,10
15mm	5/8"	4x8,9,10
18mm	23/32"	4x8,9,10
20mm	25/32"	4x8,9,10
24mm	27/32"	4x8,9,10

Call for size & price for fascia, soffit, siding, et al

Engineering Data

Transverse Load iaw AC376-E72

Test	Positive Load, Ultimate Failure	Negative Load, Ultimate Failure
Average(of 3 tests)	145.6 Psf/ 6.97 Kpa	130.66 Psf/ 6.26 Kpa

Wet Racking Shear IAW AC376-E72 Section 15.05

Test	Ultimate Load	Lbf/ Lineal ft
Average (of 3 tests)	3367 lbf	421

Certifications

GREENGUARD Environmental Institute (GEI) certified Gigacrete as a low-emitting listed product. GigaCrete's PlasterMax products exceed EPA, State of California, and CHPS (Collaborative for High Performance Schools) standards for VOC emissions and indoor air quality.



Technical Data and Applications Available

Please refer to the Technical Data Information Sheet provided.



GigaCrete Plastermax™ – State-of-the-Art Non-Toxic Plaster Alternative

GigaCrete PlasterMax™ is a one-step protective interior "plaster" coating, offering designers and builders a previously unavailable combination of strength, durability and ease of installation. Plastermax's proprietary non-toxic binder, which is 100% toxin-free and does not contain silica-based sands, Portland cement or fly ash, finally offers a true alternative for eco-conscious builders and designers.



Superior Qualities at the Same Cost as Comparable Products

Plastermax's unbelievable 8000+ psi strength delivers a solution for high abuse environments. Its incredible smooth, seamless finish and natural anti-bacterial proprietary additive create a highly sanitary and easy-to-clean finish. All Plastermax products are pre-blended and can be applied directly over painted or unfinished drywall with conventional plaster or paint texture guns common to the painting and plastering industry.

Sustainably Manufactured

Gigacrete products use less embodied energy to produce than Portland cement-based products due to the lower kiln temperatures required in production. Reduction of waste materials is achieved due to efficient manufacturing methods and less "on-the-job" waste.

Durable and Sanitary

Perfect for medical and other institutional uses due to the incredible strength. Seamless application and smooth easy-to-clean surface. Less expensive to purchase and install than any common alternative, it is the new standard for sanitary and high-impact conditions.

An Award-Winning Innovation

Selected by **BUILDERNews** as the *Best New Products* winner and a *Best in Green Design* by **Popular Mechanics** magazine in 2007.



- State-of-the-art, one step protective interior "plaster" coating
- Maximum strength and durability achieves ceramic-like hard finish
- Can be applied on numerous interior substrates including drywall/sheetrock
 - Virtually no shrinking or cracking when properly mixed and applied
- Highly resistant to damage from scratching, abrasion, and impact abuse
- Applied as a thin shell coat (0.125 inch to 0.25 inch)
 - Meets class "A" fire rating
 - Well suited to high abuse spaces or high traffic areas where wall damage may occur
- Applied through conventional plaster or paint texture guns
 - For smooth finish, can be troweled flat to look like Venetian plaster
 - Working cure times of 2 to 4 hours
 - Compressive strength of approximately 8,000 PSI
 - 50 lb. material coverage - approximately 23 SF @ 0.25 inch

GIGACRETE FULL STRENGTH MIX DESIGN PROPERTY VALUE

Compressive strength:	(28 days) 40-100 N/mm2 (5,801-14,503 PSI)
Flexural tensile strength:	(28 days) 10-17 N/mm2 (5,801-2,465 PSI)
Surface hardness:	50-250 N/mm2 (7,251-36,259 PSI)
E-Module:	1-3 104 N/mm2
Thermal conductivity:	< 0,7 w/mk
Electrical conductivity:	R: 103-105 Ohm
Decomposition temperature:	>500°C (>932 F)
Specific weight:	1,50-2,10g/cm3
Dimensions stability:	Δ< 0,2%
Surface fluctuation:	< 2mm/m



Fire Information

Test	Method	Criteria	Result
Corner Room Fire Test	NFPA 286	No flame growth	Pass
Surface Burning Test	ASTM E 84	Flame spread < 25, Smoke < 450	Zero flame spread, Zero smoke
Combustibility Test	ASTM E 136	No combustion	Pass
Fungal Resistance	ASTM G21	Harbor no mold, mildew	Pass