

**Chronostratigraphic age:** Emsian–lower Givetian (SCHÖNLAUB et al., 2004: p. 16).

**Biostratigraphy:** -

**Thickness:** 330 m.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Seewarte Limestone (conformable contact).

**Overlying unit(s):** Kellergrat Reef Limestone (conformable contact).

**Lateral unit(s):** Lambertenghi Limestone, Spinotti Limestone, Vinz Limestone, Cellon Limestone.

**Geographic distribution:** Carnic Alps.

**Remarks:** -

**Complementary references:** SCHÖNLAUB (1985c), SCHÖNLAUB & HISTON (2000).

### Freikofel-Kalk / Freikofel Limestone

THOMAS J. SUTTNER, ERIKA KIDO

**Validity:** Invalid; mentioned by BANDEL (1972) and SCHÖNLAUB (1985a: p. 43); included within the summary of the Variscan carbonate sequences in the Carnic Alps (KREUTZER, 1992b: p. 30); lithology and facies described by SCHÖNLAUB et al. (2004).

**Type area:** ÖK50-UTM, map sheets 3109 Oberdrauburg, 3110 Kötschach-Mauthen, 3116 Sonnenalpe Naßfeld (ÖK50-BMN, map sheet 197 Kötschach).

**Type section:** -

**Reference section(s):** Mount Freikofel [= Cuelat] (SCHÖNLAUB et al., 2004), N 46°36'03" / E 12°58'39"; Pal Grande, Pal Piccolo, Creta di Timau (PERRI & SPALLETTA, 1998a).

**Derivation of name:** After Mount Freikofel (SCHÖNLAUB, 1985a: p. 43).

**Synonyms:** 'Lithoklastkalk' (BANDEL, 1974: p. 101).

**Lithology:** Light red to greyish pelagic limestone (KREUTZER, 1992b).

**Fossils:** Cephalopods, conodonts, corals, crinoids, trilobites.

**Origin, facies:** Marine limestone, gravity flow deposits belonging to the Pelagic Carbonate Facies (KREUTZER, 1992a: p. 272; SCHÖNLAUB et al., 2004: p. 45).

**Chronostratigraphic age:** Eifelian–Givetian.

**Biostratigraphy:** *costatus* conodont zone (PERRI & SPALLETTA, 1998a).

**Thickness:** > 100 m.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Vinz Limestone (conformable contact).

**Overlying unit(s):** Pal Limestone (conformable contact).

**Lateral unit(s):** Cellon Limestone, Findenig Limestone, Hohe Trieb Formation.

**Geographic distribution:** Carnic Alps.

**Remarks:** -

**Complementary references:** SCHÖNLAUB & HISTON (2000), BRIME et al. (2008).

### Cellon-Kalk / Cellon Limestone

THOMAS J. SUTTNER, ERIKA KIDO

**Validity:** Invalid; first detailed profiles by BANDEL (1972, 1974); mapped by KREUTZER & SCHÖNLAUB (1984); lithology and facies described by SCHÖNLAUB (1985a) and KREUTZER (1992a); included within the summary of the Variscan carbonate sequences in the Carnic Alps (KREUTZER, 1992b: p. 30).

**Type area:** ÖK50-UTM, map sheets 3109 Oberdrauburg, 3110 Kötschach-Mauthen, 3111 Spittal an der Drau, 3112 Villach, 3116 Sonnenalpe Naßfeld, 3117 Nötsch im Gailtal, 3118 Arnoldstein (ÖK50-BMN, map sheets 197 Kötschach, 198 Weißbriach, 199 Hermagor, 200 Arnoldstein).

**Type section:** Upper part of Cellon avalanche gully (KREUTZER, 1992a), N 46°36'31" / E 12°56'08".

**Reference section(s):** Lower Kellerwand cliff (Obere Valentinalm to Eiskarkopf), Kleiner Pal (KREUTZER & SCHÖNLAUB, 1984; KREUTZER, 1990).

**Derivation of name:** After Mount Cellon.

**Synonyms:** 'Lithoklastkalk' (BANDEL, 1974: p. 101); Kunzkopf-Kalk (KREUTZER, 1990).

**Lithology:** Massive grey limestone with pelagic biogenes with debris layers (KREUTZER, 1992b).

**Fossils:** Bivalves, cephalopods, corals, conodonts, echinoderms, foraminifers, gastropods, stromatoporoids, trilobites.

**Origin, facies:** Marine limestone, pelagic unit (Transitional Facies).

**Chronostratigraphic age:** Eifelian–Givetian.

**Biostratigraphy:** *partitus*, *costatus* and *varcus* conodont zones (KREUTZER, 1990).

**Thickness:** 210 m.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Vinz Limestone (conformable contact).

**Overlying unit(s):** Pal Limestone (conformable contact).

**Lateral unit(s):** Eiskar Limestone, Kellergrat Reef Limestone, Freikofel Limestone.

**Geographic distribution:** Carnic Alps.

**Remarks:** -

**Complementary references:** KREUTZER et al. (1997, 2000), VAI (1998), SCHÖNLAUB & HISTON (2000), SCHÖNLAUB et al. (2004).

