

Biostratigraphy: *eosteinhornensis* conodont zone.

Thickness: 8 m.

Lithostratigraphically higher rank unit: Plöcken Facies (informal).

Lithostratigraphic subdivision: -

Underlying unit(s): Alticola Limestone (conformable contact).

Overlying unit(s): Rauchkofel Limestone (conformable contact).

Lateral unit(s): Nölbling Formation.

Geographic distribution: Carnic Alps.

Remarks: -

Complementary references: FRECH (1894b), HERITSCH (1929), VAI (1963, 1998, 1999), FLÜGEL (1965), RISTEDT (1969), SCHÖNLAUB (1970, 1971a, 1985a, 1997), TIETZ (1976), KREUTZER (1994), SCHÖNLAUB & KREUTZER (1994a), WENZEL (1997), FERRETTI et al. (1999), PASAVA & SCHÖNLAUB (1999), SCHÖNLAUB & HISTON (1999, 2000), PRIEWALDER (2000), SCHÖNLAUB et al. (2004), CORRADINI et al. (2005), SUTTNER (2007b).

Bodenkalk / Boden Limestone

THOMAS J. SUTTNER, ERIKA KIDO

Validity: Invalid; lithological characters and conodont biostratigraphy provided by SCHÖNLAUB (1980b, 1985a); facies described 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, 3116 Sonnenalpe Naßfeld (ÖK50-BMN, map sheet 197 Kötschach).

Type section: -

Reference section(s): Rauchkofel Boden section (SCHÖNLAUB, 1985a), N 46°36'54" / E 12°52'40".

Derivation of name: after the Rauchkofel Boden on Mount Rauchkofel (SCHÖNLAUB, 1985a: p. 43).

Synonyms: *Orthoceras* Lst. (SCHÖNLAUB, 1980b).

Lithology: Light flaser limestone (KREUTZER, 1992b).

Fossils: Cephalopods (orthoconic and coiled nautiloids), conodonts, tentaculites (dacryoconarids).

Origin, facies: Marine limestone, following KREUTZER (1992a) this unit belongs to the Pelagic Carbonate Facies (compare Fig. 10 in SCHÖNLAUB, 1985a). Wrongly illustrated as shallow neritic unit in the ASC 2004.

Chronostratigraphic age: Lochkovian.

Biostratigraphy: *delta* and *pesavis* conodont zones (SCHÖNLAUB, 1980b).

Thickness: 20 m.

Lithostratigraphically higher rank unit: -

Lithostratigraphic subdivision: -

Underlying unit(s): Rauchkofel Limestone (conformable contact).

Overlying unit(s): Findenig Limestone (conformable contact).

Lateral unit(s): Rauchkofel Limestone.

Geographic distribution: Carnic Alps.

Remarks: -

Complementary references: SCHÖNLAUB (1991, 1992), FERRETTI et al. (1999), SCHÖNLAUB & HISTON (2000), HUBMANN et al. (2003), SCHÖNLAUB et al. (2004), CORRIGA & CORRADINI (2009).

Rauchkofel-Kalk / Rauchkofel Limestone

THOMAS J. SUTTNER, ERIKA KIDO

Validity: Invalid; known since FRECH (1887); two different facies of limestone are discriminated, i.e., neritic Rauchkofel Limestone and pelagic Rauchkofel Limestone (SCHÖNLAUB, 1980b: Fig. 3; SCHÖNLAUB, 1985a: Fig. 10); a detailed study on the facies of the neritic unit at Mount Seewarte has been done by BANDEL (1969), POHLER (1982) and additional conodont-biostratigraphy by SUTTNER (2007b); the pelagic unit was well described by SCHÖNLAUB (1985a: p. 42–43); a summary of lithostratigraphic characters of this formation is provided by KREUTZER (1992b: p. 25–26).

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: -

Reference section(s): Section at the footwall of Mount Seewarte (BANDEL, 1969; neritic Rauchkofel Limestone), N 46°36'40" / E 12°52'24"; Rauchkofel South section (SCHÖNLAUB, 1985a; pelagic Rauchkofel Limestone).

