

Solution - Design Example 1Fa - Clay Brick (Separating and Loadbearing Function)

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

Wall thickness - 102,5 mm unplastered finish

Masonry unit type - Group 1

Mortar type - General Purpose

Gross dry density, $\rho = 1600 \text{ kg/m}^3$ - within $> 1000 \text{ kg/m}^3$ compliance category

Design load ratio = $180 \text{ kN/m} / 207 \text{ kN/m}$ (see Design Example 1 for EC6 Part 1.1)
= 87% (greater than 60%, but less than 100%)

Therefore $\alpha \leq 1,0$ category

Therefore standard fire resistance period for an unplastered wall is 90 minutes REI

Clay brickwork wall will provide 90 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 1Fb - Clay Brick (Separating and Non-Loadbearing Function)

Using Table NA.1.1 of UK National Annex to Eurocode 6 Part 1.2 :-

Wall thickness - 102,5 mm unplastered finish

Masonry unit type - Group 1

Mortar type - General Purpose

Gross dry density, $\rho = 1600 \text{ kg/m}^3$ - within $> 1000 \text{ kg/m}^3$ compliance category

Non-loadbearing alternative

Therefore standard fire resistance period for an unplastered wall is 120 minutes EI

Clay brickwork wall will provide 120 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 non-loadbearing function)

Solution - Design Example 1Fc - Aggregate Concrete Block (Separating and Loadbearing Function)

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

Wall thickness - 140 mm unplastered finish

Masonry unit type - Group 1 dense aggregate

Mortar type - General Purpose

Gross dry density, $\rho = 1450 \text{ kg/m}^3$ - within 1200 - 2400 kg/m^3 compliance category

Design load ratio = 180 kN/m / 228 kN/m (see Design Example 1 for EC6 Part 1.1)
= 79% (greater than 60%, but less than 100%)

Therefore $\alpha \leq 1,0$ category

Therefore standard fire resistance period for an unplastered wall is 180 minutes REI

Dense aggregate concrete blockwork wall will provide 180 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 1Fd - 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 - 140 mm unplastered finish

Masonry unit type - Group 1 dense aggregate concrete

Mortar type - General Purpose

Gross dry density, $\rho = 1600 \text{ kg/m}^3$ - within 1200 - 2400 kg/m^3 compliance category

Non-loadbearing alternative

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

Dense 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 non-loadbearing function)