

**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).

**Thickness:** > 330 m.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

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

**Overlying unit(s):** Plotta Lydite (unconformable contact).

**Lateral unit(s):** Gamskofel Limestone.

**Geographic distribution:** Carnic Alps.

**Remarks:** -

**Complementary references:** SCHÖNLAUB (1985a), RAN-TITSCH (1992a), SCHÖNLAUB & HISTON (2000), SCHÖNLAUB et al. (2004).

### Kellergrat-Riffkalk / Kellergrat Reef Limestone

THOMAS J. SUTTNER, ERIKA KIDO

**Validity:** Invalid; facies described by KREUTZER (1990, 1992a); summary of unit is provided by KREUTZER (1992b: p. 31); the formation name Kellergrat-Riffkalk was first mentioned by KREUTZER (1992a: p. 271); later it has been continuously used, e.g., by FLÜGEL & HUBMANN (1994), KREUTZER et al. (1997) and SCHÖNLAUB (1992).

**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):** Kellergrat (located between the Kellerspitzen to the West and the Kollinkofel to the East, N 46°36'39" / E 12°54'04") and Hohe Warte (KREUTZER, 1990); abandoned trail #149 to Rifugio Marinelli (SCHÖNLAUB et al., 2004: p. 46); Monte Zermula and Monte Zuc della Guardia (Canson di Lanza pass) (FERRARI & VAI, 1966).

**Derivation of name:** After the Kellergrat which is located between the Kellerspitzen and Kollinkofel (KREUTZER, 1990: p. 295).

**Synonyms:** La serie calcarea di M. Zermula [partim] (FERRARI & VAI, 1966); Stromatoporen-Korallen-Riffkalk im Gipfelbereich der Hohen Warte (SCHÖNLAUB, 1971–1973); Phillipsastrea Lst. (SCHÖNLAUB, 1980b: Fig. 3); Phillipsastrea-Kalk (KREUTZER & SCHÖNLAUB, 1984); Stromatoporen/Korallenschutt-K. (SCHÖNLAUB, 1985a: Fig. 10); Phillipsastrea/Brachiop.-K. (SCHÖNLAUB, 1985a: Fig. 10); Riff-Kalk (KREUTZER, 1990); Korallenkalk (SCHÖNLAUB, 1991: p. 119); Korallen-Stromatoporen-Kalk und Phillipsastrea-Kalk (KREUTZER, 1992a: p. 271); Riffkalke im Gipfelbereich der Hohen Warte und der Kellerwände (OEKENTORP-KÜSTER & OEKENTORP, 1992: p. 237); Givetische Rindenkoralkalke der Hohen Warte und des Kollinkofels (OEKENTORP-KÜSTER & OEKENTORP, 1992: p. 238); Rindenkoralkalke im Bereich der Hohen Warte, der Kellerspitzen und des Kollinkofel (OEKENTORP-KÜSTER & OEKENTORP, 1992: p. 238); Rindenkoralkalke des Kollinkofels (OEKENTORP-KÜSTER & OEKENTORP, 1992: p. 239, 240); Rindenkoralkalke des Ober-Givetiums der Kellerwände und des Kollinkofels (OEKENTORP-KÜSTER & OEKENTORP, 1992: p. 240).

**Lithology:** Massive reef limestone (KREUTZER, 1992b: p. 31).

**Fossils:** Brachiopods, calcareous algae, calcispheres, conodonts, corals, ecinoderms, gastropods, stromatopoids (KREUTZER, 1992b: p. 31; OEKENTORP-KÜSTER & OEKENTORP, 1992).

**Origin, facies:** Marine limestone, neritic unit belonging to the Southern Shallow-water Facies (SCHÖNLAUB, 1985a: p. 42).

**Chronostratigraphic age:** Lower Givetian–Frasnian (SCHÖNLAUB, 1985a: p. 43; SCHÖNLAUB et al., 2004: p. 16).

**Biostratigraphy:** *gigas* conodont zone (KREUTZER, 1990).

**Thickness:** > 180 m.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Spinotti Limestone (conformable contact), Eiskar Limestone (conformable contact).

**Overlying unit(s):** Marinelli Limestone (conformable contact), Kollinkofel Limestone (conformable contact).

**Lateral unit(s):** Gamskofel Limestone, Cellon Limestone, Pal Limestone.

**Geographic distribution:** Carnic Alps.

**Remarks:** -

**Complementary references:** FLÜGEL (1956, 1958), VAI (1963, 1967, 1971, 1998), PÖLSLER (1967), FERRARI (1968), BANDEL (1972), GALLI (1985), SCHÖNLAUB & HISTON (2000), HUBMANN et al. (2003), VENTURINI (2006).

### Pal-Kalk / Pal Limestone

THOMAS J. SUTTNER, ERIKA KIDO

**Validity:** Invalid; known since FRECH (1887); described by GAERTNER (1931); facies analysis by KREUTZER (1992a); included within the summary of the Variscan carbonate sequences in the Carnic Alps (KREUTZER, 1992b); well studied for conodonts by PERRI & SPALLETTA (1998a, b).

**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 Herma-gor).

**Type section:** -

**Reference section(s):** Grosser Pal (Pal Grande), 3.6 km east of the Plöckenpass (N 46°35'56" / E 12°59'26"), Kleiner Pal, Cellon, section west of the Valentintörl near southern slope of Mount Rauchkofel, Grüne Schneid (Cresta Verde), Kronhofgraben, Casera Pramosio Alta, Malga Poccis, Cava Canteoniera, Casera Malpasso, Collinetta di sotto section near Plöckenpass (all localities summarized by PERRI & SPALLETTA, 1998a, b).

**Derivation of name:** After Mount Pal (FRECH, 1887).

**Synonyms:** Clymenienkalk am Gross-Pal (FRECH, 1887: p. 700); Clymenienkalk (PÖLSLER, 1967); 'Kalk mit phosphatischen Knollen' (BANDEL, 1974: p. 97); 'Goniatiten-Flaserkalk' (BANDEL, 1974: p. 97); Goniatite Flaser-Ist. (SCHÖNLAUB, 1980b: Fig. 3); Pramosio calcirudite and clymenid- and goniatid-bearing pelagic limestone (SPALLETTA & PERRI, 1998c); Pal Limestone Formation (HÜNEKE, 2006).

**Lithology:** Limestone beds (mudstone and wackestone), thin biosparitic and quartz-rich layers, black shale.

**Fossils:** Bivalves, clymeniids, conodonts, corals (rare), echinoderms, goniatites, ostracods, styliolinids, trilobites.

**Origin, facies:** Open marine limestone, pelagic unit (Transitional Facies and Pelagic Carbonate Facies).

# 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 / Dorashamian	251	PERMIAN	MID PERMIAN / GUADALUPIAN				
		WUCHIAPINGIAN / Dzhulfian	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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