Linear Thermal Transmittance (Ψ) and Temperature Factor (*f*)

Certificate :	*WRTM – 778 CPG E8 vs. 0*	Issued:	22 February 2024

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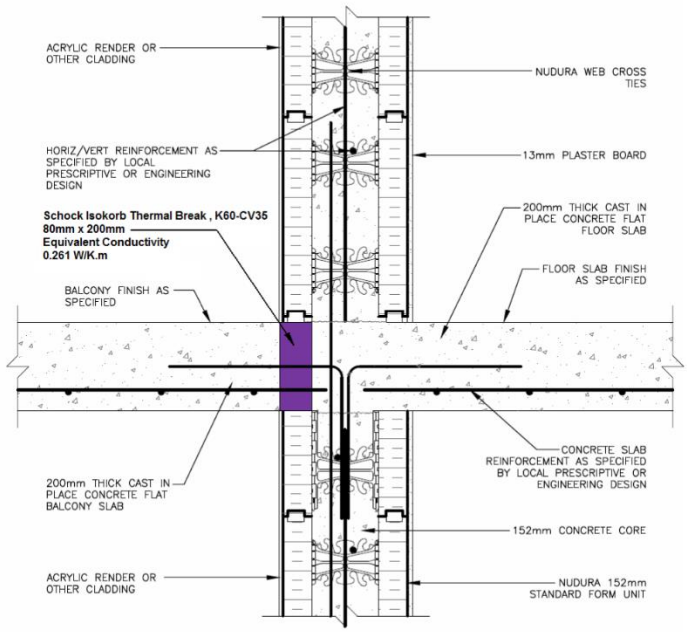
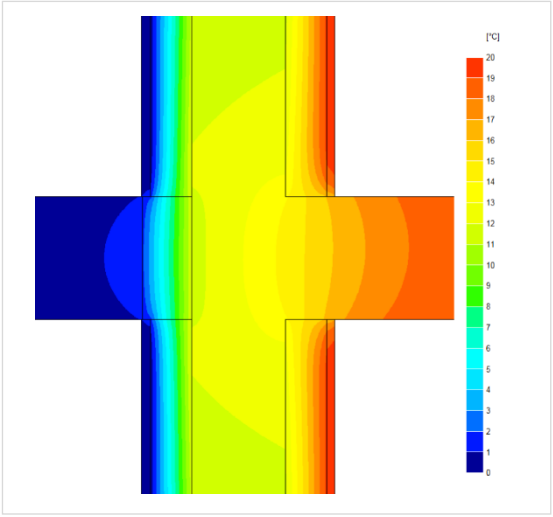
General Construction Specification: (see detail below for full construction)		
	Main/Load-bearing:	152mm (nominal) Dense Concrete Core, λ <= 2.00
	Insulation:	2x 67mm layers of EPS, λ = 0.036
	Balcony:	Cast-in-situ and continuous with internal floor
	Thermal Break:	80mm in line with external insulation, equivalent λ = 0.261 W/K.m
Description:	ICF Wall, Balcony_TBreak	
Reference:	E8	Balcony, within dwelling, with thermal break, Standard Wall





Temperature Distribution

Linear Thermal Transmittance W/m.K	
Ψ =	**0.336**

Temperature Factor[3] for Humidity and Mould	
***f* =**	**0.829**

Calculation prepared by: Matthew Wright MA Physics (Oxon) PGCE

Notes: Calculation based upon internal heat loss areas, applicable in UK Building Regulations and SAP calculations.
The Schöck Isokorb concrete/concrete balcony thermal break has been used. Representative worst case fixing chosen, implying balcony not to exceed 2.25m / maximum penetrating steel bars K60-CV35 fixing pattern, fire rating F90. Refer to Schöck Isokorb Technical Manual, equivalent conductivity tables.

1. Ψ and *f* are only valid for the detail drawn and described above.
2. The Ψ and f quoted are considered valid for U-value(s) Wall<= 0.248 W/m^2.K (allowance of +/- 20%, following the present guidance from B. Anderson,BRE, correspondence dated 24/02/2012, for the UK market). The use of different claddings may affect the U-value slightly, but will have no material impact on the calculated values used here, in this case.
3. In dwellings UK regulations indicate that a temperature factor *f* that is >0.75 would avoid the risk of mould. For other nations, jurisdictions and climates, other standards may apply. E.g. 0.65; Switzerland: 0.75; Belgium: 0.7; Germany: 0.7; Finland: 0.87. French, German and other standards often do not indicate a single number for acceptable risk, but are dependent on circumstances.
4. Calculations have been performed in accordance with:
   - EN ISO 10211: 2017 Thermal bridges in building construction. Heat flows and surface temperatures. Detailed calculations
   - IP 1/06 & BR 497 : 2016 (2nd Edition) Conventions for calculating linear thermal transmittance and temperature factors

   and with reference to the following publications:
   - BS EN ISO 6946 : 2017 Building components and building elements. Thermal resistance and thermal transmittance. Calculation methods
   - *BR 443 (2019 Edition)* Convention for U-value calculations