

## Summarised description

### Unit name

La Roche Formation

### Code

LAR

### Status

Formal Formation

### Parent unit

Warche Group

### Child units

Martelange Member, Jupille Member

### Characteristic description

Dark grey or bluish slate, siltstone and shale, with few bluish sandstone intercalations.

### Age

Pragian

### Thickness

From 215 m south of Couvin to 800 m along the southern flank of the La Roche Syncline.

### Area of occurrence

Southern and south-eastern limbs of the Dinant Synclinorium from the French border to Amonines. Northwards, the typical facies tend to disappear and there is no trace of them anymore south of the Xhoris Fault (Marion & Barchy, in press, a, b).

### Type locality

Sections along the road N833 from La Roche-en-Ardenne to Hotton (Stainier, 1994).

### Alternative names

*Facies de La Roche*

### Authors

Asselberghs (1946)

### 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 La Roche Formation, 23/09/2025. National Commission for Stratigraphy Belgium. <https://ncs.naturalsciences.be/lithostratigraphy/La-Roche-Formation>

## Full description

### Unit name

La Roche Formation

### Code

LAR

### Status

Formal Formation

### Parent unit

Warche Group

### Child units

Martelange Member, Jupille Member

### Origin of the name

After the town of La Roche-en-Ardenne in the Ourthe valley.

### Alternative names

*Facies de La Roche*

### Authors

Asselberghs (1946, p. 180) : *facies de Laroche*

### Modified after

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

### Date

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### Characteristic description

The La Roche Formation is dominated by slate, slaty siltstone (*phyllade*) and shale, typically dark grey or bluish, with few bluish sandstone intercalations. The cleavage is usually very good in the fine-grained beds and the rock can easily be split into thin sheets. Where sandstone and siltstone beds are intercalated, the cleavage is poorer, and the rock is cut in thick slabs. Pseudonodules, occasionally up to 50 cm in diameter, occur in the lower and upper parts of the Formation. In the Neufchâteau–Eifel Synclitorium, a basal unit of monotonous fine-grained dark slates is known as the **Martelange Member** (*Phyllades de Martelange* in Asselberghs, 1912a, p. M58; 1912b, p. B201). It differs from the rest of the formation by the virtual absence of sandstone laminae and beds that allowed the production of fine slates (Ghysel, 2022a, 2022b, 2023; Belanger, in press). Locally, small carbonate or limonitic nodules occur, together with scarce decarbonated coquina (*Grauwacke de Petigny* in the old literature, Asselberghs & Maillieux, 1938). East of the Lomme River valley, the upper part of the Formation gets richer in lenticular sandstone beds (Barchy & Marion, 2014). In the Ourthe River valley, this unit is better individualised and was described as the Jupille Formation by Dejonghe et al. (2008). However, the impossibility to pinpoint a boundary between the La Roche and the Jupille formations,

as well as the very variable development of sandstone make it complicated to separate both lithostratigraphic units. Therefore, we here chose to retrograde the sandy unit to the member level, which is also more concordant with the previous studies (Asselberghs, 1946; Stainier, 1994). In its stratotype, the **Jupille Member** is composed of decimetric beds of dark grey to brownish sandstone and siltstone alternating with dark micaceous shale. The sandstone and siltstone beds, which are locally micaceous and bioturbated, display a wide range of sedimentary structures (oblique stratifications, toolmarks, ripples, lenticular bedding, oblique and cross stratifications, load casts, etc.). They typically have a brownish-orange weathering colour due to their limonitic content. In the upper part of the Member, the sandstone is slightly arkosic and displays ball-and-pillow structures. Eastwards (Nisramont, Lengeler), the proportion of sandstone decreases, and the dark shale (and slate locally) becomes dominant.

### Area of occurrence

Southern and south-eastern limbs of the Dinant Synclinorium from the French border to Amonines. Northwards, the typical facies tend to disappear and there is no trace of them anymore south of the Xhoris Fault (Marion & Barchy, in press, a, b). Locally, sandstone beds are present throughout most of the Formation and were mapped as the Jupille Formation, notably in the Lomme River valley (Blockmans et al., 2019) and between the Aisne River and Amblève River valleys (Marion & Barchy, in press, a).

### Type locality

Sections along the road N833 from La Roche-en-Ardenne to Hotton (Stainier, 1994). The base of the La Roche Formation is exposed at the northern exit of La Roche-en-Ardenne along this road, whereas its top and the Jupille Member can be observed along the same road, c. 600 m south of Jupille (Dejonghe et al., 2008). The Martelange Member is exposed along the road from Arlon to Martelange (N4) (Belanger, in press).

### Age

Mostly late Pragian. In the Pèrnelle pond section, south of Couvin, the La Roche Formation (units 2–4 in Godefroid, 1979) yielded the brachiopod *Arduspirifer latestriatus prolatestriatus* suggesting that this part is Emsian (Bultynck et al., 2000). In Belgium, however, the ‘traditional’ base of the Emsian is based on the appearance of the brachiopod *Brachyspirifer minatus* and located above the La Roche Formation (Godefroid & Stainier, 1982).

### Thickness

Highly variable: 215 m south of Couvin (Marion & Barchy, 1999), 420 m south of Grupont (Blockmans et al., 2019), about 400 m at Amonines, 400 m on the northern flank of the La Roche Syncline increasing to 800 m on its opposite flank (Dejonghe & Hance, 2001). The Martelange Member is 100–150 m thick in its type area but tends to disappear northwards (Ghysel, 2023). The Jupille Member is very variable in thickness, c. 600 m in Jupille and Nisramont (Dejonghe et al., 2008) but only 250 m in Lengeler and decreases to 0 m in the Grand Duchy of Luxembourg (Dejonghe, 2019).

### Lower boundary

The base is transitional from the Villé Formation to the La Roche Formation and is marked by the increasing thickness of the dark slate packages and the rapid disappearance of the carbonate beds.

### Upper boundary

The increasing proportion of the sandstone bed in the Jupille Member marks the transition to the overlying Ruisseau de la Forge Formation, though the contact has never been observed.

## Regional correlations

In the north-eastern part of the Neufchâteau–Eifel Synclinorium, the La Roche Formation passes to the monotonous slaty facies of the Kautenbach–Troisvierges Formation—the *facies de Saint-Vith* sensu Asselberghs (1927, p. 209; 1946, p. 179)—named *Wüstebach-Formation* on the German territory (Ribbert et al., 1992). In the Neufchâteau–Eifel Synclinorium, the upper part of the La Roche Formation tends to be richer in sandstone and quartzitic sandstone beds, which probably corresponds to the transition to the overlying Our Formation (Brichant, 1928; Brül, 1966).

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