AGRICULTURE

Providing
Sustainable
Elements for the
Modern Economy

Our Mission

E3 Agriculture is a forward-thinking sustainable materials company. Harnessing the power of plants and scale of industrial agriculture to supply superior products for construction, marine and aerospace applications. Our products improve efficiency, cut logistical costs, increase longevity, while lowering energy and maintenance costs over their lifetime.

E3 is regional and reliable, with distribution throughout North America. We work with leading institutions and global experts, continually testing, improving, and expanding the use of these materials.

The construction industry is responsible for %25 of global emissions. Without practical alternatives to the materials used, no country or company will acheive any emissions cuts targets, ever. Our products are made in America with rapidly renewable materials. Eliminating CO2, lead-times and Supply Chain complexity while supporting American business and farmers.

004 Years of operations

029 States served

300+ Happy Customers

007 World Changing Technologies

U.S. GREEN BUILDING COUNCIL

US HEMP BUILDING ASSOCIATION
Building Our Future, Together

ASTM INTERNATIONAL

Table of Contents

"We have used [FREPOXY] with great success as a flat roof sealant, in warehouses, pedestrian walkways, and garage floors. This product has a rapid curing time and superb adhesion to most substrates. The fact that it is VOC-free also adds to its appeal with our customers in North America, Central America and the Caribbean."

Frank Ruiz
President, Reflect A Seal LLC

"The Team at E3 delivered a consistent, uniform and commercial grade product for our hempcrete cabin overlooking the Brazos River. I look forward to them supplying many future projects for us."

Andrew Hancock
President, LimeLife Construction

TREBAR™

MADE IN USA

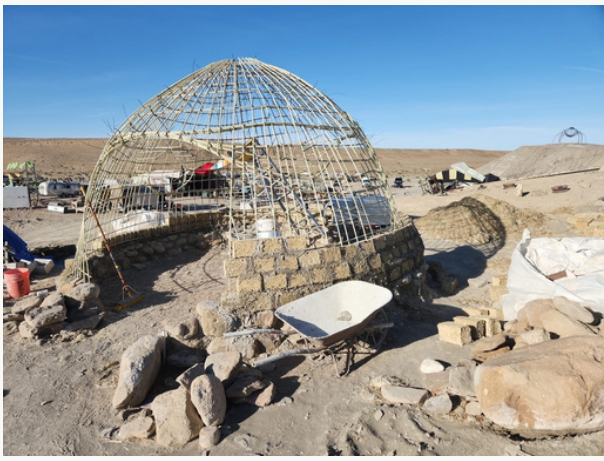
NON-CORROSIVE, RENEWABLY SOURCED

2X STRONGER, 4X LIGHTER THAN STEEL REBAR

Steel reinforcing members were invented in the early 1900s, the technology has not improved much since.

E3's Bio-based FRP Rebar is a great leap forward in efficiency, strength, durability, and material sourcing.

By utilizing, glass, basalt, and natural fibers bound with a plant-based matrix specially designed for optimal properties AND comparable in cost, the choice is clear.



TREBAR Properties

- Non-Corrosive/Long Lifespan
- Non-Conductive, Data usage
- 4x Lighter
- Transportation and worker safety
- Made in America
- 2x stronger tensile
- Maintenance Free
- ASTM D7957/D7957M-17

Pricing / 20' stick under 10000':

#2 - $3.75
#3 - $7.50
#4 - $12.50
#5 - $19.00

MADE IN USA

FREPOXY™

VOC free plant-based Epoxy

By identifying and maximizing the inherent properties of plant molecules we have developed a VOC-free, renewable epoxy.

Perfect for use in corrosive environments, composite materials, paints, moldings, and much more.

Our chemistry team can tailor specific properties for your desired use.

FREPOXY Applications

- Floor/roof coating
- Art and Jewelry
- Paint, Primer substrate
- Weather-proofing of wood, concrete and steel
- Composite material matrix
- Anchoring and adhesives
- Customizable properties
- MSDS sheet upon request

Pricing:

18 oz - $30

1.5 gal - $85

+15 gal - $55/gal

Technology Brief

PRODUCTS

MADE IN USA

HempCrete

Renewably sourced, Carbon-Negative, biobased concrete and insulation alternative

- The concrete industry and built world account for roughly 25% of global carbon emissions.
- Hempcrete is a fast-emerging construction solution that sequesters carbon, grows rapidly and has superior insulation properties.
- Reducing energy consumption over its life, improving indoor air quality, excellent moisture and climate control.
- Hempcrete construction is approved for International Residential Code: RB316-22

Limelife Construction

Brazos Overlook Cabin

www.Hempitecture.com

Minka

Pricing/Lb

Contact us for pricing in your area

→ Worked with Axel Vorvoodt Architects.

