

**Type section:** No type section defined; SCHLAMBERGER (1987) noticed that in the region of Kitzreck and Demmerkogel (N 46°47'10" / E 15°25'47") boulders of typical rocks of the unit are widespread.

**Reference section(s):** Generally outcrops are rare in the Sausal region and therefore sections are restricted to deeply incised small valleys only. SCHLAMBERGER (1987) mentioned prominent occurrences on the ridge of the Mandelkogel-Harrachegg-Hochbrudersegg-Mitterriegel to Kogelberg.

**Derivation of name:** After the most prominent lithology of the unit.

**Synonyms:** Mandelkogelporphroid (FLÜGEL & NEUBAUER, 1984); Saurer Vulkanitkomplex (SCHLAMBERGER, 1987); Partly: hellgrüne Talkschiefer (HILBER, 1878); Sericitphyllite (LEITMEIER, 1908); Basiskomplex (BOIGK, 1939); Mallitschberg-Serie (SCHIMUNEK, 1958); Porphyroidischer Serizitschiefer (HANSELMAYER, 1961); Orthoserizitschiefer (HANSELMAYER, 1961); Mallitschberg-Gruppe (FLÜGEL, 1964); phyllitische Schiefer (SCHÖNLAUB, 1979).

**Lithology:** Various volcanic and volcanoclastic rocks. SCHLAMBERGER (1987) mentioned two main types: greenish to white densely foliated types with phenocrysts of 0.1 to 1 mm in diameter, and black to light-green quartzitic types with phenocrysts greater than 3 mm in diameter.

**Fossils:** -

**Origin, facies:** Unknown.

**Chronostratigraphic age:** Unknown; probably pre-Silurian.

**Biostratigraphy:** -

**Thickness:** Strong variations; approx. 250 m.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Unknown (crystalline basement?).

**Overlying unit(s):** Metapelitic Complex.

**Lateral unit(s):** Kitzreck Slates.

**Geographic distribution:** Sausal region, ?Remschnigg; ÖK50-BMN, map sheets 190 Leibnitz, 207 Arnfels.

**Remarks:** Due to exhaustive weathering of the Paleozoic rocks and the long-lasting wine growing, a culture dating back to the Celtic epoch, only very scattered outcrops are known in that region. Lithological similarities with the Blaseneck Porphyry resulted in assumptions of an Ordovician age of the unit.

**Complementary references:** -

### Kitzecker Schiefer / Kitzreck Slates

BERNHARD HUBMANN

**Validity:** Invalid; description in SCHÖNLAUB (1979): "Mallitschberg-Kitzreck Schiefer", resp. "Mallitschberg-Kitzreck Schichten".

**Type area:** ÖK50-UTM, map sheet 4111 Leibnitz (ÖK50-BMN, map sheet 190 Leibnitz).

**Type section:** No type section defined; SCHIMUNEK (1958) mentioned in his unpublished doctoral thesis a "locus typicus" of the "Kitzreck-Serie" along the road Fresing-Kern-Kitzreck-Tischlerwirt-Kroisgraben (N 46°46'02" / E 15°26'15").

**Reference section(s):** Reference sections (see SCHIMUNEK, 1958) are on the road Fresing-Kitzreck (N 46°46'27" / E 15°27'15") and at Kroisgraben (N 46°46'14" / E 15°26'33").

**Remarks:** Already in the 1950s outcrops were rather rare; SCHIMUNEK (1958) reported only isolated boulders which cannot be found in a successional sequence.

**Derivation of name:** After Kitzreck, the highest viticulture village of Europe (564 m altitude).

**Synonyms:** Meta-Quarzkeratophyre (ANGEL, 1924); Mallitschberg-Kitzreck-Schichten (SCHÖNLAUB, 1979); partly: Mallitschberg-Serie (SCHIMUNEK, 1958); Kitzreck-Serie (SCHIMUNEK, 1958); Mallitschberg-Gruppe (FLÜGEL, 1964).

**Lithology:** Various tectonized phyllitic quartz-rich slates.

**Fossils:** Unknown.

**Origin, facies:** ?

**Chronostratigraphic age:** Ordovician?, Silurian?

**Biostratigraphy:** -

**Thickness:** Strong variations; maximum 200 m.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Unknown.

**Overlying unit(s):** Metapelitic Complex.

**Lateral unit(s):** Acidic Volcaniclastics.

**Geographic distribution:** Sausal and ?Remschnigg; ÖK50-BMN, map sheets 190 Leibnitz, 207 Arnfels.

**Remarks:** -

**Complementary references:** FLÜGEL & NEUBAUER (1984).

### Metapelitischer Komplex / Metapelitic Complex

BERNHARD HUBMANN

**Validity:** Invalid; comprehensive description by SCHLAMBERGER (1987: p. 10; "Metapelitischer Komplex").

**Type area:** ÖK50-UTM, map sheet 4111 Leibnitz (ÖK50-BMN, map sheet 190 Leibnitz).

**Type section:** No type section defined; SCHLAMBERGER (1987) presents a section of the lower part of the complex (i.e., "calcareous phyllites") at the eastern slope of Demmerkogel (N 46°47'11" / E 15°26'07").

