

**Fossils:** Conodonts, tentaculites, stromatoporoids, crinoids (FLAJS & SCHÖNLAUB, 1976).

**Origin, facies:** Pelagic basinal environment (FLAJS & SCHÖNLAUB, 1976).

**Chronostratigraphic age:** Lower Devonian (?Pragian) (FLAJS & SCHÖNLAUB, 1976).

**Biostratigraphy:** Based on conodonts.

**Thickness:** 50 m.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Crinoid-Stromatoporoid Limestone (FLAJS & SCHÖNLAUB, 1976).

**Overlying unit(s):** Permian Präbichl Formation along an angular unconformity.

**Lateral unit(s):** Flaser Limestones, Sauberg Limestone.

**Geographic distribution:** E-GWZ; Styria, Eisenerzer Alpen, Präbichl area.

**Remarks:** -

**Complementary references:** TOLLMANN (1977), SCHÖNLAUB (1979, 1980a, 1982a), EBNER et al. (1989), SCHÖNLAUB & HEINISCH (1993).

### Sauberg-Kalk / Sauberg Limestone

FRITZ EBNER

**Validity:** Invalid; not formalized.

**Type area:** ÖK50-UTM, map sheet 4215 Eisenerz (ÖK50-BMN, map sheet 101 Eisenerz).

**Type section:** Sauberg quarry, ÖK50-UTM, map sheet 4215 Eisenerz (ÖK50-BMN, map sheet 101 Eisenerz) at former Erzberg SSW slope. This locality does not exist anymore due to siderite mining.

**Reference section(s):** -

**Derivation of name:** According to the former Sauberg quarry at the Erzberg.

**Synonyms:** "Sauburger Kalk" (STUR, 1866); "Erzführender Kalk" (CZERMAK, 1931).

**Lithology:** Thick bedded, light to pinkish, red mottled limestone.

**Fossils:** Corals, gastropods, bivalves, nautiloids, trilobites (scutellids), brachiopods (STUR, 1865, 1866; HERITSCH, 1931a; CZERMAK, 1931), conodonts (SCHÖNLAUB et al., 1980).

**Origin, facies:** Carbonate shelf environment.

**Chronostratigraphic age:** Upper Lower Devonian (upper Pragian–Zlichovian; SCHÖNLAUB, 1979; SCHÖNLAUB et al., 1980).

**Biostratigraphy:** Based on conodonts.

**Thickness:** 70–150 m.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Flaser Limestones.

**Overlying unit(s):** Flaser Limestones.

**Lateral unit(s):** Flaser Limestones, Upper Polster Limestone.

**Geographic distribution:** E-GWZ; Eisenerzer Alpen.

**Remarks:** Historical term for pinkish red mottled fossiliferous limestones first named by STUR (1865, 1866) from the Erzberg. Later this term was often used as synonym for Lower Devonian reddish mottled flaser limestones in the Eisenerzer Alpen.

**Complementary references:** TOLLMANN (1977), SCHÖNLAUB (1980a), EBNER et al. (1989).

### Massenkalk / Massive Limestones

FRITZ EBNER

**Validity:** Invalid; informal working term.

**Type area:** Eisenerzer Alpen, ÖK50-UTM, map sheet 4215 Eisenerz (ÖK50-BMN, map sheets 101 Eisenerz, 132 Trofaiach).

**Type section:** Not indicated.

**Reference section(s):** -

**Derivation of name:** According to the massive lithological character.

**Synonyms:** Partim "Erzführende Kalk" (STACHE, 1874); "Heller Bänderkalk der Reitingdecke" (SCHÖNLAUB, 1982a).

**Lithology:** Massive and sometimes banded limestones.

**Fossils:** Heliolitids, Syringoporids, stromatoporoids, conodonts (HERITSCH, 1927b; HABERFELNER, 1935; SCHÖNLAUB, 1979).

**Origin, facies:** Shallow water "reef" facies.

**Chronostratigraphic age:** Devonian (?Middle Devonian).

**Biostratigraphy:** -

**Thickness:** -

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Flaser Limestones.

**Overlying unit(s):** -

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

**Geographic distribution:** E-GWZ; Styria, Eisenerzer Alpen.

**Remarks:** Formerly, the massive limestones were attributed to a Middle Devonian reef facies. However, all conodont data constrain an Early Devonian age. Middle Devonian was only dated from one limestone layer from level "Dreikönig" at Erzberg which was later removed by mining activities. Nevertheless, it is suggested that Middle Devonian could be represented by massive banded limestones of the Reiting Nappe at some localities of the Eisenerzer Alpen (e.g., Linseck, HÖchstein, Stadelstein, Schwarzenstein; SCHÖNLAUB, 1982a: p. 394).

