

## Using LLumar® high-performance window films to support compliance with UK building codes

### An information note for developers, property and sustainability consultants



Window film can offer a cost-effective and practical solution to those looking to comply with building regulation codes in the United Kingdom (UK) dealing with the conservation of fuel and power.

These codes cover domestic and non-domestic properties and apply to both new build and existing premises. Although aspects of the regulations do differ, there is also commonality as all require the use of accredited energy modelling software to apply a Standard Assessment Procedure (SAP)<sup>1</sup> or a National Calculation Method (NCM)<sup>2</sup> with both developed by the Building Research Establishment (BRE).

The use of energy modelling to calculate predicted carbon emissions, energy consumption and overheating through solar gain is necessary across these regions. LLumar® high-performance window film(s) offers an opportunity to help reduce the cost of compliance while improving building performance. The film(s) can be modelled at the design stages to ensure the right solution is identified before applying them at the construction and/or retrofit stages.

In all cases an expert in each country should be consulted, as although the requirements are similar, there are nuances that will need to be taken into account. Readers should also be aware that window film also may help with compliance with other Approved Documents, such as Part K in England which includes a requirement for protection against impact with glazing<sup>3</sup>.

**Table 1:** A brief guide to the conservation of fuel and power through building codes across the UK.



Country	The regulations	The benefit(s) of LLumar: new build properties	The benefit(s) of LLumar: existing build properties
<b>England</b>  <b>Wales</b> 	<p><b>Part L (2013) of Building Regulations 2010</b></p> <p>England and Wales have their own Part L Approved Documents. Part L1A and L2A deals with new build properties. Part L1B and L2B deals with existing properties.</p> <p>Compliance is achieved by setting minimum energy efficiency standards around materials and building services. Minimum CO<sub>2</sub> emissions are established through energy modelling using SAP for domestic properties, and SBEM (and NCM approved) DSM tools for non-domestic properties.</p>	<p>High-performance window film can offer a tailored approach to design, helping to improve g- and U-values to different elevations and/or to account for different form(s) and massing.</p> <p>Film can contribute towards a passive design solution helping to reduce the use of and requirement for mechanical heating and cooling, which in turn reduces the Built Emissions Rate: a key requirement of Building Regulations.</p> <p>By reducing g-values, LLumar films help provide a cost-effective solution when dealing with difficult often localised overheating issues. Limiting overheating is necessary to comply with Criterion 3 of Part L1A and Part L2A which limits permissible solar gains.</p> <p>Building Regulations also require the production of an energy performance certificate or EPC<sup>4</sup> – and improved g- and U-values will therefore help improve EPC ratings.</p>	<p>There is a requirement in Part L for consequential improvements. These are works that are required in addition to the proposed works - provided the (proposed) works are deemed to be of sufficient size. Consequential improvements are subject to tests around both economic and technical viability.</p> <p>Improving a window's U-value through the addition of window film can help reduce costs associated with consequential improvements as well bringing real benefits through improved energy efficiency and human comfort factors.</p>

<sup>1</sup> <https://www.bre.co.uk/sap2012/page.jsp?id=2759>

<sup>2</sup> <http://www.uk-ncm.org.uk/>

<sup>3</sup> K4. Glazing, with which people are likely to come into contact whilst moving in or about the building shall: a) if broken on impact, break in a way which is unlikely to cause injury or b) resist impact without breaking or c) be shielded or protected from impact.

<sup>4</sup> See LLumar guidance note on Minimum Energy Efficiency Standards and EPCs.

Country	The regulations	The benefit(s) of LLumar: new build properties	The benefit(s) of LLumar: existing build properties
<b>Northern Ireland</b> 	<b>Building Regulations (Northern Ireland) 2012</b> <p>Unlike England and Wales, Northern Ireland deals with the conservation of fuel and power through Part F. Part F differs as the requirements for both new build and existing buildings are detailed in a single document.</p> <p>Technical Booklet F1 deals with domestic property while Technical Booklet F2 deals with non-domestic properties.</p>	<p>High-performance window film can bring comparable benefits in terms of achieving compliance with Part F of Building Regulations (Northern Ireland) 2012 as with Part L of Building Regulations 2010 in England and Wales.</p> <p>This is because all regions use SAP and an NCM developed by the Building Research Establishment.</p>	<p>High-performance window film can bring comparable benefits in terms of achieving compliance with Part F of Building Regulations (Northern Ireland) 2012 as with Part L of Building Regulations 2010 in England and Wales.</p> <p>This is because all regions use SAP and an NCM developed by the Building Research Establishment.</p>
<b>Scotland</b> 	<b>Building (Scotland) Act 2003 and The Building (Scotland) Regulations 2004</b> <p>The Scottish Building Standards technical handbooks provide guidance on achieving the standards set in the Building (Scotland) Regulations 2004. They are available in two volumes covering domestic buildings and non-domestic buildings.</p> <p>Section 6 of both volumes deals with energy and covers both new build and existing buildings.</p>	<p>For new build properties high-performance window film can bring comparable benefits in Scotland as in England, Wales and Northern Ireland.</p> <p>This is because all regions use SAP and an NCM developed by the Building Research Establishment.</p>	<p>Section 6 of Building Regulations in Scotland focuses on Building Services requiring, when triggered, replacement where services are:</p> <ol style="list-style-type: none"> <li>1) over a prescribed age or</li> <li>2) lack modern functionality (controls etc.)</li> </ol> <p>In both examples the replacement or upgrade must be deemed to be cost-effective and practical. High-performance window film could introduce benefits since it could affect the building services strategy. This is because solar gain reduction through measures such as low g window film will reduce the requirement to remove this (solar) heat gain through mechanical cooling. Therefore, in some cases, if used as part of a wider design, improved window performance can help reduce or even remove the requirement for mechanical cooling.</p> <p>This may result in savings against capital expenditure – a result of the reduced capacity and load on plant. Examples include passive house and wider low carbon design solutions.</p>

To learn more about how LLumar window film can help, please contact your LLumar representative.