

SARI

Daerah penelitian terletak di Desa Kalirejo dan sekitarnya, Kabupaten Kulon Progo dan Purworejo. Penelitian ini bertujuan untuk mengetahui karakteristik alterasi hidrotermal serta pengaruhnya terhadap sifat keteknikan batuan dan kestabilan lereng di daerah penelitian. Penelitian dilakukan melalui pengamatan langsung di lapangan dan ditunjang dengan analisis laboratorium seperti analisis petrografi, *X-ray diffraction (XRD)*, dan sifat keteknikan batuan. Hasil penelitian menunjukkan daerah penelitian memiliki karakteristik berupa tipe alterasi argilik dan propilitik dengan intensitas alterasi lemah, sedang, dan tinggi. Tipe alterasi argilik memiliki karakteristik keteknikan batuan berupa kandungan material berukuran butir halus, densitas total, berat jenis total, porositas, rasio pori, *specific gravity*, kandungan air, derajat kejenuhan, dan indeks plastisitas yang lebih tinggi, serta nilai sudut geser dalam dan kohesi yang lebih rendah bila dibandingkan dengan tipe alterasi propilitik. Nilai berat jenis kering dan densitas kering tidak menunjukkan kecenderungan tertentu. Nilai kandungan material berukuran halus, sudut geser dalam, dan indeks plastisitas semakin besar, sedangkan nilai *specific gravity* semakin kecil seiring dengan peningkatan intensitas alterasi hidrotermal. Untuk nilai porositas, kohesi, kandungan air, derajat kejenuhan, rasio pori, densitas total, berat jenis total, densitas kering, dan berat jenis kering sampel batuan tidak menunjukkan pola tertentu, tetapi pada intensitas lemah dan intensitas tinggi tipe alterasi argilik memiliki nilai yang lebih besar dibandingkan intensitas sedang tipe alterasi propilitik. 3. Hasil pengujian kestabilan lereng pada daerah penelitian (kondisi pengujian: kemiringan lereng 20-30° (Curam), ketebalan material hasil pelapukan tinggi hingga sempurna 2-7m untuk alterasi argilik dan 1-3m untuk alterasi propilitik, dan kualitas massa batuan sangat buruk hingga baik) menunjukkan semakin tinggi intensitas alterasi hidrotermal maka potensi terjadinya keruntuhan lereng semakin lebih besar. Tipe alterasi argilik memiliki potensi yang lebih besar untuk terjadinya keruntuhan lereng dibandingkan tipe alterasi propilitik.

Kata kunci: alterasi hidrotermal, sifat keteknikan batuan, Kalirejo, kestabilan lereng.

ABSTRACT

The study area is located in the Kalirejo Village and surrounding areas, Kulon Progo and Purworejo districts. This study aims to determine the characteristics of hydrothermal alteration and its effect on the characteristics of engineering properties of rock and slope stability in the study area. Research is done through direct observation in the field and supported by laboratory analysis such as petrographic analysis, X-ray diffraction (XRD), and engineering properties of rocks. The result of this research shows that the study area has characteristic of argillic and propylitic alteration type with weak, medium, and high alteration intensity. Argillic alteration type has characteristics of engineering properties such as fine grain size, total density, total specific weight, porosity, pore ratio, specific gravity, water content, degree of saturation, and plasticity index is higher, and friction angle and cohesion is lower when compared with propylitic alteration types. The value of dry specific weight and dry density did not show any particular tendency. The content of fine material, friction angle, and plasticity index is greater, while the value of specific gravity is smaller along with the increase of hydrothermal alteration intensity. For porosity values, water content, cohesion, degree of saturation, pore ratio, dry density, dry specific weight, total density, and total specific weight of rock do not show a particular pattern, but at low intensity and high intensity the argillic type of alteration has a greater value than the moderate intensity of propylitic alteration type. Slope stability test results in the study area (test conditions: slope 20-30° (steep) slope, highly to completely weathering material thickness 2-7m for argillic alteration and 1-3m for propylitic alteration, and rock mass quality is very poor to good) shows the higher the intensity of hydrothermal alteration, the potential for slope failure will be greater. Argillic alteration types have greater potential for slope failure compared with propylitic alteration types.

Keywords: *engineering properties of rocks, hydrothermal alteration, Kalirejo, slope stability*