**Complementary references:** TOLLMANN (1977), SCHÖNLAUB (1980a), EBNER et al. (1989), SCHÖNLAUB & HEINISCH (1993).

### Plattenkalk / Platy Limestone

FRITZ EBNER

**Validity:** Invalid; informal working term (SCHÖNLAUB, 1979).

**Type area:** Eisenerzer Alpen; ÖK50-UTM, map sheet 4215 Eisenerz (ÖK50-BMN, map sheet 101 Eisenerz).

**Type section:** Kalkschuppe at Erzberg.

**Reference section(s):** -

**Derivation of name:** After the lithological character.

**Synonyms:** -

**Lithology:** Grey, splintery breaking, hard, well bedded limestone.

**Fossils:** Very rare and badly preserved undeterminable conodonts (SCHÖNLAUB, 1979).

**Origin, facies:** Carbonatic shelf deposits.

**Chronostratigraphic age:** ?Middle Devonian.

**Biostratigraphy:** -

**Thickness:** 50 m.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Flaser Limestones (Lower Devonian).

**Overlying unit(s):** Flaser Limestones (Upper Devonian).

**Lateral unit(s):** -

**Geographic distribution:** E-GWZ; Styria, Eisenerzer Alpen.

**Remarks:** The rare and badly preserved conodonts are undeterminable. Dating is due to the position between conodont dated Lower and Upper Devonian Flaser Limestones (SCHÖNLAUB, 1979, 1980a).

**Complementary references:** TOLLMANN (1977), SCHÖNLAUB (1982a), EBNER et al. (1989), SCHÖNLAUB & HEINISCH (1993).

#### Flaserkalke / Flaser Limestones

FRIEZ EBNER

**Validity:** Invalid; informal working term (SCHÖNLAUB et al., 1980).

**Type area:** Eisenerzer Alpen; ÖK50-UTM, map sheet 4215 Eisenerz (ÖK50-BMN, map sheet 101 Eisenerz).

**Type section:** Not indicated.

**Reference section(s):** -

**Derivation of name:** After the lithological character.

**Synonyms:** -

**Lithology:** Light grey to whitish and reddish indistinctly to well bedded limestones.

**Fossils:** Badly preserved conodonts (FLAJS, 1967b).

**Origin, facies:** Basinal, pelagic facies.

**Chronostratigraphic age:** Upper Devonian (Frasnian-lower Famennian).

**Biostratigraphy:** Some distinct morphological features of the genus *Palmatolepis* indicate lower Upper Devonian, the occurrence of *Ancyrodella* Frasnian (FLAJS, 1967a; SCHÖNLAUB, 1982a).

**Thickness:** 10 m (SCHÖNLAUB, 1982a).

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Platy Limestones.

**Overlying unit(s):** -

**Lateral unit(s):** -

**Geographic distribution:** E-GWZ; Styria, Eisenerzer Alpen.

**Remarks:** Devonian limestones younger than early Famennian are not known from the Eisenerzer Alpen. How-

ever, conodonts of this interval are known from limestone pebbles in the early Carboniferous Crinoidal Limestone Breccia.

**Complementary references:** TOLLMANN (1977), SCHÖNLAUB (1979, 1980a), EBNER et al. (1989), SCHÖNLAUB & HEINISCH (1993).

#### Crinoidenkalkbrekzie / Crinoidal Limestone Breccia

FRIEZ EBNER

**Validity:** Invalid; informal working term (SCHÖNLAUB, 1979; SCHÖNLAUB et al., 1980).

**Type area:** Eisenerzer Alpen; ÖK50-UTM, map sheet 4215 Eisenerz (ÖK50-BMN, map sheet 101 Eisenerz).

**Type section:** Not indicated; some sections are described from the mining levels Schuchart, Dreikönig, Antoni and Liedemann from the Erzberg (SCHÖNLAUB, 1979; SCHÖNLAUB et al., 1980).

