

## Test for Fragility of Roofing Assemblies

### Health and Safety – Tests

“No material should be specified for use on a roof unless it has been tested as non-fragile”.

The new test methods were approved by the HSE in the early part of 2000, and were developed from the original HSE document HSG33 which was to form the basis for a Standard which could be relied upon by the industry, embracing manufacturers, designers and contractors.

The testing methods were approved by the British Cladding Council, (BCC), The Association of Rooflight Manufacturers, (ARM), the Metal Cladding and Roofing Manufacturers Association, The Fibre Cement Manufacturers Association, The National Federation of Roofing Contractors (NFRC) and Inform.

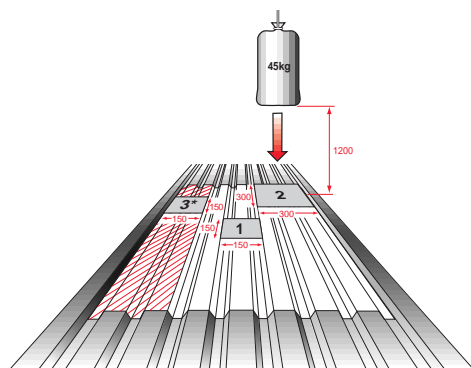
### The following is a brief summary of the test procedure

The testing programme involves the dropping of an impactor filled with 45 kg of soft sand in a controlled fall under gravity from a height of 1200 mm onto the sample profile sheet. The test samples must be conditioned to ensure that they are tested under the worst case for impact strength and in a condition, which could reasonably exist in service. The test sample is held within a rig representing a roof structure and is 1 metre from the ground.

The 45 kg weight must be dropped into specific zones onto the test sample. These zones are:

- 1 Within 150 mm of the centre of the sample profile sheet.
- 2 Within 300 mm of a support point.
- 3 Within 150 mm of the sample edge adjacent to the underlap with the next profile sheet.

These test zones are illustrated below:



\* Exact position to be specified by the competent person

It is not necessary to subject each profile sample sheet to each drop as detailed.

### Interpretation of results.

If the 45 kg weight drops through the profile sheet sample its use should be avoided in roof construction.

If the weight is held by the profile sheet sample for five minutes or longer the product may be certified as non-fragile and it may be used within a roof construction.

There are then a further two important classifications under the non-fragile certification.

If the profile sheet sample retains the dropped weight for a minimum period of five minutes, but has only been subjected to one drop, then the approved certification is Category C non-fragile assembly. Hambleside Danelaw does not recommend the use of a Category C rated sheet for rooflight applications due to the potential safety risks in the longer term if the sheet suffers damage and is not replaced.

If the profile sheet sample is subjected to a second drop, and the weight is retained for a further period of five minutes then the sheet can be classified as a Category B non-fragile assembly.

Category B may safely be specified on a rooflight product, provided it is maintained in accordance with Hambleside Danelaw's policy in section 10 of this manual.

In addition providing the sheet is examined by a competent person after that second drop and providing that it shows no signs of significant damage which could effect its long term strength or weathering performance then the sheet may be classified as a Category A non-fragile assembly.

In order to verify the test procedures and the performance of the in-plane rooflights the Company employed the services of Rapra Technology Limited to witness and certify the classification of the product grades.

Test reports on the StepSafe and Contour product ranges are available from our sales office. The test report provides detailed information covering the profile configuration tested, confirmation that the tests were correctly conducted in accordance with the test procedures and the classification awarded.

**NOTE:** A full copy of the Test for Fragility of Roofing Assemblies ARC[M]001 : 2000 is available from our sales office at the appropriate cost price.

### Product Identification

All StepSafe and Contour products are clearly identified with contact numbers and production batch details including fire grade details.

### Safety on Roofs – In-Plane Rooflights

For the specific safety classification ratings of the Company's rooflight products please see their relevant product section within this guide.

As a general matter of guidance the Company does not recommend that any person is encouraged to walk on a rooflight. Whilst StepSafe and GRP profiled sheets of certain weights are classified as non-fragile, there are other factors which must be considered from the safety point of view.



In the past many different materials have been used to produce rooflights, including PVC which is fragile and totally unsafe to walk upon.



The natural effects of weathering on all roofing materials could weaken the structure – in addition rooflights can be slippery when wet.



Damage sustained to a roofing material could also weaken the structure.



Exposure to extreme environmental conditions such as heavy chemical pollutants would also effect the roofing materials and subsequently weaken the structure.



It may be difficult to identify older sheets or the original manufacturer. All Hambleside Danelaw profiled sheets are clearly identified, but other manufacturers do not necessarily work to the same product specifications.



In the event that any rooflight is damaged it should be replaced – unnecessary risks should never be taken.

