

“Karystos” Schists Grey

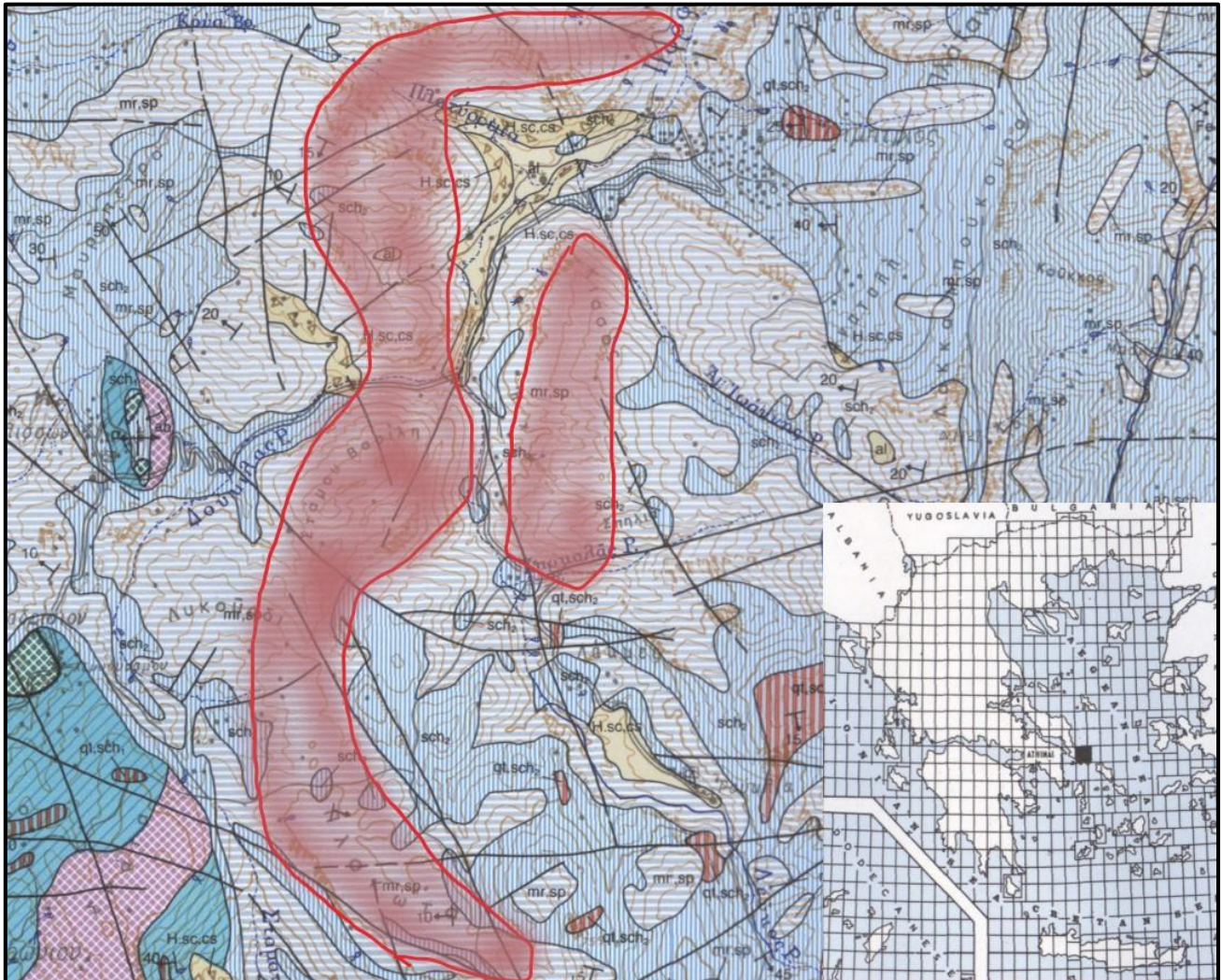


Scale 1:1

Short description: Fine to coarse-grained cipollino marble displaying mainly grey colours but also grey-green or off-white zones.

Commodity (vocabulary)	Lithology (vocabulary)	Typical colour (code list)	Place of origin			
			Country	County / District / Province	Municipality / Community	Place/town / Village
Marble	Cipollino marble	Grey	Greece	Central Greece	Karystos	Agios Dimitrios Marmari Paradisi

Geological setting



Geology: Karystos Schists (red marking) belong to marbles and cipolins of Atticocycladic Massif. They are mainly thin-bedded and locally thick-bedded, to micro- to medium-crystalline marbles of grey, grey-black and black colours. Great participation of muscovite is often observed resulting in cipolins-marbles or / and cipolins. Chlorite also participates locally in significant proportion, turning them into green cipolins which have intensely exploited ever since the ancient times. The thin – bedded and even the medium bedded marbles and cipolins are highly exploited producing the well-known “Karystos plates”.

