

Thymiana Chios Stone

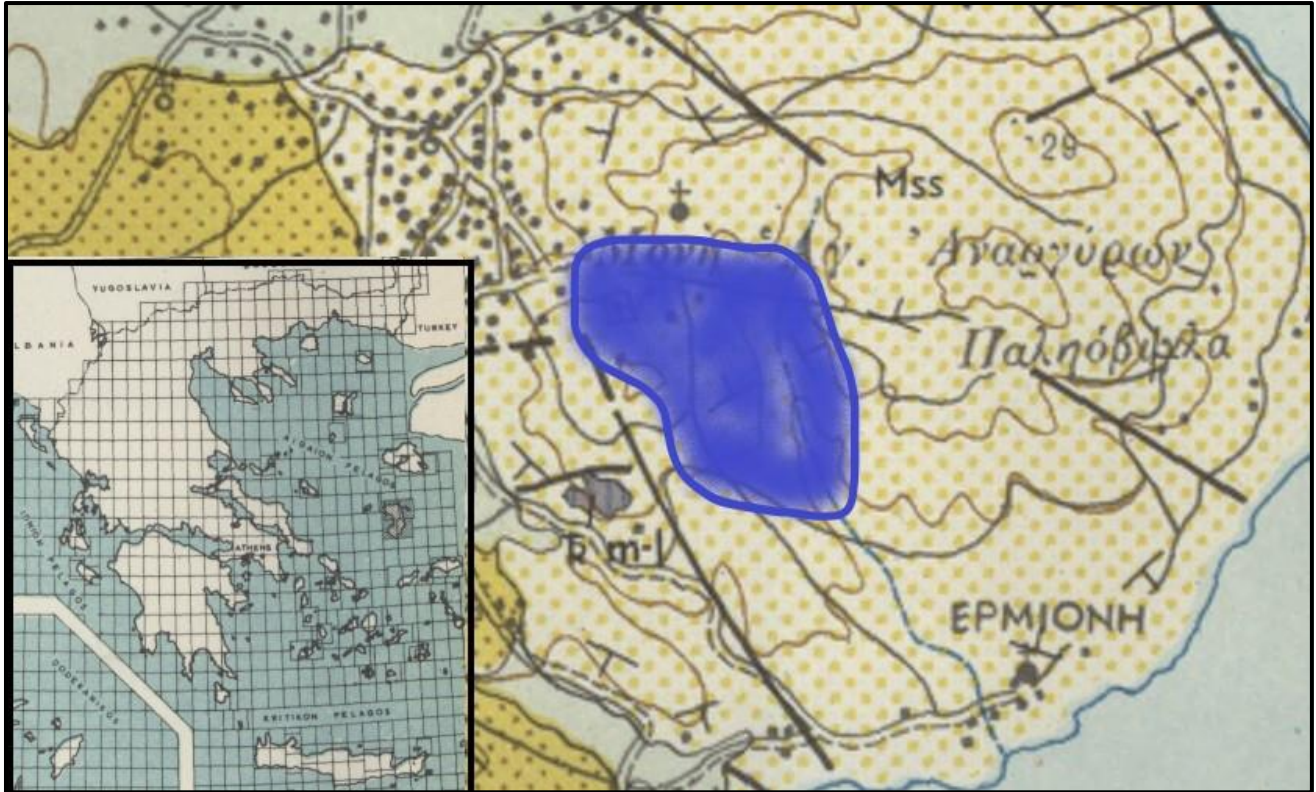


Scale 1:1

Short description: Fine-grained reddish pelitic rock with white veins.

Commodity (vocabulary)	Lithology (vocabulary)	Typical colour (code list)	Place of origin			
			Country	County / District / Province	Municipality / Community	Place/town / Village
Miscellaneous ornamental stones	Calcitic Pelite	Reddish- brown	Greece	North Aegean	Chios	Thymiana

Geological setting



Geology: Thymiana Chios Stone (blue marking) belongs to Ferruginous sandstones brownish to red, rich in silt, slightly calcareous, some-times conglomeratic, with intercalated yellowish red silty marls. Fossils: internal molds of fresh-water Ostracods and Gas-tropods and carbonized plant remnants.