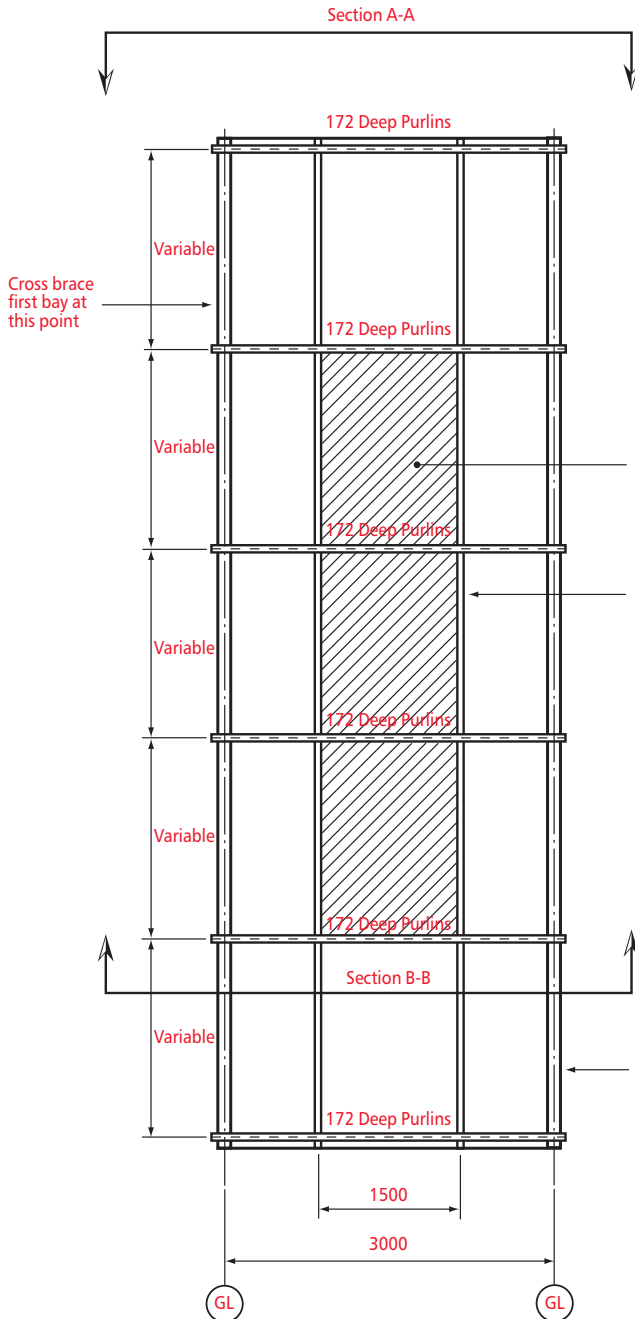
### General Safety Issues

Should a rooflight be fully fixed to be totally safe? The opinion of this Company is that the answer should be yes. StepSafe is a safe rooflight product, but why encourage unnecessary risks. It is sensible to say that until the rooflight is securely in position, there is a danger that it could be kicked or moved inadvertently to a position where safety cannot be guaranteed. It is not worth that risk, once fixed then StepSafe will safely withstand the weight of a person, as indeed will Contour GRP sheets when they are correctly installed. In an unfixed state however, StepSafe APC rooflights are as safe as any other "safe" lights on the market in that state.

**Lining Out:** Concern has been expressed about the practice of "lining out". Where lining out is required then Hambleside Danelaw recommends the StepSafe Liner Panel at 2.22 kg/m<sup>2</sup> or a traditional GRP sheet weight of 2.44 kg/m<sup>2</sup>. All liner panels should be subject to the fragility tests procedures detailed on page 2.1. Further advice may be obtained from our sales office.

**Cost:** Safety usually comes at a price, StepSafe advanced composite rooflights will be more expensive than traditional GRP rooflights of a comparable product thickness. However, to meet the same safety requirements and performance as the APC rooflight, the traditional GRP rooflight has to be manufactured in a far greater thickness/weight resulting in increased costs. Against those products, StepSafe is more than competitive. StepSafe and Contour GRP prices are detailed in a separate price list available from our sales office.

## Drop Test Rig Configuration



### Notes

The test rig must be supported on a solid concrete base.

The rig may be bolted or welded construction. Diagonal cross bracing may be added to the support structure as necessary to ensure stability.

