

**Origin, facies:** The rocks of the Silbersberg Formation are considered as terrestrial deposits at the margin of a depositional basin.

**Chronostratigraphic age:** Although originally considered as Ordovician or older (CORNELIUS, 1952b), the composition and macroscopic appearance remember that of the Permian Alpine Verrucano as already stated by NIEVOLL (1984). This was confirmed by <sup>40</sup>Ar/<sup>39</sup>Ar dating of concentrates of detrital white mica which yield an age of 359.6 ± 1.1 Ma implying a depositional age younger than the approximate Devonian/Carboniferous boundary (HANDLER et al., 1997).

**Biostratigraphy:** -

**Thickness:** Unknown.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** In nearly all cases a tectonic boundary including a sheared boundary to underlying Paleozoic quartzphyllite.

**Overlying unit(s):** Tectonic boundary.

**Lateral unit(s):** -

**Geographic distribution:** Lower Austria and eastern Styria.

**Remarks:** -

**Complementary references:** -

#### Graschnitz-Formation / Graschnitz Formation

FRANZ NEUBAUER

**Validity:** Invalid and informal unit; the term Graschnitz Formation was introduced on the ÖK50-UTM, map sheet 4217 Kindberg (ÖK50-BMN, map sheet 134 Passail) (FLÜGEL et al., 1990; erroneously named "Graschnitz-Formation" in the map's legend). Unfortunately, neither a description of the succession was ever published, nor explanatory notes for the map sheet.

**Type area:** ÖK50-UTM, map sheet 4217 Kindberg (ÖK50-BMN, map sheet 134 Passail).

**Type section:** No type section defined. A sort of type section is exposed along a long road cut north of Frauenberg village.

**Reference section(s):** -

**Derivation of name:** After the small village Graschnitz near St. Marein im Mürztal.

Remarks: The correct name of the small village in the Mürztal Valley SW of St. Marein is Graschnitz and not Graschnitz as misprinted in the legend of the map.

**Synonyms:** -

**Lithology:** Grey phyllites and other grey metaclastics of the Veitsch Group (not shown on ASC 2004) are overlain by reddish-grey metapsammitic and metapelitic rocks intercalated by quartz-rich metabreccias and acidic metatuffites. All rocks are metamorphosed in lower greenschist facies metamorphic conditions. In general, sand- and gravel-sized clasts display a reddish color. The lower boundary of the Graschnitz Formation is defined by a color change from grey phyllites to grey-reddish metaclastic rocks, which allows an easy separation from the underlying unit.

**Fossils:** -

**Origin, facies:** The Graschnitz Formation could be considered as a terrestrial deposit at the margin of a depositional basin.

**Chronostratigraphic age:** In Central Europe, the color change is commonly assigned to the approximate Carboniferous/Permian boundary, and the red colour is believed typical for Permian successions. A further argument for a possible Early Permian depositional age is the presence of several decimeter- to meter-thick layers of acidic metatuffites near the base of the Graschnitz Fm., which contain abundant volcanic quartz and K-feldspar phenocrysts. These layers are correlated with the Lower Permian Bozen Quartzporphyry.

**Biostratigraphy:** -

**Thickness:** Unknown.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Greyish, upper Carboniferous phyllites of a hitherto unnamed part of the Veitsch Group (not shown in the ASC 2004).

**Overlying unit(s):** Tectonic boundary.

**Lateral unit(s):** -

**Geographic distribution:** Veitsch Nappe of the Greywacke Zone in eastern Styria south of the Mürztal Valley (ÖK50-BMN, map sheet 134 Passail).

**Remarks:** -

**Complementary references:** -

#### Haselgebirge / Haselgebirge

KARL KRAINER

**Validity:** Invalid; informal term for multiphase deformed and weakly metamorphosed Permo-Triassic evaporites of the Northern Calcareous Alps (see MEDWENITSCH, 1951; KÜHN, 1962; TOLLMANN, 1976; SPÖTL, 1989).

**Type area:** Hallstätter Salzburg (Upper Austria), N 47°33'55" / E 13°37'54", ÖK50-UTM, map sheet 3217 Hallstatt (ÖK50-BMN, map sheets 95 Sankt Wolfgang im Salzkammergut, 96 Bad Ischl).

**Type section:** No type section defined.

**Reference section(s):** Poorly exposed on the surface, most studies are based on outcrops in saltmines of Hallstatt (Upper Austria), Hallein (Salzburg) and Hall (Tyrol).

