

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

### Orthocerenkalk / Orthoceratid Limestone

FRITZ EBNER

**Validity:** Invalid; not formalized. After the first description (AL-HASANI & MOSTLER, 1969) used as informal working term (SCHÖNLAUB, 1979, Tab. 3).

**Type area:** Spiessnägel in the Kitzbüheler Alpen/Tyrol; ÖK50-UTM, map sheet 3219 Neunkirchen (ÖK50-BMN, map sheet 121 Neunkirchen).

**Type section:** Spiessnägel S Kirchberg/Tyrol (N 47°21'21"/E 12°18'27"; ÖK50-UTM, map sheet 3219 Neunkirchen; ÖK50-BMN, map sheet 121 Neunkirchen; AL-HASANI & MOSTLER, 1969).

**Reference section(s):** -

**Derivation of name:** After lithologic characteristics and the occurrence of orthocon nautiloid cephalopods.

**Synonyms:** -

**Lithology:** Grey and rarely black limestones with strongly silicified nautiloids.

**Fossils:** Nautiloids, conodonts.

**Origin, facies:** Pelagic basinal facies.

**Chronostratigraphic age:** Lower–upper Ludlow.

**Biostratigraphy:** Conodonts of *ploeckensis*–?*eostein-hornensis* Zone.

**Thickness:** 17 m.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** “Dolomite, Limestone with tuffs”.

**Overlying unit(s):** In the Spiessnägel section “Dolomites” with inclusions of magnesite (AL-HASANI & MOSTLER, 1969).

**Lateral unit(s):** Dolomite-Lydite Group, upper parts of Di-enten Schists.

**Geographic distribution:** W-GWZ; Tyrol, Kitzbüheler Alpen.

**Remarks:** -

**Complementary references:** MOSTLER (1968), TOLLMANN (1977), SCHÖNLAUB (1980a), EBNER et al. (1989), SCHÖNLAUB & HEINISCH (1993).

### Dolomit / Dolomites

FRITZ EBNER

**Validity:** Invalid; not formalized informal working term.

**Type area:** Kitzbüheler Alpen (ÖK50-UTM, map sheet 3219 Neunkirchen, ÖK50-BMN, map sheet 121 Neunkirchen; ÖK50-UTM, map sheet 3214 Kitzbühel, ÖK50-BMN, map sheet 122 Kitzbühel).

**Type section:** Within the Wildseeloder Unit (HEINISCH, 1988), but not indicated.

**Reference section(s):** -

**Derivation of name:** Named after the dominant lithology.

**Synonyms:** “Dolomite mit Magnesiteinschaltungen” (AL-HASANI & MOSTLER, 1969); “Schwarze Dolomite und Hellgraue Dolomite der Südfazies” (MAVRIDIS & MOSTLER, 1970); “Graue Dolomite der Kitzbühler Horn-Serie” (EMMANUILIDIS & MOSTLER, 1970).

**Lithology:** Different types of black and grey, massive to bedded dolomites, subordinate with intercalations of limestone, calcareous dolomite, magnesite and siliceous shales (MAVRIDIS & MOSTLER, 1970).

**Fossils:** Conodonts, ostracods, radiolarians; from Lower Devonian limestone intercalations: crinoids, agglutinated foraminifers and brachiopods (AL-HASANI & MOSTLER, 1969; MAVRIDIS & MOSTLER, 1970; EMMANUILIDIS & MOSTLER, 1970).

**Origin, facies:** Pelagic basinal environment.

**Chronostratigraphic age:** Upper Ludlow–Lochkovian.

**Biostratigraphy:** Sporadic findings of conodonts indicate without a more exact determination late Silurian to Early Devonian (Lochkovian) ages (MOSTLER, 1968; AL-HASANI & MOSTLER, 1969; MAVRIDIS & MOSTLER, 1970; EMMANUILIDIS & MOSTLER, 1970).

**Thickness:** Mostly not indicated in the literature. Light grey Lochkovian dolomite of the “Südfazies” (MAVRIDIS & MOSTLER, 1970) may reach up to 140 m. In the hanging parts they include siliceous shales with a thickness of 3 m and intercalations of 22 m thick “Netzkalke” (MAVRIDIS & MOSTLER, 1970).

**Lithostratigraphically higher rank unit:** “Südfazies” (MAVRIDIS & MOSTLER, 1970), “Kitzbühler Horn-Serie” (EMMANUILIDIS & MOSTLER, 1970) – both informal.

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** Dolomite-Lydite Group.

