

Synonyms: Partly: Orthocerenkalk (FLÜGEL, 1953a); Folge von Laufnitzdorf (H. FLÜGEL, 1960, 1975).

Lithology: Succession of various fine-grained volcaniclastic rocks, organodetrinitic limestones and silt- to sandstones.

Fossils: Conodonts; TSCHELAUT in GOLLNER et al. (1982) mentioned in the lower series (basal 30 m of the sequence) various fossils in thin sections (bryozoans, brachiopods, echinoderms, trilobites).

Origin, facies: Pelagic environment of some 10 to 100 m water depth (GOLLNER et al., 1982).

Chronostratigraphic age: Llandovery to Emsian.

Biostratigraphy: *amorphognathoides* Zone–lower *sagitta* Zone.

Thickness: About 350 m.

Lithostratigraphically higher rank unit: Laufnitzdorf Group (FLÜGEL, 2000)

Lithostratigraphic subdivision: FLÜGEL (2000) discerned three members according to the suggestions of GOLLNER et al. (1982).

Oberferler Member: Predominantly argillaceous shales and silt/sandstones, subordinate occurrences of lydites and alkaline volcanoclastics; up to 200 m in thickness.

Rathlosgraben Member: Flaser to nodular limestones, argillaceous shales, Lydites and silt/sandstones; up to 90 m in thickness.

Rothleiten Member: Alkaline volcanoclastics with intercalations of limestones; about 70 m in thickness.

Underlying unit(s): Formations of the Hochschlag and Gschwend Nappes (tectonic contact).

Overlying unit(s): Units of the Kogler Nappe (tectonic contact).

Lateral unit(s): -

Geographic distribution: Styria, highland in the surroundings of Graz; ÖK50-BMN, map sheets 133 Leoben, 134 Passail.

Remarks: -

Complementary references: FLÜGEL & NEUBAUER (1984), HUBMANN & WEBER (2010).

Kehr-Formation / Kehr Formation

BERNHARD HUBMANN

Validity: Valid; description and formalization by FLÜGEL (2000: p. 14; “Kehrer-Vulkanit-Formation”); change of name into Kehr-Formation by EBNER et al. (2000).

Type area: ÖK50-UTM, map sheet 4228 Voitsberg (ÖK50-BMN, map sheet 163 Voitsberg).

Type section: No type section defined, but FLÜGEL (2000) proposed a type region in the municipality area of Kehr, ÖK50-UTM, map sheet 4228 Voitsberg (ÖK50-BMN, map sheet 163 Voitsberg) (N 47°07'38" / E 15°14'34").

Reference section(s): -

Derivation of name: After Kehr (formerly Kher), a small village east of the monastery Rein, approx. 20 km northwest of Graz.

Synonyms: Partly: obere Schiefer (HERITSCH, 1917b); Falbenschiefer (WAAGEN, 1929); untere Schichten von Kher

(FLÜGEL & SCHÖNLAUB, 1972b; FLÜGEL & NEUBAUER, 1984); Schichten von Kher (H. FLÜGEL, 1975); vulkanoklastische Schichtfolge des Haritzgrabens (NEUBAUER, 1989).

Lithology: Predominantly alkaline subordinately acidic metavolcanites (tuffs, lavas).

Fossils: Conodonts – one single finding of a graptolite fragment (HIDEN, 1995).

Origin, facies: Open marine environment.

Chronostratigraphic age: Llandovery–Ludlow.

Biostratigraphy: *leintwardinensis* graptolite zone.

Thickness: Probably more than 100 m.

Lithostratigraphically higher rank unit: Reinerspitz Group (FLÜGEL, 2000).

Lithostratigraphic subdivision: -

Underlying unit(s): Unknown (crystalline basement of the Graz Paleozoic ?)

Overlying unit(s): Kötschberg Formation.

Lateral unit(s): -

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

Remarks: -

Complementary references: HUBMANN & MESSNER (2005).

Kötschberg-Formation / Kötschberg Formation

BERNHARD HUBMANN

Validity: Valid; description and formalization by FLÜGEL (2000: p. 14; “Kötschberger-Formation”); change of name into Kötschberg-Formation by EBNER et al. (2000).

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

Type section: No type section defined, but FLÜGEL (2000) proposed a type region in the area of the municipality Kötschberg; ÖK50-UTM, map sheet 4229 Graz (ÖK50-BMN, map sheet 164 Graz) (N 47°05'28" / E 15°20'56").

