General:

Global warming and energy conservation have been linked by many experts in this field and the Government of the United Kingdom have committed themselves to reducing carbon emissions. This commitment is evident by reference to Building Regulations - Approved Document 'L' that is published in separate sections as follows:

- Approved Document L1A - Conservation of Fuel & Power - New Dwellings.
- Approved Document L1B - Conservation of Fuel & Power - Existing Dwellings.
- Approved Document L2A - Conservation of Fuel & Power - New Buildings other than Dwellings.
- Approved Document L2B - Conservation of Fuel & Power - Existing Buildings other than Dwellings.

The performance of building products may be expressed in terms of 'Thermal Conductivity' *(lambda-value)* OR, 'Thermal Transmittance' *(U value)*:

Thermal Conductivity:
The rate at which a material will pass heat. Expressed in units of Watts per metre per degree of temperature difference (W/mK).

Thermal Transmittance:
The measure of how much heat will pass through one square metre of a structure when the air temperatures on either side differ by one degree. U-values are expressed in units of Watts per square metre per degree of temperature difference (W/m^2K).

The Thermal Transmittance or U-value performance is generally applied to doorsets.

Thermal Transmittance can be measured by use of three methods:

BS EN 12567-1:2000 - 'Hot Box' method. This provides for the physical measurement of specimens.

BS EN ISO 10077-1:2000 - Calculation of thermal transmittance - Simplified Method.
NOTE: This method is used by reference to Tables in Building Regulations - Approved Document L1A - Table 2 and Approved Document L2A - Table 4.

BS EN ISO 10077-2:2003 - Calculation of thermal transmittance - Numerical method for frames.
NOTE: This method provides for calculations related to the characteristics of particular products.

In practice, energy conservation relates to a building as a whole but with this performance being determined by considering the combined influence of each component. The savings resulting from the careful selection of one element can be offset against the performance of other elements to meet the performance requirements for a building as a whole.

For Dwellings, the Government's preferred method for determining an energy rating is by use of the 'Standard Assessment Procedure' *(SAP)*. This provides for a method for calculating a 'Carbon Index' that can be used to demonstrate that dwellings comply with Approved Document 'L'.

The U-value performances for FLAMEBREAK™ door cores have been calculated by Chiltern Dynamics using the method defined by reference to BS EN ISO 10077-2:2003.

Tables published by reference to Approved Documents L1A - Table 2 and L2A - Table 4 provide for numerical values to be applied to doorsets *(among other things)* in the absence of calculated or tested data. The BS EN ISO 10077-2:2003 calculated U value performances published in this section for FLAMEBREAK™ door cores provides Designers and Technicians with a stable door construction product that is suitable for the design of doorsets that provide for significant thermal insulating property improvements when compared with the Approved Document published values. Further, being of a solid core construction, FLAMEBREAK™ door cores provide for an excellent base product for enhancing thermal insulation performances by the addition of appropriate facing materials.

For further advice concerning the thermal transmittance performance of FLAMEBREAK™ door cores please contact our Technical Support Department:

Pacific Rim Wood Ltd.,
Unit 3, Kingdom Fields,
Bratton Fleming,
Barnstaple,
Devon. EX21 4EN

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E-mail: pacrim@btinternet.com

Rev.D

FLAMEBREAK© Thermal Transmittance:

This Section provides for guidance U - value data that has been calculated using the BS EN ISO 10077-2:2003 calculation method.

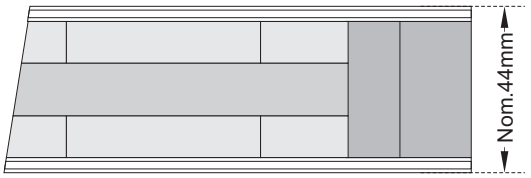
FLAMEBREAK™ 430
Top & Bottom Rails: Nom. 26x36.4mm mixed hardwood .
Stiles: Nom. 33x36.4mm mixed hardwood.
Core Construction: Three layer laminated Falcatta.
Facings: 2x3.6mm Plywood.
Calculated U-value = 1.0W/m²K

FLAMEBREAK™ FF630
Top & Bottom Rails: Nom. 26x31.8mm mixed hardwood .
Stiles: Nom. 33x31.8mm mixed hardwood.
Core Construction: Three layer laminated Falcatta.
Facings: 2x6mm MDF.
Calculated U-value = 1.1W/m²K