→ Supplied material for +17 homes in 6 states

MicroPoz

Micropoz® Mineral Catalyst is a special mineral blend to be used to formulate a fast setting and high pozzolanic activity lime binder.

Micropoz® Compound is used in the preparation of different hempcretes.

- In-situ walls (non-structural)
- Floor slabs
- Screens
- Roof insulation.
- Pre-cast members

Delivered in an easy to handle ready-mix bag or purchased in bulk

MicroPoz is used to repair the Meso-American pyramids and structures.

Pricing/55lb Bags:

Ready-Mix: $50

Mineral Catalyst: $90

Technology Brief

PRODUCTS

FiberGrass ™

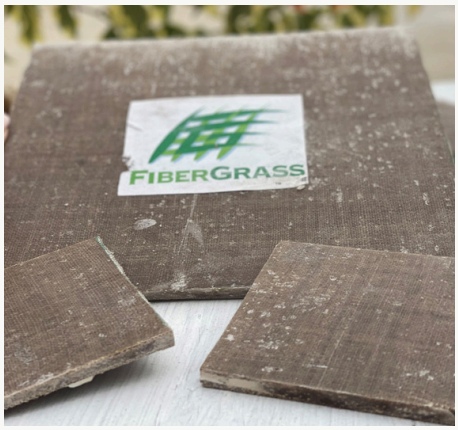
MADE IN USA

A natural woven fiber and bio-polymer matrix alternative to fiberglass with superior properties, renewably sourced.

- Glass fibers were discovered on accident in the 1930s, since, countless hands, lungs and environments have been stuck with this legacy.

- E3's **FiberGrass** composite's are a revolution in healthy durable goods, strength, weight reduction, and material sourcing.
  - Kayaks
  - Furniture
  - Reusable, Weatherproof Panels etc.

- By combining our FREPOXY with natural fibers such as hemp. Designed for optimal properties from abundant supplies.



Custom Applications:
$750 minimum order

Panel Pricing:
1/4" x 1 sq. ft: $19
1/2" x 1 sq .ft: $29
3/4" x 1 sq ft: $39

Hemp Hurd (Shiv)

MADE IN USA

Hemp Hurd is the woody core of the hemp plant, can be sized for the desired use. Pricing listed below. Top Applications include:

1-5 cm "Construction Grade Hurd" (see 9.1)
-Hempcrete construction (concrete aggregate)
-Animal Bedding
-Absorbents (oil, industrial fluids etc)
-Jobsite mud mitigation, applied and compacted to wet or muddy job sites to prevent tracking.

>1 cm to 100 microns "micronized hurd" (see 9.2)
-Injection Molding
-3D printing construction
-Plaster additive
-Plastic substrate
-Absorbents

Ex. 9.1

Ex. 9.2

.5-2.5cm Pricing/Lb
0-700 lbs: $1.00
701-1800 lbs: $.85
1801- +5000lbs: $.70

Micronized Pricing/LB
0-100 lbs: $3.50
101-500 lbs: $3.00
+500: $2.75

HempWool TM

MADE IN USA

HempWool® is a healthy and non-toxic insulation, a direct replacement for fiberglass batt insulation

The making of fiberglass insulation is an energy-intensive process — up to 10 times more so than eco-friendly alternatives.

- Mold and fungus resistant
- Easy to work with
- Chemical free
- Affordable
- Highly Insulative
- Carbon Negative

Grown and manufactured in America

Pricing:

Reach out for pricing, by the pallet and sq. ft.

HempWood TM

MADE IN USA

HempWood® Natural Flooring is the most sustainable flooring product on the market.

Through our unique process and adhesives, we are able to offer a flooring product strong enough to handle daily foot traffic without emitting VOCs into the atmosphere.

- Stronger and lighter than Oak
- Comes in finished or several options
- Carbon Negative
- Rapidly produced
- Fully Domestic Supply chain

USDA CERTIFIED BIOBASED PRODUCT
PRODUCT 100%
FP

Grown and manufactured in America

Pricing:

Reach out for pricing

FiberLite TM

MADE IN USA

FiberyLite TM, is a non-structural replacement for traditional timber MDF. Created using the fast growing hemp plant and patented adhesives and processes. MDF is commonly uses in furniture, internal cladding and interior features.

