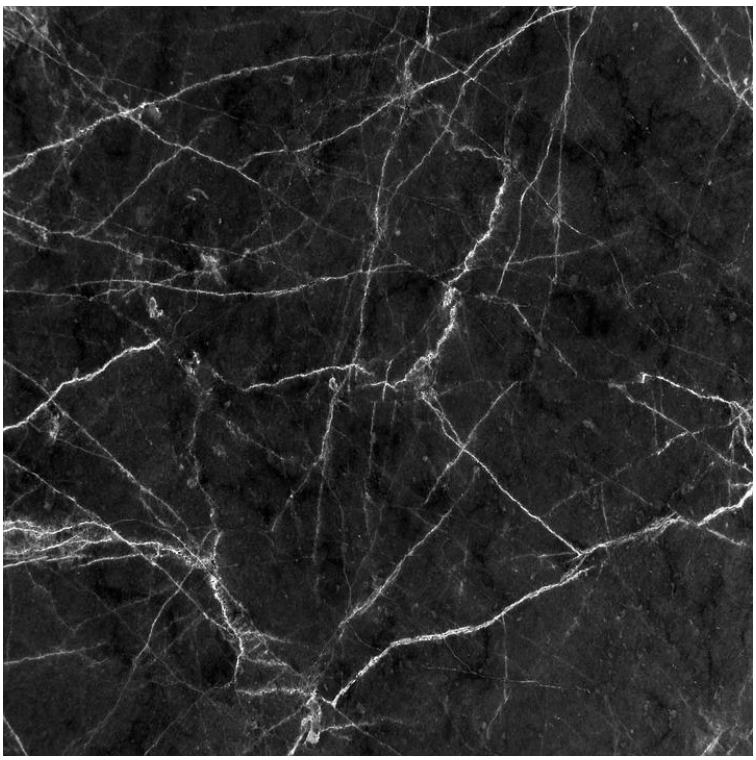
Negro Marquina



Short description: Black to dark gray recrystallized limestone with white veins of calcite.

Commodity (vocabulary)	Lithology (vocabulary)	Typical colour (code list)	Place of origin			
			Country	County / District / Province	Municipality / Community	Place/town / Village
limestone	limestone	black	Spain	Vizcaya	Marquina	Marquina

Geological setting

Geology: The Negro Marquina marble is a black rock, compact and fine-grained, in which there are many areas with a white veining that gives it a flowery appearance. From a geological point of view, it is a recrystallized reef limestone, with calcite veins, in which fossil remains can be seen.

Production: It is extracted in the province of Vizcaya, in the municipality of Marquina. The quarrying fronts are of considerable length and height, with several targets, from which large blocks can be extracted. Any type of surface finish can be made with this type of rocks.

Geological age: Lower Aptian –Upper Albian (115 My).
Geological unit: Urgoniano complex.

Application, use and heritage

Description: Flooring.

Petrography

Description: The microfacies of the black Markina limestones are biomicrites (Folk, 1962) and Packstone-Wackestone (Dunham, 1962; Embry and Klovan, 1971) rich in polyconitid rudists, Chondrodonta sp. and dark-walled agglutinating foraminifera, both cut-bisected and flat-spiral. There is also no lack of bioconstructed facies composed of rudists arranged in bouquets of up to a few dozen individuals, as well as Chondrodonta sp. that appear in bundles of shells that fan out. The polyconitid rudists show well differentiated the outer layer (low-Mg or LMC calcite) and the inner (initially aragonitic).

Source of information: http://www.igme.es/.

Physical properties

Apparent density (EN 1936) kg/m3	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
2680	**0.2**	**0.1**	**61.7**	**14.4**

Real density (EN 1936) kg/m3	Total porosity (EN 1936) % vol	Water absorption coefficient by capillary (EN 1925) (g/m2 x s0,5)	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	
8.2				

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
21.5				**2200**	

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		
	70	**45**		

Source of information: http://www.olaspe.com/ca/tecnica.html

Sources of more information

Type of information	Name of provider	URL
This data sheet	Instituto Geológico y Minero de España (IGME)	http://www.igme.es/
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