

Dessel Member (Diest Formation)

Unit name: Dessel Member**Hierarchical unit name:** Diest Formation**Type:** Member**Code:** DiDe**Author(s):**

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Alternative names: sables fins du Diestien (Gulinck et al., 1963)**Origin of the name:** Dessel in the east of the province of Antwerpen.**Status:** Formal**Date:** 01/05/2022**How to refer:** Houthuys, R., Adriaens, R., Goolaerts, S., Laga, P., Louwye, S., Matthijs, J., Vandenberghe, N. & Verhaegen, J., 2023. The Dessel Member, 01/09/2023. National Commission for Stratigraphy Belgium. <http://ncs.naturalsciences.be/lithostratigraphy/Dessel-Member>**Characterizing description**

The member contains the fine-grained, glauconiferous, greyish green sand that is found near the base of the Diest Formation only in subcrop in boreholes in the central and northern part of the Kempen and in northern Limburg (Houthuys et al., 2020). Glauconite content averages 25%. In the vertical direction, grain size is either constant or coarsening upwards. The sand is most often homogenized by bioturbation. In cores, white burrow traces devoid of glauconite can be seen. No primary lamination is found in this member. The member was originally defined as the lowest part of the Diest Formation in the Kempen containing foraminifera and organic-walled microfossils (Laga & De Meuter, 1972). In practice however, the member has primarily been identified based on the grain-size criterion "modal grain size smaller than 200 μm ". This implies that also overlying fine-grained sand without carbonates is included in the member. The lowest, carbonaceous part is referred to as "lower Dessel Member" and the overlying, fine-grained sand without carbonates as "upper Dessel Member" (see annex 2 to Diest Formation sheet). The lower Dessel Member is not found systematically over the area of the Dessel Member.

Type section, type locality, type borehole, type CPT and/or type geophysical borehole

To be defined. A preferred candidate would be one of the cored boreholes from Dessel or Mol preserved in the collections of the Royal Belgian Institute of Natural Sciences.

Description upper boundary

The upper boundary is a gradual upwards transition to the Kempen Diest Member. For practical reasons, the modal grain size of 200 μm is used to separate it from the Kempen Diest Member. In the SE part of the extent, the member underlies the Hageland Diest Member, as observed in the Veerle borehole (060E0215) and referred to "Hageland Dessel sand" in Vandenberghe & Louwye (2020, fig. 3 p. 106).

Description lower boundary

Where it occurs, the Dessel Member is at the base of the Diest Formation. A gravel occurs at the base; but it is only a thin layer of coarse grains and it is not found systematically in all boreholes.

Thickness

The thickness is difficult to establish as the upper boundary is not well defined. The thickness is often between 10 and 30 m. If there is a lower calciferous part, it is only about 10 m thick. In the Veerle borehole, the "Hageland Dessel sand" is 45 m thick.

Occurrence

The member occurs in the Kempen region below the Kempen Diest Member. The western border is a few km east of the city of Antwerpen and the southern border is approximately along a line Lier – Veerle – southwest border fault of the Roer Valley Graben. Both borders are poorly defined.

Regional correlations

The member boundaries are not (yet) well defined. The lower part of the Dessel Member may biostratigraphically correlate to the Hageland Diest Member, the Borsbeek Member and possibly also the Deurne Member. The upper Dessel Member may constitute the bottomset part of the prograding marine delta of the Kempen Diest Member. Near Maaseik in the Roer Valley Graben, a fine grained glauconite sand from biochron DN9 may be a lateral biostratigraphic correlate (Louwye & Vandenberghe, 2020).

Age

Late Miocene: last part of the early to middle Tortonian biochron DN8 for the lower, often calcareous, part of the Dessel Member (Vandenberghe & Louwye, 2020; Goolaerts et al., 2020); late Tortonian to earliest Messinian, biochron DN9 for the upper, often non-calcareous, part of the Dessel Member (Vandenberghe & Louwye, 2020).

Dataset

Data in the LIS are part of the DOV-Neogene data collection, including links to the GSB-collection data sheets: <https://www.dov.vlaanderen.be/data/opdracht/2020-021774>.

Subset of the Diest Formation: <https://www.dov.vlaanderen.be/data/opdracht/2020-021774>

References

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