**Derivation of name:** Old mining term (historical review in SCHAUBERGER, 1986).

**Synonyms:** Alpines Haselgebirge, Alpine Haselgebirge Formation.

**Lithology:** The Haselgebirge is a chaotic mélange of shale, siltstone, sandstone, anhydrite, carbonate and rare magmatic rocks embedded in a matrix of clayey halite. The mélange formed during severe tectonization caused by different tectonic processes during Alpine deformation (SPÖTL, 1989). Within undeformed Late Permian successions exposed in saltmines of Hallstatt (Upper Austria), Hallein (Salzburg) and Hall (Tyrol) SPÖTL (1988a, b, 1989) distinguished three lithofacies: (1) red beds and anhydrite, (2) nodular and stratified anhydrites, and (3) bedded halite.

**Fossils:** Pollen and spores, rare bivalves (KLAUS, 1953, 1963, 1965, 1972; SPÖTL, 1987).

# Austrian Stratigraphic Chart 2004 - Paleozoic

(sedimentary successions)

Austrian Stratigraphic Commission



ERA	SYSTEM / PERIOD / SERIES / EPOCH	STAGE / AGE	DURATION Ma	Global Classification					
				ERATHM / ERA	SYSTEM / PERIOD / SERIES / EPOCH				
PALEOZOIC	PERMIAN	CHANGHSINGIAN / Dorashanian	251	PERMIAN	MID PERMIAN / GUADALUPIAN				
		WUCHIAPINGIAN / Dufallian	255						
		CAPITANIAN	260						
		WORDIAN	265						
		ROADIAN	270						
		PERMIAN	LOWER PERMIAN / CISURALIAN			KUNGURIAN	275		
						ARTINSKIAN	280		
						SAKMARIAN	285		
						ASSELIAN	290		
		PERMIAN	UPPER PERMIAN / CARBONIFEROUS			GZHELIAN	295	PERMIAN	LOWER PERMIAN / CISURALIAN
KASIMOVIAN	300								
MOSKOVIAN	305								
BASHKIRIAN	310								
PERMIAN	UPPER PERMIAN / CARBONIFEROUS			SERPUKHOVIAN	315				
				VISEAN	320				
					325				
PERMIAN	LOWER PERMIAN / MISSISSIPPIAN			TOURNAISIAN	330	PERMIAN	LOWER PERMIAN / MISSISSIPPIAN		
				335					
				340					
		345							
		350							
		355							
		359.2							
		365							
		370							
		375							
PERMIAN	UPPER DEVONIAN	FAMENNIAN	380	PERMIAN	UPPER DEVONIAN				
		FRASNIAN	385						
		GIVETIAN	390						
		EIFELIAN	395						
		DEVONIAN	LOWER DEVONIAN			EMSIAN	400		
						405			
		PRAGIAN	410						
		LOCHKOVIAN	415						
		PERMIAN	LOWER DEVONIAN			LUDFORDIAN	420	PERMIAN	LOWER DEVONIAN
						GORSTIAN	425		
HOMERIAN	430								
SHEINWOOD	435								
TELYCHIAN	440								
AERONIAN	443.7								
RHUDDANIAN	445								
HIRNANTIAN	447								
PERMIAN	UPPER ORDOVICIAN			450	PERMIAN	UPPER ORDOVICIAN			
				455					
		460							
		465							
		470							
		475							
		480							
		485							
		488.3							
		490							
PERMIAN	UPPER CAMBRIAN	495	PERMIAN	UPPER CAMBRIAN					
		500							
		505							
		510							
		515							
		520							
		525							
		530							
		535							
		540							
PERMIAN	LOWER CAMBRIAN	542	PERMIAN	LOWER CAMBRIAN					
		545							
		550							
		555							
		560							
		565							
		570							
		575							
		580							
		585							



- Legend**
- pelagic, offshore, siliciclastic
  - pelagic, nearshore, calcareous
  - shallow marin, neritic
  - terrestrial-continental, coarse clastic
  - terrestrial-continental, fine clastic
  - evaporite (chloride, sulphate)
  - rhyolite, dacite
  - (basaltic) andesite, trachyandesite
  - basalt
  - phyllite
  - mixed-facies (in corresponding colors)
  - coal (may include several seams)
  - ? position/age doubtful/controversial
  - | equal units
  - \ older unit left \ younger unit right
  - hiatus
  - unconformity
  - GSSP
  - Fm. Formation
  - Ls. Limestone

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Cutout and English adaptation of the "Die Stratigraphische Tabelle von Österreich 2004": Geological Survey of Austria

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