

ABSTRAK

Pengaruh Komposisi Bahan Baku dan Konsentrasi NaOH terhadap Karakteristik Silika Gel dari Sekam Padi (*Oryza sativa L*) dan Ampas Tebu (*Saccharum officinarum L*) sebagai Penyerapan Kelembaban Udara

Attailah Israf Satir, 2026, 43 Halaman, 4 Tabel, 10 Gambar, 4 Lampiran

Limbah sekam padi dan ampas tebu berpotensi dimanfaatkan sebagai sumber silika untuk pembuatan silika gel yang bernilai guna dan ramah lingkungan. Penelitian ini bertujuan mengetahui pengaruh variasi konsentrasi NaOH terhadap karakteristik silika gel yang dihasilkan dari abu sekam padi dan abu ampas tebu. Karakteristik yang dianalisis meliputi rendemen, kadar air, daya serap, dan struktur kristal menggunakan *XRD*. Hasil penelitian menunjukkan bahwa silika gel berbasis abu sekam padi menghasilkan karakteristik terbaik dengan rendemen tertinggi 41,07%, kadar air terendah 3,99%, dan daya serap tertinggi 37,31%. Berdasarkan standar Japanese Industrial Standards (JIS) Z 0701:1977, nilai kadar air yang diperoleh masih berada di atas batas maksimum 2,5%, sedangkan daya serap masih berada di bawah standar minimum penyerapan kadar air sebesar 41%. Berdasarkan keseluruhan parameter, konsentrasi NaOH 2 N merupakan kondisi optimum untuk menghasilkan silika gel dengan kualitas terbaik.

Kata kunci: silika gel, sekam padi, ampas tebu, NaOH.

ABSTRACT

Effect of Raw Material Composition and NaOH Concentration on the Characteristics of Silica Gel from Rice Husk (*Oryza sativa* L) and Sugarcane Bagasse (*Saccharum officinarum* L) as an Air Humidity Adsorbent

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Rice husk and sugarcane bagasse waste have the potential to be utilized as silica sources for producing environmentally friendly and value-added silica gel. This study aimed to determine the effect of NaOH concentration variation on the characteristics of silica gel synthesized from rice husk ash and sugarcane bagasse ash. The characteristics analyzed included yield, moisture content, adsorption capacity, and crystal structure using X-Ray Diffraction (XRD). The results showed that silica gel synthesized from rice husk ash exhibited the best characteristics, with the highest yield of 41.07%, the lowest moisture content of 3.99%, and the highest adsorption capacity of 37.31%. Based on the Japanese Industrial Standards (JIS) Z 0701:1977, the moisture content obtained exceeded the maximum allowable limit of 2.5%, while the adsorption capacity was below the minimum water adsorption standard of 41%. Overall, a NaOH concentration of 2 N was found to be the optimum condition for producing silica gel with the best quality.

Keywords: silica gel, rice husk, bagasse, NaOH.