

**SOLIDIFIKASI LIMBAH INDUSTRI MONOSODIUM GLUTAMAT MELALUI  
KARBONISASI HIDROTERMAL SEBAGAI PENJERAP NITROGEN, FOSFOR, DAN  
KALIUM**

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**INTISARI**

Penelitian mengenai solidifikasi limbah industri monosodium glutamat (MSG) melalui karbonisasi hidrotermal sebagai penjerap nitrogen (N), fosfor (P), dan kalium (K) telah dilakukan. Penelitian ini bertujuan untuk solidifikasi limbah *glutamic mother* (GM) dari limbah industri MSG menggunakan metode *hydrothermal carbonization* (HTC) dan mengkarakterisasi padatan GM tersebut menggunakan spektroskopi FTIR, serta menentukan kadar total N, P, K dalam padatan GM tersebut. Padatan GM dicapai melalui pemanasan limbah GM pada suhu 170 dan 175 °C menggunakan metode HTC hingga diperoleh produk berupa padatan dan cairan. Produk tersebut kemudian dipisahkan dengan vakum dan diamati kestabilan massanya selama 24 jam. Total nitrogen dalam padatan GM ditentukan dengan metode Kjeldahl, kadar fosfor diukur menggunakan spektrofotometri UV-Vis, dan kadar kalium diukur menggunakan spektroskopi serapan atom (SSA).

Hasil karakterisasi menggunakan spektrofotometer FTIR menunjukkan bahwa padatan GM merupakan produk *hydrochar* yang memiliki karakteristik sama seperti humus Hayes. Pada penelitian ini perlakuan HTC 170 °C merupakan suhu yang lebih baik daripada 175 °C dan memiliki 5,96 %b/b total nitrogen, 0,08 %b/b fosfor, dan 1,38 %b/b kalium sehingga dapat digunakan sebagai penjerap N, P, dan K.

Kata kunci : solidifikasi, limbah industri monosodium glutamat, kalium, fosfor, nitrogen.

**SOLIDIFICATION OF MONOSODIUM GLUTAMATE INDUSTRIAL WASTE  
THROUGH HYDROTHERMAL CARBONIZATION AS NITROGEN, PHOSPHORUS,  
AND POTASSIUM SEQUESTRATION**

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**ABSTRACT**

Solidification of monosodium glutamate (MSG) industrial waste through hydrothermal carbonization as nitrogen (N), phosphorus (P), and potassium (K) sequestration has been carried out. The research aimed to solidify glutamic mother (GM) waste from MSG industrial waste using hydrothermal carbonization (HTC) method, to characterize the GM solids using spectrophotometry FTIR, and to determine the total N, P, K within GM solids. GM solids were obtained by heating a mixture of GM waste at temperature of 170 and 175 °C until a solid and liquid resulted. Afterward, the product was separated by vacuum and the stability of its mass was observed for 24 hours. Total nitrogen of GM solids was determined by Kjeldahl method, the concentration of phosphorus by spectrophotometry UV-Vis, and the concentration of potassium by atomic absorption spectroscopy (AAS).

Characterization by spectrophotometry FTIR showed that GM solids was a hydrochar product that had the same characteristics as a Hayes humus. In this research, HTC 170 °C was better than 175 °C and had 5.96 %w/w nitrogen, 0.08 %w/w phosphorus, and 1.38 %w/w potassium which can be used as N, P, and K sequestration.

Keywords : solidification, monosodium glutamate industrial waste, potassium, phosphorus, nitrogen.