

Cystoideen Kalke / Cystoid Limestone

FRITZ EBNER

Validity: Invalid; not formalized working term. First detailed description by FLAJS & SCHÖNLAUB (1976).

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

Type section: Ca. 30 m (altitude 1,575 m) above the bend (N 47°31'44" / E 14°58'03") of the Knappensteig (trail from Prächichl Pass to Leobner Hütte) at the ridge separating the Polsterkar and the Polster S-slope (ÖK50-UTM, map sheet 4215 Eisenerz, ÖK50-BMN, map sheet 101 Eisenerz).

Reference section(s): -

Derivation of name: Due to the occurrence of debris and some theca of cystoidea (FLAJS & SCHÖNLAUB, 1976).

Synonyms: -

Lithology: Light grey to pinkish spotted, indistinctly bedded, pure sparry limestones with weak flaser texture followed by 5 m calcareous sandstones (FLAJS & SCHÖNLAUB, 1976).

Fossils: Recrystallized cystoids (debris and theca), rich conodont fauna (FLAJS & SCHÖNLAUB, 1976).

Origin, facies: Marine shallow water environment.

Chronostratigraphic age: Upper Ordovician (upper Katian–Hirnantian) (FLAJS & SCHÖNLAUB, 1976).

Biostratigraphy: *amorphognathus ordovicicus* conodont zone (FLAJS & SCHÖNLAUB, 1976).

Thickness: 13 m.

Lithostratigraphically higher rank unit: -

Lithostratigraphic subdivision: -

Underlying unit(s): Polster Quartzite.

Overlying unit(s): "Red Sparitic Limestone" (FLAJS & SCHÖNLAUB, 1976: Fig. 3); ? transgressional contact.

Lateral unit(s): "Übergangsporphyroid" at Erzberg (KERN, 1927; SCHÖNLAUB, 1982a; not indicated in Text-Fig. 2): alternation of 6–8 m thick dm-bedded light limestones with greenish grey sandy layers followed by ankeritic material.

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

Remarks: -

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

Vulkanite / Volcanics

FRITZ EBNER

Validity: Invalid; not formalized working term.

Type area: ÖK50-UTM, map sheet 4215 Eisenerz (ÖK50-BMN, map sheets 131 Kalwang and 132 Trofaiach).

Type section: Not defined. Detailed descriptions derive from the mountain Kragelschinken (1,845 m, N 47°29'21" / E 14°49'26") and along the section in the upper Lange Teichen valley (starting NNE of the foot of Mt. Wildfeld, N 47°28'18" / E 14°48'29") (HIESSLEITNER, 1931; SCHÖNLAUB, 1977a, b, 1982a, b).

Reference section(s): -

Derivation of name: According to lithology.

Synonyms: "Kragelschinken Folge" (EBNER et al., 1989); "Basische Vulkanite" in the geological map 1:25,000 (SCHÖNLAUB, 1982a).

Lithology: Alternation of mottled schists ("Fleckenschiefer" = green schists with dark spots of chlorite), diabase schists, sandy-quartzite schists and subordinate layers of massive plagioclase-hornblende rocks (HIESSLEITNER, 1931; DAURER in SCHÖNLAUB, 1982a). Parts of the sequence are characterized as volcanoclastics (lapilli and ash tuffs), basaltic lavas with well preserved pillow structures and concordant swarms of gabbroidic sills (SCHLAEGEL-BLAUT, 1990).

Fossils: Conodonts, crinoids from intercalations of Crinoidal Limestone (SCHÖNLAUB, 1977a, b).

Origin, facies: Two sections (Finzenkogel, Schleichberg) NW Trofaiach (ÖK50-UTM, map sheet 4215 Eisenerz, ÖK50-BMN, map sheet 132 Trofaiach) were characterized by SCHLAEGEL-BLAUT (1990) in terms of volcanic islands (sensu FISHER, 1984). Section Finzenkogel: submarine proximal pyroclastic flow facies at the flank of a volcanic island at the transition of effusive to explosive eruptions below or above PCL (= pressure compensation level at water depths of ~ 500 m; stadium A and B₁ sensu FISHER, 1984). Section Schleichberg: upper part of a pillow volcano below PCL (stadium A sensu FISHER, 1984).

Chronostratigraphic age: Silurian (boundary Llandovery/Wenlock) (SCHÖNLAUB, 1982a).

Biostratigraphy: *amorphognathoides* Zone in crinoidal limestone intercalations within tuffitic volcanics as well as limestone intercalations within black schists/lydites below and above the volcanics (SCHÖNLAUB, 1976, 1977a, 1982a).

