

FLÜGEL, 1961, 1975); Barrandeikalk-Formation (HUBMANN, 1993; FLÜGEL et al., 2011). During evaluation of the conceptual content of the formation and re-definition (HUBMANN, 2003: p. 285–287) the Draxler-Formation (sensu FLÜGEL, 2000: p. 25; equivalent to “unterer Schweineggkalk” of ZIER, 1982) was synonymised with the Plabutsch Formation.

Lithology: The succession represents a highly fossiliferous sequence dominated by dark marly bioclastic limestones. In the lower parts, especially at the boundary to the underlying Flösserkogel Formation yellow to brownish shales occasionally blotched with moulds of chonetid brachiopods are characteristic. In the upper parts of the formation intercalations of red marls and marly limestones are common.

Fossils: Coral and sponge taxa dominate the diverse fauna. Among tabulate corals most common are thamnoporids (*Thamnopora reticulata*, *Th. vermicularis*, “*Striatopora suessi*”), favositids (*Favosites styriacus*, *F. alpinus*), and heliolitids (*Pachycanalicula barrandei*). The rugose coral fauna is dominated by mostly fractured dendroid (phaceloid) taxa. A frequent and distinctive phillipsastroid taxon is *Thamnophyllum* (*Th. stachei*, *Th. murchisoni*). Stromatoporoids are mostly recrystallized and thus precluding precise determinations (common genera are *Actinostroma* and *Clathrocoilona*). Among brachiopods the thick valved *Zdimir* cf. *hercynicus* may occur in coquina horizons. For faunal list see H. FLÜGEL (1975: p. 44–46).

Origin, facies: A deposition on a differentiated and gently inclined carbonate platform of some few (tens) meters is assumed (HUBMANN, 1993). Conspicuous is the rarity of in situ organisms, the intermittently high supply of clayey sediments (marl-limestone intercalations) and high supply of lime mud, temporary influx of high amounts of continental phytoclasts and storm impacts (tempestites) (HUBMANN, 1995).

Chronostratigraphic age: Eifelian; locally the sequence may range from Upper Emsian to Lower Givetian (HUBMANN, 1993).

Biostratigraphy: -

Thickness: 80–100 m, strong variation.

Lithostratigraphically higher rank unit: Rannach Group.

Lithostratigraphic subdivision: In some sections at the base of the unit less than 5 m thick brownish to yellow marly slates with moulds of chonetid brachiopods are named Gaisberg Bed (FLÜGEL, 2000; HUBMANN & FRITZ, 2004; HUBMANN & MESSNER, 2007).

Underlying unit(s): Flösserkogel Formation (conformable contact, transgressive).

Overlying unit(s): Kollerkogel Formation (conformable contact).

Lateral unit(s): Flösserkogel Formation, Kollerkogel Formation, Tyrnaueralm Formation, Osser Formation.

Geographic distribution: Styria, highland in the surroundings of Graz; ÖK50-BMN, map sheets 134 Passail, 162 Köflach, 163 Voitsberg, 164 Graz.

Remarks: -

Complementary references: EBNER & HUBMANN (2012).

Osser-Formation / Osser Formation

BERNHARD HUBMANN

Validity: Valid; first entry by VACEK (1891: “Osserkalk”); formalized by FLÜGEL (2000: p. 25; Osser-Formation).

Type area: ÖK50-UTM, map sheet 4223 Weiz (ÖK50-BMN, map sheet 134 Passail).

Type section: Not defined, but FLÜGEL (2000) defined the hill Osser (N 47°20'40" / E 15°30'03") north of Passail as type region.

Reference section(s): -

Derivation of name: After the hill Osser (1,548 m) north of Graz (FLÜGEL, 2000).

Synonyms: Partly: Kalkschiefer [Folge] (CLAR, 1874; HERITSCH, 1917c); Flaserkalk (Osserkalk) (CLAR et al., 1929); Kalkschiefer-Stufe im Allgemeinen (WAAGEN, 1937); Kalkschiefer-Folge (H. FLÜGEL, 1961, 1975).

Lithology: Bluish platy tectonically stressed flaser limestones and grey dolostones with local intercalations of marly clay/siltstones and sandstones.

Fossils: Bad preserved rugose and tabulate corals.

Origin, facies: Shallow subtidal environment.

Chronostratigraphic age: ?Eifelian.

Biostratigraphy: -

Thickness: 50–100 m.

Lithostratigraphically higher rank unit: Rannach Group (FLÜGEL, 2000, p. 25).

Lithostratigraphic subdivision: -

Underlying unit(s): Flösserkogel Formation.

Overlying unit(s): Tyrnaueralm Formation?

Lateral unit(s): Plabutsch Formation?

Geographic distribution: Styria, highland in the surroundings of Graz, southeast of the Teichalm; ÖK50-BMN, map sheet 134 Passail.

Remarks: -

Complementary references: STATTEGGER (1984).

Schweinegg-Formation / Schweinegg Formation

BERNHARD HUBMANN

Validity: Valid; first description by ZIER (1982: “oberer Schweineggkalk”); formalized by FLÜGEL (2000: p. 35–36; Schweinegg-Formation).

Type area: ÖK50-UTM, map sheet 4223 Weiz (ÖK50-BMN, map sheet 134 Passail).

Type section: No type section defined, but FLÜGEL (2000) appointed the Schweinegg (= Schweineck, 1,457 m), a hill southwest of Teichalmhütte in the Hochlantsch area as type region (N 47°20'52" / E 15°26'40").

Reference section(s): -

Derivation of name: After a hill called Schweinegg in the Hochlantsch region, approximately 55 km north of Graz.

Synonyms: Oberer Schweineggkalk (ZIER, 1982).

Lithology: Dark grey to brown fossiliferous limestones.

