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Effect of Incineration Temperatures to Time on the Rice Husk Ash (RHA) Silica Structure: A Comparative Study to the Literature with Experimental Work

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Abstract : Controlled burning of rice husk can produce amorphous rice husk ash (RHA) with high silica content which can significantly enhance the properties of concrete. This study has been undertaken to investigate the relationship between the incineration temperatures and time to produce RHA with ultimate reactivity. The rice husk samples were incinerated in an electrical muffle furnace at 350°C, 400°C, 425°C 450°C, 475°C, and 500°C for 60 and 90 minutes, respectively. The silica structure in the Rice Husk Ash (RHA) was determined using X-Ray diffraction analysis, while chemical properties obtained using X-Ray Fluorescence. The results show that RHA appeared to be the totally amorphous when the husk incineration up to 425°C for 60 and even at 90 minutes. However, with increased temperature to 450°C, 475°C and 500°C, traces of crystalline silica (quartz) were detected. However, cannot be taken into account as it does not affect on the ash structure. In conclusion, the result gives an idea of the temperature and the time required to produce ash from rice husk with totally amorphous form.

Keywords : rice husk ash, silica, compressive strength, tensile strength, X-Ray diffraction, X-R florescence, pozzolanic activity
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