Derivation of name: After Mount Rauchkofel.

Synonyms: Korallenriffkalk am Wolayer- u. Seekopf-Thörl [partim] (FRECH, 1887: p. 700); unterdevonischer Riffkalk [partim] (FRECH, 1894b: p. 229); Schwarze Plattenkalke (GAERTNER, 1931); ey-Plattenkalke (GAERTNER, 1931); ey-Schichten (GAERTNER, 1931); Schwarze Kalke der Einheiten 0b, 0d, 0f, 0g (BANDEL, 1969); ey limestone (SCHÖNLAUB, 1980b: Fig. 3); Conjugula Lst. (SCHÖNLAUB, 1980b: Fig. 3); Neritic Rauchkofel Limestone (KREUTZER, 1992b sensu SCHÖNLAUB, 1985a); Pelagic Rauchkofel Limestone (KREUTZER, 1992b sensu SCHÖNLAUB, 1985a); Rauchkofel Formation (SUTTNER, 2007b; informal).

Lithology: Dark, platy limestone, lithoclastic limestone, dark nodular limestone, mega-conglomerate horizon (only neritic unit), well bedded dark grey crinoidal limestone.

Fossils: Acritarchs, brachiopods, chitinozoans, conodonts, crinoids, gastropods.

Origin, facies: Marine limestone, neritic and pelagic units are discriminated (Southern shallow-water Facies and Transitional to Pelagic Carbonate Facies).

Chronostratigraphic age: Lochkovian–Pragian.

Biostratigraphy: *?woschmidti*, *delta*, *pesavis* and *steinachensis* conodont zones (conodont zones within the neritic unit at Mount Seewarte; SUTTNER, 2007b); *woschmidti* Zone (conodont zone within the pelagic unit of the Rauchkofel Boden section; SCHÖNLAUB, 1980b: p. 39).

Thickness: About 180 m (neritic unit), 80–120 m (pelagic unit).

Lithostratigraphically higher rank unit: -

Lithostratigraphic subdivision: Divided into neritic and pelagic Rauchkofel Limestone (compare Fig. 10 in SCHÖNLAUB, 1985a); the neritic unit at Mount Seewarte was subdivided into “Einheit 0a-0g” by BANDEL (1969).

Underlying unit(s): Megaerella Limestone (conformable contact), Nölbling Formation (conformable contact).

Overlying unit(s): Gamskofel Limestone (conformable contact), Hohe Warte Limestone (conformable contact), Kellerwand Limestone (conformable contact), Boden Limestone (conformable contact).

Lateral unit(s): Boden Limestone, Nölbling Formation.

Geographic distribution: Carnic Alps, Karavanke Mountains.

Remarks: -

Complementary references: PALLA (1965, 1966, 1967), (PÖLSLER, 1967), KODSI (1971), SCHÖNLAUB (1971-1973, 1984b, 1991, 1992), PRIEWALDER (1987, 1997, 2000), KREUTZER (1990, 1992a), FENNINGER & HUBMANN (1994), HUBMANN (1994), KREUTZER et al. (1997, 2000), SCHÖNLAUB & KREUTZER (1997), VAI (1998), FERRETTI et al. (1999), SCHÖNLAUB & HISTON (2000), HUBMANN et al. (2003), SCHÖNLAUB et al. (2004), SUTTNER (2005), CARULLI (2006), VENTURINI (2006), HUBMANN & SUTTNER (2007), BRIME et al. (2008), CORRIGA & CORRADINI (2009), SUTTNER & KIDO (2011).

Mittlere und Obere Bischofalm-Schiefer / Middle and Upper Bischofalm Shales

THOMAS J. SUTTNER, ERIKA KIDO

Validity: Invalid; the graptolite bearing section at the Obere Bischofalm was discovered by STACHE (1872); the section was studied in detail by JAEGER (in FLÜGEL et al., 1977) and later by SCHÖNLAUB (1985a); an important biostratigraphic study has been performed by JAEGER & SCHÖNLAUB (1980).