### Hohe Trieb-Formation / Hohe Trieb Formation

THOMAS J. SUTTNER, ERIKA KIDO

**Validity:** Valid; well described by PÖLSLER (1969a) and SCHÖNLAUB (1969a); mapped by SCHÖNLAUB (1981); named by SCHÖNLAUB (1985a: p. 43); unit formalized by KREUTZER (1992b).

**Type area:** ÖK50-UTM, map sheets 3109 Oberdrauburg, 3110 Kötschach-Mauthen, 3111 Spittal an der Drau, 3116 Sonnenalpe Naßfeld, 3117 Nötsch im Gailtal (ÖK50-BMN, map sheets 197 Kötschach, 198 Weißbriach, 199 Hermagor).

**Type section:** Hoher Trieb (SCHÖNLAUB, 1969a), N 46°35'46" / E 13°03'31".

**Reference section(s):** Bischofalm, Tristanköpfel (SCHÖNLAUB, 1969a); Mount Findenig (PÖLSLER, 1969a).

**Derivation of name:** After Mount Hoher Trieb (SCHÖNLAUB, 1969a).

**Synonyms:** Formazione di Monte Lodin (SELLI, 1963); "20m-Bank" (PÖLSLER, 1969a: Tab. 1, 4, p. 366); gebankte Kalke mit Lydit (PÖLSLER, 1969a: Tab. 1, 4, p. 366); Blockhorizont (PÖLSLER, 1969a: Tab. 4, p. 369); massiger Kalk mit verkieselten Korallen (PÖLSLER, 1969a: Tab. 1); Hoher Trieb-Kalk (SCHÖNLAUB, 1981); tentaculite pelagic limestone [partim] (SPALLETTA & VENTURINI, 1989); Hoher Trieb Formation (HÜNEKE, 2006: p. 154).

**Lithology:** Flaser and platy limestone with clay and chert layers (KREUTZER, 1992b).

**Fossils:** Cephalopods, conodonts, corals, crinoids, trilobites, stromatoporoids; silicified corals and stromatoporoids of Mount Findenig are known since FRECH (1894).

**Origin, facies:** Marine limestone, pelagic unit (Pelagic Carbonate Facies).

**Chronostratigraphic age:** Eifelian–Givetian (age constraint follows the conodont analysis and zonation from equivalent strata of Mount Findenig by PÖLSLER, 1969a: Tab. 1).

**Biostratigraphy:** -

**Thickness:** 30–40 m.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Findenig Limestone (conformable contact).

**Overlying unit(s):** Pal Limestone (unconformable contact).

**Lateral unit(s):** Freikofel Limestone, Pal Limestone, Valentin Limestone.

**Geographic distribution:** Carnic Alps.

**Remarks:** -

**Complementary references:** SCHÖNLAUB (1991), VAI (1998), SCHÖNLAUB & HISTON (2000), SCHÖNLAUB et al. (2004).

### Valentin-Kalk / Valentin Limestone

THOMAS J. SUTTNER, ERIKA KIDO

**Validity:** Invalid; the name of this unit was introduced on the map of SCHÖNLAUB (1971–1973); conodont stratigraphy by SCHÖNLAUB (1980b) and GÖDDERTZ (1982); lithological description by SCHÖNLAUB (1985a); mentioned by KREUTZER (1990, 1992a); summary of unit is provided by KREUTZER (1992b: p. 30–31); facies analysis (HÜNEKE, 2001, 2006; SCHÖNLAUB et al., 2004: p. 59).

**Type area:** ÖK50-UTM, map sheets 3109 Oberdrauburg, 3110 Kötschach-Mauthen, 3111 Spittal an der Drau, 3116 Sonnenalpe Naßfeld, 3117 Nötsch im Gailtal (ÖK50-BMN, map sheets 197 Kötschach, 199 Hermagor).

**Type section:** -

**Reference section(s):** Obere Valentinalm, Wolayer "Glacier" section (SCHÖNLAUB et al., 2004: p. 59); sections 13 km NE of Paluzza (Malpasso, Poccis, Pramosio, Rio Boreado) (PERRI & SPALLETTA, 1998a: p. 116, 118, 119).

**Derivation of name:** After the Valentin Törl between Lake Wolayer the Valentin Valley (SCHÖNLAUB, 1980b: p. 45).

**Synonyms:** "Grauer Styliolinen-Flaserkalk" (BANDEL, 1974: p. 96); Pramosio calcirudite (SPALLETTA & PERRI, 1998a).

**Lithology:** Well bedded limestones (wackestone), nodular phosphorite horizon (at Givetian/Frasnian boundary).

**Fossils:** Brachiopods, conodonts, echinoderms, gastropods, ostracods, styliolinids, trilobites (SCHÖNLAUB et al., 2004: p. 59).

