BUILDING REGULATIONS FOR ENGLAND

APPROVED DOCUMENT L1A (CONSERVATION OF FUEL AND POWER IN NEW DWELLINGS) CONSULTATION 2020 AND 'FUTURE HOMES'

As new and existing homes account for approximately 20% of greenhouse gas emissions for the UK, improving the performance of housing stock is essential.

Over the coming months, the Governments in Scotland, Wales and England will be consulting with industry stakeholders on improving the requirements of the respective regulations in order to drive improvements in thermal performance.

The Building Regulations for England have been consulted on first, Scotland and Wales will follow. This document will be updated as new information becomes available.

It is possible that different solutions will evolve for each country within the United Kingdom. Industry needs to consider the specific aspects of regional building methods and window styles when considering what can sensibly be achieved within a particular timeframe. For example, in Scotland where Tilt and Turn style windows are commonly used this is likely to influence to views expressed in terms of what is appropriate in terms of U-value performance.

GLASS PERFORMANCE AND WINDOW PERFORMANCE

The Government's Future Homes Consultation, published in October 2019, considers Approved Document L1A, which concerns the energy efficiency requirements for new homes, with an aim to reduce carbon emissions from new build housing. This is an essential step towards net zero emissions target for the country.

Parameter		Approved Document L1A (2013)	Option 1: Future Homes Fabric	Option 2: Fabric Plus Technology
Notional Building	Whole Window U Value (W/m^2K)	1.4	0.8	1.2
	Window Solar Gain, g	0.63	0.57	0.63
Limiting Fabric Parameter	Whole Window U Value (W/m^2K)	2.0	1.6	
	Roof-light U Value (W/m^2K)		2.2	

ACHIEVING THE 'NOTIONAL BUILDING' VALUES:

Option 1 would typically require triple glazing for most window styles, with low-emissivity coatings such as PLANITHERM TOTAL+, and would offer the greatest level of fabric efficiency balanced with solar gain.

Option 2 is typically achievable with double glazing for most widely available PVC casement window systems using the lowest emissivity coated products available on the market, such as PLANITHERM ONE T. Certain window framing systems might need triple glazing depending on the thermal performance of the frame.

Note: The 'Limiting Fabric Parameter' allows builders to use windows with U-values up to the figure quoted in the table – this is to provide flexibility and choice in terms of specific window design.

WHAT HAPPENS NEXT?

Whilst the outcome of the consultation won't be known until later this year, it's important to recognise that whether Option 1 or 2 is selected, the resultant performance requirements for windows will have an influence on products and configurations that will be suitable for any given building.

It's also important to look beyond U-values and consider the energy balance performance of glazing configurations, specifically, how the U-value in conjunction with the solar gain (g-factor) will influence the overall performance of the building. Whilst it might be considered suitable to focus on the lowest U-values achievable, the solar gain of a window is critical to making a glazing configuration energy positive, i.e. providing passive heating during cooler months.

THE ROLE OF INDUSTRY ASSOCIATIONS – GLASS AND GLAZING FEDERATION (GGF)

Recognised and influential industry associations are involved in the consultation; discussions have been ongoing with their members to seek opinion.

The Glass and Glazing Federation (GGF) is an authoritative voice of the industry in the UK.

The full GGF response to the consultation is available to members of the GGF; selected responses to the specific questions are included below for reference.

GGF
Glass and Glazing Federation

Q1 Do you agree with our expectation that a home built to the Future Homes Standard should produce 75-80% less CO2 emissions than one built to current requirements?

Answer: Yes
The GGF fully supports the Government's proposals and objectives contained within the Future Homes Standard. We understand that our industry must provide product that effectively contributes to the reduction of carbon in all buildings whether dwellings or commercial properties. We do believe that Option 2 is the practical approach providing a transitional period for manufacturers to achieve the targets for 2025 and beyond. While production facilities exist and is used to manufacture triple glazing and there are windows suitable to take the weight and thickness of these and achieve targets for 2025 that is not the case for all UK manufacturing companies. Due consideration must be given to the industry's ability as a whole to provide product in sufficient quantity, quality and durability. This will involve major investment for many manufacturers including but not exclusively the introduction of new window profiles, upgrading of IGU production lines for triple glazing as standard, improved hardware such as hinges and handles. There is no doubt that a sensible and staged approach to achieving the 2025 requirements is the favoured way forward.

Q3 Do you agree that the fabric package for Option 1 (Future Homes Fabric) set out in Chapter 3 and Table 4 of the impact assessment provides a reasonable basis for the fabric performance of the Future Homes Standard?

Answer: Yes
The GGF and its members are well placed to achieve the targets set for 2025 and play an important part in reducing carbon emissions. We believe that timing is critical and consideration has to be given to the major changes, production improvements & investments that require to be made by the glass & fenestration industries in order to provide products which achieve the performance requirements laid out in the Future Homes Standard and specifically in Table 4.

Q6 What level of uplift to the energy efficiency standards in the Building Regulations should be introduced in 2020?

Answer: Option 2 – 31% CO2 reduction (the government's preferred option)
As stated previously we do not believe the industry would cope if Option 1 was introduced in 2020. We believe that Option 2 provides a sensible and achievable performance standard with minimum impact as we move towards the targets for 2025.

THE ROLE OF INDUSTRY ASSOCIATIONS – FLAT GLASS MANUFACTURERS' ASSOCIATION (FGMA)

The FGMA supports the position put forward by the GGF.

The FGMA is supporting the continued use of double-glazed window in 2020 for the majority of applications, and points out that industry needs time to adapt to any bigger changes.

In summary, for 2020, the whole window U-value should reduce to 1.2 W/m2K from 1.4 (notional specification) – in practical terms this means using a double-glazed glass sealed-unit (DGU) with Planitherm ONE T along with a good performing casement window system.

Builders could elect to use windows with a higher U-value than 1.2 W/m2K but they would need to compensate with higher levels of solar gain, and/or other measures in the building design.

FGMA
FLAT GLASS MANUFACTURERS' ASSOCIATION

WHAT ABOUT THE FUTURE

Against the backdrop of the 'climate emergency' the window and glazing industry needs to recognise that more demanding window performance is part of solutions to improve housing stock and reduce carbon emissions. It will be very difficult to achieve an 85% reduction in CO2 emissions in new homes without significant improvement to the building fabric.

In this context, anything other than higher performance window (0.8 W/m2K u-values) would be a weak point in the building fabric.

THE IMPORTANCE OF ACTUAL PRODUCT PERFORMANCE DATA

Where SAP assessment are being undertaken, default values for windows are available within the methodology, however, these typically underperform relative to what is currently available on the market. It is therefore important that the performance of a window is determined based on the design size and glass configuration in order to achieve the most accurate results. Saint-Gobain can offer technical support through CalumenLive and the Tech Hub for all aspects of glass and glazing performance.

REFERENCES AND FURTHER INFORMATION:

UK housing: Fit for the future?, Committee on Climate Change (2019) https://www.theccc.org.uk/publication/uk-housing-fit-for-the-future/

The Flat Glass Manufacturers' Association. www.fgma.co.uk

The Glass and Glazing Federation. www.ggf.org.uk

The Building Regulations (England): https://www.gov.uk/housing-local-and-community/building-regulation

Approved Documents (England): https://www.gov.uk/government/collections/approved-documents