(Source: Geological Map of Greece 1:50000, Karistos-Platanistos Sheet)

Production: The most important quarry area is near the villages of Agios Dimitrios, Marmari, Paradisi, in South Evia.

Geological age: Neogene – Middle – Upper Miocene

Geological unit: Atticocycladic Massif – Neohellenic Tectonic Nappe

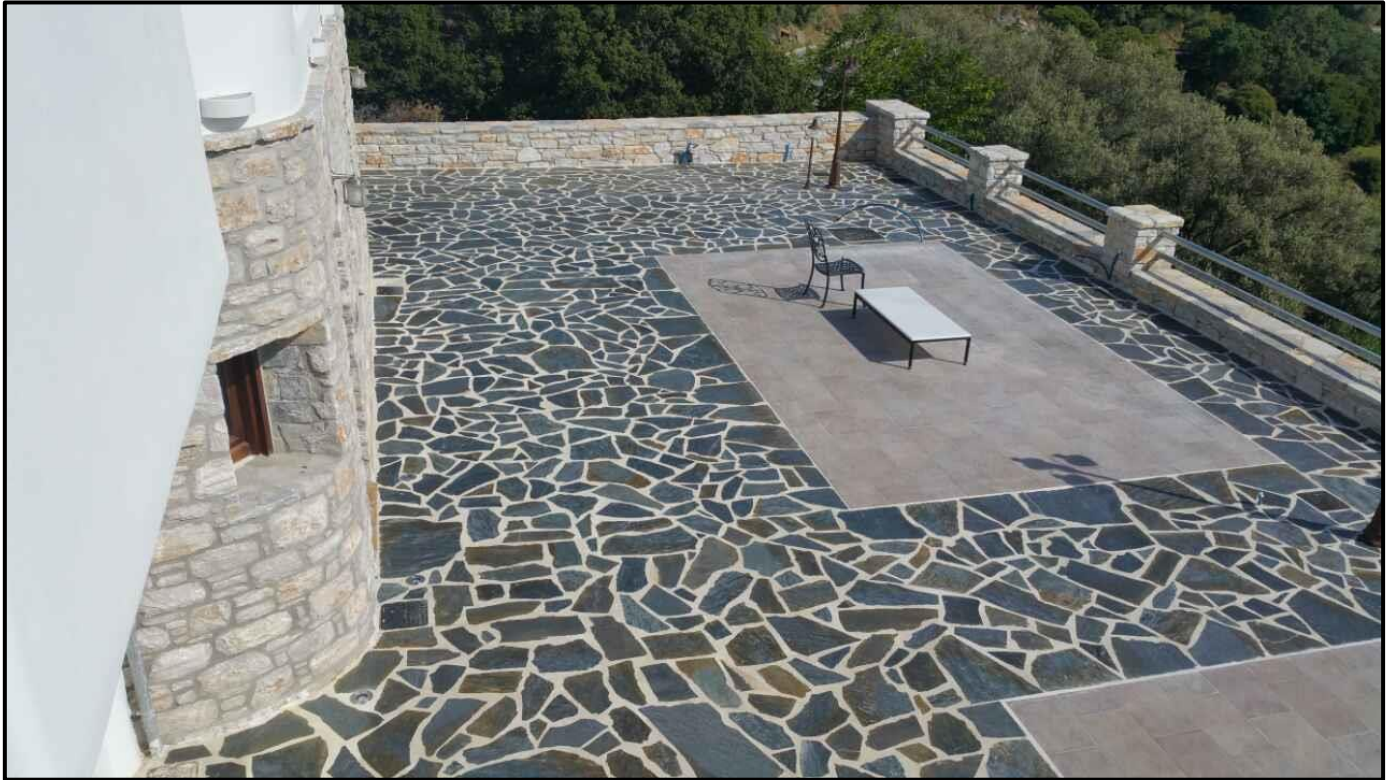
Application, use and heritage

Description: Karystos schists are widely used since archaic times in the construction of columns, monuments and other buildings of colossal (“cyclopean”) dimensions for decorative, ritualistic or other practical purposes. Those constructions are dated before 700 BC or before the Trojan War (1300 BC) or even as early as the Neolithic Age (> 3000 BC). Karystos schists are compact and tough. They present low water absorption and open porosity. The values of mechanical properties determined for Karystos schists are much higher than the minimum acceptable for ornamental stones. They are now widely used for paving of roads and footpaths, in gardens and yards, as well as for masonry, wall cladding and flooring.



