

Physical Characteristics of Scoria Clasts from Inierie Volcano, Flores, Eastern Sunda Arc

Agung Harijoko^{1,2}, Esti Handini^{1,2}, Nugroho Imam Setiawan^{1,2},
Kesuma Wahni¹, Gabriella Bunga Naen²

¹*Center for Disaster Studies Universitas Gadjah Mada*
²*Geological Engineering Dept. Universitas Gadjah Mada*
³*Kyushu University*

E-mail: aharijoko@ugm.ac.id

Keywords: Large scale basaltic eruption, Inierie, East Sunda Arc

Abstract

Inierie is a 2245-meter-tall active volcano in the eastern end of Sunda arc which has erupted a range of basalt to basaltic andesite magma compositions. This volcano is situated in the frontal area of Flores Islands and is the highest in the arc section. Geologically, Inierie is located just outside the western rim of a 20 km long N-S and NW-SE Bajawa-Rift zone which yields geothermal potential. We report component analysis and physical characteristics of scoria clasts using petrography, granulometry, and SEM analyses. The scoria clasts are systematically selected from a total of 9.2 meter of fall deposit layers which grouped into at least eight individual units.

Overall, these units have varying degree of sortation, median clast diameter, degree of vesicularity, and morphology. The first five layers (unit A to E) from the bottom are 2-meter-thick in total and consist of relatively thin individual layers. These layers are overlain by at least 2 m thick of pyroclastic density current deposit. Unit F, G, and H are at least 7-meter-thick and each separated by several units of pyroclastic density current deposits. Both median clast diameter and degree of sortation show fluctuation but increasing clast diameter (Md_{ϕ} ranging from ϕ -2,241 to ϕ -1,082) and better sorting degree (σ_{ϕ} ranging from ϕ 0,568 to ϕ 1,361) from bottom to top can be observed. The changing in scoria clast size over time produced by several eruptive events from a single vent may indicate dynamic in intensity of eruptive events. The scoria morphology and interior vesicularity also change over time. Unit A scoria shows highest degree of vesicularity. Other units are showing unrecognized trend in degree of vesicularity. Poorly vesiculated scoria is observed in unit D and H. Vesicles in scoria from unit 5 are distinctly elongated in shape indicating a more intense shearing process in the magma conduit.