**Overlying unit(s):** Spielberg and Schwaz Dolomite as well as “Dolomites, Flaser Limestones”.

**Lateral unit(s):** -

**Geographic distribution:** W-GWZ; Tyrol, Kitzbüheler Alpen.

**Remarks:** In the Kitzbüheler Alpen, especially within the Wildseeloder Unit (HEINISCH, 1988) the sequence above the Orthoceratid Limestone and the Dolomite-Lydite Group is made up of a carbonate facies (= partly “Südfazies” of MAVRIDIS & MOSTLER, 1970) dominated by thick dolomites. The Spielberg Dolomite and Schwaz Dolomite form two distinct Lower Devonian “formations” within this facies. Other dolomite niveaus were named in the ASC 2004 by working terms as “Dolomites” (uppermost Silurian–Lower Devonian) and “Dolomites, Flaser Limestones” (Lower Devonian; Frasnian–Famennian), respectively.

**Complementary references:** AL-HASANI & MOSTLER (1969), TOLLMANN (1977), SCHÖNLAUB (1979, 1980a), HEINISCH & SCHÖNLAUB (1993).

### Schwaz-Dolomite / Schwaz Dolomite

FRITZ EBNER

**Validity:** Invalid; since the first denomination (PICHLER, 1860) and detailed description (PIRKL, 1961) used in terms of a formation but without formalization.

**Type area:** ÖK50-UTM, map sheet 2224 Schwaz (ÖK50-BMN, map sheets 119 Schwaz and 120 Wörgl).

**Type section:** Not yet indicated.

**Reference section(s):** -

**Derivation of name:** After the town of Schwaz in Tyrol (ÖK50-UTM, map sheet 2224 Schwaz, ÖK50-BMN, map sheet 119 Schwaz) and the predominant lithology.

**Synonyms:** Schwazer Dolomit (PICHLER, 1860; PIRKL, 1961); Spielberg-Dolomit (TOLLMANN, 1977: p. 494).

**Lithology:** Grey, coarse sparry dolomite subdivided into two types: a) laminated dolomite without fossils and biotrititic material in the lower parts; b) dolomitic and biotrititic limestones and dolomite in the upper parts (PIRKL, 1961; MOSTLER, 1968).

**Fossils:** Nautilids, crinoids, corals, bivalves, conodonts.

**Origin, facies:** Shallow water shelf environment.

**Chronostratigraphic age:** Lower Devonian (Lochkovian–Pragian).

**Biostratigraphy:** Conodonts (PIRKL, 1961; MOSTLER, 1964, 1968) point to Lochkovian–Pragian ages.

**Thickness:** 600 m.

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** “Dolomites”.

**Overlying unit(s):** -

**Lateral unit(s):** Spielberg Dolomite, “Dolomites, Flaser Limestones”.

**Geographic distribution:** W-GWZ; Tyrol, Kitzbüheler Alpen.

**Remarks:** see unit “Dolomites”.

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

### Spielberg-Dolomit / Spielberg Dolomite

FRITZ EBNER

**Validity:** Invalid; since the first description by MAVRIDIS & MOSTLER (1970) used in terms of a formation but without formalization.

**Type area:** Kitzbüheler Alpen (ÖK50-UTM, map sheet 3214 Kitzbühel, ÖK50-BMN, map sheet 123 Zell am See).

**Type section:** At Spielberghorn but not further indicated in the literature.

**Reference section(s):** -

**Derivation of name:** After the Mt. Spielberghorn (N 47°25'57" / E 21°37'56"; ÖK50-UTM, map sheet 3214 Kitzbühel, ÖK50-BMN, map sheet 123 Zell am See) in the Kitzbüheler Alpen.

**Synonyms:** Partly “Schwaz-Dolomit” (TOLLMANN, 1977: p. 494); “Wilde Hag-Pfeiferkogel-Serie” (EMMANULIDIS & MOSTLER, 1970).

**Lithology:** Light dolomite, rarely with reddish-grey and partly black dolomite (MAVRIDIS & MOSTLER, 1970; EMMANULIDIS & MOSTLER, 1970).

**Fossils:** Detritus of crinoids, corals, bryozoans, gastropods, stromatoporids and ostracods (MAVRIDIS & MOSTLER, 1970; EMMANULIDIS & MOSTLER, 1970).

**Origin, facies:** Shallow water shelf environment (reworked biostromes) (MAVRIDIS & MOSTLER, 1970).

**Chronostratigraphic age:** Lower Devonian–?Eifelian.

**Biostratigraphy:** Corals indicate a Devonian age.

**Thickness:** Some hundreds of meters?

**Lithostratigraphically higher rank unit:** -

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** “Dolomites”.