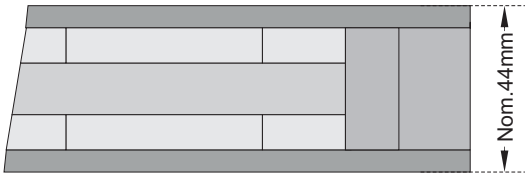
FLAMEBREAK™ 660
Top & Bottom Rails: Nom. 75~100x42mm mixed hardwood .
Stiles: Nom. 35x42mm mixed hardwood.
Core Construction: Three layer laminated Falcatta.
Facings: 2x5.2mm Plywood.
Calculated U-value = 0.9W/m²K

FLAMEBREAK™ FF660
Top & Bottom Rails: Nom. 75~100x42mm mixed hardwood .
Stiles: Nom. 35x42mm mixed hardwood.
Core Construction: Three layer laminated Falcatta.
Facings: 2x6mm MDF.
Calculated U-value = 0.9W/m²K

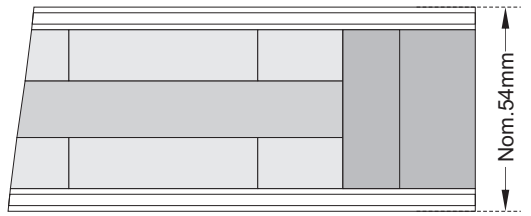
FLAMEBREAK™ 430



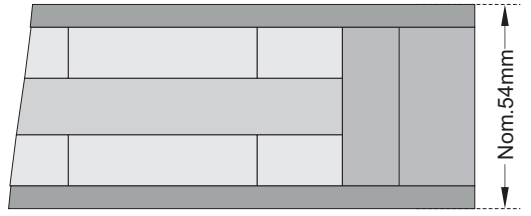
FLAMEBREAK™ FF630



FLAMEBREAK™ 660



FLAMEBREAK™ FF660



Glazing:
Calculations in this section do not include for glazing. The performance of glazed doors will vary according to glass type and glazed area *For guidance (centre pane) performances for glazed elements are indicated as follows:*

- **Single pane clear glass - 'U' value = approx. 5.4W/m²K**
- **Double glazed unit using non specialist glass types - 'U' value = approx. 2.6W/m²K**
- **Sealed glazed units using specialist glass types e.g. Pilkington 'E' glass with air = approx. 1.8W/m²K.**
- **Sealed glazed units using specialist glass types e.g. Pilkington 'E' glass with argon gas = approx. 1.6W/m²K.**

Results of Calculation: Chilt/T11003-06

Pacific Rim Wood Limited

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EX31 4EN

This document confirms that simulation and calculations were conducted on 25 May 2011
Results were obtained using the following method:-

- Whole leaf U-Value simulation to the principles of EN ISO 10077-2:2003
- Whole leaf U-Value calculation to the principles of EN ISO 10077-1:2000

Product calculated	Flamebreak FD30 44mm (Door leaf)*	
	Calculation Method	Result
Whole leaf U-Value calculation	To the principles of EN ISO 10077-1 & EN ISO 10077-2	1.1 W/m^2 K

*Covers Plywood or MDF Faced blanks

The above result is the maximum door leaf only U-Value. Calculation methods, additional performance values, material specifications and sample dimensions are contained within report number Chilt/T11003-6
These results can be validated when read in conjunction with the full calculation report.

Mike Chorlton – BFRC Certified Simulator
Date: 04 July 2011

Terry Johnson – BFRC Certified Simulator
Date: 04 July 2011

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Results of Calculation: Chilt/T11003-07

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This document confirms that simulation and calculations were conducted on 25 May 2011
Results were obtained using the following method:-

- Whole leaf U-Value simulation to the principles of EN ISO 10077-2:2003
- Whole leaf U-Value calculation to the principles of EN ISO 10077-1:2000

Product calculated	Flamebreak FD60 54mm (Door leaf)*	
	Calculation Method	Result
Whole leaf U-Value calculation	To the principles of EN ISO 10077-1 & EN ISO 10077-2	0.9 W/m^2 K

*Covers Plywood or MDF Faced blanks

The above result is the maximum door leaf only U-Value. Calculation methods, additional performance values, material specifications and sample dimensions are contained within report number Chilt/T11003-7
These results can be validated when read in conjunction with the full calculation report.

Mike Chorlton – BFRC Certified Simulator
Date: 04 July 2011

Terry Johnson – BFRC Certified Simulator
Date: 04 July 2011

Chiltern Dynamics
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