

Solution - Design Example F3a - Aggregate Concrete Block (Separating and Loadbearing Function)

Using Table NA.3.2 of UK National Annex to Eurocode 6 Part 1.2 :-

Wall thickness - 2 no. 100 mm leaves unplastered finish

Masonry unit type - Group 2 lightweight aggregate concrete

Mortar type - General Purpose

Gross dry density, $\rho = 900 \text{ kg/m}^3$ - within 240 - 1300 kg/m^3 compliance category

Design load ratio = 12,5 kN/m / 35 kN/m

= 36% (less than 60%)

Therefore $\alpha \leq 0,6$ category

And equivalent single leaf wall thickness = (100 + 100) mm

= 200 mm (see 4.1.2 of EC6 Part 1.2)

Therefore standard fire resistance period for an unplastered cavity wall is 240 minutes REI (140mm single leaf wall thickness is highest tabulated thickness)

Lightweight aggregate concrete blockwork wall will provide 240 minutes REI standard fire resistance as an unplastered construction

(Note: this fire resistance period is directly comparable with UK building regulations requirements in respect of the separating and loadbearing function)

Solution - Design Example F3b - Aggregate Concrete Block (Separating and Non-Loadbearing Function)

Using Table NA.3.1 of UK National Annex to Eurocode 6 Part 1.2 :-

Wall thickness - 2 no. 100 mm leaves unplastered finish

Masonry unit type - Group 2 lightweight aggregate concrete

Mortar type - General Purpose

Gross dry density, $\rho = 900 \text{ kg/m}^3$ - within 240 - 1300 kg/m^3 compliance category

Non-loadbearing construction

And fire resistance period of 1 no. 100 mm leaf as single leaf wall construction is 120 minutes (clause 4.1.2(3) of Part 1.2)

Therefore fire resistance period for 2 no. 100 mm leaves as cavity wall construction = (120 + 120) minutes = 240 minutes

Therefore standard fire resistance period for an unplastered cavity wall is 240 minutes EI

Note: fire resistance period for a non-loadbearing cavity wall is limited to 240 minutes maximum when assessment is by use of this method

Lightweight aggregate concrete blockwork wall will provide 240 minutes EI standard fire resistance as an unplastered construction

(Note: this fire resistance period is directly comparable with UK building regulations requirements in respect of the separating and loadbearing function)