The **dragon houses** are some large, ruined buildings found in the south of Evia Island in Greece. They are dated before 700 BC. They were built with massive stone blocks without mortar and large stone slabs for the roofs. The Dragon House on Mount Ochi, north of Karystos is the most famous and well preserved.

(Source: «ΚΑΡΥΣΤΙΑ ΛΙΘΟΣ» ΕΝΑ ΔΙΑΧΡΟΝΙΚΟ ΔΟΜΙΚΟ ΥΛΙΚΟ, Ελληνική Γεωσφαιρα, Περιοδική Έκδοση Ι.Γ.Μ.Ε., Απρίλιος 2009, Τεύχος 6)

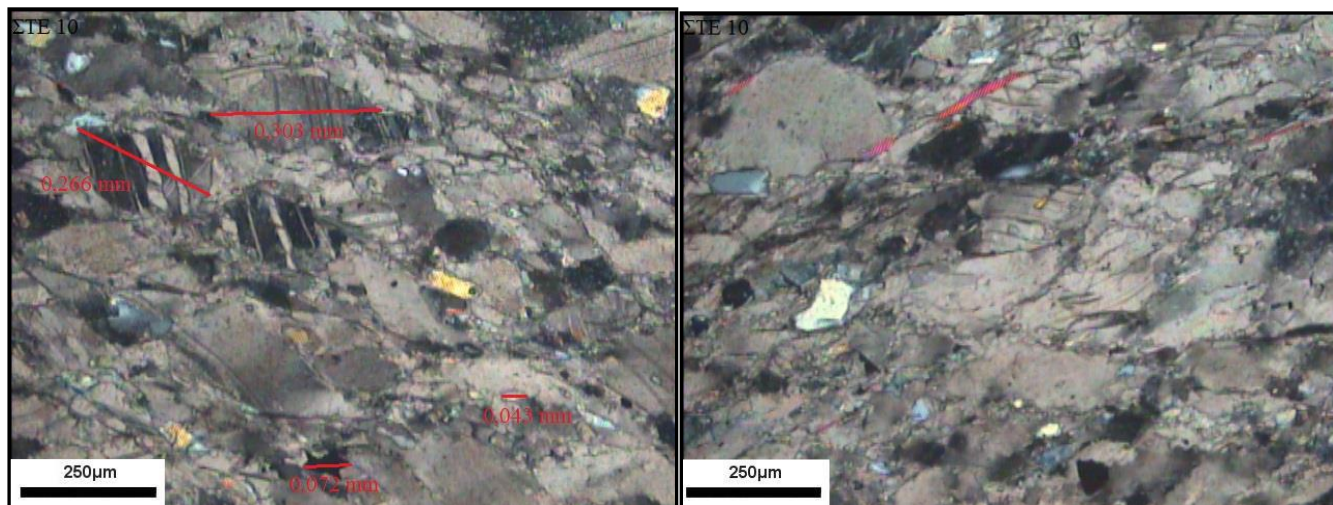


Exterior flooring with Karystos slates.



Paving of roads and footpaths on the island of Kassos with polygonal Karystos slates.

Petrography



Description: The main mineralogical constituent is calcite while the secondary minerals are muscovite and quartz. The colour of Karystos schists depends on their secondary and accessory minerals content.

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

Calcite (%)	Muscovite (%)	Chlorite (%)	Albite (%)	Quartz (%)	Opaque minerals (%)	Titanite (%)
80	7	7	3	3	AM	AM
Epidote (%)						
SM						

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
2720	0,2	0,1	-	24,0

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	
24,1	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
20,0	-	-	-	-	-

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		
			5	-

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 (%)
5,60	1,02	0,64	-	0,80	51,35	0,39	0,33	0,05	-	-	40,20

Trace elements

V (ppm)	Cr (ppm)	Mn (ppm)	Co (ppm)	Ni (ppm)	Cu (ppm)	Zn (ppm)	As (ppm)
8,0	23	370	5,5	36	21	23	2,5
Sr (ppm)	Cd (ppm)	Ba (ppm)	Pb (ppm)	Be (ppm)	Rb (ppm)	Bi (ppm)	U (ppm)
500	0,5	90	7,0	0,5	9,0	0,0	<0,1
Sc (ppm)	Y (ppm)	Th (ppm)	Sb (ppm)	Ta (ppm)	Nb (ppm)	Zr (ppm)	Sn (ppm)
6,0	3,2	1,0	0,9	0,2	1,0		
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	Ελληνική Γεώσφαιρα Περιοδική Έκδοση Ι.Γ.Μ.Ε. Απρίλιος 2009 Τεύχος 6	https://www.igme.gr/images/igme/magazine/Elliniki_Geosphaera_No6.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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