**Overlying unit(s):** “Dolomites, Flaser Limestones”.

**Lateral unit(s):** Schwaz Dolomite, “Dolomites, Flaser Limestones”.

**Geographic distribution:** W-GWZ; Tyrol, Salzburg, Kitzbüheler Alpen.

**Remarks:** The younger age (?Emsian–?Eifelian) of the Spielberg Dolomite is the reason for separating it from the Schwaz Dolomite (MAVRIDIS & MOSTLER, 1970). For further remarks see unit “Dolomites”.

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

### Dolomite, Flaserkalke / Dolomites, Flaser Limestones

FRITZ EBNER

**Validity:** Invalid; not formalized informal working term (SCHÖNLAUB & HEINISCH, 1993).

**Type area:** Kitzbüheler Alpen (ÖK50-UTM, map sheet 3214 Kitzbühel, ÖK50-BMN, map sheet 122 Kitzbühel).

**Type section:** Within the Wildseeloder Unit at the Spielberg and Kitzbüheler Horn, not further indicated.

**Reference section(s):** -

**Derivation of name:** According to the main lithologies.

**Synonyms:** Rote Flaserdolomite, dunkle Dolomite mit hohem Tongehalt, dunkelgraue, grobspätige Dolomite, Tonschiefer, Kalktonschiefer, Tonflaserkalke und Kiesel-schiefer der “Südfazies” (MAVRIDIS & MOSTLER, 1970); “rot-gefärbte Dolomite/Flaserdolomite der Kitzbüheler Horn Serie” (EMMANULIDIS & MOSTLER, 1970).

**Lithology:** Dolomite (red-reddish flaser- and nodular dolomite, dark grey coarse sparry dolomite, dark clayey dolomite), flaser limestones with Fe-Mn crusts, shales, siliceous shales (EMMANULIDIS & MOSTLER, 1970; MAVRIDIS & MOSTLER, 1970).

**Fossils:** Conodonts, nautiloids, crinoids (EMMANULIDIS & MOSTLER, 1970; MAVRIDIS & MOSTLER, 1970).

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

**Chronostratigraphic age:** Devonian (?upper Lochkovian–lower Famennian) (EMMANULIDIS & MOSTLER, 1970; MAVRIDIS & MOSTLER, 1970).

**Biostratigraphy:** Exact dating is only possible in the early Late Devonian by species of the conodont genus *Palmatolepis*.

**Thickness:** About 30 m.

**Lithostratigraphically higher rank unit:** “Südfazies” (MAVRIDIS & MOSTLER, 1990), “Kitzbüheler Horn-Serie” (EMMANULIDIS & MOSTLER, 1970) – both units are informal.

**Lithostratigraphic subdivision:** -

**Underlying unit(s):** “Dolomites”.

**Overlying unit(s):** -

**Lateral unit(s):** Kitzbüheler Alpen: Schwaz and Spielberg Dolomite, Dientener Berge (Entachen Alm; ÖK50-UTM, map sheet 3221 Zell am See, ÖK50-BMN, map sheet 124 Saalfelden): red dolomite interfingering with reddish limestone or metasomatic magnesite (MOSTLER, 1968).

# 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						
		DEVONIAN	MIDDLE DEVONIAN			Dalejian	400		
						405			
		DEVONIAN	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						
		RHUDDANIAN	485						
		HIRNANTIAN	490						
		495							
		498.3							
		500							
		505							
PERMIAN	MIDDLE ORDOVICIAN	DARRIWILIAN	510	PERMIAN	MIDDLE ORDOVICIAN				
		490							
		495							
		500							
		505							
		510							
		515							
		520							
		525							
		530							
PERMIAN	LOWER ORDOVICIAN	TREMA-DOCIAN	535	PERMIAN	LOWER ORDOVICIAN				
		540							
		545							
		550							
		555							
		560							
		565							
		570							
		575							
		580							
PERMIAN	UPPER CAMBRIAN	PAIBIAN	585	PERMIAN	UPPER CAMBRIAN				
		590							
		595							
		600							
		605							
		610							
		615							
		620							
		625							
		630							
PERMIAN	MIDDLE CAMBRIAN	PAIBIAN	530	PERMIAN	MIDDLE CAMBRIAN				
			535						
			540						
			545						
			550						
			555						
			560						
			565						
			570						
			575						
PERMIAN	LOWER CAMBRIAN	PAIBIAN	580	PERMIAN	LOWER CAMBRIAN				
			585						
			590						
			595						
			600						
			605						
			610						
			615						
			620						
			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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