

# Dalton Formation

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## Dalton Formation (**DLB**), Carboniferous, Northern England Province

Dalton Formation is part of the [[Great Scar Limestone Group]

### Name

The formation is named after Dalton-in-Furness, Cumbria. The Dalton Beds of Rose and Dunham (1977<sup>[1]</sup>) were given formational status by Johnson et al. (2001<sup>[2]</sup>). Three informal divisions correspond approximately to Garwood's (1913<sup>[3]</sup>) '*Chonetes carinata* Subzone', '*Clisiophyllum multiseptatum* Band', and 'Gastropod Beds', in ascending order.

### Lithology

The Dalton Formation comprises dark grey, well-bedded, bituminous, crinoidal packstone with conspicuous thin siltstone interbeds. Three informal divisions are recognised: a lower division with small 'reefs'; a middle division with many marine mudstone and siltstone interbeds; and an upper division comprising pale grey packstone and grainstone.

### Genetic interpretation

The middle division of the formation was deposited in deeper water than the lower and upper divisions. A siltstone bed occurring at the base of the type section marks the abrupt change from shallow to relatively deeper water limestone deposition.

### Stratotype

The type section of the formation is the Dalton-in-Furness bypass (A590) road cutting from (SD 2245 7489) (base) to (SD 2175 7466) where a dark grey siltstone with thin limestone interbeds at its base is overlain by three informal divisions comprising mid to dark grey planar-bedded packstone with

thin siltstone partings and reefs (lowest), limestone with conspicuous siltstone partings (middle), and bioclastic packstones and grainstones (upper). A thinner reference section is available in the Plumpton Quarries from (SD 3079 7856) (base) to (SD 3106 7814). See Johnson et al. (2001, pp. 59-60<sup>[2]</sup>).

## Lower and upper boundaries

The base of the formation is defined at the type section (and inferred to be the same over a wide area) at the base of a 1.5 m thick dark grey siltstone with limestone interbeds, conformably overlying bioturbated crinoidal grainstones of the Red Hill Limestone Formation. In general, however, the base of the formation is taken at the first appearance of dark grey limestone above the pale grey fragmental limestones of the Red Hill Limestone Formation (Figure.9, Column 14). At the upper boundary of the formation, a non-sequence preceded deposition of the overlying pale grey limestones of the Park Limestone Formation.

## Thickness

The formation is about 240 m thick in Low Furness, but it is believed to thin rapidly south and east of Ulverston.

## Distribution and regional correlation

South Cumbria, north Lancashire

## Age and biostratigraphical characterisation

Arundian. Fossils are relatively common within the formation and include *Haplolasma subibicinum*, *Clisiophyllum multiseptatum* and *Michelinia megastoma*. The characteristic Arundian brachiopod *Delepinea carinata* occurs at the base, whilst the upper part of the formation has the first appearance of *Siphonodendron martini*.

## References

1. ↑ Rose, W C C, and Dunham, K C.1977.Geology and hematite deposits of South Cumbria.*Economic Memoir of the Geological Survey of Great Britain*, Sheet 58, part 48 (England and Wales).
2. ↑ <sup>2.0</sup> <sup>2.1</sup> Johnson, E W, Soper, N J, and Burgess, I C.2001.Geology of the country around Ulverston.*Memoir of the British Geological Survey*, Sheet 48 (England and Wales).
3. ↑ Garwood, E J.1913.The Lower Carboniferous succession in the north-west of England.*Quarterly Journal of the Geological Society*, Vol. 68, 449-596.

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