Schöck
Innovative Building Solutions

Guidelines for the selection and use of structural thermal breaks in buildings.

Use and function of thermal breaks

Manufactured structural thermal breaks are designed to

1. Minimize thermal bridges in the building envelope between the interior and exterior structures
2. Enable inner surface area temperatures to remain well in excess of those likely to cause condensation and mould formation
3. Transfer load and maintain full structural integrity
4. Ensure any specific fire regulations are met

Thermal break elements have a very specific purpose and to work effectively over a long period the main body should have the following components:

- thermal insulation with an optimum thickness
- load-bearing components, including a combination of reinforced steel and stainless steel for corrosion resistance and compression bearings that transfer bending moment, stress and shear forces
- fire protection boards

Due to its function and construction methods there are several characteristics related to thermal breaks which can only be verified by testing and 3D analyses. These can be undertaken according to the Common understanding of Assessment Procedure CUAP 03.01/59, for load-bearing thermal insulation elements, as well as in accordance with the UK Building Regulations. The key characteristics are listed below.

1. Assessment of Working Life

The lateral displacement of the exterior slab due to temperature changes causes additional constraining and fatigue forces to the structural elements which run through the thermal insulation and the weldings.
These thermal actions can only be tested through cycling testing and considering several number of displacements and temperature differences to ensure a certain working life.

2. Structural Assessments

Structural assessments should verify the thermal break specifics such as the materials used, the material strengths, concrete covers, element spacings etc. in accordance with UK Building regulations.

3. Fire Assessments

The load bearing thermal insulation element shall be tested, using the test methods relevant for the corresponding reaction to fire class, in order to be classified according to EN 13501-1. This only can be verified through testings.

4. Thermal Assessments

According to UK Building Regulations Part L junction temperature factors and hence risk of surface condensation, have to be assessed in accordance with section 7.1 and BRE Information Paper IP 01/06. This only can be verified by 3D thermal analyses and should consider realistic construction details according to the application.

Verified structural performance and quality of the Schöck Isokorb®

The conformity of the Schöck Isokorb® to UK Building Regulations and to the specifics of manufactured structural thermal breaks is independently verified by the BBA.

The BBA is the UK's major authority offering approval and certification services to manufacturers´ and installers supplying the construction industry.

BBA Approval is recognised by building control, government departments, architects, local authorities, specifiers, and industry insurers like the NHBC. It also complements manufacturer`s own technical data with the BBA`s impartial and unbiased information on the performance of the product. The BBA also works closely with regulatory authorities throughout the UK as well, as with housing warranty bodies, to ensure Agrément Certificates are accepted nationwide.

The BBA assessment shows that the Schöck Isokorb® provides verified:

- tested working life performance of a minimum of 60 years
- conformity of the materials used in meeting UK code requirements
- fire protection. Test results have indicated that the products incorporating the fire protection plates are capable of achieving up to 120 minutes loadbearing capacity, 120 minutes integrity and 120 minutes insulation
- internal and external quality control according to BBA approval

Verified thermal performance of Schöck Isokorb®

To guarantee the accuracy of its current performance values, Schöck has submitted its solutions for independent evaluation by the Oxford Institute for Sustainable Development (OISD), at Oxford Brookes University. One of the UK's largest research institutes dedicated to sustainable development research in the built and natural environments. The results show that: the following Schöck Isokorb® product ranges in general provide verifiable thermal performance and compliance with UK Building Regulations Part L and therefore avoid any risk of condensation:

Schöck Isokorb® type K for concrete to concrete applications
Schöck Isokorb® type KS for steel to concrete applications
Schöck Isokorb® type KST for steel to steel applications

The Schöck Isokorb® range is unique in being able to provide all three connectivity types with independently verified structural and thermal performance.

Schöck Isokorb®	BBA Certifications	OISD Report References
Type K	05/4277	121212SCH
Type KS	05/4277	120927SCH
Type KST	10/4801	060814SCH

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803803/07.2014/UK/140466