

Peračiški tuf

Peračica tuff

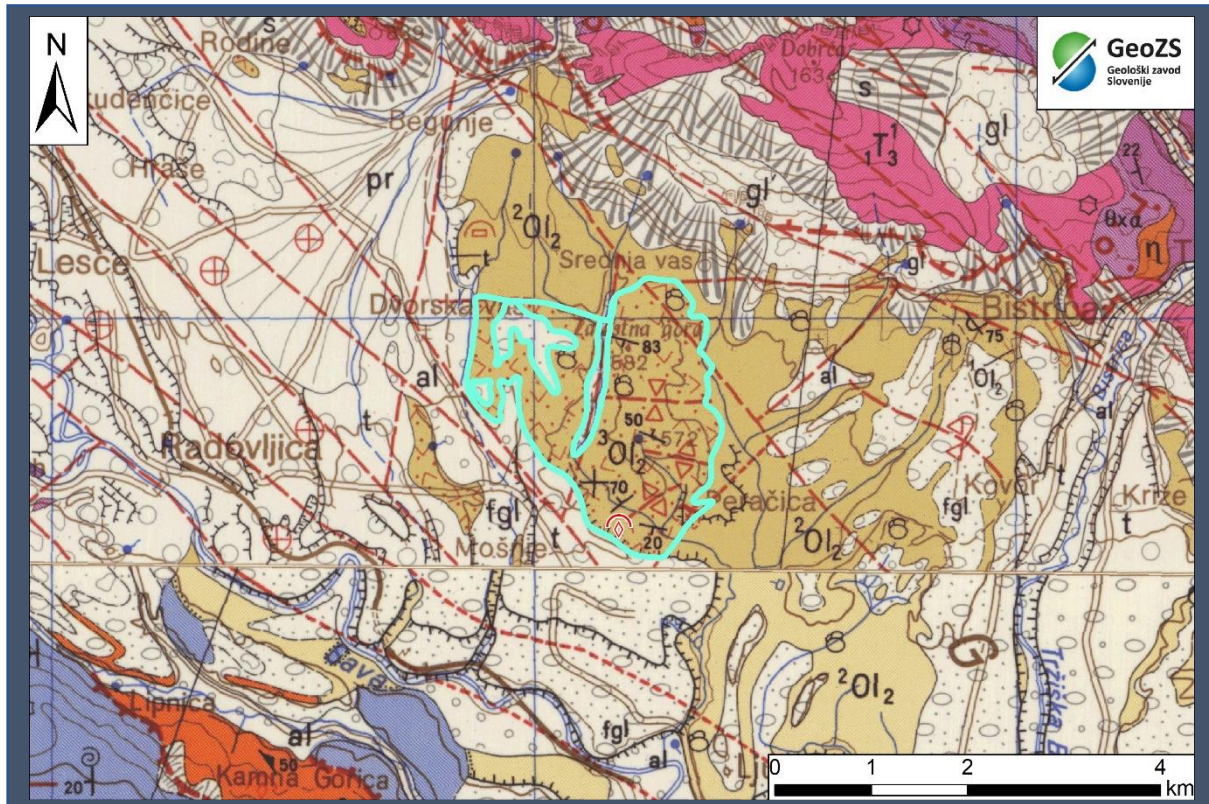


4 cm

Short description: Soft andesitic tuff of green color, in places brown due to carbonatization, easily weathered. It occurs in lapilli-, coarse- and fine-grained varieties. The image shows rough surface.

Commodity (vocabulary)	Lithology (vocabulary)	Typical colour (code list)	Place of origin			
			Country	County / District / Province	Municipality / Community	Place/town / Village
miscellaneous	andesite tuff (pietra verde)	green	Slovenia	Gorenjska (traditional province)	Radovljica	Radovljica

Geological setting



Geology: Pyroclastic andesitic tuff is part of the Oligocene Smrekovec volcanic complex.

Production: No (abandoned quarries: Bogataj, Klinar and Pernuš quarry).

Geological age: Oligocene (25 million years)

Geological unit: Smrekovec volcanic complex of the Pannonian basin geotectonic unit.

Application, use and heritage

Description: Due to the softness of the rock and its colour, tuff was exploited from the Roman times and especially in the 16th century. It is named Peračica tuff after quarries in the valley of Peračica creek near Brezje. It strongly characterises the architecture of the Gorenjska area where it is used mostly for architectural elements, tombstones, portals.

