



Development of X-MAT® Coal Core Composite for Building Material Applications

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Coal has historically been used for the generation of electrical power and in the production of steel from iron ore. However, recent X-MAT® research and development activities have resulted in an alternative use for raw coal particles as a key component within modern building materials. X-MAT technology combines proprietary chemical formulations with the raw coal (approximately 70% by mass of the composite) and transforms these materials into an inert coal-core composite. One surprising property of this unique material is that it does not burn when placed in a flame environment.

The enormous promise of this technology led the Department of Energy to award Semplastics a Phase I Small Business Innovative Research (SBIR) grant in 2018 to continue its development. The specific purpose of the DoE-funded research is to produce coal-core composite roof tiles, which have key advantages in weight, fire resistance, and durability over the conventional alternatives. This talk will highlight the progress and challenges experienced in the roof tile project. Viability of the product will be measured against the benchmarks set by commercially available roof tiles. Promising results showing higher flexure strength of X-MAT roof tiles at lower weights than currently available roof tiles will be presented.

