



AIRTIGHTNESS - A GOOD THING

Correctly specified metal cladding and roofing systems competently installed should have good thermal performance and achieve a consistently good air tightness standard. In this article the Metal Cladding and Roofing Manufacturers Association (MCRMA) will explain the importance of sealing end and side laps to achieve the required level of airtightness.

When designing a building, it is now widely recognised that airtightness has to be a crucial consideration and the air permeability figures for buildings with different footprint sizes and locations across the UK range between 3 and 7 m³/h.m² at 50Pa. In order to comply with Approved Document L2 regulation, the required U values must also be achieved.

There should be no thermal bridges or gaps in the building envelope, and air leakage should be kept to the minimum. We should also be mindful that even a well-designed building system will fail to comply with the regulations if it has not been properly installed by trained, experienced and supervised contractors.

Laboratory testing has shown that properly installed roofing and cladding will already meet the required air leakage standards. However, the additional sealing of side and end laps and perimeter joints will significantly further reduce air leakage to a very low level (cf. BRE Information Paper IP 17/01). In laboratory testing and on-site, butyl sealant has proven to be a very effective material for this application.

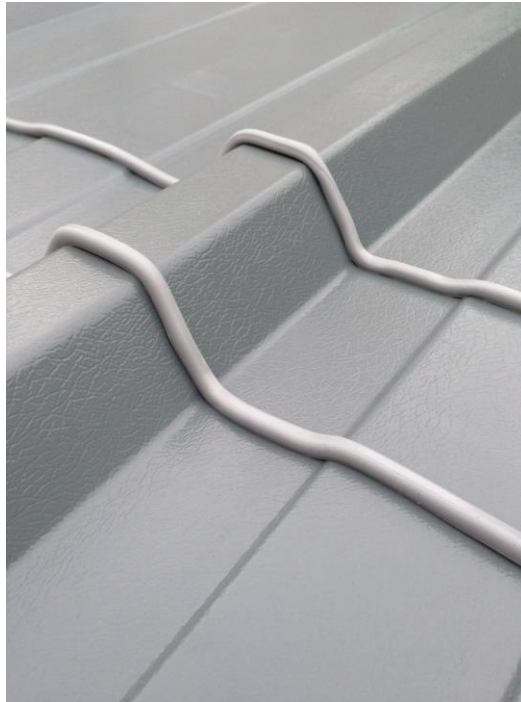
This attention to detail also has to be extended to sealing rooflights and metal flashings at flashings and junctions. The ridge and eaves are sealed using butyl tape in combination with correctly sized and shaped male and female foam fillers and any penetrations to the roof and wall cladding also have to be airtight. The appropriate size and positioning of the butyl tape can be determined by following the component manufacturer's recommendations or the guidance provided by MCRMA in technical paper No 16, *Guidance for the effective sealing of end lap details in metal roofing constructions*.



Airtightness sealing with liner panel tape

In a built-up system, the end and side laps of the metal sheeting should be sealed with a good quality, Class A preformed butyl tape. For the external metal sheeting, the dimensions of the butyl strip should be large enough to provide an effective seal between both surfaces, but not so large as to cause uplift or 'bird-mouthing' of the sheets when mechanically fixed. Typically, butyl sizes of 5mm x 6mm, 6mm Bead or 8mm Bead are specified here.

A vital part of making the structure airtight is to also seal the liner panel sheets. A butyl strip sized at 3mm x 9mm or 4mm Bead is recommended for the end laps. The side laps of the liner panel need special consideration and work has shown that a thinner, wider, single-sided butyl laminated with a fixed liner, 1mm x 50mm is particularly effective. This is a high-performance air seal and moisture barrier butyl tape developed especially for sealing the side laps of metal liner panels and also the side laps of roof and wall liners to reduce condensation and increase airtightness in buildings.



Butyl sealant applied along the sheet profile

For many of us, it is easy to stop at the particular part of the job or component with which we are concerned, but with regulation becoming even more rigorous we have to look at the entire building. A roofing and cladding contractor will finish off at the cladding/brick interface, as achieving airtightness around personnel doors and access doors is the concern of the door system manufacturer and installer.

This is also true of any windows; there is now a butyl strip product available which is designed to completely seal round windows and is applied during installation. This highly conformable, laminated tape adheres to the window frame and surrounding blockwork or closure, providing airtightness, yet remains flexible during its service life.

To sum up, it makes sense to ensure that the side and end laps of the roofing and cladding system and perimeter joints are correctly sealed and well installed. This will lessen air leakage, provide vapour control and retain heat. Getting it wrong at the construction stage will cause a building to fail, resulting in expensive remedial work and instead of being a valuable asset it will be a major headache to all concerned.

Manufacturers are best placed to offer advice about their particular products and any variation from their published data during the design or construction process could result in the component or system failing prematurely. Any uncertainty about the use or application of a product or system should be referred back to the manufacturer for detailed written advice. Additional project specific advice for demanding or complex constructions may also be obtained from one of the independent consultants featured on the MCRMA web site at www.mcrma.co.uk.

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