- Stronger and lighter than traditional MDF
- Direct replacement for traditional MDF
- Hemp grows up to 16x faster than trees
- Carbon Negative
- Cost competitive
- Fully Domestic Supply chain
- VOC-free plant based adhesives
- Vertically integrated

Grown and manufactured in America

Pricing:

Available Q4 2024

Technology Brief

PRODUCTS

FiberPly TM

MADE IN USA

FiberyPly TM, is a structural replacement for traditional timber OSB. Created using the fast growing hemp plant and patented adhesives and processes.

- Stronger and lighter than traditional OSB
- Direct replacement for traditional OSB
- Hemp grows up to 16x faster than trees
- Carbon Negative
- Cost competitive
- Fully Domestic Supply chain
- VOC-free plant based adhesives
- Vertically integrated

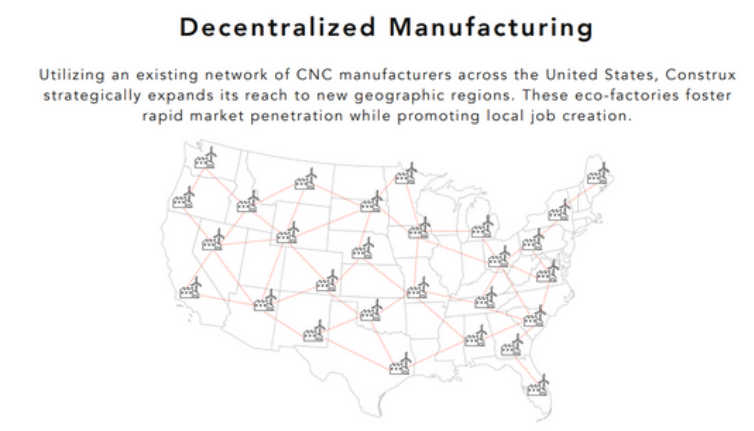
Grown and manufactured in America

Pricing:
Available Q4 2025

Construx Shells TM

Construx Shells TM uses automated machinery to precision cut low-cost plywood components in a controlled factory environment, delivering a predictable, consistent, and repeatable result with accuracy and quality that outperform traditional construction

- Precision engineered.
- 4x faster construction
- No concrete, limited site work
- Hurricane Resistance
- 95% less waste
- Carbon Negative
- Customizable options



Robot CNC machines work at max efficiency.

Pricing:

Reach out for pricing

Design

In close collaboration with **Biobuild Studio** we identify local materials, environmental conditions and client request. Applying bio-agency and bio-regional principals to design, fabricate and deliver appropriate, sustainable and high performing buildings.

BIOBUILD

web: Biobuild.studio

Texas Farm Outhouse: Incorporating E3 Hempcrete, TREBAR, and passive design to give the client a comfortable, long lasting bathroom experience. Did we mention its mobile?

Entheogenic Temple: Biobuild Designed and E3 supplied Hempcrete ceremonial temple, located in Blanco Texas.

Breezeway House: Designed by Biobuild Studio for a client interested in sustainable construction, historical Texas influence.

Lone Star Bio-Char™

MADE IN USA

Biochar is created by Burning biomass (creating energy) in low-oxygen conditions yielding a carbon-rich substance great for soil rejuvenation and as a high performing sustainable aggregate for construction and composites.

Relatively light-weight and porous, biochar can act like a sponge, storing water or energy and serve as a habitat for many beneficial soil microorganisms

Biochar can be used in the following applications.

- Soil additive to increase water retention, increase microbial activity.
- Soil conditioner, loosens compacted soil, provides structure.
- Chemical clean up, the carbon molecules attract and latch on to harmful elements, locking them away for years.
- Brick making
- Injection molding
- Composite material
- Dye

Pricing/LB

0-100 lbs: $3.50

101-700 lbs: $3.25

+700 lbs: $2.75

Prototyping and Mock-ups

E3's team of world class scientist, craftsmen and top tier facilities allow us to design, tailor and fabricate specific technologies and systems for companies and clients.

Custom Hempcrete Panel incorporating TREBAR to be precast either onsite or delivered from our facility to a company looking to add plant-based building materials into their portfolio.

