

ABSTRAK

Tanah merupakan tempat berdirinya berbagai macam jenis konstruksi dan struktur. Sifat-sifat buruk tanah seperti nilai indeks plastisitas tinggi, potensi kembang susut yang tinggi, dan kuat geser yang rendah menjadi permasalahan yang dihadapi. Untuk mengetahui nilai kembang susut tanah dilakukan 2 tahap pengujian yaitu pengujian sifat fisis dan sifat mekanis tanah serta distabilisasikan dengan bahan *additive* berupa kapur 4% dan Matos *soil stabilizer* 2%, 4% dan 8%. Hasil penelitian tanah Capkala dengan nilai berat jenis sebesar 2,568, nilai batas cair sebesar 51,444%, nilai batas plastis sebesar 29,507%, dan nilai IP sebesar 21,937%. Kemudian berdasarkan pengujian hidrometer dan analisa saringan menunjukkan bahwa menurut klasifikasi AASHTO tanah Capkala termasuk dalam A-7-6 yaitu tanah lempung sedangkan menurut klasifikasi USCS termasuk golongan MH yaitu lanau anorganik atau pasir halus dan menurut klasifikasi USDA termasuk lempung berlanau. Dari hasil pengujian *swelling pressure* tanah *disturbed* sebesar 2,427 Kg/cm² dan termasuk dalam *swelling potential low* sedangkan dengan campuran *bentonite* 40% didapatkan hasil *swelling pressure* sebesar 4,133 Kg/cm² yang termasuk dalam *swelling potential high*. Sedangkan pengaruh penambahan Matos *soil stabilizer* terhadap tanah *disturbed* yang dimodifikasi dengan *bentonite* 40% dan Matos pada pengujian *swelling pressure* mengakibatkan tanah termasuk dalam *swelling potential medium*. Dari hasil *free swelling index* (FSI) tanah *disturbed* didapatkan nilai sebesar 26,667% yang memiliki kategori derajat pengembangan sedang. Pengaruh penambahan *bentonite* 40% pada tanah *disturbed* mengakibatkan kenaikan 45,455% dengan kategori derajat pengembangan tinggi. Sedangkan pengaruh penambahan Matos *soil stabilizer* terhadap tanah *disturbed* yang dimodifikasi dengan *bentonite* 40% pada pengujian *free swelling index* mengakibatkan tanah termasuk dalam kategori derajat pengembangan sedang.

Keywords: **Kapur, Lempung, Matos, Stabilisasi, Swelling**

ABSTRACT

Soil is a place where various types of construction and structures can be found. Bad soil properties such as high plasticity index values, high potential for swelling and shrinkage, and low shear strength are the problems encountered. To find out the swelling and shrinkage value of the soil, 2 stages of testing were carried out, namely testing the physical and mechanical properties of the soil and stabilizing it with additives in the form of 4% lime and 2%, 4% and 8% Matos soil stabilizer. The results of research on Capkala soil with a specific gravity value of 2.568, a liquid limit value of 51.444%, a plastic limit value of 29.507%, and an IP value of 21.937%. Then, based on hydrometer testing and sieving analysis, it shows that according to the AASHTO classification, Capkala soil is included in A-7-6, namely clay soil, while according to the USCS classification, it is included in the MH group, namely inorganic silt or fine sand, and according to the USDA classification, it includes silty clay. From the results of the disturbed soil swelling pressure test of 2.427 Kg/cm² and included in the swelling potential low, while the 40% bentonite mixture obtained a swelling pressure result of 4.133 Kg/cm² which was included in the swelling potential high. Meanwhile, the effect of adding Matos soil stabilizer to disturbed soil modified with 40% bentonite and Matos in the swelling pressure test resulted in the soil being included in the swelling potential medium. From the results of the disturbed soil free swelling index (FSI) a value of 26.667% was obtained which has a moderate degree of development category. The effect of adding 40% bentonite to disturbed soil resulted in an increase of 45.455% in the category of high degree of development. Meanwhile, the effect of adding Matos soil stabilizer to disturbed soil modified with 40% bentonite in the free swelling index test resulted in the soil being included in the category of moderate degree of development.

Keywords: Clay, Lime, Matos Stabilization, Swelling