ABSTRAK

PEMBUATAN *CHEMICALLY BONDED PHOSPHATE CERAMIC* DARI LIMBAH BESI INDUSTRI KERAMIK

Besi oksida yang terdapat dalam bahan baku pembuatan keramik dapat menyebabkan *black core* ketika pembakaran sehingga gagal secara visual. Dalam penelitian ini, dilakukan pembuatan *chemically bonded phosphate ceramic* dengan menggunakan besi oksida sebagai sumber oksida dan asam fosfat sebagai sumber fosfat. Hasil penelitian menunjukkan bahwa pembuatan *chemically bonded phosphate ceramic* dapat dilakukan dari limbah industri keramik. Hasil pengujian sifat mekanik menunjukkan bahwa *chemically bonded phosphate ceramic* dengan rasio 1:1 memiliki kuat lentur dan densitas paling tinggi, sedangkan porositas dan resapan airnya paling rendah. Hasil XRD menunjukkan terdapat kristal besi fosfat dihidrat dan besi fosfat. Hasil pengujian sifat mekanik dengan rasio 1:1 memiliki kuat lentur dan densitas paling tinggi, sedangkan porositas dan resapan airnya paling rendah.

Kata-kata kunci: *chemically bonded phosphate ceramic*; besi oksida; asam fosfat; rasio; sifat mekanik.

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ABSTRACT

PREPARATION OF CHEMICALLY BONDED PHOSPHATE CERAMICS FROM IRON WASTE OF CERAMIC INDUSTRY

Iron oxide in ceramic raw materials can cause black cores during firing, leading to visual defects. In this study, chemically bonded phosphate ceramics were made using iron oxide as an oxide source and phosphoric acid as a phosphate source. The results showed that the manufacture of chemically bonded phosphate ceramics can be done from ceramic industry waste. Mechanical properties test results show that chemically bonded phosphate ceramics with a ratio of 1:1 have the highest flexural strength and density, while porosity and water absorption are the lowest. XRD results show the presence of iron phosphate dihydrate and iron phosphate crystals. SEM results show that the morphology of chemically bonded phosphate ceramics with a 1:1 ratio has smaller pores.

Keywords: *chemically bonded phosphate ceramics; iron oxide; phosphoric acid; ratio; mechanical properties.*

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