

Bronceado Sierra Elvira



3 cm

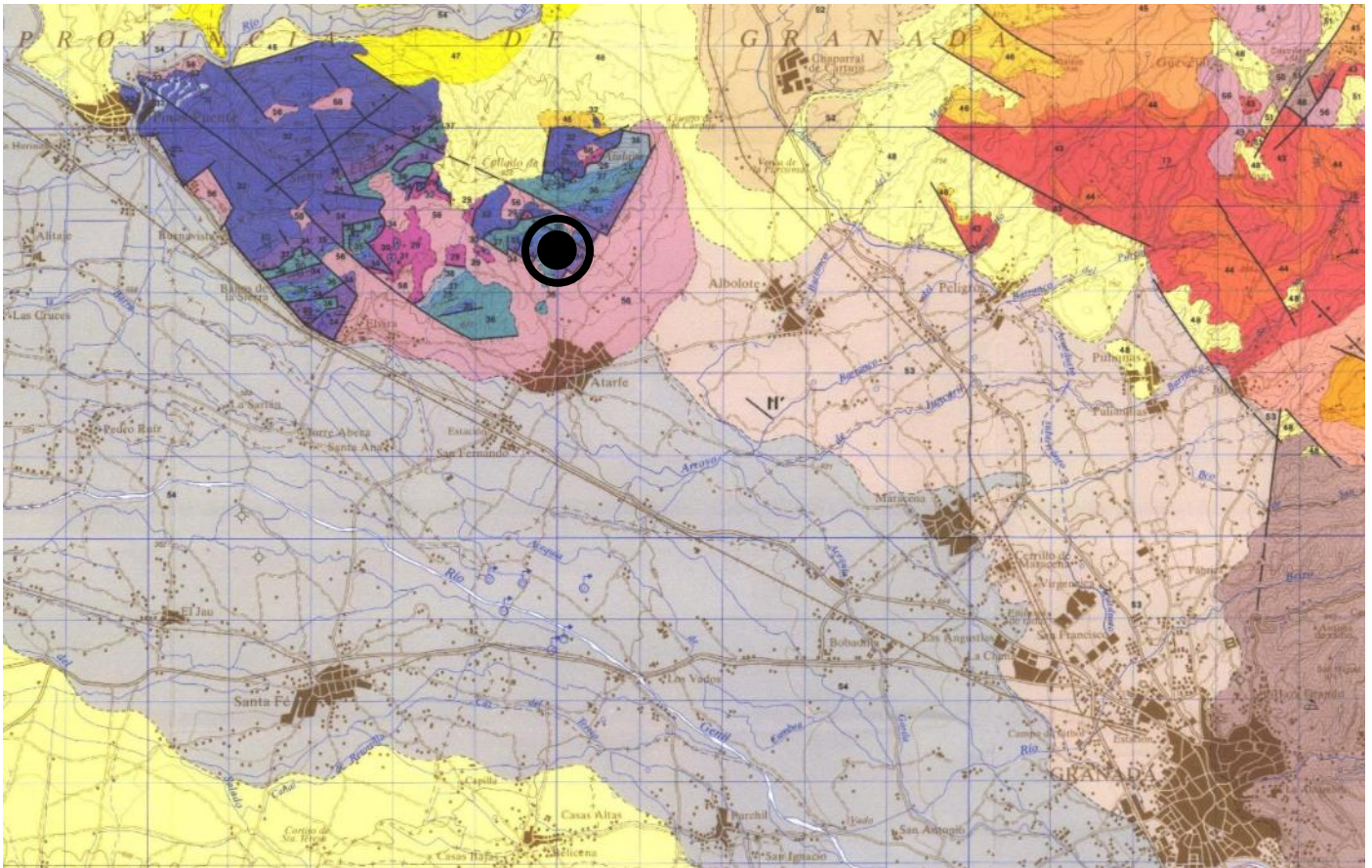
Image source: www.marblefromspain.com

Short description:

Grey-green to grey-brown limestone with some very thin strips of calcite and brown, yellow or green stylolite veins. The most characteristic facies of this rock variety is a crinoid limestone.

Commodity (vocabulary)	Lithology (vocabulary)	Typical colour (code list)	Place of origin			
			Country	County / District / Province	Municipality / Community	Place/town / Village
					Mun1 Mun2	Place 1 Place 2

Geological setting



Geology:

Sierra Elvira is a Mesozoic horst that rises from the Granada depression and comprises the southernmost part of the Middle Subbaetic domain in the central section of the Baetic Mountains. Its Triassic, Jurassic and Cretaceous materials were deposited on the Tethys seabed.

