Technical Note 107

Thermal transmittance (U-values) for built-up walls

This Technical Note is one of six on the thermal performance of building envelopes. The series comprises:

106: Fundamentals of heat transfer
107: Thermal transmittance (U-values) for built-up walls
108: Thermal bridges, Psi and Chi values
109: Thermal bridges within SAP and NCM
110: Designing building façades to manage the risk of surface condensation and mould growth
111: Designing building façades to manage the risk of interstitial condensation

Introduction

1 This Technical Note provides guidance and advice on calculating U-Values for built-up walls to demonstrate compliance with the requirements included within Part L of the Approved Documents.

2 This note does not include methods for determining the performance of a curtain wall or window. Please refer to TN48 '*U-Values of windows*' and TN49 '*U-value of curtain walls*' for information on those systems.

3 It is expected that the reader will be familiar with TN106, BRE report BR 443 and heat transfer more generally.

Relevant standards

4 Relevant standards can be found in TN106.

Notation

Symbol	Quantity	Unit
A	Area	m^2
C_p	Specific heat capacity	J/kg·K
H	Heat transfer coefficient	W/K
Q	Heat flow	W
d	Thickness or depth	m
T	Temperature (absolute scale)	K
θ	Temperature (Celsius)	°C
ε	Emissivity	-
q	Rate of air leakage	$m^3/s\ m^2$
ρ	Density	kg/m^3
p	Pressure	Pa
L	Thermal conductance, overall	W/K
$\mathfrak{R}$	Thermal resistance, overall (1/L)	K/W

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