

SARI

Penggunaan pasir alam sebagai salah satu bahan konstruksi semakin meningkat seiring dengan pertumbuhan pembangunan infrastruktur. Pasir alam dijumpai pada berbagai macam tempat pemanfaatan salah satunya sungai. Daerah Istimewa Yogyakarta memiliki banyak sungai yang sudah sejak lama dimanfaatkan untuk pengambilan pasir alam, salah satu sungai tersebut adalah Sungai Oyo. Pengambilan data dilakukan di sepuluh stasiun pengamatan dengan total sepuluh sampel pasir. Pengolahan data dilakukan di laboratorium, yang meliputi analisis data ukuran butir, analisis morfologi pasir, analisis komposisi partikel sedimen serta analisis uji kuat tekan mortar. Hasil analisis menunjukkan bahwa nilai rata-rata ukuran butir berubah dari pasir kasar di bagian hulu yaitu STA 1 menjadi pasir sedang pada STA 8, kemudian berubah kembali menjadi pasir kasar di bagian hilir pada STA 9 dan STA 10. Nilai distribusi ukuran butir (sortasi) didominasi *moderately sorted*, nilai kesimetrian kurva frekuensi (*skewness*) didominasi *very fine skewed* dan nilai kepuncakan kurva frekuensi (kurtosis) didominasi *extremely leptokurtic*. Hal ini menunjukkan bahwa semakin menuju hilir ukuran butir akan semakin menghalus. Bentuk butir pasir pada daerah hulu dan hilir dominan teramati bentuk *oblate* dan *bladed*. Derajat kebolaan (*sphericity*) pada daerah hulu dan hilir dominan pada teramati bentuk *elongate* ke *subequant*. Derajat kebundaran (*roundness*) pada daerah hulu dan hilir dominan teramati bentuk *subangular* ke *subequant*. Pada daerah hulu dan hilir ditemui kehadiran mineral berat yaitu mineral opak seperti mineral magnetit sebanyak 29,76% dan hematit sebanyak 26,08% , mineral meta stabil seperti piroksen sebanyak 6,38% dan amfibol sebanyak 25,1%, dan mineral ringan seperti kuarsa sebanyak 32,8%, feldspar sebanyak 21,8% dan litik fragmen sebanyak 22,1%. Nilai kuat tekan mortar yang tinggi dapat diperoleh dengan nilai rata ukuran (*mean*) berupa pasir kasar, nilai keseragaman butir (sortasi) *Moderately sorted*, nilai kesimetrian kurva frekuensi (*skewness*) *Very fine skewed* dan nilai kepuncakan kurva (kurtosis) *Extremely leptokurtic*. Bentuk butir didominasi *Oblate* dan *Prolate*, Derajat kebolaan (*sphericity*) didominasi oleh bentuk *Elongate* ke *Subequant*, Derajat kebundaran (*roundness*) bentuk *Subangular* ke *Subequant*. Secara mineralogi, kuat tekan mortar tinggi didominasi oleh kehadiran mineral berat yaitu mineral opak seperti magnetit dan hematit, mineral meta stabil seperti piroksen dan amfibol serta mineral ringan kuarsa, feldspar dan litik fragmen.

Kata kunci: Pasir alam, Sungai Oyo, Morfologi Butir, Mineral Berat.

ABSTRACT

The use of natural sand as a construction material is increasing along with the growth of infrastructure development. Natural sand is found in various places, one of which is rivers. Yogyakarta Special Region has many rivers that have long been used for natural sand extraction, one of which is the Oyo River. Data were collected at ten observation stations with a total of ten sand samples. Data processing was carried out in the laboratory, which included grain size data analysis, sand morphology analysis, sediment particle composition analysis and mortar compressive strength test analysis. The results of the analysis show that the average grain size value changes from coarse sand in the upstream part, namely STA 1 to medium sand at STA 8, then changes back to coarse sand downstream at STA 9 and STA 10. The grain size distribution value (sorting) is dominated moderately sorted, the symmetrical value of the frequency curve (skewness) was dominated by very fine skewed and the value of the curve of the frequency (kurtosis) was dominated by extremely leptokurtic. This indicates that the more downstream the grain size is, the finer it will be. The shape of the sand grains in the upstream and downstream areas was oblate and bladed. The degree of sphericity (sphericity) in the upstream and downstream areas was dominant in the elongate to subequant. The degree of roundness (roundness) in the upstream and downstream dominant area was observed in the form of subangular to subequant. In the upstream and downstream areas, heavy minerals were found, namely opaque minerals such as magnetite as much as 29.76% and hematite as much as 26.08%, metastable minerals such as pyroxene as much as 6.38% and amphibole as much as 25.1%, and light minerals such as quartz as much as 32.8%, feldspar as much as 21.8% and fragmental as much as 22.1%. A high value of mortar compressive strength can be obtained with the average size (mean), value of distribution value (sorting) is moderately sorted, Very fine skewed symmetrical value of the frequency curve (skewness) and Extremely leptokurtic curve punctuality value (kurtosis). Grain form is dominated by Oblate and Prolate, degree of sphericity is dominated by Elongate to Subequant, degree of roundness (roundness) of Subangular to Subequant. Mineralogically, the high compressive strength of mortar is dominated by the presence of heavy minerals, namely opaque minerals such as magnetite and hematite, stable meta minerals such as pyroxene and amphibole as well as light minerals of quartz, feldspar and lytic fragments.

Keywords: Natural sand, Oyo River, Grain Morphology, Heavy Minerals.