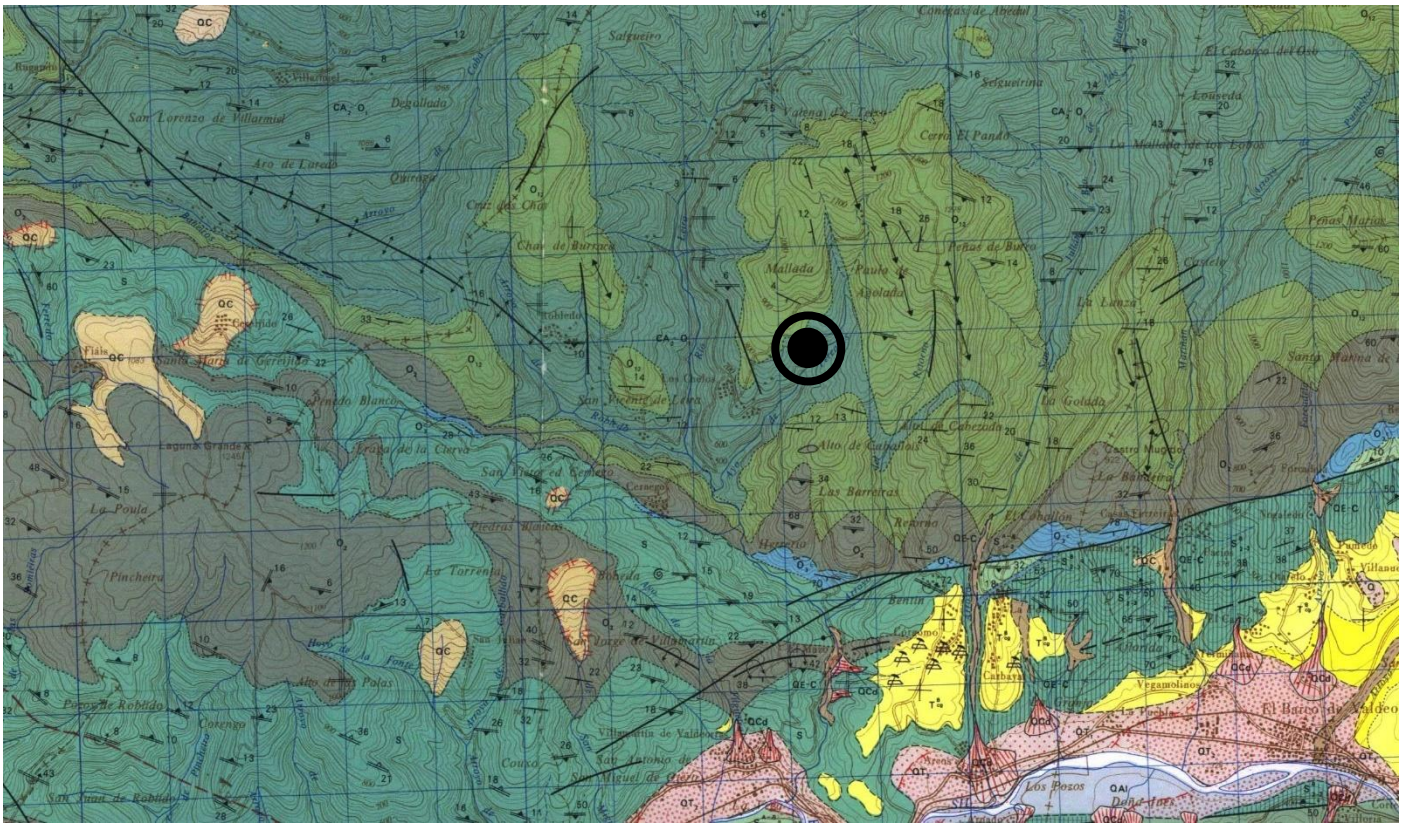
Valdeorras San Vicente

Pizarra roja Multicolor

Short description: Dark gray to black slates, with high fissility that results in flat and smooth surfaces. Heterogeneities consisting of thin centimeter to decimeter quartzite intercalations are not abundant, not observing the presence of kink-bands or nodules, but rather of fine crenulation in some sectors, and in some sections the presence of metallic sulphides in form of polycrystalline aggregates of millimeter thickness and diameter.