Type area: ÖK50-UTM, map sheets 3108 Sillian, 3109 Oberdrauburg, 3110 Kötschach-Mauthen, 3111 Spital an der Drau, 3116 Sonnenalpe Naßfeld, 3117 Nötsch im Gailtal (ÖK50-BMN, map sheets 196 Obertilliach, 197 Kötschach, 198 Weißbriach, 199 Hermagor).

Type section: -

Reference section(s): Area around Lake Zollner (SCHÖNLAUB, 1981), N 46°36'21" / E 13°04'17"; Obere Bischofalm (Graptolithengraben), Gundersheim Alm road (Oberbuchach section), Collendiaul, Dellach Alm, Nöblinggraben (SCHÖNLAUB, 1985a).

Derivation of name: After the Bischofalmgraben (SCHÖNLAUB, 1985a: Fig. 14, p. 40, 72).

Synonyms: Graptoliten-Schiefer (STACHE, 1872); Grey-green eß-shales (FLÜGEL et al., 1977: syn. Middle Bischofalm Shale); Upper Graptolitic Shales (FLÜGEL et al., 1977).

Lithology: Black alau shale and lydites, greyish green shale.

Fossils: Graptolites.

Origin, facies: Marine, pelagic unit (Distal Siliciclastic Facies).

Chronostratigraphic age: Ludlow to Pridoli (M. B. Shale); Pridoli to Lochkovian (U. B. Shale).

Biostratigraphy: M. B. Shale: *bohemicus-transgrediens* graptolite zones (FLÜGEL et al., 1977; JAEGER & SCHÖNLAUB, 1980); U. B. Shale: *transgrediens, uniformis, praehercynicus* and *hercynicus* graptolite zones (FLÜGEL et al., 1977; JAEGER & SCHÖNLAUB, 1980).

Thickness: 4–5 m (Middle Bischofalm Shale) and 10 m (Upper Bischofalm Shale).

Lithostratigraphically higher rank unit: -

Lithostratigraphic subdivision: -

Underlying unit(s): Lower Bischofalm Shale (conformable contact).

Overlying unit(s): Findenig Limestone (conformable contact), Zollner Formation (conformable contact).

Lateral unit(s): Nölbling Formation.

Geographic distribution: Carnic Alps.

Remarks: -

Complementary references: HABERFELNER (1931), FLÜGEL (1953b), SCHÖNLAUB (1969a, 1971a, 1985a, 1991, 1998), JAEGER & SCHÖNLAUB (1994), VAI (1998), SCHÖNLAUB & HISTON (1999, 2000), SCHÖNLAUB et al. (2004), VENTURINI (2006), HISTON et al. (2007).

Gamskofel-Kalk / Gamskofel Limestone (note the typological error “Gamskogel-Kalk” in the ASC 2004)

THOMAS J. SUTTNER, ERIKA KIDO

Validity: Invalid; some of the sections at Mount Gamskofel were already measured by BANDEL (1972); facies of the Gamskofel Limestone was observed by SCHÖNLAUB (1985a: p. 43); well described by KREUTZER (1990, 1992a); later included within the summary of the Variscan carbonate sequences in the Carnic Alps (KREUTZER, 1992b: p. 26–27).

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): Section on the northern side of the Gamskofel at the Bösen Gangele between Raimunda Törl and Wodner Törl (KREUTZER, 1992b: p. 27), N 46°38'01" / E 12°54'06".

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

Synonyms: -

Lithology: Algal laminite with *Amphipora* limestone and loferite layers.

Fossils: Calcareous algae, brachiopods, corals, foraminifers, ostracods.

Origin, facies: Marine limestone, intertidal (KREUTZER, 1990: p. 306), neritic unit; Southern Shallow-water Facies (KREUTZER, 1992a).

Chronostratigraphic age: Pragian–Givetian(?).

Biostratigraphy: -

Thickness: Approx. 800 m.