Fossils: Stromatoporoids, rugose and tabulate corals, crinoids (see ZIER, 1982).

Origin, facies: Subtidal depositional environment with minor terrigenous influx.

Chronostratigraphic age: Eifelian, Givetian?

Biostratigraphy: -

Thickness: Less than 100 m.

Lithostratigraphically higher rank unit: Lantsch Group.

Lithostratigraphic subdivision: -

Underlying unit(s): Flösserkogel Formation (with tectonic contact).

Overlying unit(s): Tyrnaueralm Formation.

Lateral unit(s): Zachenspitz Formation.

Geographic distribution: Styria, highland in the surroundings of Graz; ÖK50-BMN, map sheet 134 Passail.

Remarks: Parts of this formation which contain corals and stromatoporoids resemble the Plabutsch Formation resp. the Tyrnaueralm Formation of the Rannach Group. ZIER (1982) distinguished two parts within the sequence, a lower up to 60 m thick part of the succession which contains considerable amounts of stromatoporoids and corals and an upper part with white fossil-free beds of limestones. FLÜGEL (2000) assigned ZIER's lower part of the formation ("unterer Schweineggkalk") to the Draxler Formation which was synonymised with the Plabutsch Formation by HUBMANN (2003).

Complementary references: GOLLNER & ZIER (1985).

Rotmüller-Formation / Rotmüller Formation

BERNHARD HUBMANN

Validity: Valid; first description and formalization by EBNER (1998: p. 128).

Type area: ÖK50-UTM, map sheet 4222 Leoben (ÖK50-BMN, map sheet 163 Voitsberg).

Type section: No type section published because of bad outcrops; according to EBNER (1998) on both sides of the Arzbach valley from "Reicherhöhe" (998 m; N 47°12'24" / E 15°14'23") in the southwest to "Rathlosgraben" in the northeast and in the vicinity of the farmstead "Rotmüller" (N 47°14'54" / E 15°14'52") on ÖK50-BMN, map sheet 163 Voitsberg typical outcrops of the formation may be seen.

Reference section(s): See above; forest road west of Reicherhöhe at altitude 880 m (EBNER, 1998)

Remarks: The Formation may be a lateral equivalent of the Tyrnaueralm Formation (EBNER, 1998: p. 128).

Derivation of name: After the farmstead "Rotmüller" 40 km northwest of Graz.

Synonyms: -

Lithology: Massive light to dark grey dolostones.

Fossils: Stromatoporoids (especially amphiporids), rugose and tabulate corals, crinoids, brachiopods.

Origin, facies: Subtidal depositional environment.

Chronostratigraphic age: ?Eifelian – Givetian.

Biostratigraphy: -

Thickness: About 300 m.

Lithostratigraphically higher rank unit: Lantsch Group.

Lithostratigraphic subdivision: -

Underlying unit(s): Flösserkogel Formation (tectonic contact).

Overlying unit(s): Fahrneck Formation.

Lateral unit(s): Zachenspitz Formation?

Geographic distribution: Styria, highland in the surroundings of Graz; ÖK50-BMN, map sheet 134 Passail.

Remarks: -

Complementary references: FLÜGEL (2000).

Kollerkogel-Formation / Kollerkogel Formation

BERNHARD HUBMANN

Validity: Valid; first entry by SUESS (1868: "ungeschichteter, ... lichtgrauer Kalkstein, welcher ... an den Westhängen des Kollerberges ... entblößt ist"); formalized by FLÜGEL (2000: p. 25–26; Kollerkogel-Formation).

Type area: ÖK50-UTM, map sheet 4229 Graz (ÖK50-BMN, map sheet 164 Graz).

Type section: No type section defined, but FLÜGEL (2000) selected a type region at Kollerkogel (Kollerberg, 633 m) (N 47°03'46" / E 15°22'35"), a hill belonging to the Plabutsch-Buchkogel-Range west of Graz.

Reference section(s): -

Derivation of name: After the hill Kollerberg (633 m) west of Graz.

Synonyms: Helle Kalke (KUNTSCHNIG, 1937); Helle Kalke des Mitteldevon (SCHÄFER, 1937); partly: Korallenkalk (CLAR, 1874) and Mitteldevon-Gruppe (VACEK, 1891).

Lithology: Grey dolomites with biolaminations, light bluish limestones (mostly mudstones), locally bioclastic limestones with chert nodules.

Fossils: Rugose and tabulate corals, stromatoporoids, conodonts.

Origin, facies: Major parts of the sequence developed in an open platform setting; basal parts are shallow restricted lagoonal deposits due to biolaminations, emersion horizons and pseudomorphs after gypsum.

Chronostratigraphic age: Givetian–Frasnian.

Biostratigraphy: *varcus* Zone; *asymmetricus* to *triangularis* conodont zones.

Thickness: Strong variation in thickness; about 150 m.

Lithostratigraphically higher rank unit: Rannach Group.

Lithostratigraphic subdivision: FLÜGEL (2000) included four members in the Kollerkogel Formation.

Gaisbergsattel Member: dark grey biolaminated dolostones; about 20 m (up to 100 m) in thickness.

Kanzel Member: light grey to bluish limestones; mostly mudstones; up to 100 m in thickness.

Platzl Member: sequence of grey limestones intercalated with carbonatic argillaceous shales; about 50 m in thickness.

Platzlkogel Member: grey limestones (in some places biohermal structures); about 75 m in thickness.

Underlying unit(s): Plabutsch Formation (conformable contact).

Overlying unit(s): Steinberg Formation (conformable contact).

Lateral unit(s): ?Plabutsch Formation.

Geographic distribution: Styria, highland in the surroundings of Graz; ÖK50-BMN, map sheets 134 Passail, 163 Voitsberg, 164 Graz.

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 / 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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