(Source: Geological Map of Greece 1:50000, Chios Sheet (Southern Part))

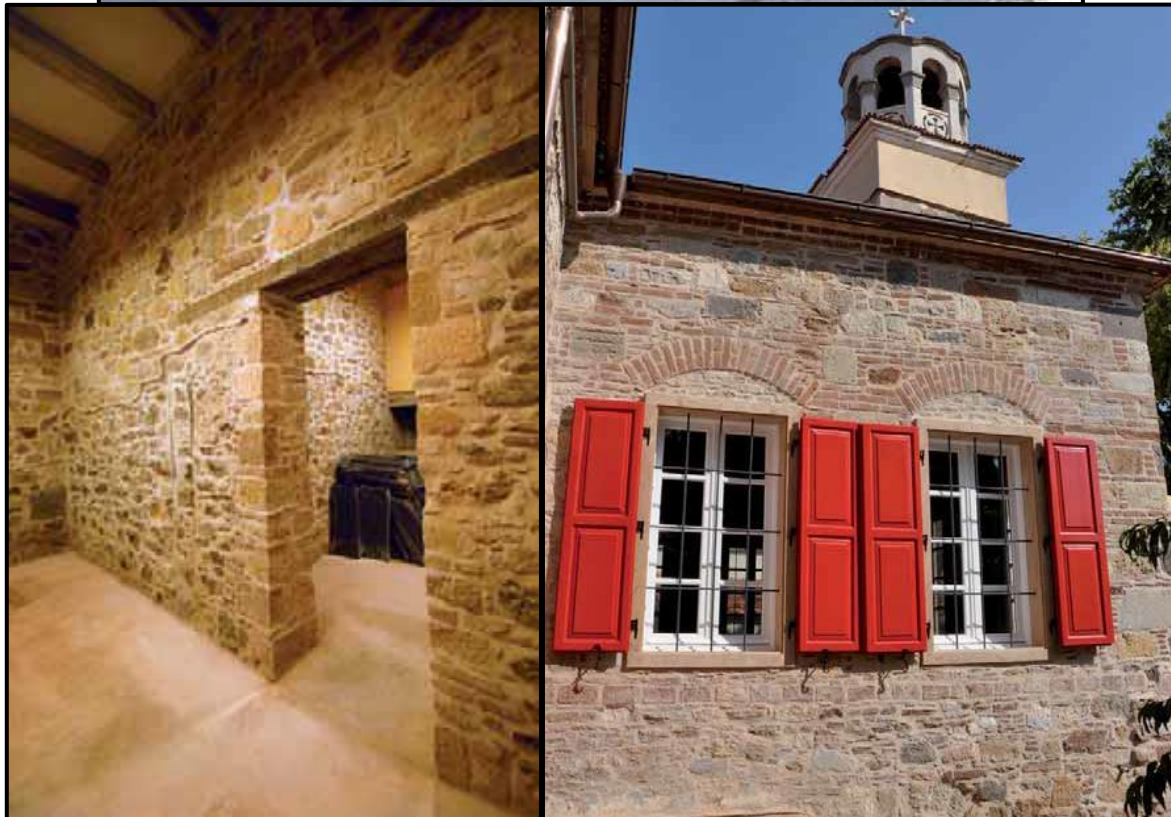
Production: The quarry area is located south of Chios town and includes the regions of Thymiana, Hermioni and Monastiri.

Geological age: Upper Miocene

Geological unit: Ferruginous sandstones

Application, use and heritage

Description: Thymiana Chios Stone is widely used as building material for house masonry, for external wall cladding, internal cladding and flooring, as well as for paving of roads and footpaths, stairs and stone fences.



The Ottoman School in the Castle of Chios: Restoration with Thymiana Chios Stone.

(Photos: EPHORATE OF ANTIQUITIES OF CHIOS)



