

Samples from Öskjuhlíð for TCP-project

**Guðmundur Ómar Friðleifsson,
Hjalti Franzson,
Steinar Þór Guðlaugsson,
Sigurður Sveinn Jónsson**

Greinargerð GÓF-HF-SPG-SSJO-97-06

SAMPLES FROM ÖSKJUHLÍÐ FOR TCP-PROJECT

Several samples were collected from late Pleistocene olivine tholeite shield lavas in Öskuhlíð in Reykjavík. The lavas are partly infilled by light coloured opaline silica of some sort, resulted from could groundwater percolation in glacial time. Some samples appear quite fresh and with little or no infilling into vesicles, while lava vesicles in other samples are partly or wholly filled by this low-T precipitate. This may affect the grain density of the rock as well as the porosity-permeability relationship in the samples which needs evaluation. Thinsections are not ready yet, but the problem can be dealt with on a semi-quantitative basis by thinsection studies.

The samples were all collected from the same lava sequence, which is composed of 2-3 flow units at sample site, flow units of this sort being a typical feature of shield volcanoes, e.g. neatly exposed in Almannagjá at Thingvellir. The Öskjuhlíð samples are divided in to 9 groups (I-IX).

Group I. 20 samples drilled horizontally into a relatively dense middle of the lavaflow. The cliffwall sampled in the excavated area is facing north (see sketch-map). Samples are oriented paralell to flow banding in the lava, which is visible but poorly developed. The sample numbers in this group are: R-30, R-31, R-32, R-33, R-34, R-35, R-36, R-37, R-38, R-39, R-40, R-41, R-42, R-43, R-44, R-45, R-46, R-47. Porosity calculated from weighted samples R-33, R-34 and R-35 yield 13.7 %, 12.7 % and 13.4 % respectively, with a mean of 13.3 %.

Groups II to V. 37 samples from 4 loose lavablocks below the NE wall of the lava excavation, representing the scoracious part of the lava. The samples are not oriented with respect to the flow direction, and visible pore-intensity varies from block to block..

Group II. Sample numbers from the first lavablock: R-48, R-49, R-50, R-51, R-52, R-53, R-54, R-55, R-56, R-57, R-58. Porosity was calculated for the 3 first and 3 last of these samples (numbers inclined) and yielded a mean value of 33.7 % and 31.3 % respectively.

Group III. Sample numbers: R-59, R-60, R-61, R-62, R-63, R-64, R-64, R-65, R-66, R-67. Calculated mean porosity for 3 of these samples (inclined) is 15.9 %.

Group IV. Sample numbers: R-68, R-69, R-70, R-71, R-72, R-73, R-74, R-75. Calculated mean porosity for the last 3 of these yielded 16.4 %.

Group V. Sample numbers: R-76, R-77, R-78, R-79, R-80, R-81, R-82, R-83, R-84. Calculated mean porosity for the last 3 of these yielded 31.6 %.

Group VI. 22 samples drilled vertically down into the top of the lava flow, above group-I sample site. These samples are oriented perpendicular to flow banding (if such exist at site ?). Sample numbers: R-85, R-86, R-86, R-90, R-91, R-92, R-93, R-94, R-95, R-96, R-97, R-98, R-99, R-101, R-102, R-103, R-104, R-105, R-106. Calculated mean porosity for three of these samples (inclined) is 30.0 %.

Group VII. 10 samples drilled into a dense middle part of the lava at west wall in the excavtion. Sample numbers: R-107, R-108, R-109, R-110, R-111, R-112, R-113, R-114, R-115, R-116. Calculated mean porosity for three of these samples (inclined) is 11.7 %.

Group VIII. 12 samples drilled vertically down into the middle part of the same lavaflow unit as group VII. Sample numbers: *R-117, R-118, R-119, R-120, R-121, R-122, R-123, R-124, R-125, R-126, R-127, R-128, R-129*. Calculated mean porosity for the first 3 of these is 13.3 %.

Group IX. 5 samples drilled vertical down into the flowtop of the lavaunits above the samplesite of groups VII and VIII. Sample numbers: *R-130, R-131, R-132, R-133, R-134*. Calculated mean porosity for the first 3 of these is 23.8 %.