Thickness: 250–300 m at Paarenkogel and Kragelschinken (HIESSLEITNER, 1931). Along the Gößgraben (WSW Trofaiach, ÖK50-UTM, map sheet 4215 Eisenerz, ÖK50-BMN, map sheet 132 Trofaiach) the thickness of the entire volcanogenic sequences is between 180 and 550 m. There, the volcanoclastics include also intercalations of schists and up to 150 m thick lavas (SCHLAEGEL-BLAUT, 1990).

Lithostratigraphically higher rank unit: -

Lithostratigraphic subdivision: -

Underlying unit(s): Lydites, Arkoses, Schists.

Overlying unit(s): Crinoidal Limestones (SCHÖNLAUB, 1992) (not shown in ASC 2004).

Lateral unit(s): Lydites, Arkoses, Schists.

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

Remarks: Informal working term for thick basic volcanics (first description HIESSLEITNER, 1931) in the hanging parts of the "Lydites, Arkoses, Schists".

Complementary references: TOLLMANN (1977), SCHÖNLAUB (1979, 1980a), SCHÖNLAUB & HEINISCH (1993), LOESCHKE & HEINISCH (1993).

Crinoidenkalke / Crinoidal Limestone

(not shown in ASC 2004)

FRITZ EBNER

Validity: Invalid; working term (SCHÖNLAUB, 1976, 1979, 1982a).

Type area: ÖK50-UTM, map sheet 4215 Eisenerz (ÖK 50-BMN, map sheets 101 Eisenerz and 131 Kalwang).

Type section: Not indicated in the literature.

Reference section(s): -

Derivation of name: After the lithology and the mass occurrence of crinoids.

Synonyms: Partim “Crinoiden führende Bänderflaserkalke” (SCHÖNLAUB, 1982a).

Lithology: Grey and pink crinoid bearing flaser limestone (SCHÖNLAUB, 1976, 1979, 1982a).

Fossils: Crinoids, conodonts.

Origin, facies: Shelf deposits (?).

Chronostratigraphic age: Llandovery/Wenlock.

Biostratigraphy: *amorphognathoides* conodont zone.

Thickness: 15 m.

Lithostratigraphically higher rank unit: -

Lithostratigraphic subdivision: -

Underlying unit(s): Volcanics; Polster Quartzites (SCHÖNLAUB, 1992; not illustrated in Text-Fig. 2).

Overlying unit(s): Black Lydites, Alaun Schists.

Lateral unit(s): Red Sparitic Limestone.

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

Remarks: -

Complementary references: -

Rote Sparitkalke / Red Sparitic Limestone

Fritz Ebner

Validity: Invalid; not formalized working term; first description by FLAJS & SCHÖNLAUB (1976).

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

Type section: Ca. 45 m above the bend (N 47°31'44" / E 14°58'03") of the Knappensteig (trail from Präbichl Pass to Leobner Hütte) at the ridge separating the Polsterkar and the Polster S-slope (ÖK50-UTM, map sheet 4215 Eisenerz, ÖK50-BMN, map sheet 101 Eisenerz).

Reference section(s): -

Derivation of name: According to the predominant lithological character.

Synonyms: Partim “Silur Transgressionsbildungen” (SCHÖNLAUB, 1977b).

Lithology: Pinkish-grey, massive sparry limestone with mm-thick irregular greenish flaser textures in the lower parts and metasomatically mineralized by iron-carbonate (“Rohwand”) in the hanging parts (FLAJS & SCHÖNLAUB, 1976).

Fossils: Conodonts.

Origin, facies: Transgression deposits.

Chronostratigraphic age: Llandovery (SCHÖNLAUB, 1997b).

Biostratigraphy: *Icriodina cf. irregularis* and *Distomodus stauognathoides* indicate Aeronian stage (FLAJS & SCHÖNLAUB, 1976).

Thickness: 3 m.

Lithostratigraphically higher rank unit: -

Lithostratigraphic subdivision: -

Underlying unit(s): Cystoid Limestone.

Overlying unit(s): Orthoceratid Limestone.

Lateral unit(s): -

Geographic distribution: E-GWZ; Styria: Polsterkar in the Eisenerzer Alpen.

Remarks: The lower part of the Red Sparitic Limestone is composed of 60 cm sandy shales (FLAJS & SCHÖNLAUB, 1976: Fig. 3).

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

Orthocerenkalk / Orthoceratid Limestone

Fritz Ebner

Validity: Invalid; working term used as local (lithostratigraphic) unit (SCHÖNLAUB, 1982a).

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

Type section: Not defined.

Reference section(s): -

Derivation of name: After the occurrence of orthoceratid nautiloids.

