

Summarised description

Unit name

Vireux Formation

Code

VIR

Status

Formal Formation

Parent unit

None

Child units

Ecluse Member, Ruisseau de Deluve Member

Characteristic description

Thick beds of grey, bluish-grey or greenish quartzitic sandstone rich in various sedimentary structures, passing to bluish-grey or greenish argillaceous sandstone alternating with greenish or dark grey shale,

Age

Emsian

Thickness

100 to 350 metres

Area of occurrence

Southern limb of the Dinant Synclinorium up to the Aisne River valley.

Type locality

After the village of Vireux in the Meuse River valley (France).

Alternative names

Grès noir de Vireux

Authors

Gosselet (1864)

Modified after

Denayer, J. & Mottequin, B., 2024. Lower Devonian lithostratigraphy of Belgium. *Geologica Belgica*, 27/3-4, 115–154.

Date

23/09/2025

Cite as

Denayer, J. & Mottequin, B., 2025. The Vireux Formation, 23/09/2025. National Commission for Stratigraphy Belgium. <https://ncs.naturalsciences.be/lithostratigraphy/Vireux-Formation>

Full description

Unit name

Vireux Formation

Code

VIR

Status

Formal Formation

Parent unit

None

Child units

Écluse Member, Ruisseau de Deluve Member

Origin of the name

After the village of Vireux in the Meuse River valley (France).

Alternative names

Grès noir de Vireux

Authors

Gosselet (1864, p. 306) : *Grès noir de Vireux*

Modified after

Denayer, J. & Mottequin, B., 2024. Lower Devonian lithostratigraphy of Belgium. *Geologica Belgica*, 27/3-4, 115–154.

Date

23/09/2025

Cite as

Denayer, J. & Mottequin, B., 2025. The Vireux Formation, 23/09/2025. National Commission for Stratigraphy Belgium. <https://ncs.naturalsciences.be/lithostratigraphy/Vireux-Formation>

Characteristic description

The base of the Vireux Formation corresponds to the first bluish-grey quartzitic sandstone overlying the shale and siltstone of the Ruisseau de la Forge Formation. The Vireux Formation consists of thick masses of bluish-grey or greenish, more or less argillaceous sandstone and quartzitic sandstone that are separated from each other by dark grey or greenish shale and siltstone beds. The upper limit of this lithostratigraphic unit is placed at the bottom of the first red shale bed of the Chooz Formation.

At the stratotype, Godefroid & Stainier (1988, 1994) subdivided the Vireux Formation into two members, from base to top: the Écluse and Ruisseau de Deluve members. The **Écluse Member** (*Membre de l'Écluse* in Godefroid & Stainier, 1988, p. 99) is made of thick masses of frequently lenticular beds of grey, bluish-grey or locally greenish quartzitic sandstone that are separated by thick beds of dark grey shale. The vertical arrangement of the lithologies suggests sequential shallowing-upwards deposits (Cibaj, 1992). Sedimentary structures (cross-beds, ripple marks, load and groove casts, ball-and-pillows) are frequent. Discontinuous and thin fossiliferous horizons (brachiopods, bivalves, crinoids, tabulate corals, trilobites) are observed in the sandstone beds. The **Ruisseau de Deluve Member** (*Membre du Ruisseau de Deluve* in Godefroid & Stainier, 1988, p. 99) comprises thick

masses of quartzitic or argillaceous, bluish-grey or more frequently greenish sandstone alternating with greenish or, more rarely, dark grey shale. It only yielded plant remains. The boundary between the two members is defined at the top of the last bed containing macrofossils and sedimentary structures. It is not clear-cut from the lithological viewpoint; therefore, Godefroid & Stainier (1988, 1994) placed it at the top of the last bed yielding macrofauna, but again, this criterion cannot be easily applied on isolated outcrops. Hence, both members are not distinguished on the geological maps of Wallonia (e.g. Dumoulin & Coen, 2008).

Area of occurrence

The Vireux Formation is recognised on the southern and south-eastern flanks of the Dinant Synclinorium up to the Aisne River valley.

Type locality

Disused Montigny quarries, on the left bank of the Meuse River, between Vireux-Molhain and Montigny-sur-Meuse (France). The stratotype can be complemented with the section of the abandoned Mont de Vireux quarry at Vireux-Molhain although the contact with the underlying Ruisseau de la Forge Formation is not exposed.

Age

Traditionally ascribed to the lower part of the Emsian following the tripartite subdivision of this stage (e.g. de Dorlodot, 1901) but elements for a precise dating are lacking.

