

## **Fire resistance of biomass ash panels used for internal partitions in buildings**

### **Abstract**

This study was to develop fire-resistant panels with a high biomass ash ratio from the combustion of EFB at an industrial scale to be used in different fire-resistant internal partitions in buildings and industrial constructions. This study develop new products made of by biomass ash from industry waste for the internal partitions panel. Modifying the internal partition panel of wall with addition of biomass ash (EFB) and clay soils in producing new products that can resist and retain durability and resilience of the panel products to the fire. ASTM C1396 Standard Specification for Gypsum Board defines Gypsum wallboard as designed wallboard use for on walls, ceilings, or partitions and that affords a surface suitable to receive decoration tested in accordance with ASTM E119 Standard Test Methods for Fire Tests of Building Construction and Materials. For this study, fire resistance, thermal and mechanical parameters were measured. The panels which are 100 mm × 100 mm by 15 mm thick were prepared following ASTM standard. The product here studied in the form of low-density panels (800 kg/m<sup>3</sup>) has a great potential for an industrial use, showing similar properties to those found in commercial gypsum plasterboard, a material of generalized use for this type of application. Consequently, from the test, biomass ash (EFB) panelboard can retain more than 2 hours fire resistance in standard conditions of room temperature by fire laboratory and panels showing a compressive strength of 3.535 MPa.

### **Keywords**

Biomass ash; Empty Fruit Bunch (EFB); Fire resistance; Gypsum board; Panel