Gebharts Fein

Gebhartser Syenit

Gebharts Feinkörnig

5 cm

Short description: fine-grained, massive, dark, low-silica igneous rock of feldspar (plagioclase), biotite and hornblende

Commodity (vocabulary)	Lithology (vocabulary)	Typical colour (code list)	Place of origin			
			Country	County / District / Province	Municipality / Community	Place/town / Village
Commercial Granite	Diorite	Grey	Austria	Gmünd / Niederösterreich (Lower Austria)	Schrems Heidenreichstein	Gebharts

Geological setting

Geology: The Gebharts diorite is a small intrusive body (green signature in map) that extends over a length of about 3.5 km north the village of Gebharts. The intrusion was late to post-Variscan.

Production: The main quarrying area (red marking) is restricted to an extension of only about 1x2 km, which hosted well over 10 active quarries at the beginning of the 20th century. Most of these quarries have been recultivated by now, some of the former quarrying sites are still visible as ponds in the landscape.

Geological age: Late-Variscan to Post-Variscan, 320 – 300 Ma
Geological unit: Gebhartser Diorit; (tectonic unit): Südböhmischer Batholith / Southern Bohemian Batholith (URI: http://resource.geolba.ac.at/tectonicunit/106)

Application, use and heritage

Description: The stone is very popular due to its dark colouring. Its applications range from floor slabs, paving stones, wheel deflectors, stair treads, sculptures and gravestones to wall stones.

Petrography

Description: Petrologically, the Gebharts diorite has a relatively uniform structure and is characterised by a hypidiomorphic, irregular to porphyritic structure with idiomorphic plagioclase, brown biotite, pale green hornblende and small amounts of xenomorphic quartz. Secondary hydrothermal alteration can lead to the formation of chlorite on fractures. In some places, cm- to dm-thick aplite veins are found.

Source of information: Geological Survey of Austria (GBA)

Mineral composition

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

plagioclase	potassium feldspar	quartz	biotite	muscovite	Amphibolite	Apatite
MM	**MM**	**MM**	**SM**	**SM**	**SM**	**AM**
Zircon	Orthite	Titanite	ilmenite			
AM	**AM**	**AM**	**AM**			

Source of information: Geological Survey of Austria (GBA)

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

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

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:

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Chemical properties

Main elements

SiO_2 (%)	Al_2O_3 (%)	Fe_2O_3 (%)	TiO_2 (%)	MgO (%)	CaO (%)	Na_2O (%)	K_2O (%)	MnO (%)	P_2O_5 (%)	SO_3 (%)	LOI (%)

Trace elements

V (ppm)	Cr (ppm)	Mn (ppm)	Co (ppm)	Ni (ppm)	Cu (ppm)	Zn (ppm)	As (ppm)
Sr (ppm)	Cd (ppm)	Ba (ppm)	Pb (ppm)	Be (ppm)	Rb (ppm)	Bi (ppm)	U (ppm)
Sc (ppm)	Y (ppm)	Th (ppm)	Sb (ppm)	Ta (ppm)	Nb (ppm)	Zr (ppm)	Sn (ppm)
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:

Sources of more information

Type of information	Name of provider	URL
This data sheet	Geological Survey of Austria (GBA)	https://www.geologie.ac.at
Non-commercial directory		
Commercial directory		
Scientific publication		
Other publication		

Anthes, G., Heinrich, M., Lipiarski, P., Massimo, D., Kollars, B. & Rabeder, J. (2006): Grundlagenerhebung zu Vorkommen von Granitgesteinen in Österreich: Voruntersuchungen der nutzbaren Festgesteinsarten unter schwerpunktmäßiger Betrachtung der qualitativen Eigenschaften für den Verkehrsflächen- & Wasserbau als Basis für den Österreichischen Rohstoffplan.- Studie zu Projekt Ü-LG-050, 64 S., 2 Anl., 3 Blg., Stobl/Wien.

Picture of Stone Surfaces: Source: Kieslinger-Archive, Geological Survey of Austria, Wien

Geological Map: Schnabel, W. (2002): Geologische Karte der Republik Österreich 1:200.000 Niederösterreich.- 2 Bl., Geologische Bundesanstalt, Wien.

Topographic map: Basemap.at (https://basemap.at)

Compiled by:	Geological Survey of Austria (GBA) https://www.geologie.ac.at	Geologische Bundesanstalt