Thickness

It considerably varies, from the west to the east: c. 100 m south of Couvin (Marion & Barchy, 1999), c. 130 m in the Meuse River valley (Montigny-sur-Meuse: 66 m for the Ruisseau Deluve Member and 54 m for the Écluse Member, Dumoulin & Coen, 2008), and 350 m in the Lesse River valley (Blockmans et al., 2019).

Lower boundary

First thick sandstone bed overlying the mostly shaly underlying Ruisseau de la Forge Formation.

Upper boundary

The definition of the upper limit of the Vireux Formation varies on both sides of the Belgian–French border as pointed out by Godefroid & Stainier (1994) and Dumoulin & Coen (2008). Belgian geologists use the first appearance of the red colour to place the base of the overlying Chooz Formation in contrast with their French counterparts who use a lithological change. Consequently, on the last version of the geological map of Givet (Lacquement et al., 2006a, 2006b), the Vireux Formation is 200 m thick in the Meuse River valley, covering therefore the sandy basal part of the overlying Chooz Formation.

Regional correlations

In the Aisne River valley, the Vireux Formation passes laterally to the Wépion Formation (Marion & Barchy, in press).

References

Blockmans, S., Dumoulin, V. & Dejonghe, L., 2019. Carte géologique de Wallonie : Grupont – Saint-Hubert 59/7-8. 1/25 000. Service public de Wallonie, Direction générale de l’Agriculture, des Ressources naturelles et de l’Environnement, Namur, and its explanatory booklet, 84 p.

Cibaj, I., 1992. Structures sédimentaires dans les grès de Vireux (Dévonien inférieur). Les coupes du Mont de Vireux, Ardenne Méridionale. Annales de la Société géologique du Nord, 2^e série, 1/4, 195–203.

de Dorlodot, H., 1901. Compte rendu des excursions sur les deux flancs de la crête du Condroz faites par la Société belge de Géologie, de Paléontologie et d'Hydrologie le 19 mars et les 8 et 9 avril 1899. Bulletin de la Société belge de Géologie, de Paléontologie et d'Hydrologie, 14/5 (pro 1900), Mémoires, 113–192.

Dumoulin, V. & Coen, M., 2008. Carte géologique de Wallonie : Olloy-sur-Viroin – Treignes 58/5-6. 1/25 000. Ministère de la Région wallonne, Direction générale des Ressources naturelles et de l'Environnement, Namur, and its explanatory booklet, 103 p.

Godefroid, J. & Stainier, P., 1988. Les Formations de Vireux et de Chooz (Emsien inférieur et moyen) au bord sud du Synclinorium de Dinant entre les villages d'Olloy-sur-Viroin (Belgique) à l'Ouest et de Chooz (France) à l'Est. Bulletin de l'Institut royal des Sciences naturelles de Belgique, Sciences de la Terre, 58, 95–173.

Godefroid, J. & Stainier, P., 1994. VIR - Formation de Vireux. In Godefroid, J. et al., Les formations du Dévonien inférieur du Massif de la Vesdre, de la Fenêtre de Theux et du Synclinorium de Dinant (Belgique, France). Mémoires pour servir à l'Explication des Cartes géologiques et minières de la Belgique, 38, 67–76.

Lacquement, F., Mansy, J.-L., Meilliez, F. & Van Vliet-Lanoë, B., 2006a. Carte géologique de la France (1/50 000), feuille Givet (40) (seconde édition). Bureau de Recherches Géologiques et Minières, Orléans.

Lacquement, F., Mansy, J.-L., Meilliez, F., Van Vliet-Lanoë, B., Coen, M., Corneille, J.-P., Dumoulin, V., Hanot, F., Lemonne, E., Oudoire, T. & Pénisson, J.-P., 2006b. Notice explicative de Carte géologique de France (1/50 000), feuille Givet (40) (seconde édition). Bureau de Recherches Géologiques et Minières, Orléans, 108 p.

Marion, J.-M. & Barchy, L., 1999. Carte géologique de Wallonie : Chimay – Couvin 57/7-8. 1/25 000. Ministère de la Région wallonne, Direction générale des Ressources naturelles et de l'Environnement, Namur, and its explanatory booklet, 89 p.

Marion, J.-M. & Barchy, L. in press. Carte géologique de Wallonie : Durbuy – Mormont 55/1-2. 1/25 000. Service public de Wallonie, Agriculture, Ressources naturelles et Environnement, Namur, and its explanatory booklet.