

Travertino Romano

Lapis Tiburtinus (Latin name)

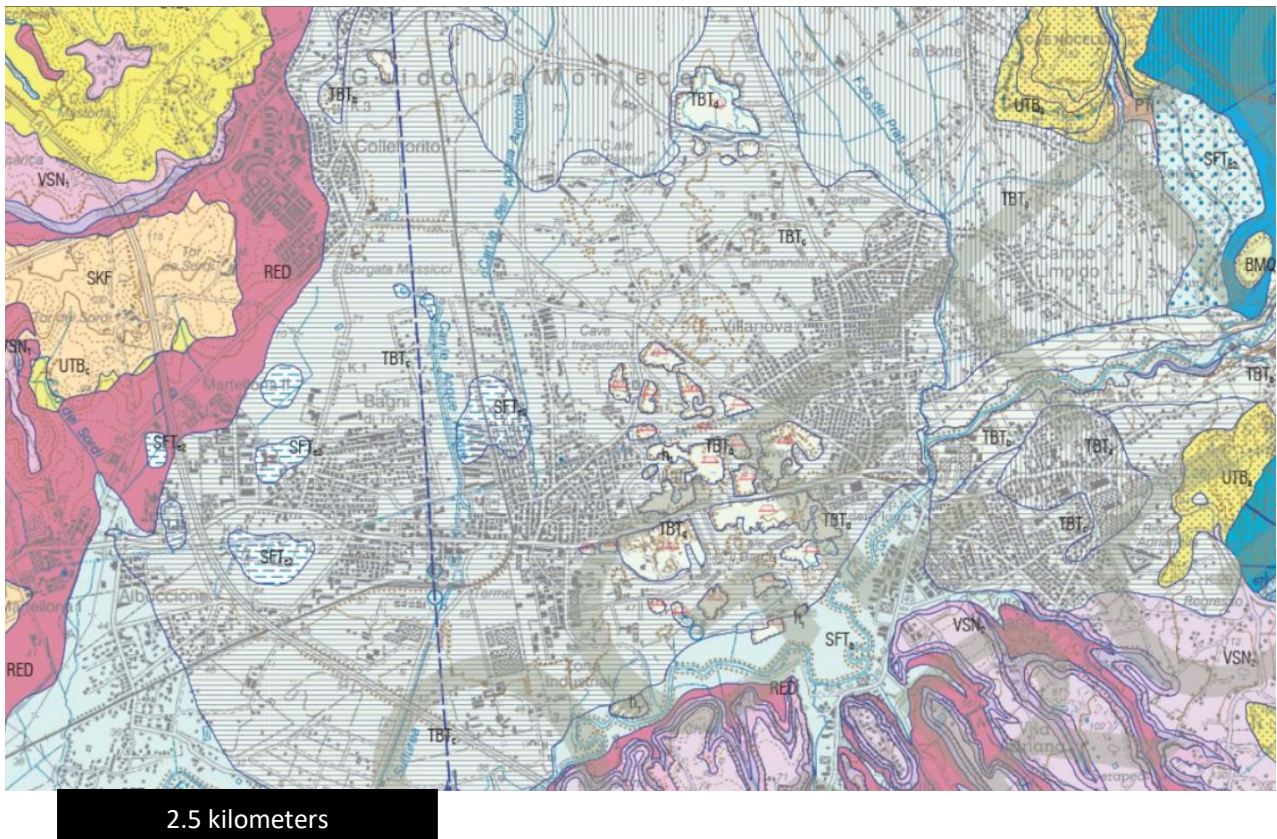


8 centimeters

Short description: Lithoid vacuolar travertine with fibrous-concretional structure.

Commodity	Lithology	Typical colour	Place of origin			
			Country	Province	Municipality	Village
Commercial limestone	Travertine	White	Italy	Rome (Latium)	Guidonia	Guidonia

Geological setting



Geology: The Tivoli-Guidonia plain (blue-grey colours in the figure), within the Valley of the Aniene River (flowing southwestwards), is mostly composed of travertine deposits and subordinately of a clayey-candy lithofacies and of alluvial, slope and lacustrine deposits. Travertine deposits are evidenced with TBT acromyms. The quarry areas are evidenced with white background polygons. The deposits cropping out in the western and southern part of the map are mainly pyroclastic deposits of the Alban Hill Volcano, those cropping out at the eastern side are mainly calcareous-marly deposits of the Cornicicoli Mts.

Production: Many quarries are escavated around the Tivoli and Guidonia towns for the production of this stone, known from ancient Roman times.

Geological age: Holocene-Upper Pleistocene p.p.

Geological unit: Travertines

Application, use and heritage



The Travertino Romano, extracted since the ancient Roman time, was used for many purposes (e.g. facade cladding, indoor floors, table tops and monuments). The classic Travertino Romano is whitish in colour and has many subtypes with different typical shades of colours (e.g. yellowish grey, light beige, beige, beige with darker veins). In this picture, a detail of the colonnade (284 columns, 16 m of height) of the Vatican Basilica of San Peter in Rome, built by the worldwide known sculptor and architect G.L. Bernini in 1656-1667, made of this stone.

Petrography



3 centimeters

Description: Detailed photo in natural light of a cutting surface of Travertino Romano, showing the appearance of this chemically-deposited mainly calcitic and subordinately anidritic and magnesitic sedimentary rock with porous texture and encrusted plant relics.

Source of information: Geological Survey of Italy, Geological map of Italy 1:50.000 scale, Tivoli Sheet, <https://www.isprambiente.gov.it/en/services/cartography/geological-and-geothematic-maps/geological-map-at-a-scale-1-to-50000>;

Geological Science Department - University Roma Tre, Italithos 2000, <http://www.italithos.uniroma3.it/>

Mineral composition

Calcite (%)	Clay Minerals (%)	Quartz (%)	Fe-Mn oxydes (%)	Fe-Mn hydroxydes (%)		
>95	AM	AM	AM	AM		

MM=main minerals, SM = Subordinate minerals, AM=accessory minerals

Source of information: Geological Science Department - University Roma Tre, Italithos 2000,
<http://www.italithos.uniroma3.it/>

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
2247		0.8	109	13.8

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	
		110	48	

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
		28			

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: Geological Science Department - University Roma Tre, Italithos 2000, <http://www.italithos.uniroma3.it/>

Chemical properties

Main elements

SiO ₂ (%)	Al ₂ O ₃ (%)	Fe ₂ O ₃ (%)	FeO (%)	MgO (%)	CaO (%)	Na ₂ O (%)	K ₂ O (%)	MnO (%)	P ₂ O ₅ (%)	SO ₃ (%)	CO ₂ (%)
0.73	0.05	0.05	0.07		55.10	0.14			0.27	0.28	43.40

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: Geological Science Department - University Roma Tre, Italithos 2000, <http://www.italithos.uniroma3.it/>

Sources of more information

Type of information	Name of provider	URL
This data sheet	Geological Survey of Italy -ISPRA	https://www.isprambiente.gov.it/en/services/cartography/geological-and-geothematic-maps/geological-map-at-a-scale-1-to-50000
Non-commercial directory	Geological Science Department - University Roma Tre, Italithos 2000	http://www.italithos.uniroma3.it/
Commercial directory		
Scientific publication	Società Geologica Italiana/ Italian Geological Society, Rend. Online Soc. Geol. It.	https://doi.org/10.3301/ROL.2013.23
Other publication		

Compiled by:	Geological survey of Italy – ISPRA website http://portalesgi.isprambiente.it/	 
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