

## EFEKTIVITAS MEDIA FILTER SILIKA, KARBON, ZEOLIT DAN KOMBINASINYA DALAM MENURUNKAN KADAR Fe AIR TANAH

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Air adalah materi yang sangat penting dalam kehidupan. Air harus memenuhi persyaratan kualitatif maupun kuantitatif. Kandungan Fe yang tinggi dapat mengganggu kesehatan. Pada studi pendahuluan pemeriksaan air tanah tanggal 25 November 2007 Perumahan Kutilang Sari Blok A 411 sebesar 7,61 mg/l yang melebihi standar persyaratan kualitas sehingga perlu pengolahan apabila akan digunakan. Tujuan penelitian ini untuk mengetahui efektivitas media filter silika, karbon, zeolit dan kombinasinya dalam menurunkan kadar Fe air tanah. Jenis penelitian yang digunakan adalah eksperimen murni. Populasinya adalah air tanah yang mengandung kadar Fe di atas standar persyaratan kualitas dengan ditandai bau amis dan berwarna kuning kecoklatan di Perumahan Kutilang Sari Blok A 411 Ungaran. Bahan dan cara pemeriksaan air menggunakan metode fenantrolin dengan enam kali pengulangan. Hasil penelitian untuk media filter silika 0,145mg/l, media filter karbon 0,456 mg/l, media filter zeolit 0,174 mg/l, media filter kombinasi 0,123 mg/l dan kontrol sebesar 9,481 mg/l. Efektivitas media filter didapatkan paling banyak menurunkan kadar Fe adalah media kombinasi 99,25%, media silika 98,99%, media zeolit 98,52% dan terendah media karbon 96,25%. Media silika berfungsi menghilangkan bakteri, bau, rasa, warna dan besi. Media carbon berfungsi menghilangkan zat organik, bau, rasa, polutan mikro dan menjernihkan air. Media zeolit berfungsi mengikat ion bebas di air. Nilai signifikan untuk Fe nilai (p)  $0,242 > 0,05$  sehingga tidak ada perbedaan efektivitas media filter terhadap penurunan kadar Fe. Hasil media afilter paling banyak menurunkan kadar fe dengan biaya paling murah adalah media kombinasi, sehingga peneliti menyarankan kepada masyarakat Perumahan Kutilang Sari untuk menggunakan penyaringan air dengan media kombinasi.

**Kata Kunci:** media filter, silika, karbon, zeolit, penurunan kada Fe

*THE EFFECTIVENESS OF SILICA FILTER MEDIA, CARBON, ZEOLITE AND THEIR COMBINATION IN REDUCING Fe DEGREE ON THE GROUND WATER*

*Water was very important for our life. It must have good qualitative condition. Water that contains too many Fe was not good for human health. Based on the test that was conducted on November 25, 2007 in Kutilang Sari Housing block A no 411 the ground water contain 7,61 mg/l of Fe that this amount was higher than the standard. The purpose of the research was to know the effectiveness of the filter media of silica, carbon, zeolite and their combination in reducing the amount of Fe on the ground water. The method of the research was true experiment. The population was the ground water that contain higher standard of Fe that found in Kutilang Sari block A No 411 Ungaran. The high amount of Fe in the ground water can be recognized by the purid smell and the yellow brownish colour. In testing the water, fenatrolin method was being used until six times repetition. The result of the research of each filter media in reducing the amount of Fe in the ground water area silica media 0,145 mg/l, carbon filter media 0,456 mg/l, zeolite filter media 0,174 mg/l, combination filter media 0,123 mg/l and control as much 9,481 mg/l. The Effectiveness result of combination filter was 99,25%, silica filter media was 98,99%, zeolite filter media 98,52% and carbon filter media as the lowest was 96,87%. Silica filter media function as reducing bacteria, the taste, the smell, color and iron. Carbon filter media function as reducing the organic material, the taste, the smell, the micro pollutant and purifying water. Zeolite filter media function as binding the free ion in the water. From the result of the research, p value was  $0,242 > 0,05$  so there was no significant difference of effectivity among the filters. But if compared with all filter, their combination filter media was the best as all. It was not just the most effective filter in reducing the amount of Fe in ground water but also cheap. From that point of view it was suggested to the society in Kutilang Sari Housing block A to use their combination filter media as the ground water filter.*

*Keyword : filter media, silica, carbon, zeolite, reduction of Fe degree*