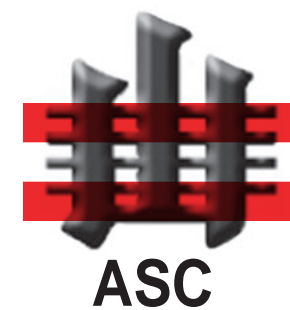
Lithostratigraphically higher rank unit: -

Lithostratigraphic subdivision: -

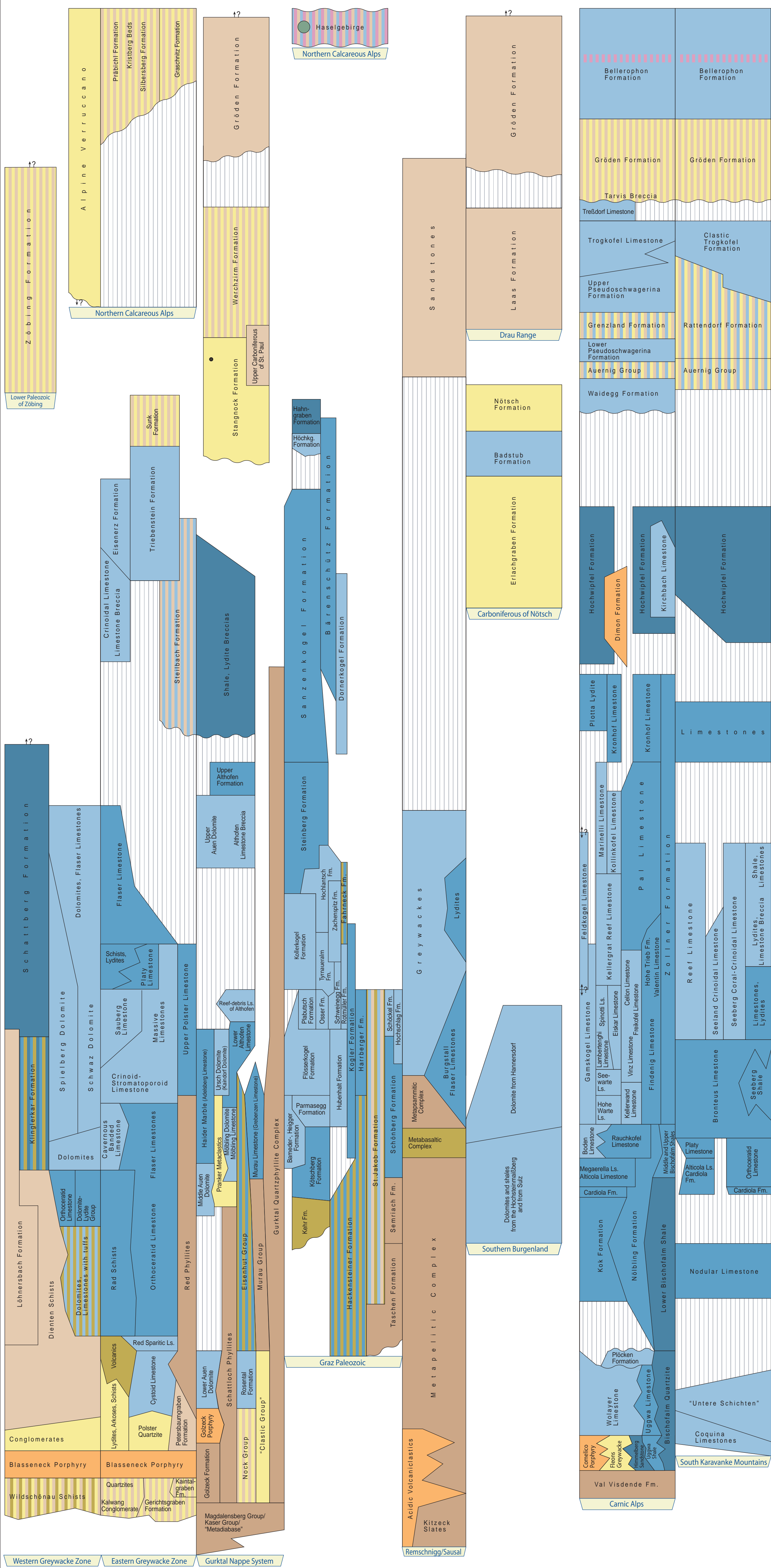
Austrian Stratigraphic Chart 2004 - Paleozoic