E3 was contacted by a builder looking to design and build TREBAR columns for a pool bar

E3 was contracted to develop a lightweight, bulletproof plate that can be used in military, police and protection services

University, 3rd party Testing, ASTM, Codes and designation

13.1 TREBAR

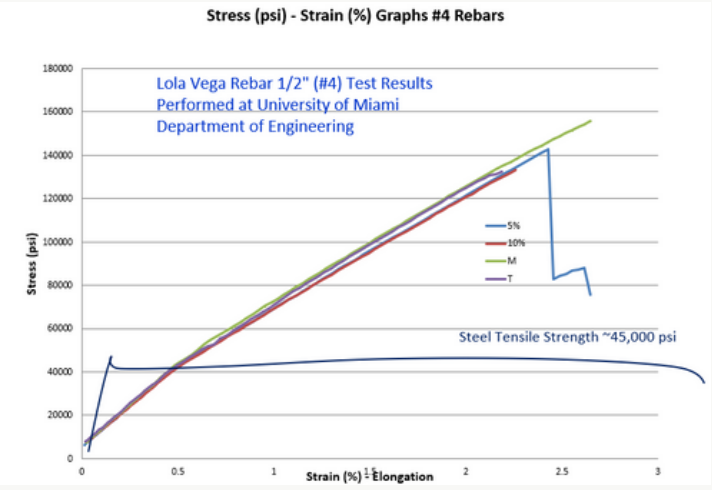
Tested by the University of Miami (see 13.1.A) , 3rd Party Testing Lab in Georgia, MTS (see 13.1.B).

Currently Being Tested by Texas Department of Transportation (see 13.1.C) and Texas A&M Center for Infrastructure Renewal with expected testing completed by the end of 2023.

ASTM Designation: D7957/D7957M-17

Engineering Specifics: ACI-440.1R-06 Guide for the Design and Construction of Structural Concrete Reinforced with FRP Bars

Ex. 13.1.C



Ex. 13.1.A

LVG_#4_TNS - ASTM D7205 Summary of Results

Size #	Lot #	Test Rep. #	SPECIMEN ID	Peak Load P_{max} kN	Peak Load P_{max} lbs	DATA W/ NOMINAL AREA: Nominal Area A_{nom} mm²	Nominal Area A_{nom} in²	Tensile Strength $f^*_{fu\,nom}$ MPa	Tensile Strength $f^*_{fu\,nom}$ ksi	Modulus of Elasticity E^* GPa	Modulus of Elasticity E^* Msi	Strain ε_u %	% deviation of P_{max} from Average
		1	LVG_#4_TNS_M-001	131.62	29589			1039.5	150.8	52.01	7.54	1.95	-0.8
		2	LVG_#4_TNS_M-002	133.78	30075			1056.6	153.2	51.09	7.41	1.98	0.8
			Average	132.7	29832			1048.1	152.0	51.6	7.5	2.0	
			S_{n-1}	1.5	343			12.1	1.8	0.7	0.1	0.0	
			CV((%)	1.2	1.2			1.2	1.2	1.3	1.3	1.2	
			Guaranteed Properties*	128.1	28802			1011.9	146.8				
		3	LVG_#4_TNS_20-001	133.49	30010			1054.3	152.9	NA	NA	1.93	1.1
		4	LVG_#4_TNS_20-002	130.58	29356			1031.3	149.6	52.23	7.57	1.88	-1.1
			Average	132.0	29683			1042.8	151.2	52.2	7.6	1.9	
4	NA		S_{n-1}	2.1	463			16.3	2.4	NA	NA	0.0	
			CV((%)	1.6	1.6			1.6	1.6	NA	NA	1.6	
			Guaranteed Properties*	125.9	28294			994.1	144.2				
		5	LVG_#4_TNS_05-001	129.91	29206	126.61	0.196	1026.1	148.8	51.93	7.53	1.97	-1.6
		6	LVG_#4_TNS_05-002	130.50	29339			1030.7	149.5	51.41	7.46	1.98	-1.2
			Average	130.2	29272			1028.4	149.2	51.7	7.5	2.0	
			S_{n-1}	0.4	94			3.3	0.5	0.4	0.1	0.0	
			CV((%)	0.3	0.3			0.3	0.3	0.7	0.7	0.3	
			Guaranteed Properties*	129.0	28990			1018.5	147.7				
		7	LVG_#4_TNS_203-001	79.60	17895			628.7	91.2	49.59	7.19	1.00	3.4
		8	LVG_#4_TNS_203-002	74.41	16728			587.7	85.2	50.11	7.27	1.00	-3.4
			Average	77.0	17312			608.2	88.2	49.9	7.2	1.0	
			S_{n-1}	3.7	825			29.0	4.2	0.4	0.1	0.1	
			CV((%)	4.8	4.8			4.8	4.8	0.7	0.7	5.6	
			Guaranteed Properties*	66.0	14836			521.2	75.6				
			*Minimum Guaranteed (ICC-ES AC454)		21600			759.8	110.2	44.8	6.5		max 15%
			*Minimum Guaranteed (FDOT Std. 932)					758.4	110	44.8	6.5		

Note 1: For Specimen #3 data was compromised with the exception of peak load.
Note 2: Only nominal area values were used at testing and for calculations as measured values were not available.
Note 3: Specimens #7 and #8 (in yellow) showed pronounced low peak values.