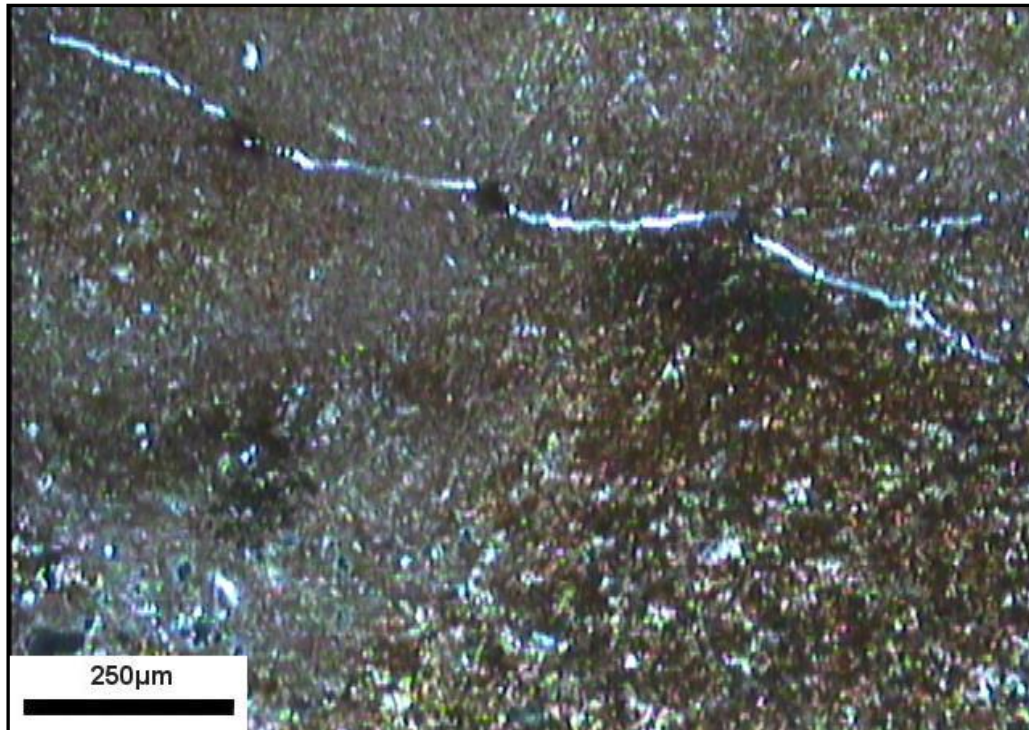
Panoramic view of a “Pétra Thymianón” quarry.

(Photo: “THE “Pétra Thymianón” FROM CHIOS; ITS VARIOUS TYPES AND THE CORRELATION OF THEIR CHARACTERISTICS WITH POTENTIAL APPLICATIONS”
Bulletin of the Geological Society of Greece vol. XLVI, 95-107, 2012)



Various applications of Thymiana Stone

Petrography



Description: Photomicrograph of thin section, showing quartz and muscovite, while the rest of its mass consists of carbonate material, such as ankerite. Calcitic vein is also observed.

Source of information: Hellenic Survey of Geology and Mineral Exploration

Mineral composition

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

Quartz (%)	Ankerite (%)	Kaolinite – Illite (%)	Biotite (%)	Iron Oxides (%)		
48	31	14	7	AM		

Source of information: Hellenic Survey of Geology and Mineral Exploration

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
2220	19,7	8,4	-	13,0

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	
12,6	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
33,5	22	-	-	-	-

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		
			3	-

Source of information: Hellenic Survey of Geology and Mineral Exploration

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 (%)
33,50	8,10	4,00	<0,05	7,50	18,50	3,00	2,40	0,10	-	-	22,00

Trace elements

V (ppm)	Cr (ppm)	Mn (ppm)	Co (ppm)	Ni (ppm)	Cu (ppm)	Zn (ppm)	As (ppm)
45	101	755	20	160	52	60	78
Sr (ppm)	Cd (ppm)	Ba (ppm)	Pb (ppm)	Be (ppm)	Rb (ppm)	Bi (ppm)	U (ppm)
238	0,0	655	23	2,0	67	0,0	3,0
Sc (ppm)	Y (ppm)	Th (ppm)	Sb (ppm)	Ta (ppm)	Nb (ppm)	Zr (ppm)	Sn (ppm)
23	14	16	2,0	7,0	14		
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: Hellenic Survey of Geology and Mineral Exploration

Sources of more information

Type of information	Name of provider	URL
This data sheet	Hellenic Survey of Geology and Mineral Exploration	https://www.eagme.gr/
Non-commercial directory		
Commercial directory		
Scientific publication	EPHORATE OF ANTIQUITIES OF CHIOS	https://efachi.gr/wp-content/uploads/2018/03/sxoleio.pdf
	Bulletin of the Geological Society of Greece vol. XLVI, 95-107, 2012	https://ejournals.epublishing.ekt.gr/index.php/geosociety/article/viewFile/10933/10975.pdf
Other publication		

Compiled by:	Hellenic Survey of Geology and Mineral Exploration (H.S.G.M.E.) https://www.eagme.gr/	
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