**Origin, facies:** Marine limestone, Pelagic Carbonate Facies (POHLER & SCHÖNLAUB, 2001).

**Chronostratigraphic age:** Eifelian–Givetian.

**Biostratigraphy:** *costatus* to lower *hassi* conodont zones (GÖDDERTZ, 1982; SCHÖNLAUB et al., 2004: p. 60–61).

**Thickness:** 15 m.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Findenig Limestone (conformable contact).

**Overlying unit(s):** Pal Limestone (unconformable contact).

**Lateral unit(s):** Hohe Trieb Formation, Zollner Formation.

**Geographic distribution:** Carnic Alps.

**Remarks:** -

**Complementary references:** PÖLSLER (1969a, b), BANDEL & BECKER (1975), SCHÖNLAUB (1985b, 1999), JOACHIMSKI et al. (1994), SCHÖNLAUB & KREUTZER (1994b), PERRI & SPALLETTA (1998a), SPALLETTA & PERRI (1998b), SCHÖNLAUB & HISTON (2000), VENTURINI (2006), HÜNEKE (2007), BRIME et al. (2008).

### Feldkogel-Kalk / Feldkogel Limestone

THOMAS J. SUTTNER, ERIKA KIDO

**Validity:** Invalid; known since FRECH (1887); observed by BANDEL (1972); facies analysis by KREUTZER (1992a); included within the summary of the Variscan carbonate sequences in the Carnic Alps (KREUTZER, 1992b).

**Type area:** ÖK50-UTM, map sheets 3109 Oberdrauburg, 3110 Kötschach-Mauthen, 3111 Spittal an der Drau, 3116 Sonnenalpe Naßfeld, 3117 Nötsch im Gailtal (ÖK50-BMN, map sheets 197 Kötschach, 198 Weißbriach, 199 Hermagor).

**Type section:** -

**Reference section(s):** Feldkogel south of the village of Gundersheim (KREUTZER, 1992a: p. 272), N 46°37'16" / E 13°07'23".

**Derivation of name:** After Mount Feldkogel (KREUTZER, 1992a).

**Synonyms:** Dolomitische Schichten des Pollinigg (FRECH, 1887: p. 690).

**Lithology:** Algal laminite with dolomite layers (KREUTZER, 1992b).

**Fossils:** Conodonts, foraminifers, ostracods, stromatolites.

**Origin, facies:** Marine limestone, intertidal, neritic unit (Northern Shallow-water Facies).

**Chronostratigraphic age:** Eifelian–Upper Devonian.

**Biostratigraphy:** Upper Devonian is based on the occurrence of *Palmatolepis* sp. from sediments of the Mooskofel (KREUTZER, 1990).

# 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	330	DEVONIAN	UPPER DEVONIAN				
				FRASNIAN	335						
				GIVETIAN	340						
		EIFELIAN	345								
		DEVONIAN	LOWER DEVONIAN	EMSIAN	350						
				LOCHKOVIAN	355						
		PERMIAN	DEVONIAN	LUDFORDIAN / GORSTIAN	359.2			DEVONIAN	MIDDLE DEVONIAN		
				HOMERIAN / SHEINWOOD	365						
				TELYCHIAN	370						
				AERONIAN	375						
RHUDDANIAN	380										
PERMIAN	SILURIAN			HIRNANTIAN	385						
				LLANDOVERY	390						
PERMIAN	DEVONIAN			WEN-LOCK / LOW	395	DEVONIAN	LOWER DEVONIAN				
				PRAGIAN	400						
				LOCHKOVIAN	405						
		Zlichovian	410								
		PERMIAN	SILURIAN	LUDFORDIAN / GORSTIAN	416						
				HOMERIAN / SHEINWOOD	420						
		PERMIAN	DEVONIAN	TELYCHIAN	425			DEVONIAN	UPPER ORDOVICIAN		
				AERONIAN	430						
				RHUDDANIAN	435						
				HIRNANTIAN	440						
PERMIAN	SILURIAN			LLANDOVERY	443.7						
				HIRNANTIAN	445						
PERMIAN	DEVONIAN			WOLYER / GREYWACKE	446	DEVONIAN	MIDDLE ORDOVICIAN				
				PAIBIAN	450						
				PERMIAN	SILURIAN					UPPER ORDOVICIAN	455
										MIDDLE ORDOVICIAN	460
		PERMIAN	SILURIAN	DARRIWILIAN	465						
				TREMA-DOCIAN	470						
		PERMIAN	DEVONIAN	UPPER CAMBRIAN	475			DEVONIAN	LOWER ORDOVICIAN		
				MIDDLE CAMBRIAN	480						
				PAIBIAN	485						
				PERMIAN	SILURIAN					UPPER CAMBRIAN	490
MIDDLE CAMBRIAN	495										
PERMIAN	SILURIAN			UPPER CAMBRIAN	500						
				MIDDLE CAMBRIAN	505						
PERMIAN	DEVONIAN			UPPER CAMBRIAN	510	DEVONIAN	UPPER ORDOVICIAN				
				MIDDLE CAMBRIAN	515						
				PERMIAN	SILURIAN					UPPER CAMBRIAN	520
		MIDDLE CAMBRIAN	525								
		PERMIAN	SILURIAN	UPPER CAMBRIAN	530						
				MIDDLE CAMBRIAN	535						
		PERMIAN	SILURIAN	UPPER CAMBRIAN	540						
				MIDDLE CAMBRIAN	542						



### 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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