Reference section(s): -

Derivation of name: After Kötschberg near Thal, a small village 12 km west of Graz.

Synonyms: Partly: obere Schiefer (HERITSCH, 1917b); obere Schichten von Kher (FLÜGEL & SCHÖNLAUB, 1972b; FLÜGEL & NEUBAUER, 1984); Schichten von Kher (H. FLÜGEL, 1975); plattige Kalkschiefer (WEBER, 1990).

Lithology: Predominantly limestones, rare dolostones, argillaceous shales and silty shales.

Fossils: Conodonts, orthocon cephalopods, bivalves, corals.

Origin, facies: Pelagic environment.

Chronostratigraphic age: Ludlow–Lochkovian.

Biostratigraphy: *siluricus* to *woschmidtii* conodont zones.

Thickness: About 30 m.

Lithostratigraphically higher rank unit: Reinerspitz Group (FLÜGEL, 2000).

Lithostratigraphic subdivision: FLÜGEL (2000) distinguished 4 members:

Eggenfeld Member: Dolomites alternating with fine bedded tuffs; about 10 m in thickness.

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 | 295 | | |
| | | PERMIAN | UPPER PERMIAN / CARBONIFEROUS / PENNSYLVANIAN | | | GZHELIAN | 299 | PERMIAN | LOWER PERMIAN / CISURALIAN |
| KASIMOVIAN | 305 | | | | | | | | |
| MOSKOVIAN | 310 | | | | | | | | |
| BASHKIRIAN | 315 | | | | | | | | |
| PERMIAN | UPPER PERMIAN / CARBONIFEROUS / PENNSYLVANIAN | | | SERPUKHOVIAN | 320 | | | | |
| | | | | VISEAN | 325 | | | | |
| | | | | | 335 | | | | |
| PERMIAN | LOWER PERMIAN / MISSISSIPPIAN | | | TOURNAISIAN | 350 | PERMIAN | LOWER PERMIAN / MISSISSIPPIAN | | |
| | | | | 355 | | | | | |
| | | | | 359.2 | | | | | |
| | | 365 | | | | | | | |
| | | PERMIAN | UPPER DEVONIAN | FAMENNIAN | 370 | | | | |
| | | | | FRASNIAN | 380 | | | | |
| | | PERMIAN | MIDDLE DEVONIAN | GIVETIAN | 385 | | | | |
| | | | | EIFELIAN | 395 | | | | |
| | | | | EMSIA | 400 | | | | |
| | | | | PRAGIAN | 405 | | | | |
| LOCHKOVIAN | 410 | | | | | | | | |
| 416 | | | | | | | | | |
| PERMIAN | LOWER DEVONIAN | LUDFORDIAN / GORSTIAN | 420 | PERMIAN | LOWER DEVONIAN | | | | |
| | | HOMERIAN / SHEINWOOD | 425 | | | | | | |
| | | TELYCHIAN | 430 | | | | | | |
| | | AERONIAN | 435 | | | | | | |
| | | RHUDDANIAN | 440 | | | | | | |
| | | HIRNANTIAN | 443.7 | | | | | | |
| | | 445 | | | | | | | |
| | | PERMIAN | UPPER ORDOVICIAN | | | 450 | | | |
| | | | | | | 455 | | | |
| | | | | | | 460 | | | |
| 465 | | | | | | | | | |
| PERMIAN | MIDDLE ORDOVICIAN | DARRIWILIAN | 470 | | | | | | |
| | | 475 | | | | | | | |
| | | 480 | | | | | | | |
| | | 485 | | | | | | | |
| PERMIAN | LOWER ORDOVICIAN | TREMACIAN | 490 | | | | | | |
| | | 495 | | | | | | | |
| PERMIAN | UPPER CAMBRIAN | PAIBIAN | 500 | | | | | | |
| | | 505 | | | | | | | |
| CAMBRIAN | MIDDLE CAMBRIAN | 510 | | | | | | | |
| | | 515 | | | | | | | |
| | | 520 | | | | | | | |
| | | 525 | | | | | | | |
| CAMBRIAN | LOWER CAMBRIAN | 530 | | | | | | | |
| | | 535 | | | | | | | |
| 540 | | | | | | | | | |
| 542 | | | | | | | | | |



- 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

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