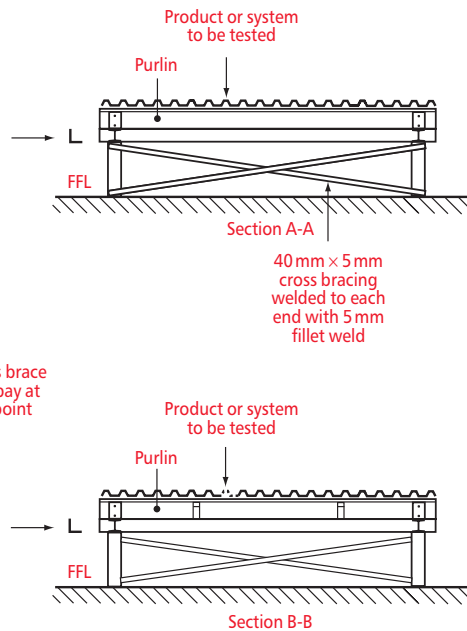
The underside flange of the purlin must be a minimum of 500 mm from Flat Floor Level to enable inspection of the test sample.

Details of the test position, loading bag and quick release mechanism are recorded in the notes for guidance.

Tests are required with and without strutting to determine worst case condition.

Sample fixed as per manufacturers instructions. Impact test to be carried out at worst load case condition. Worst load case condition to be determined by testing.

45 x 45 x 2 mm struts fixed to manufacturers instructions



## The StepSafe Rooflights Non-fragility Guarantee

Hambleside Danelaw Limited (Hambleside) guarantee that StepSafe Rooflights (the Product) will maintain a non-fragility status as laid down by ACR [M]001 : 2000 for a period of up to 25 years (the guarantee period) when used in normal industrial conditions within the United Kingdom, providing that the conditions set out below have been complied with at the date of any claim under this guarantee. Normal industrial conditions is defined as there being no unusually high levels of chemical or other pollutants within the external or internal atmosphere of the premises where the rooflights are incorporated which would adversely affect the service life expectancy of the product.

In order for this guarantee to be effective it is essential that within 14 days of the completed installation Hambleside receive at their Daventry address formal notification signed by both the contractor and the purchaser, owner or tenant of the building that the system has been satisfactorily installed. Hambleside will acknowledge within five days receipt of the formal notification by recorded delivery post confirming acceptance of responsibility under the guarantee.

Should the Product be damaged so as to affect its non-fragility status within the guarantee period then Hambleside will replace the same at its own cost, subject to the following conditions and exclusions.

### Section 1: Conditions

- This Guarantee applies only to StepSafe top (weather) sheets manufactured to a nominal weight of 4.05 kg/m<sup>2</sup> and thickness of 2 mm as referred to within its relevant technical manual.
- The installation including storage and handling of the Product must be completed in accordance with instructions and specifications of Hambleside in respect of its StepSafe Rooflights which are detailed within its relevant technical manual.
- The Product is subject to a regular annual maintenance schedule in accordance with Hambleside's written policy.
- Any damage to the protective weather film must be notified to Hambleside within five working days of the incident in order that Hambleside can inspect the sheet and repair the damage using the appropriate materials to reinstate an effective weathering surface.
- That only stainless steel fixings are used.
- That Aluminium + tape, or a tape with an equal or better specification, is used on all built-up installations.
- The fixings are regularly inspected on an annual basis and replaced if any damage or evidence of corrosion is present.

- The sealant is applied correctly and regularly inspected on an annual basis.
- Access to the roof is restricted to authorised contractors only. Authorised contractors are defined as those persons knowledgeable of roofing construction, who are fully aware of HSE considerations in respect of roof work and who have been formally approved by the person responsible for the building management to have access to the roof.
- In the event of anyone falling onto or an object being dropped onto the relevant Product the incident must be notified to Hambleside within five working days of the incident to enable inspection and if necessary for Hambleside to remedy any surface film damage.
- All incidents must be formally recorded in the Company's accident records, noting the date and giving a description. If the incident involves a person falling onto the rooflight then the appropriate HSE executive body must also have been formally notified.

### Section 2: Exclusions

This guarantee shall not extend to the following:

- Damage resulting from movement, subsidence or any failure in the structure or building in which the Product has been installed.
- Damage resulting from abnormal use of the roof.

### Section 3: Claim Procedures

Any claim under this guarantee must be recorded in writing to Hambleside at its address in Daventry within five working days of the fault arising or damage occurring.

Hambleside will within five working days of receipt of such notification arrange for a site visit to be made to inspect and to determine the cause and extent of the damage. Thereafter Hambleside will indicate in writing whether or not it accepts liability under the guarantee.

In the event that the claim has not been resolved between the parties within 14 days then arbitration will be arranged in accordance with Hambleside's Conditions of Sale.

### Section 4:

Hambleside will under no circumstances be liable for any incidental or consequential damage to the building structure or contents of the building or any other direct or indirect loss resulting from damage to the relevant Product.