

## Solution - Design Example 4F - Cavity Wall One leaf Loadbearing (Separating and Loadbearing Function)

Using Tables NA.4.6 (and NA.1.1) of UK National Annex to Eurocode 6 Part 1.2 :-

Wall thickness - 102,5 mm outer leaf, 100 mm inner leaf, gypsum plastered finish to inner leaf inner surface only complying with BS EN 13279 Part 1

Masonry unit types - Group 1 clay and Group 1 autoclaved aerated concrete

Mortar type - General Purpose

Gross dry density,  $\rho = 1450 \text{ kg/m}^3$  clay - within  $\geq 1000 \text{ kg/m}^3$  compliance category

$\rho = 600 \text{ kg/m}^3$  aircrete - within 500 - 1000  $\text{kg/m}^3$  compliance -  
- category

Design load ratio = 21,0 kN/m / 42,0 kN/m

= 50% (less than 60%) relevant to inner loadbearing leaf

Therefore  $\alpha \leq 0,6$  category

Therefore standard fire resistance period from Table NA.4.6 for a gypsum plastered inner leaf cavity wall is 120 minutes REI

*Note: Part 1.2 requires that the non-loaded leaf of the construction is of relevant materials specification and of sufficient thickness to provide a comparable fire resistance period to the inner leaf. In this case 102,5 mm clay brick provides 120 minutes REI from Table NA.1.1 and therefore comparability is achieved.*

*Where, for the situation of a one-leaf loaded cavity wall construction, outer and inner leaves are of dissimilar materials specification and/or of dissimilar thicknesses, such that the fire resistance period is not compatible, then the fire resistance period achieved by that cavity wall construction should be assessed on the inner loadbearing leaf only considered as a single leaf loadbearing wall using the appropriate Part 1.2 table for materials specification and loading ratio.*

**Cavity wall construction will provide 120 minutes REI standard fire resistance**

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