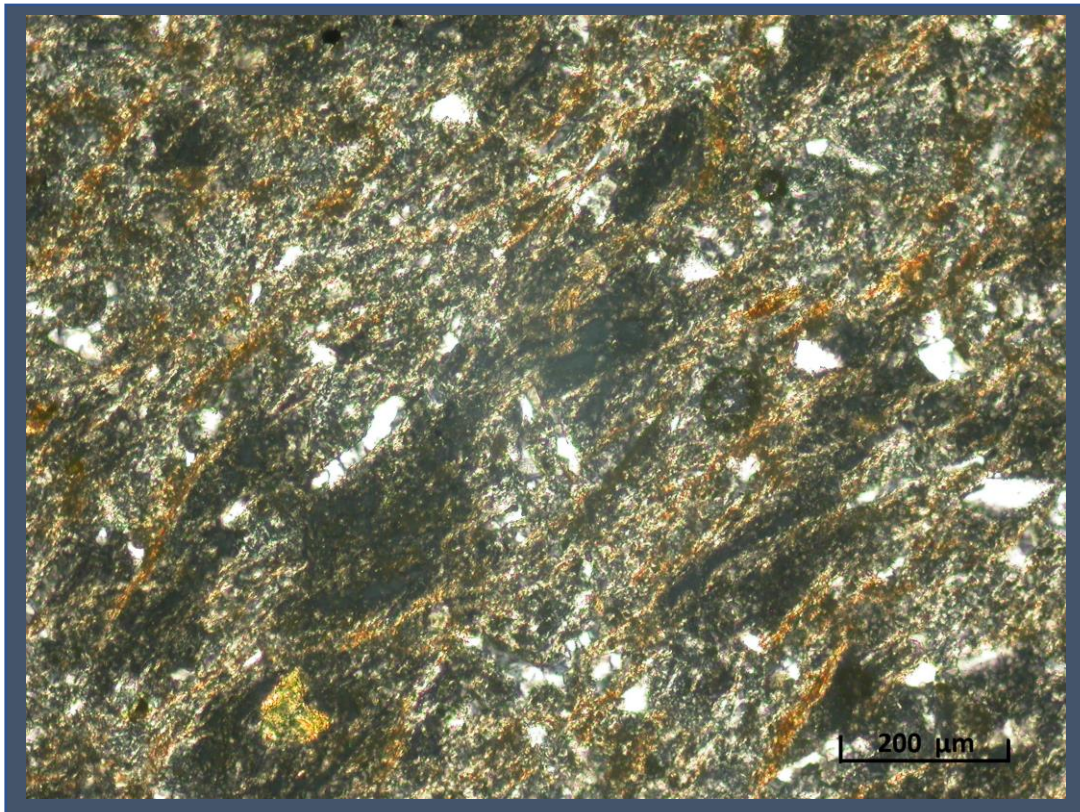


The cladding on the ground floor and the oriel above the entrance of the Neo-Baroque Bamberg house (1907) in Ljubljana are made of green andesitic Peračica tuff.



Country house in Zgornja Besnica with entrance portal, window frames and benches made of Peračica tuff.

Petrography



Description: The rock contains plagioclases, pyroxene, quartz, zeolites, micas and analcime. Green color is from chlorite which substitutes primary biotite. Both, the fine-grained and coarser-grained lapilli tuff occurs. The rock on the figure is intensively ilimonitised. Photo: Mateja Košir

Source of information: Geological Survey of Slovenia, Mirtič et al., 1999, Kralj, P. 2009, Košir, 2011.