**Reference section(s):** According to SCHLAMBERGER (1987) some small outcrops are at Steinbachgraben and east of Hohegg (E 15°28'24" / N 46°46'35").

**Remarks:** Due to bad exposure and intensive tectonic overprint no continuous sequence can be traced.

**Derivation of name:** After the most prominent lithology (weakly metamorphosed fine grained sediments) of the unit.

**Synonyms:** Partly: Gleinstätterberg-Serie (SCHIMUNEK, 1958); Serizitschiefer (HANSELMAYER, 1961); basische Vulkanite und Grünschiefer (SCHÖNLAUB, 1979); Gleinstättenberg-Serie (SCHÖNLAUB, 1979).

**Lithology:** Brownish to green calcareous phyllites (colors of the rocks depend on degree of weathering), phyllites to quartzitic phyllites (without hints of volcanic influence), dark-green to black metatuffs and metatuffites and marbles.

**Fossils:** Unknown; SCHLAMBERGER (1987) reported “ghost structures” of organic debris in thin sections.

**Origin, facies:** Shallow marine deposits (?).

**Chronostratigraphic age:** ?pre-Silurian–Silurian.

**Biostratigraphy:** -

**Thickness:** Strong variations; approx. 400 m.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** SCHLAMBERGER (1987) mentioned four units: calcareous phyllites with maximum thickness of 250 m, phyllites (and quartzitic phyllites) at Steinriegel southeast of Kitzack with strongly fluctuating thickness, metatuffs and metatuffites with different amounts of ore mineralizations, and marbles which occur as lenses. On the eastern slope of the Demmerkogel this marble horizon reaches a thickness of 20 to 30 m.

**Underlying unit(s):** Acidic Volcaniclastics and Mallitschberg-Kitzeck Slates.

**Overlying unit(s):** Metabasaltic Complex.

**Lateral unit(s):** Acidic Volcaniclastics.

**Geographic distribution:** Sausal region, ?Remschnigg; ÖK50-BMN, map sheets 190 Leibnitz, 207 Arnfels.

**Remarks:** -

**Complementary references:** -

#### Metabasaltischer Komplex / Metabasaltic Complex

BERNHARD HUBMANN

**Validity:** Invalid; comprehensive description by SCHLAMBERGER (1987: p. 39; “Metabasaltkomplex”).

**Type area:** ÖK50-UTM, map sheet 4111 Leibnitz (ÖK50-BMN, map sheet 190 Leibnitz).

**Type section:** No type section published; SCHLAMBERGER (1987) noticed at Wiesberg two abandoned quarries exposing rocks of the unit (N 46°47'54" / E 15°31'26").

**Reference section(s):** SCHLAMBERGER (1987) mentioned further occurrences at Demmerkogel and Grillkogel (ÖK50-BMN, map sheet 207 Arnfels) (N 46°44'52" / E 15°24'09").

**Derivation of name:** After the dominating basaltic lithology of the unit.

**Synonyms:** Metabasaltkomplex (SCHLAMBERGER, 1987); partly: Kugeldiabase (HOERNES, 1889); Diabasporyrit (LEITMEIER, 1907, 1908); Metadiabase [im Sausalgebirge] (ANGEL, 1924); Gleinstätterberg Serie (SCHIMUNEK, 1958); Serizit-Quarz Gesteine vom Madlkogel (SCHIMUNEK, 1958).

**Lithology:** Basaltic rocks of tholeiitic composition with various secondary changes in mineralogy.

**Fossils:** -

**Origin, facies:** Geochemical data (SCHLAMBERGER, 1987) point to a continental rift position.

**Chronostratigraphic age:** Unknown; probably Lower Devonian.

**Biostratigraphy:** -

**Thickness:** Strong variation in thickness ranging from two meters up to several meters.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Metapelitic Complex.

**Overlying unit(s):** Metapsammitic Complex.

**Lateral unit(s):** ?

**Geographic distribution:** Sausal region, ?Remschnigg; ÖK50-BMN, map sheets 190 Leibnitz, 207 Arnfels.

**Remarks:** SCHLAMBERGER (1987) distinguished three types of metabasalts, the diabase at Wiesberg (massive and hard, dark-green to black vein rock), the metabasalts of Demmerkogel (strongly tectonized, light-green to reddish rocks), and metabasalts of Grillkogel (massive blackish basalts) at the contact to Neogene covering sediments.

**Complementary references:** FLÜGEL & NEUBAUER (1984).

#### Metapsammit Komplex / Metapsammitic Complex

BERNHARD HUBMANN

**Validity:** Invalid; comprehensive description by SCHLAMBERGER (1987: p. 18; “Metapsammitkomplex”).

**Type area:** ÖK50-UTM, map sheet 4111 Leibnitz (ÖK50-BMN, map sheet 190 Leibnitz).

**Type section:** No type section defined; SCHLAMBERGER (1987) mentions thick sequences overlying the diabases (= Metabasaltic Complex) at Wiesberg (E 15°31'26" / N 46°47'54").