Ex. 13.1.B

Testing Continued

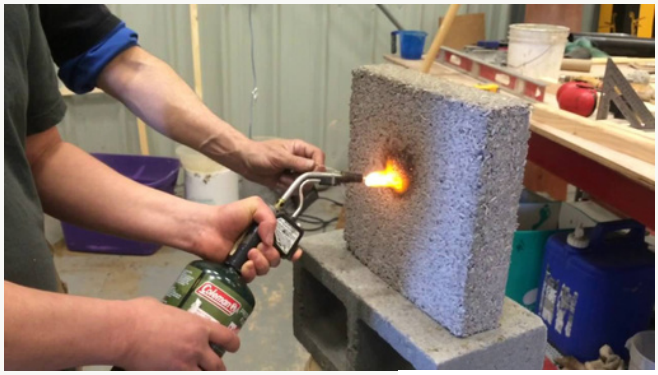
14.1 Hempcrete

Has been tested and approved by multiple universities and independent laboratories and is currently approved by the IRC. Hemp is considered load bearing in Europe but used widely as a insulating wall system (see 14.1.C)

International Residential Code: RB316-22 (see 14.1.A)

Fire Rating Test: ASTM E 84-19B receiving a perfect score of 0, 0 to 450. (see 14.1.B)

Standardization News: https://sn.astm.org/features/green-building-hempcrete-ma20.html

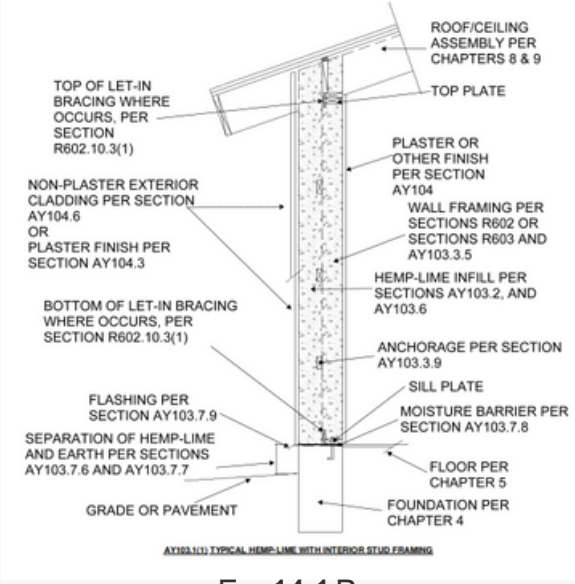


Ex. 14.1.B

density (self-bearing, load-bearing) mechanical strength versus thermal conductivity

Application	Shiv: Binder proportions (by mass)	Target density [kg.m^{-3}]	Typical ultimate compressive strength [N.mm^{-2}]	Typical thermal conductivity λ [Wm^{-1}K^{-1}]
Roof Insulation	1:1	220	0.05	0.06
Wall Construction	1:1.5	275	0.11	0.06-0.09
Wall Construction	1:2	330	0.22	0.09-0.115
Wall Construction	1:2 (compressed)	440	0.35	0.115
Floor	1:3	500	0.8	0.13
Floor	1:4	600	1.15	0.14
Pre-cast Structural	1:4 (compressed)	600-1000	2-6	0.14-0.27

Ex. 14.1.C



Ex. 14.1.B

Accolades and Support

- E3 has been recognized by the British Royal Family's Earthshot Prize Challenge for our FiberGrass TM product line which includes our plant-based composites, TREBAR and Panelized materials. (see 15.1)
- The Earthshot Prize is a global competition to identify solutions which will halt and reverse the destruction of our planet by 2030.
- E3 works in close collaboration with Texas A&M to test, improve and approve of our plant-based building materials. (See 15.2)
- E3 has also engaged with Frostburg State University to conduct full panel Life Cycle Analysis of our plant-based products.
- E3 is members of ASTM international, USGBC and USHBA

Ex. 15.1

Ex 15.2

Bridging Agriculture
and the Built World

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