Mineral composition

If no accurate number, use MM=main minerals, SM = Subordinate minerals, AM=accessory minerals

Mineral n (%)	Mineral n (%)	Mineral n (%)	Mineral n (%)	Mineral n (%)	Mineral n (%)	Mineral n (%)

Source of information:

Physical properties

Apparent density (EN 1936) kg/m ³	Open porosity (EN 1936) % vol	Water absorption at atmospheric pressure (EN 13755) % wt	Uniaxial Compressive strength (EN 1926) MPa	Flexural strength under concentrated load (EN 12372) MPa

Real density (EN 1936) kg/m ³	Total porosity (EN 1936) % vol	Water absorption coefficient by capillary (EN 1925) (g/m ² x s ^{0,5})	Flexural strength under constant moment (EN 13161) MPa

Frost resistance (EN 12371)				
Technological Test (Test A)				Identification Test (Test B): Number of cycles completed prior to stone failure
Flexural strength (EN 12372) after freeze-thaw cycling, MPa	Number of cycles	Uniaxial compressive strength (EN 1926) after freeze-thaw cycling, MPa	Number of cycles	

Resistance to ageing by thermal shock (EN 14066)			
Change in dynamic modulus of elasticity (increase: +; decrease: -) %	Change in open porosity (increase: +; decrease: -) %	Change in ultrasound pulse velocity (increase: +; decrease: -) %	Change in flexural strength under conc. load (increase: +; decrease: -) %

Abrasion resistance (EN 14157)			Resistance to salt crystallisation (EN 12370)	Breaking load at dowel hole (EN 13364)	
Method A - Wide Wheel Abrasion Test, mm	Method B - Böhme Abrasion Test, cm ³ / 50cm ²	Method C - Amsler Abrasion Test, mm	Change in mass (increase: +; decrease: -), %	Breaking load, N	Thickness of the test specimens, mm

Slip resistance by means of the pendulum tester (EN 14231 / CEN/TS 16165)			Rupture energy (EN 14158), Joule	Thermal Conductivity (EN 1745), W/m·K
Tested surface finish	Slip Resistance Value — SRV			
	Dry test condition	Wet test condition		

Source of information:

Chemical properties

Main elements

SiO ₂ (%)	Al ₂ O ₃ (%)	Fe ₂ O ₃ (%)	TiO ₂ (%)	MgO (%)	CaO (%)	Na ₂ O (%)	K ₂ O (%)	MnO (%)	P ₂ O ₅ (%)	SO ₃ (%)	LOI (%)

Trace elements

V (ppm)	Cr (ppm)	Mn (ppm)	Co (ppm)	Ni (ppm)	Cu (ppm)	Zn (ppm)	As (ppm)
Sr (ppm)	Cd (ppm)	Ba (ppm)	Pb (ppm)	Be (ppm)	Rb (ppm)	Bi (ppm)	U (ppm)
Sc (ppm)	Y (ppm)	Th (ppm)	Sb (ppm)	Ta (ppm)	Nb (ppm)	Zr (ppm)	Sn (ppm)
Ag (ppm)	B (ppm)	Mo (ppm)	W (ppm)	Ga (ppm)	Ge (ppm)	Se (ppm)	Cs (ppm)
Tl (ppm)							

REE

La (ppm)	Ce (ppm)	Pr (ppm)	Nd (ppm)	Sm (ppm)	Eu (ppm)	Gd (ppm)	Tb (ppm)
Dy (ppm)	Ho (ppm)	Er (ppm)	Tm (ppm)	Yb (ppm)	Lu (ppm)		

Methods applied and source of information:

Sources of more information

Type of information	Name of provider	URL
This data sheet		
Non-commercial directory	Geological Survey of Slovenia: Mining Registry Book	https://www.ms.geo-zs.si/en-GB
Commercial directory		
Scientific publication	MIRTIČ, B., MLADENVIČ, A., RAMOVŠ, A., SENEGAČNIK, A., VESEL, J., & VIŽINTIN, N. 1999. Slovenski naravni kamen. Ljubljana, Geological Survey of Slovenia, Slovenian National Building and Civil Engineering Institute, University of Ljubljana Geology department. 131 pg. KRALJ, P. 2009. Tertiary volcanic formations. In: PLENIČAR, M. et al. (Eds.), The Geology of Slovenia. Geološki zavod Slovenije, 503-514. KOŠIR, M. 2011. Izvor piroklastičnih kamnin z arheološkega najdišča Mošnje : diplomsko delo = Provenance of pyroclastic rocks from archaeological site Mošnje Diploma thesis. University of Ljubljana, Faculty of Natural Sciences and Engineering, Ljubljana, 74 pg.	
Other publication		

Compiled by:	Geological Survey of Slovenia (GeoZS) www.geo-zs.si	Logo
		 GeoZS Geološki zavod Slovenije