

## **AWTER (*Ammonia Water Filter*): Pembuatan Granulated Active Carbon dari Limbah Tulang Ikan dengan Varian Perendaman CaCl<sub>2</sub> sebagai Biofilter Ammonia Air Limbah Pencucian Ikan**

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### **ABSTRAK**

Permasalahan limbah ikan menjadi penting dan unik untuk diatasi, terlebih bilamana cara mengatasinya adalah dengan mengolah limbah untuk limbah. Penelitian ini akan memanfaatkan dua limbah dari ikan, yaitu *pertama* mulai dari limbah tulang ikan sebagai material pembuatan arang aktif berbentuk granul atau GAC dan *kedua* upaya menekan air cemaran dari proses pencucian ikan (limbah pencucian ikan) di TPI, sehingga dapat mengurangi kuantitas limbah dari sektor perikanan di Lamongan. Penelitian akan terfokus memanfaatkan tulang ikan sebagai material pembuatan *Granulated Active Carbon* (GAC) dengan varian perendaman CaCl<sub>2</sub>, kemudian perbedaan varian perendaman CaCl<sub>2</sub> tersebut akan dianalisis berdasarkan morfologi dan karakterisasi melalui FTIR, XRD dan SEM, dan tahapan terakhir adalah pembuktian bahwa *Granulated Active Carbon* (GAC) mampu sebagai biofilter melalui pemeriksaan kadar ammonium (NH<sub>3</sub>), COD, dan BOD. Penelitian melakukan eksperimen dengan varian perendaman CaCl<sub>2</sub> saat pembuatan *Granulated Active Carbon* (GAC) dari tulang ikan, di mana varian tersebut adalah 1M, 2M dan 3M. Hasil penelitian menunjukkan bahwa limbah tulang ikan dapat dimanfaatkan sebagai material organik pembuatan *Granulated Active Carbon* (GAC). Hasil analisis perbedaan varian perendaman CaCl<sub>2</sub> menunjukkan GAC Optimum adalah dengan pemberian CaCl<sub>2</sub> sebanyak 1M dinilai lebih optimum sebab mampu mereduksi kadar ammonium (NH<sub>3</sub>) hingga penurunan sebesar 83,66 mg/l atau hingga 98,9% dari kondisi awal.

***Kata Kunci: Tulang Ikan, Granulated, Arang Aktif, Ammonia***

## **AWTER (Ammonia Water Filter): Making Granulated Active Carbon from Fish Bone Waste with CaCl<sub>2</sub> Soaking Variant as Ammonia Biofilter for Fish Washing Wastewater**

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### **ABSTRACT**

The problem of fish waste is important and unique to overcome, especially if the way to overcome it is by processing waste for waste. This study will utilize two wastes from fish, namely first starting from fish bone waste as a material for making granular activated carbon or GAC and second efforts to reduce contaminated water from the fish washing process (fish washing waste) at the TPI, so that it can reduce the quantity of waste from the fisheries sector in Lamongan. The study will focus on utilizing fish bones as a material for making Granulated Active Carbon (GAC) with a CaCl<sub>2</sub> immersion variant, then the differences in the CaCl<sub>2</sub> immersion variants will be analyzed based on morphology and characterization through FTIR, XRD and SEM, and the last stage is proof that Granulated Active Carbon (GAC) is capable of being a biofilter through examination of ammonium (NH<sub>3</sub>), COD, and BOD levels. The study conducted experiments with CaCl<sub>2</sub> immersion variants when making Granulated Active Carbon (GAC) from fish bones, where the variants are 1M, 2M and 3M. The results of the study showed that fish bone waste can be used as an organic material for making Granulated Active Carbon (GAC). The results of the analysis of the differences in CaCl<sub>2</sub> soaking variants showed that Optimum GAC with the provision of 1M CaCl<sub>2</sub> was considered more optimal because it was able to reduce ammonium (NH<sub>3</sub>) levels by up to 83.66 mg/l or up to 98.9% of the initial condition.

***Keywords: Fish Bone, Granulated, Activated Charcoal, Ammonia***



