

Peščenjak

Jelarji sandstone

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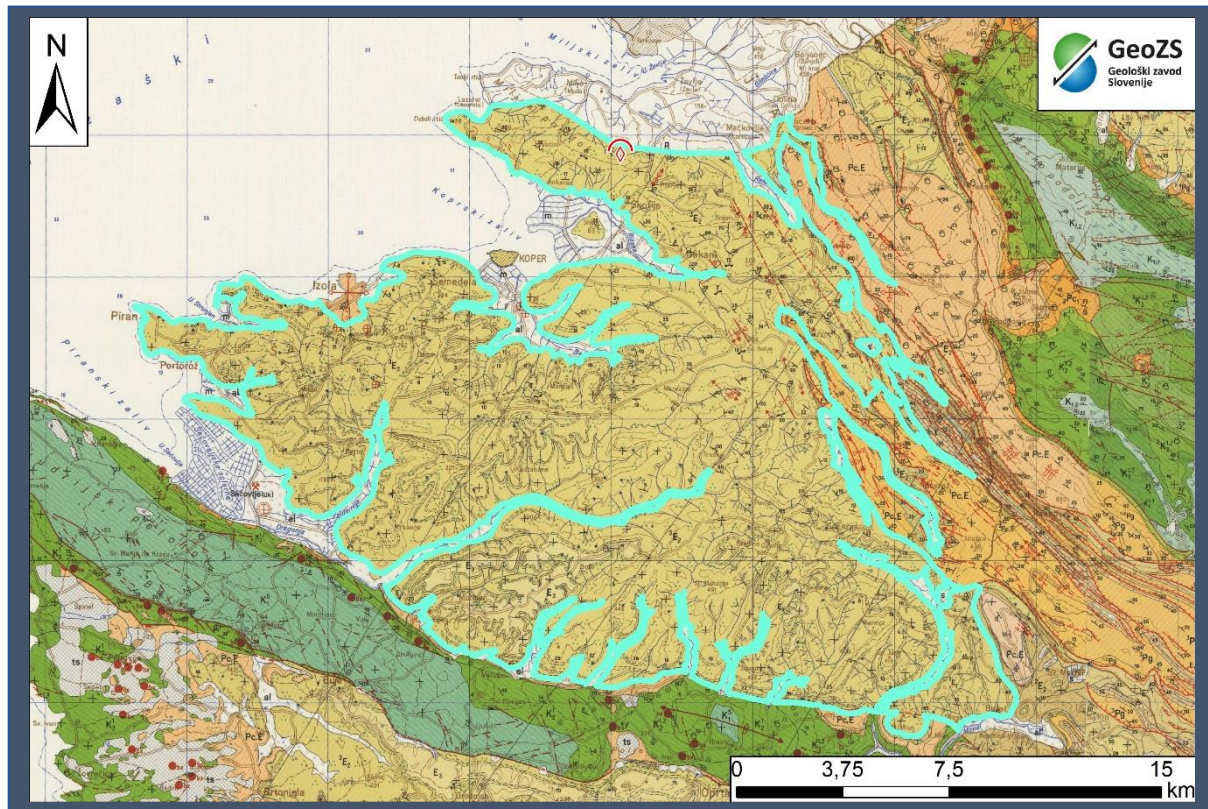


5 cm

Short description: Grey to brownish and bluish-grey thick-bedded uniformly fine-grained sandstone. The image displays a rough surface.

Commodity (vocabulary)	Lithology (vocabulary)	Typical colour (code list)	Place of origin			
			Country	County / District / Province	Municipality / Community	Place/town / Village
sandstone	Lithic graywacke	grey	Slovenia	Primorska (traditional province)	Koper	Jelarji

Geological setting



Geology: Beds of greywacke type sandstone, alternating with marlstone, are integral parts of the Paleogene flysch sequence of the Paleogene Adriatic Carbonate Platform.

Production: No. Abandoned quarry Elerji (formerly named Jelarji) at Sečovelje (N Istria).

Geological age: Middle Eocene, late Lutetian (41 million years)

Geological unit: Eocene flysch of Adria Microplate

Application, use and heritage

Description: Due to easy excavation and cutting it has been used for centuries and is nowadays adorning most old Istrian city centers and squares, while also being known abroad. Owing to its frost resistance it is appropriate for covering internal and external surfaces. It is mostly used for external surfaces, such as pavements, walls, steps, window sills, door frames, building blocks, and cladding.



Tartini Square in Piran on the N Istrian coast is paved with Jelarji sandstone. Photo: Grega Pirc



Walkway along Breg embankment of Ljubljanica river in Ljubljana is paved with Jelarji sandstone.



Private residence in Puče in Slovenia Istria built with blocks of Jelarji sandstone.

Petrography



Description: Sandstone with mostly limestone and monocrystal quartz grains, some lithic grains of volcanic and metamorphic rocks, siltstones and chert, with sparite calcite cement.

Source of information: Geological Survey of Slovenia, Mirtič et al., 1999.

Mineral composition

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

Calcite (%)	Quartz (%)	Dolomite (%)	Feldspars (%)	Mica (glauconite) (%)	Pyrite (%)	Organic matter (%)
15-35 (lim. grains) + 15 (matrix)	25-40 (monocrystals), 5-10 (microcrystals)	few %	few %	few %	few %	few %

Source of information: Mirtič et al., 1999.

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 (%)
24-40	10-18	1-3	-	0,8-1,2	26-30	-	-	-	-	-	30

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: JUS B.H 360 to 369
Mirtič et al., 1999.

Sources of more information

Type of information	Name of provider	URL
This data sheet		
Non-commercial directory	Geological Survey of Slovenia: Mining book	https://ms.geo-zs.si/Nahajalisce/Podrobnosti/2237?culture=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. RUDA 3 trade and engineering website: https://www.ruda3.si/en	
Other publication		

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