COAL-DERIVED BUILDING MATERIALS SHOW VERY PROMISING RESULTS

Coal-derived building materials have performance characteristics that exceed those of commercial brick and concrete block.

INITIAL PERFORMANCE TESTING OF FIVE COAL-DERIVED BUILDING MATERIALS REVEALS HIGH-PERFORMANCE CHARACTERISTICS

Initial performance testing of coal-derived building materials (CDBM)—including X-BLOX, X-BRIX, X-PANEL, X-MATRIX, and X-TILES—exhibited several exciting **high-performance** characteristics:

- **Five times** the flexure strength of the best commercial brick.
- More than **twice** the compressive strength of construction-grade concrete block.
- **Lower** density than comparable material.
- Improved mechanical **durability** and abrasion resistance.
- Very **high temperature stability**.
- **Resistance** to chemicals, acids, salts, and water.

ADVANCING THE UTILITY OF COAL-DERIVED BUILDING MATERIALS

X-MAT, in collaboration with their production partner the Center for Applied Research and Technology, Inc., have **steadily improved several CDBM products**. The XMAT CDBM components contain at least 55% coal by weight and 71% carbon by weight.

Based on their **favorable testing results**, X-MAT is currently working on a **market-worthy design** for a CDBM structure that will meet insurance standards (seismic, fire, wind resistance) and the International Building Code.

Coal-based bricks (X-BRIX) and blocks (X-BLOX).

Examples of various colors and coatings for the ceramic tiles.

CDBM USE RESULTS IN ECONOMIC AND ENVIRONMENTAL JUSTICE BENEFITS

CDBM can **reduce the cost of building construction** for targeted markets, create employment in disadvantaged coal communities and the CDBM industry, and remediate legacy waste by utilizing existing coal waste as feedstock for CDBM.

Artist's conception of coal building proof-of-concept design.

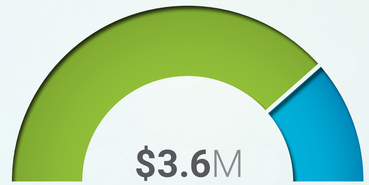
PARTNERS

August Brown
EERC
Semplastics
CART Center for Applied Research and Technology, Inc.
Lignite Energy Council
X-MAT Reimagining high performance materials

AWARD NUMBER
FE0031985

PROJECT BUDGET

FY20 & FY21 FUNDING



DOE $2,746,286
PARTNERS $826,000

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FECM RDD&D PRIORITY

DOMESTIC CRITICAL MINERALS PRODUCTION

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