# PEMANFAATAN LIMBAH SABUT KELAPA (*Cocos* sp.) SEBAGAI BAHAN BAKU PEMBUATAN ARANG AKTIF

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## INTISARI

Sabut kelapa adalah salah satu bahan baku yang mempunyai potensi cukup besar untuk dimanfaatkan dalam pembuatan arang aktif di Indonesia. Penelitian ini bertujuan untuk mengetahui pengaruh suhu aktivasi, lama aktivasi, dan interaksi antara suhu dan lama aktivasi terhadap kualitas arang aktif dari sabut kelapa (*Cocos* sp.). Arang aktif dengan kualitas terbaik akan diaplikasikan dalam penjernihan air sumur.

Penelitian dilakukan dengan mengarangkan sabut kelapa dalam *retort* listrik pada suhu 400°C selama 2 jam. Arang kemudian diaktivasi secara *thermal* yaitu dengan dipanaskan pada suhu 800°C dan 900°C selama 30 menit, 60 menit, dan 90 menit. Nilai rata-rata dianalisis dengan analisis varians dan apabila berbeda diuji lanjut dengan HSD.

Penelitian arang aktif sabut kelapa (*Cocos* sp.) menghasilkan kisaran rendemen antara 76,788%-84,139%, kadar air 1,884%-3,208%, kadar zat mudah menguap 6,090%-9,120%, kadar abu 12,850%-14,460%, kadar karbon terikat 76,840%-80,140%, daya serap terhadap uap benzena 9,896%-12,906%, daya serap terhadap iodium 881,280 mg/g-1.386,720 mg/g, dan daya serap terhadap metilen biru 124,440 mg/g-126,230 mg/g. Nilai kadar air, kadar abu, daya serap terhadap iodium, dan daya serap terhadap metilen biru memenuhi SNI 06-3730-1995. Interaksi antara kedua faktor memberikan pengaruh yang sangat nyata terhadap rendemen, kadar zat mudah menguap, kadar abu, kadar karbon terikat, daya serap terhadap benzena, dan daya serap terhadap metilen biru. Interaksi antara kedua faktor tidak berpengaruh nyata terhadap kadar air dan daya serap terhadap iodium. Arang aktif dengan kualitas tertinggi diperoleh dari suhu aktivasi 800°C dan lama aktivasi 90 menit kemudian diaplikasikan untuk peningkatan kualitas air sumur yang tercemar dan menghasilkan penurunan warna 60%, kekeruhan 27,27%, kadar besi 0%, kadar mangan 66,67%, kesadahan 26,09%, serta kenaikan pH sebesar 28,57%. Kualitas air sumur yang dihasilkan sudah memenuhi kriteria sebagai air bersih menurut standar baku mutu No. 416/Menkes/Per/IX/1990.

**Kata kunci : Arang aktif, sabut kelapa, *Cocos* sp., suhu aktivasi, lama aktivasi, air sumur**

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# EXPLOITING OF COCONUT COIR ( *Cocos* sp.) WASTE PERMANENT UPON WHICH ACTIVE CARBON MAKING

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## ABSTRACT

Coconut coir is one of raw material having big enough potency to be exploited in active carbon making in Indonesia. This research aimed to know the influence of activation temperature, activation length, and interaction between temperature and activation length to active carbon quality from coconut coir (*Cocos* Sp.). Active carbon with the best quality application will be applied in wheel water purification.

Research was conducted with the charcoal of coconut coir in electrical retort at 400°C for 2 hours. And then activation by thermal ways at 800°C and 900°C during 30 minutes, 60 minutes, and 90 minutes. The average value was analyzed with the analysis variance and significantly difference tested by HSD test

The result of coconut coir (*Cocos* Sp.) active carbon showed that the yield was respectively among 76.788%-84.139%, moisture content 1.884%-3.208%, volatile matter 6.090%-9.120%, ash content 12.850%-14.460%, fixed carbon 76.840%-80.140%, absorption to benzene 9.896%-12.906%, absorption to iodium 881.280 mg/g-1386.720 mg/g, and absorption to blue metilen 124.440 mg/g-126.230 mg/g. Assess the moisture content, ash content, absorption to iodium, and absorption to blue metilen fulfill the SNI 06-3730-1995. Its interaction gave highly significant influence to yield, volatile content, ash content, fixed carbon, absorption to benzene, and absorption to blue metilen. Its interaction did not have highly effect to moisture content and absorption to iodium. Active carbon with the highest quality obtained from activation temperature 800°C for 90 minutes, and the application to the make-up of quality irrigate the well which contamined and reducing of colour 60%, turbidity 27.27%, iron content 0%, manganese content 66.67%, hardness of water 26.09%, and also increase pH 28.57%. Quality well water have fulfilled criterion as clean water according to permanent standard quality No. 416/Menkes/Per/IX/1990.

**Keywords : Active carbon, coconut coir, *Cocos* sp., temperature activation, time activation, well water**

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