

The report shown in this file states that the examined stone type is suitable for sauna heater stone use. The study was conducted by Geological Survey of Finland.

Studied rock type is used in following Harvia products manufactured by Sauna-Eurox OY that is part of Harvia Group:

- **AC3000** olivine diabase sauna heater stone (5-10 cm diameter)
- **AC3010** olivine diabase sauna heater stone / blanco box (5-10 cm diameter)
 - **AC3020** olivine diabase sauna heater stone (10-15 cm diameter)
 - **AC3050** Elite Pro Heavy Duty sauna heater stone (5-10 cm diameter)
 - **AC3055** Elite Pro Heavy Duty sauna heater stone (10-15 cm diameter)
- **R-991** Rounded olivine diabase sauna heater stone (5-10 cm diameter)
- **R-995** Rounded olivine diabase sauna heater stone (10-15 cm diameter)

A study of sauna stove stones, ODLÄ

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Authors Hannu Kujala		Type of report	
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Title of report A study of sauna stove stones, ODLÄ			
<p>Abstract A study of polished thin section was carried out. On the basis of the mineral composition and ophitic texture the rock type is an olivine diabase. The ophitic texture is very clear. Olivine, pyroxene and opaque grains fill the interstices between prismatic plagioclase crystals. The opaque minerals are mainly oxides (ilmenite and magnetite). Very small sulphide grains (pyrrhotite and chalcopyrite) occurs occasionally.</p> <p>A rock sample from ODLÄ was examined by Työterveyslaitos (Finnish Institute of Occupational Health) for possible asbestos minerals. The sample did not contain any asbestiform minerals. The conclusion of this study is that this rock type is very suitable to be used as sauna stove stones.</p>			
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Samples and the purpose of the study

Sauna-Eurox Oy sent rock samples to the Geological Survey of Finland (GTK) from the ODLÄ quarry in western Finland. The purpose of this study is to test the usability of the rock material as raw material for sauna stove stone production. Research methods were a microscopical study and the examination for possible asbestos minerals.

Macroscopical examination

The rock samples are medium -grained, grey, massive and homogenous. Ophitic texture is clearly visible with plagioclase occurring as 1–3 mm prismatic crystals. No veins or inclusions exist.

Microscopical examination

A study of polished thin section was carried out. The ophitic texture is very clear. Olivine, pyroxene and opaque grains fill the interstices between prismatic plagioclase crystals. Plagioclase has been slightly altered to sericite. Serpentine and chlorite occur as metamorphic minerals on the rims and cracks of olivine. The opaque minerals are mainly oxides (ilmenite and magnetite). Very small sulphide grains (pyrrhotite and chalcopyrite) occurs occasionally. Biotite flakes occur mainly together with opaque minerals. Some small apatite grains were observed.

The modal composition of the rock (point counting, 500 points) is:

plagioclase	56.4 %
olivine	22.6 %
pyroxene	6.8%
opaque minerals	5.6%
biotite	4.6%
sericite	3.2%
serpentine	0.8%
apatite	+
chlorite	+

On the basis of the mineral composition and ophitic texture the rock type is an olivine diabase.

Asbestos minerals

A rock sample from ODLÄ was examined by Työterveyslaitos (Finnish Institute of Occupational Health) for possible asbestos minerals. The sample did not contain any asbestiform minerals. (Report TY-03/hl/1532-2011).

Conclusions

Because of its mineral composition and ophitic texture, the rock has high density and firmness. No harmful minerals were obtained. The conclusion of this study is that this rock type is very suitable to be used as sauna stove stones.