

# Determining Compliance for Building Products - the process for NZ

## NZ REGULATIONS

The Building Act 2004 requires a product manufacturer or supplier to be responsible for ensuring that the product will, if installed in accordance with the technical data, plans, specifications, and advice prescribed by the manufacturer, comply with the relevant provisions of the building code.

Verification processes for demonstrating compliance of methods and products are set out in the Act.

The Act provides for three processes – either by way of the use of “an acceptable solution” or, by way of an “Alternative Solution” or by way of obtaining a “CodeMark certificate”.

The process used by BEAL for demonstrating compliance using the “Alternative Solution” pathway, is called “The Compliance Verification Procedure”. This process has proven over time to be a robust reliable means for demonstrating how a new and innovative product does meet the requirements of the Building Code and therefore, Councils.

1. In order to determine which 'performance requirements or clauses' need to be considered for inclusion in an Alternative Solution, it is first necessary to determine which performance requirements are considered 'essential'.

Essential is taken to mean that a 'function' of the product is important to fulfil its purpose or and may have a high 'risk' of non-performance since previous experience with this type of product indicates a higher than normal/acceptable level of potential non-performance.

2. To determine which performance requirements are considered 'essential' it is necessary to have persons of sufficient experience and expertise relevant to the component materials of the product, in order to assess what are the important 'functions' that need to be assessed or measured.

A function is taken to mean a physical characteristic that defines and may contribute to distinguishing it from other materials.

Examples of common physical characteristics for building materials are:

- Density
- Tensile strength
- Elasticity
- Adhesion strength
- Shear strength
- Modulus of Rupture
- Corrosion resistance
- Compression resistance
- Resistance to moisture
- Thermal conductivity... and so on.

As can be seen from the above list, it is clear that sufficient experience with these functions is necessary to understand their role and importance in determining their inclusion in any functional analysis.

3. The 'performance clauses' of the New Zealand Building Code were developed in a manner that follows a hierarchy of important functions, mostly related to safety (of persons using a building).

For example, 'performance clause B1' addresses 'structural behavior of materials and systems' which are well known safety risks for buildings in windy and seismic active New Zealand;

Performance Clause B2 addresses the well-known issue of durability of materials – especially where timber is used;

Performance Clause C1-3 addresses the need for adequate fire safety in both design and in the use of materials;

Performance Clause D1 addresses the need for safe and reliable egress in and out of buildings;

and so on...

4. Every procedure for deciding which functions are essential begins with an analysis of the purpose of the product - which may be a system comprised of many components - and the environment in which it is intended to be used, such as below grade, exposed to the weather (and sun), or hidden behind a cladding or rain screen system.

The next step is to write up a list of physical characteristics that components by themselves and as part of a whole (product) are required to have in order that the product will perform as designed and intended by the manufacturer.

For example, a liquid applied roof membrane may or may not be required to withstand foot traffic, and so slip resistance may or may not be a physical characteristic that the product has and needs to be considered as an essential function of the product.

The procedure for deciding which functions are essential is described by BEAL as the "Compliance Validation Procedure" which includes -

- Writing up a list of the **essential functions**;
- For each function, the relevant **performance clause** is determined;
- For each performance clause, the appropriate **criteria** is determined - typically citing a published "**standard**" or specific **test programme** -such as one developed by a structural engineer - with relevant conditions and criterion;
- All of the above information is written up in a tabular form to enable easy understanding of the scope of information required to demonstrate compliance.

An example is provided:

For a sealant used to provide air and moisture resistance in a control joint -

1. Adhesion to the faces of the adjoining material, before and after accelerated ageing;
2. Cyclic compression, before and after accelerated ageing;
3. Resistance to water penetration, before and after accelerated ageing;
4. Resistance to UV equivalent to 7 days, unless specified otherwise, to the sun.

'ASTM C920, Standard Specification for Elastomeric Joint Sealants' describes each of the functional requirements, criterion and means of testing.

For each function, the relevant 'performance clause can now be determined:

For Adhesion	B1.3.2 and B2.3.1(b)
For Cyclic compression	B1.3.3 (I) and B2.3.1(b)
For Resistance to water	E2.3.2 and B2.3.1(b)
For Resistance to UV	B2.3.1 (b)

The above example shows how the important functions can be related to relevant 'performance clauses and in this case, to a Standard for testing to verify compliance

using the Alternative Solution process.

The process described above has been tested over time having been employed for assessment of compliance over 100 products. Use of the Compliance Verification Process assures applicants of the reliability of achieving acceptance. The process is completely transparent. To summarise, the BEAL Compliance Verification Process is and has been proven to be a reliable methodology for determining compliance of building products for use in New Zealand.

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