(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				
		WUCHIANGIAN / Dufuian	255						
		CAPITANIAN	260						
		WORDIAN	265						
		ROADIAN	270						
		PERMIAN	LOWER PERMIAN / CISURALIAN			KUNGURIAN	275		
						ARTINSKIAN	280		
						SAKMARIAN	285		
						ASSELIAN	290		
		PERMIAN	UPPER PERMIAN / PENNSYLVANIAN			GZHELIAN	295	PERMIAN	LOWER PERMIAN / CISURALIAN
KASIMOVIAN	300								
MOSKOVIAN	305								
BASHKIRIAN	310								
PERMIAN	UPPER PERMIAN / PENNSYLVANIAN			SERPUKHOVIAN	315				
				VISEAN	320				
					325				
PERMIAN	LOWER PERMIAN / MISSISSIPPIAN			TOURNAISIAN	330	PERMIAN	LOWER PERMIAN / MISSISSIPPIAN		
				335					
				340					
		345							
		350							
		355							
		359.2							
		PERMIAN	UPPER DEVONIAN	FAMENNIAN	360			PERMIAN	UPPER DEVONIAN
				FRASNIAN	370				
				375					
380									
385									
390									
395									
400									
405									
410									
PERMIAN	LOWER DEVONIAN	EMSIAN	415	PERMIAN	LOWER DEVONIAN				
		PRAGIAN	420						
		LOCHKOVIAN	425						
		430							
		435							
		440							
		443.7							
		445							
		PERMIAN	UPPER ORDOVICIAN			HIRNANTIAN	447	PERMIAN	UPPER ORDOVICIAN
						450			
455									
460									
465									
470									
475									
480									
485									
488.3									
PERMIAN	MIDDLE ORDOVICIAN	TREMACIAN	490	PERMIAN	MIDDLE ORDOVICIAN				
		495							
		500							
		505							
		510							
		515							
		520							
		525							
		530							
		535							
PERMIAN	LOWER ORDOVICIAN	PAIBIAN	540	PERMIAN	LOWER ORDOVICIAN				
		545							
		550							
		555							
		560							
		565							
		570							
		575							
		580							
		585							
PERMIAN	UPPER CAMBRIAN	495	PERMIAN	UPPER CAMBRIAN					
		500							
		505							
		510							
		515							
		520							
		525							
		530							
		535							
		540							
PERMIAN	MIDDLE CAMBRIAN	505	PERMIAN	MIDDLE CAMBRIAN					
		510							
		515							
		520							
		525							
		530							
		535							
		540							
		545							
		550							
PERMIAN	LOWER CAMBRIAN	510	PERMIAN	LOWER CAMBRIAN					
		515							
		520							
		525							
		530							
		535							
		540							
		545							
		550							
		555							



- 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

© Commission for the Paleontological and Stratigraphical Research of Austria (CPSA) of the Austrian Academy of Sciences and Austrian Stratigraphic Commission

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

The Austrian Stratigraphic Chart 2004 - Paleozoic is a supplement of:
 Hubmann, B., Ebner, F., Ferretti, A., Kido, E., Krainer, K., Neubauer, F., Schönlaub, H.-P. & Suttner, T.J. (2014): The Paleozoic Era (them), 2nd edition. - In: Pillner, W.E. (Ed.): The lithostratigraphic units of the Austrian Stratigraphic Chart 2004 (sedimentary successions) - Vol. 1 - Abhandlungen der Geologischen Bundesanstalt, 66, 9-133, Wien.

Printing: Grasl Druck & Neue Medien GmbH, Bad Vöslau 2014