**Reference section(s):** See above.

**Derivation of name:** -

**Synonyms:** "Kalkbrekzie des Unterkarbons" (SCHÖNLAUB, 1982a).

**Lithology:** Banded brecciated limestone with components (maximum diameter: 15 cm) of light to dark grey, often sparry, tectonically flattened limestone in a matrix of crinoidal debris. At one site sparry pure crinoidal limestone is situated below the limestone breccia. Dense banded to phacoidal limestones with a mixed fauna of Devonian-lower Carboniferous conodonts occur as thin tectonic slices at the base of the Eisenerz Formation (SCHÖNLAUB et al., 1980).

**Fossils:** Conodonts (stratigraphically mixed faunas), crinoids.

**Origin, facies:** The onset of a marine transgression after an erosional gap due to karstification (EBNER, 1991).

**Chronostratigraphic age:** Formation of the breccia occurred during the Viséan. The reworked components indicate Devonian and lowermost Carboniferous.

**Biostratigraphy:** Breccia formation: *Gnathodus bilineatus* Zone; the reworked components indicate *asymmetricus*-, *(?)triangularis*-, *(?)crepida*-, *rhochoidea*-, *marginifera*-, *styriacus*-, *costatus/praesulcata*-, *sulcata*-, *duplicata*-, *(?)sandbergi*- and *anchoralis* zones of Upper Devonian and lower Carboniferous (SCHÖNLAUB, 1982a; SCHÖNLAUB et al., 1980).

**Thickness:** Maximum 10 m.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Sauberg Limestone, Flaser Limestones (erosional disconformity).

**Overlying unit(s):** Eisenerz Formation.

**Lateral unit(s):** -

**Geographic distribution:** E-GWZ; Styria, Eisenerzer Alpen.

**Remarks:** THALMANN (1974) mentioned lower Carboniferous limestones from the Erzberg for the first time. Although any further information is lacking these limestones most probably correspond with the Crinoidal Limestone Breccia.

# 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 / Dabuffian	255						
		CAPITANIAN	260						
		WORDIAN	265						
		ROADIAN	270						
		PERMIAN	LOWER PERMIAN / CISURALIAN			KUNGURIAN	275		
						ARTINSKIAN	280		
						SAKMARIAN	285		
						ASSELIAN	290		
		PERMIAN	UPPER PERMIAN / CARBONIFEROUS / PENNSYLVANIAN			GZHELIAN	295	PERMIAN	LOWER PERMIAN / CISURALIAN
KASIMOVIAN	300								
MOSKOVIAN	305								
BASHKIRIAN	310								
PERMIAN	UPPER PERMIAN / CARBONIFEROUS / PENNSYLVANIAN			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						
		PERMIAN	MIDDLE DEVONIAN			Dalejian	400		
						405			
		PERMIAN	LOWER DEVONIAN			EMSIAN	410		
						415			
		PERMIAN	LOWER DEVONIAN			LOCHKOVIAN	420	PERMIAN	LOWER DEVONIAN
						425			
430									
435									
440									
443.7									
445									
450									
455									
460									
PERMIAN	UPPER ORDOVICIAN	LUDFORDIAN / GORSTIAN	465	PERMIAN	UPPER ORDOVICIAN				
		HOMERIAN / SHEINWOOD	470						
		TELYCHIAN	475						
		AERONIAN	480						
		LLANDOVERY	485						
		RHUDDANIAN	490						
		HIRNANTIAN	495						
		443.7							
		445							
		450							
PERMIAN	MIDDLE ORDOVICIAN	DARRIWILIAN	500	PERMIAN	MIDDLE ORDOVICIAN				
		455							
		460							
		465							
		470							
		475							
		480							
		485							
		490							
		495							
PERMIAN	LOWER ORDOVICIAN	TREMA-DOCIAN	500	PERMIAN	LOWER ORDOVICIAN				
		455							
		460							
		465							
		470							
		475							
		480							
		485							
		490							
		495							
PERMIAN	UPPER CAMBRIAN	PAIBIAN	500	PERMIAN	UPPER CAMBRIAN				
		455							
		460							
		465							
		470							
		475							
		480							
		485							
		490							
		495							
PERMIAN	MIDDLE CAMBRIAN	MIDDLE CAMBRIAN	505	PERMIAN	MIDDLE CAMBRIAN				
			510						
			515						
			520						
			525						
			530						
			535						
			540						
			542						
			PERMIAN			LOWER CAMBRIAN	LOWER CAMBRIAN	545	PERMIAN
550									
555									
560									
565									
570									
575									
580									
585									
590									



- 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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