Commodity (vocabulary)	Lithology (vocabulary)	Typical colour (code list)	Place of origin			
			Country	County / District / Province	Municipality / Community	Place/town / Village
slate of tectonic compres	slate	grey	Spain	Orense	Carballeda de Valdeorras (OR-OU)	Carballeda de Valdeorras

Geological setting



Geology: In the Ollo de Sapo Domain, in the Central Iberian Zone, the so-called Pizarras del Soldon (slates of the Soldon), which emerge in the nucleus of the Piornal anticline, are compared in stratigraphic position and lithological characteristics to the Layers of the Mountains, and also to the Layers from Villamea of the Asturoccidental-Leonese Zone (Cantabrian cordillera). In Quiroga and Vilamartin de Valdeorras slates from this unit have been exploited, consisting of dark slates with abundant metallic sulphides, and with intercalations of quartzites and sandstones with centimeter to metric thicknesses. The total thickness of the unit in the outcropping part (the formation wall does not emerge) has been estimated at about 350 m.

Production: Muy próximas a la localidad de San Vicente de Leira, en el municipio de Vilamartín de Valdeorras (Ourense), se ubican dos explotaciones, en la parte alta de la formación. La explotación Calzada que está en explotación y San Vicente que está parada desde hace pocos años debido a problemas geotécnicos y a su ubicación en un espacio reducido entre el cauce del Arroyo de Freanes y la carretera de acceso a San Vicente de Leira. Very close to the town of San Vicente de Leira, in the municipality of Vilamartín de Valdeorras (Ourense), there are two quarries in the upper part of the formation. The Calzada operation, which is active and San Vicente, which has been shut down for a few years due to geotechnical problems and its location in a reduced space between the stream of the Freanes and the access road to San Vicente de Leira.

Geological age: Lower Ordovician (Tremadoc).
Geological unit: Layers of the Montes (Soldon slates).

Application, use and heritage

Description: Slate for roofing in a building.

Slate for roofing in a building.

Mineral composition

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

Mineral 1 (%)	Mineral 2 (%)	Mineral 3 (%)	Mineral 4 (%)	Mineral 5 (%)	Mineral 6 (%)	Mineral 7 (%)
Chlorite (15-40%)	**Feldspars (0-15%)**	**Mica (30-50%)**	**Quartz (20-35%)**			
Mineral 8 (%)	Mineral n (%)					

Source of information: V. CÁRDENES, A. RUBIO ORDÓÑEZ, A. LÓPEZ MUNGUIRA Y C. MONTERROSO. 2010. Petrografía y mineralogía de las pizarras para cubiertas de la Península Ibérica en relación con su calidad. Trabajos de Geología, Universidad de Oviedo, 30: 412-420.

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
2830		**1.8**	**93.61**	**49.3**

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	

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
				3131	

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: Quiroga, J.R., Casares, A., Míguez, V., Vidal, J.R. (1997): La Piedra de Galicia. Xunta de Galicia, 319 págs. ISBN: 84-453-2037-8.

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/
Non-commercial directory		
Commercial directory		
Scientific publication	V. CÁRDENES, A. RUBIO ORDÓÑEZ, A. LÓPEZ MUNGUIRA Y C. MONTERROSO. 2010. Petrografía y mineralogía de las pizarras para cubiertasde la Península Ibérica en relación con su calidad. Trabajos de Geología, Universidad de Oviedo, 30 : 412-420	
Other publication	Quiroga, J.R., Casares, A., Míguez, V., Vidal, J.R. (1997): La Piedra de Galicia. Xunta de Galicia, 319 págs. ISBN: 84-453-2037-8.	

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