

PENGARUH pH LINGKUNGAN TERHADAP KUALITAS SEMENTASI LIMBAH RADIOAKTIF ⁹⁰Sr YANG DIPERKUAT SERAT ALAMI

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Untuk memenuhi sebagian persyaratan untuk memperoleh derajat
sarjana S-1 Program Studi Teknik Nuklir

INTISARI

Limbah baik yang bersifat radioaktif maupun tidak apabila tidak dikelola dengan baik maka dapat menimbulkan kerugian bagi manusia maupun lingkungan hidup. Penelitian ini bertujuan untuk mengetahui efek pH lingkungan terhadap kualitas mortar limbah radioaktif stronsium yang diperkuat serat alami yang meliputi kuat tekan dan densitasnya.

Dalam penelitian ini digunakan semen Portland pozollan dan serat alami berupa serat bambu dan serat kelapa dengan panjang 3 cm dengan konsentrasi 0,50%, kandungan zeolit yang dipakai sebesar 13% dari volume semen zeolit, faktor air semen 0,3, larutan NaOH dengan pH 8, 9. Semua bahan dicampur dan diperam selama 28 hari, setelah dikeluarkan dari cetakan direndam di dalam larutan NaOH, kemudian dilakukan uji tekan.

Dari penelitian ini didapat nilai kuat tekan mortar tanpa perendaman sebesar $14,563 \pm 0,990 \text{ N.mm}^{-2}$ untuk mortar bambu dan $29,160 \pm 0,918 \text{ N.mm}^{-2}$ untuk mortar kelapa. Nilai kuat tekan mortar yang direndam larutan NaOH untuk mortar bambu $23,970 \pm 0,592 \text{ N.mm}^{-2}$ untuk pH 8 dan $34,076 \pm 3,709 \text{ N.mm}^{-2}$ untuk pH 9, sedangkan untuk mortar kelapa nilai kuat tekan sebesar $31,960 \pm 4,022 \text{ N.mm}^{-2}$ untuk pH 8 dan $26,101 \pm 0,301 \text{ N.mm}^{-2}$ untuk pH 9. Densitas mortar tidak berpengaruh pada nilai kuat tekan.

Kata Kunci : kuat tekan, densitas, stronsium, serta bambu, serat kelapa, pH

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**EFFECT OF ENVIRONMENTAL pH ON QUALITY OF RADIOACTIVE
WASTE CEMENTATION ⁹⁰Sr STRENGTHENED THE NATURAL FIBER**

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Submitted to the Department of Nuclear Engineering and Engineering Physics

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in partial fulfillment of the Degree of

Bachelor of Engineering in Nuclear Engineering

ABSTRACT

The waste, either radioactive waste or non-radioactive waste, if they did not manage properly, it can cause a various losses to humans and the environment. This study aims to determine the effect of environmental pH on the quality of natural fiber strengthened radioactive strontium mortar waste which include compressive strength and density.

In this study, Pozollan portland cement and natural fibers were used which they were a bamboo fiber and a coconut fiber with a length was 3 cm at a concentration of 0.50%, the content of zeolite was used by 13% of the zeolite cement volume, cement water factor was 0.3, a solution of NaOH with a pH 8 and 9. All the ingredients were mixed and brooded for 28 days, then the ingredients were pressured test after being removed from the mold which soaked in a solution of NaOH.

From this research were obtained the compressive strength of non-soaked mortar were $14.563 \pm 0.990 \text{ N.mm}^{-2}$ for bamboo mortar and $29.160 \pm 0.918 \text{ N.mm}^{-2}$ for coconut mortar. The compressive strength of a soaked bamboo mortar on NaOH solution were $23.970 \pm 0.592 \text{ N.mm}^{-2}$ at pH 8 and $34.076 \pm 3.709 \text{ N.mm}^{-2}$ at pH 9, while the compressive strength of a soaked coconut mortar value on NaOH solution were $31.960 \pm 4.022 \text{ N.mm}^{-2}$ at pH 8 and $26.101 \pm 0.301 \text{ N.mm}^{-2}$ at pH 9. The density of mortar had no effect on the compressive strength.

Keywords : compressive strength, density, strontium, bamboo fiber, coconut fiber, pH

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