**Reference section(s):** Further outcrops for reference are stratigraphically above the diabase horizon at Kreuzkogel (496 m; N 46°47'21" / E 15°30'48"), at Demmerkogel (671 m; N 46°47'10" / E 15°25'47"), north of the road from Kostnast to Grillbauer inn and in the upper part of the Wöllinggraben at the eastern slope of Nebenegg (N 46°48'13" / E 15°26'50").

**Derivation of name:** After the most prominent lithology (weakly metamorphosed rocks with grains of sand size) of the unit.

**Synonyms:** Tonschiefer (SCHÖNLAUB, 1979); partly: Gleinstätterberg Serie (SCHIMUNEK, 1958); Serizit-Quarz Gesteine vom Madlkogel (SCHIMUNEK, 1958).

**Lithology:** Typically compact fine-grained grey, brown or light-red rocks with local interbeddings of phyllites.

**Fossils:** Unknown.

**Origin, facies:** Due to the lack of fossils and sedimentary structures unknown. Heavy minerals point to a hinterland with acidic magmatic and metamorphic rocks. Shallow marine deposits (?).

**Chronostratigraphic age:** ?Lower Devonian.

**Biostratigraphy:** -

**Thickness:** Strong variations; approx. 250 m.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Metabasaltic Complex.

**Overlying unit(s):** Burgstall Flaser Limestones, Greywackes.

**Lateral unit(s):** Burgstall Flaser Limestones.

**Geographic distribution:** Sausal region, ?Remschnigg; ÖK50-BMN, map sheets 190 Leibnitz, 207 Arnfels.

**Remarks:** -

**Complementary references:** -

# 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 / LOPINGIAN				
		WUCHIAPINGIAN / Dzhulfian	255						
		CAPITANIAN	260						
		WORDIAN	265						
		ROADIAN	270						
		PERMIAN	LOWER PERMIAN / CISURALIAN			KUNGURIAN	275		
						ARTINSKIAN	280		
						SAKMARIAN	285		
						ASSELIAN	290		
		PERMIAN	TRIAS			GZHELIAN	295	TRIAS	U. CARBONIFEROUS / PENNSYLVANIAN
KASIMOVIAN	300								
MOSKOVIAN	305								
BASHKIRIAN	310								
TRIAS	LOWER CARBONIFEROUS / MISSISSIPPIAN			SERPUKHOVIAN	315				
				VISEAN	320				
				TOURNAISIAN	325				
PERMIAN	DEVONIAN			FAMENNIAN	350	DEVONIAN	UPPER DEVONIAN		
				FRASNIAN	355				
				GIVETIAN	360				
		EIFELIAN	365						
		EMSIAN	370						
		DEVONIAN	LOWER DEVONIAN	PRAGIAN	375				
				LOCHKOVIAN	380				
				LUDFORDIAN / GORSTIAN	385				
				HOMERIAN / SHEINWOOD	390				
		PERMIAN	DEVONIAN	WEN-LOCK / LOW	395			DEVONIAN	MIDDLE DEVONIAN
TELYCHIAN	400								
AERONIAN	405								
RHUDDANIAN	410								
DEVONIAN	UPPER ORDOVICIAN			DARRIWILIAN	415				
				TREMA-DOCIAN	420				
				PAIBIAN	425				
PERMIAN	CAMBRIAN			WEN-LOCK / HIGH	430	CAMBRIAN	MIDDLE CAMBRIAN		
				LLANDOVERY	435				
				HIRNANTIAN	440				
		ORDOVICIAN	445						
		CAMBRIAN	LOWER CAMBRIAN	WOLYER	450				
				VAL VISDENSE	455				
				COQUINA	460				
		PERMIAN	CAMBRIAN	WEN-LOCK / LOW	465			CAMBRIAN	LOWER CAMBRIAN
				LLANDOVERY	470				
				HIRNANTIAN	475				
ORDOVICIAN	480								
CAMBRIAN	UPPER CAMBRIAN			WOLYER	485				
				VAL VISDENSE	490				
				COQUINA	495				
PERMIAN	CAMBRIAN			WEN-LOCK / LOW	500	CAMBRIAN	LOWER CAMBRIAN		
				LLANDOVERY	505				
				HIRNANTIAN	510				
		ORDOVICIAN	515						
		CAMBRIAN	UPPER CAMBRIAN	WOLYER	520				
				VAL VISDENSE	525				
				COQUINA	530				
		PERMIAN	CAMBRIAN	WEN-LOCK / LOW	535			CAMBRIAN	LOWER CAMBRIAN
				LLANDOVERY	540				
				HIRNANTIAN	545				
ORDOVICIAN	550								
CAMBRIAN	UPPER CAMBRIAN			WOLYER	555				
				VAL VISDENSE	560				
				COQUINA	565				



### 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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