The Liassic age (Early-Middle Carixian) crinoid and micritic limestone from the Sierra Elvira stratigraphic sequence was the last geological formation to be deposited before the great carbonate platform on the southern rim of the European plate broke with the formation of the Atlantic Ocean around 180 million years ago.

Two stratigraphic levels can be clearly distinguished. The lower and thicker (about 20 m) of the two is characterized by large-scale unidirectional lamination and a high density of stylolites. Some of the beds in this level (about 5 m) is characterized by hardground-like cross-lamination associated with polygonal cracks caused by desiccation. In addition to crinoids, other microfauna fossils are present, including fragments of molluscs, brachiopods and foraminifers.

Geological age: Jurassic (Liassic)

Geological unit: Middle Subbaetic domain

Application, use and heritage



Nuestra Señora de las Angustias (Granada).
www.wikipedia.org



Santos Justo y Pastor church (Granada)
www.archidiocesisgranada.es

Description:

Through history and even today, Sierra Elvira stone has played an important role in the building industry in eastern Andalusia and in particular in the province of Granada. Its popularity has varied in different historical periods depending on contemporary cultural and artistic preference.

In the natural stone industry, Sierra Elvira stone is known as Bronceado Gris Sierra Elvira.

This crinoid limestone has been used in churches as well as in civil and residential buildings. It can be seen on façades, foundations, columns and plinths in some of Granada's most emblematic historic buildings, including the Royal Hospital, the Palace of Charles V on the grounds of the Alhambra, the Royal Chancellery, the Cathedral and several churches such as Nuestra Señora de las Angustias, San Juan de Dios and San Justo y Pastor.

More information in:

Sebastián Pardo, E., Cultrone, G., Garibaldi, V., Rodríguez Navarro, C., de la Torre, M.J., Valverde, I. (1988): The Sierra Elvira limestone: petrophysical features of a widespread Andalusian decorative material. *Materiales de Construcción*, 58: 51-63.

Petrography

Description:

Grey-green to grey-brown limestone with some very thin strips of calcite and brown, yellow or green stylolite veins. The most characteristic facies of this rock variety is a crinoid limestone. At a microscopic level, this rock corresponds to a biosparite limestone. Fossil grains correspond mainly to crinoid fragments, but other fossil components can be observed (i.e., echinoderma plates, mollusc shells, etc.). Very dense microstructure and no porosity can be detected under the optical microscope.

Images and photomicrographs can be found in:

Sebastián Pardo, E., Cultrone, G., Garibaldi, V., Rodríguez Navarro, C., de la Torre, M.J., Valverde, I. (1988): The Sierra Elvira limestone: petrophysical features of a widespread Andalusian decorative material. *Materiales de Construcción*, 58: 51-63.

Source of information:

- 1) Spanish Geological Survey
- 2) Sebastián Pardo, E., Cultrone, G., Garibaldi, V., Rodríguez Navarro, C., de la Torre, M.J., Valverde, I. (1988): The Sierra Elvira limestone: petrophysical features of a widespread Andalusian decorative material. *Materiales de Construcción*, 58: 51-63.

Mineral composition

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

Mineral 1 (%)	Mineral 2 (%)	Mineral 3 (%)				
Calcite (99%)	Illite (AM)	Zircon and Opaque (AM)				

Source of information:

- 1) Spanish Geological Survey.
- 2) Mármoles españoles, 1990, ITGE.
- 3) Sebastián Pardo, E., Cultrone, G., Garibaldi, V., Rodríguez Navarro, C., de la Torre, M.J., Valverde, I. (1988):
The Sierra Elvira limestone: petrophysical features of a widespread Andalusian decorative material.
Materiales de Construcción, 58: 51-63.

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	0.14	0.05	86.53	26.4

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	
		79.78	56	

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- 1) Spanish Geological Survey.
- 2) Mármoles españoles, 1990, ITGE.
- 3) Sebastián Pardo, E., Cultrone, G., Garibaldi, V., Rodríguez Navarro, C., de la Torre, M.J., Valverde, I. (1988): The Sierra Elvira limestone: petrophysical features of a widespread Andalusian decorative material. *Materiales de Construcción*, 58: 51-63.

Sources of more information

Type of information	Name of provider	URL
This data sheet	Spanish Geological Survey RockMaquina – Piedras naturales, maquinaria y equipos.	
Non-commercial directory	Spanish Geological Survey	
Commercial directory		
Scientific publication		
Other publication		

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