BISON PRECAST

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TECHNICAL GUIDANCE NOTE

Floor U-value – minimum requirements - 20 November 2017

The Building Regulations Part L1a sets out the U-value requirements for new dwellings. The overall concept is to reduce the amount of energy required to maintain a comfortable internal temperature within the dwelling. For this the document stipulates within table 2 what the maximum U-value can be for different elements of the dwelling. In the case of the floor the maximum U-value shall be no greater than 0.25W/m2K.

Table 2 - Limiting fabric parameters

Roof	0.20 W/(m^2K)
Wall	0.30 W/(m^2K)
Floor	0.25 W/(m^2K)
Party wall	0.20 W/(m^2K)
Swimming pool basin[1]	0.25 W/(m^2K)
Windows, roof windows, glazed roof light[2], curtain walling and pedestrian doors	2.00 W/(m^2K)
Air permeability	10.0 m^3/(h·m^2) at 50 Pa

Notes:

1. Where a swimming pool is constructed as part of a new building, reasonable provision should be made to limit heat loss from the pool basin by achieving a U-value no worse than 0.25 W/(m^2K) as calculated according to BS EN ISO 13370.
2. For the purposes of checking compliance with the limiting fabric values for roof-lights, the true U-value based on aperture area can be converted to the U-value based on the developed area of the roof-light. Further guidance on evaluating the U-value of out-of-plane roof-lights is given in Assessment of thermal performance of out-of-plane rooflights, NARM Technical Document NTD 2 (2010).

The overall energy used within the dwelling is referred to as the Dwelling Emission Rate (DER) which must be less than the Target Emission Rate (TER). Once all the different elements of the construction are specified the DER is calculated using the Standard Assessment Procedure (SAP). A SAP assessment will include the U-value for each element and the Psi-value for the different junctions, e.g. floor to wall and roof to wall. The SAP assessment is a sophisticated tool and allows the assessor to make various changes to meet the TER. For example the loft insulation can be increased in thickness by say 50mm which may negate the need to have a lower wall U-value. What the SAP assessment demonstrates is that the Psi-value is as important as the U-value. The alternative to a SAP assessment is to adopt the standard Model Designs which are presented in table 4 of Part L1a. The theory behind this is that by adopting the model designs the dwelling will meet the TER. However, there is a penalty associated with this approach, which is that the maximum U-values are now much tighter.

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Table 4 - Summary of concurrent notional dwelling specification

Element	Values
Opening areas (windows and doors)	Same as actual dwelling up to a maximum proportion of 25% of total floor area[1]
External walls (including opaque elements of curtain walls)	0.18 W/(m²K)
Party walls	0.0 W/(m²K)
Floor	0.13 W/(m²K)
Roof	0.13 W/(m²K)
Windows, roof windows, glazed roof-lights and glazed doors	1.4 W/(m²K) (whole window U-value)[2]
	g-value = 0.63[3]
Opaque doors	1.0 W/(m²K)
Semi-glazed doors	1.2 W/(m²K)
Airtightness	5.0 W/(h·m²K)
Linear thermal transmittance	Standardised psi values - see SAP 2012 Appendix R, except use of y = 0.05 W/(m²K) of the default value of y = 0.15 W/(m²K) is used in the actual dwelling
Ventilation type	Natural (with extract fans)[4]
Air-conditioning	None

As you can see the maximum U-value for the floor has been lowered from 0.25W/m2K to 0.13W/m2K by adopting the model designs.

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