

**COMPARISON OF FILTER A AND FILTER B IN REDUCING WATER
HARDNESS OF DUG WELLS IN DAHROMO II HAMLET,
SEGOROYOSO, PLERET, BANTUL IN 2025**

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ABSTRACT

Background : Water hardness is a chemical parameter that affects water quality. High levels of calcium (Ca^{2+}) and magnesium (Mg^{2+}) ions can lead to scale buildup on household appliances and increase health risks such as kidney stones. Dahromo II Hamlet in Segoroyoso, Pleret, Bantul, is located in a karst area and has groundwater with high hardness levels.

Purpose : This study aims to compare the effectiveness of Filter and Filter B in reducing the hardness of well water.

Methods : The research is an experimental study using a pre-test and post-test design. Water samples were tested before and after filtration through both filters. Data were analyzed descriptively and using an Independent Sample T-Test to determine the significance of differences between the two filters.

Result : The average initial water hardness was 247.92 mg/L. After filtration, the hardness decreased to 12.39 mg/L using Filter A and 9.51 mg/L using Filter B. The respective reductions were 95% and 96.17%. However, statistical analysis showed no significant difference between Filter A and Filter B.

Conclusion : Both filters were effective in reducing water hardness to the soft water category and can be recommended as practical treatment methods for communities in areas with high water hardness.

Keywords : Water hardness, filtration, activated charcoal, resin, zeolite, dug well, hard water

**PERBANDINGAN FILTER A DAN FILTER B DALAM MENURUNKAN
KESADAHAN AIR SUMUR GALI DI DUSUN DAHROMO II,
SEGOROYOSO, PLERET, BANTUL TAHUN 2025**

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ABSTRAK

Latar Belakang : Kesadahan air merupakan salah satu parameter kimia yang memengaruhi kualitas air bersih. Kandungan ion kalsium (Ca^{2+}) dan magnesium (Mg^{2+}) yang tinggi dapat menyebabkan kerak pada peralatan rumah tangga serta berisiko terhadap kesehatan seperti batu ginjal. Dusun Dahromo II, Segoroyoso, Pleret, Bantul merupakan wilayah yang memiliki tingkat kesadahan air sumur gali cukup tinggi karena berada di kawasan karst (kapur).

Tujuan : Membandingkan efektivitas Filter A dan Filter B dalam menurunkan kadar kesadahan air sumur gali.

Metode : Penelitian ini adalah eksperimen dengan desain pre-test dan post-test. Sampel air diuji sebelum dan sesudah proses filtrasi menggunakan kedua jenis filter. Data dianalisis secara deskriptif dan uji *Independent Sample T-Test* untuk mengetahui perbedaan efektivitas kedua filter.

Hasil : Rata-rata kadar kesadahan awal air adalah 247,92 mg/L. Setelah difiltrasi, kadar kesadahan turun menjadi 12,39 mg/L pada Filter A dan 9,51 mg/L pada Filter B. Penurunan kesadahan masing-masing sebesar 95% dan 96,17%. Namun, hasil uji t menunjukkan tidak ada perbedaan signifikan antara Filter A dan Filter B.

Kesimpulan : Kedua jenis filter efektif menurunkan kadar kesadahan hingga mencapai kategori air lunak (soft water), dan dapat dijadikan alternatif pengolahan air oleh masyarakat di wilayah dengan tingkat kesadahan tinggi.

Kata Kunci : Kesadahan air, filtrasi, arang aktif, resin, zeolit, sumur gali, air sadu