Synonyms: Orthocerenkalke der Rotschütt (FLAJS et al., 1963), “Kalke der Handlalm” (FLAJS, 1964, 1967).

Lithology: Thick bedded grey – dark grey and rarely pinkish sparry limestones, sometimes with nautiloids.

Fossils: Nautiloids, conodonts, crinoids, trilobites, filaments.

Origin, facies: Pelagic environment.

Chronostratigraphic age: Silurian, (?) Wenlock–Ludlow.

Biostratigraphy: *plœeckensis* Zone to *siluricus* Zone (FLAJS et al., 1963; FLAJS, 1964, 1967; FLAJS & SCHÖNLAUB, 1976).

Thickness: 24 m.

Lithostratigraphically higher rank unit: -

Lithostratigraphic subdivision: -

Underlying unit(s): Red Sparitic Limestone (FLAJS & SCHÖNLAUB, 1976).

Overlying unit(s): Lower Polster Limestone.

Lateral unit(s): Black Lydites, Alaun Schists and the “Mischfazies”, an intermediate facies between the Orthoceratid Limestone and the Black Lydites, Alaun Schists (SCHÖNLAUB, 1982a).

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

Remarks: -

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

Schwarzer Kieselschiefer, Alaunschiefer / Black Lydites, Alaun Schists

Fritz Ebner

Validity: Invalid; working term used as local (lithostratigraphic) unit (SCHÖNLAUB, 1982a).

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	350	DEVONIAN	UPPER DEVONIAN		
				FRASNIAN	355				
				GIVETIAN	360				
		EIFELIAN	365						
		DEVONIAN	LOWER DEVONIAN	EMSIAN	370				
				LOCHKOVIAN	375				
		PERMIAN	DEVONIAN	LUDFORDIAN / GORSTIAN	380			DEVONIAN	MIDDLE DEVONIAN
				HOMERIAN / SHEINWOOD	385				
				TELYCHIAN	390				
				AERONIAN	395				
RHUDDANIAN	400								
DEVONIAN	LOWER DEVONIAN			PRAGIAN	405				
				LOCHKOVIAN	410				
PERMIAN	DEVONIAN			WEN-LOCK / LOW	415	DEVONIAN	LOWER DEVONIAN		
				HIRNANTIAN	420				
				LLANDOVERY	425				
		AERONIAN	430						
		RHUDDANIAN	435						
		DEVONIAN	LOWER DEVONIAN	PRAGIAN	440				
				LOCHKOVIAN	445				
		PERMIAN	DEVONIAN	WEN-LOCK / LOW	450			DEVONIAN	UPPER ORDOVICIAN
				LLANDOVERY	455				
				AERONIAN	460				
RHUDDANIAN	465								
DEVONIAN	LOWER DEVONIAN			PRAGIAN	470				
				LOCHKOVIAN	475				
PERMIAN	DEVONIAN			WEN-LOCK / LOW	480	DEVONIAN	MIDDLE ORDOVICIAN		
				LLANDOVERY	485				
				AERONIAN	490				
				RHUDDANIAN	495				
		DEVONIAN	LOWER DEVONIAN	PRAGIAN	500				
				LOCHKOVIAN	505				
		PERMIAN	DEVONIAN	WEN-LOCK / LOW	510			DEVONIAN	LOWER ORDOVICIAN
				LLANDOVERY	515				
				AERONIAN	520				
				RHUDDANIAN	525				
DEVONIAN	LOWER DEVONIAN			PRAGIAN	530				
				LOCHKOVIAN	535				
PERMIAN	DEVONIAN			WEN-LOCK / LOW	540	DEVONIAN	UPPER CAMBRIAN		
				LLANDOVERY	545				
				AERONIAN	550				
				RHUDDANIAN	555				
		DEVONIAN	LOWER DEVONIAN	PRAGIAN	560				
				LOCHKOVIAN	565				
		PERMIAN	DEVONIAN	WEN-LOCK / LOW	570			DEVONIAN	MIDDLE CAMBRIAN
				LLANDOVERY	575				
				AERONIAN	580				
				RHUDDANIAN	585				
DEVONIAN	LOWER DEVONIAN			PRAGIAN	590				
				LOCHKOVIAN	595				
PERMIAN	DEVONIAN			WEN-LOCK / LOW	600	DEVONIAN	LOWER CAMBRIAN		
				LLANDOVERY	605				
				AERONIAN	610				
				RHUDDANIAN	615				
		DEVONIAN	LOWER DEVONIAN	PRAGIAN	620				
				LOCHKOVIAN	625				



- 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

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: Piller, 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

