

CAVITY TRAYS – THE USE OF POLYETHYLENE MATERIALS



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Introduction

This document provides additional guidance relating to the use of polyethylene cavity tray and DPC materials based upon their intended location and Warranty requirements.

What products and materials are we referring to?

Polyethylene Damp Proof Course material provided as a roll - most building merchants will stock 100mm, 450mm and 600mm complete with product branding stating a compliance with BS6515:1984 – the latter roll sizes are stocked specifically for cavity tray purposes.

What is BS 6515:1984?

It is a British Standard that relates to the **manufacture** of polyethylene damp proof courses, intended for use in masonry construction. It covers material composition, thickness, finish and permeability of the material.

BS 6515:1984 contains an Appendix giving the recommended uses for polyethylene DPC's, and notably recommends that these products are not used as a solution against the downward movement of water e.g. cavity trays.

More recent standards, such as BS8215:1991 and PD6697:2019 (a published document sitting alongside BS EN 1996-1-1), offered a variation – in that such materials could be used, provided they were installed, detailed and sealed correctly in line with manufacturers guidance. However, the issue is that polyethylene materials are often produced without any manufacturers supporting guidance nor do they undergo testing as cavity tray installations, as they are only intended to be used for 'simple' damp proofing situations. So installed to deal with:

- a. Upward movement of water e.g. linear DPC at the base of a wall, **and**
- b. Horizontal movement of water e.g. vertical applications at window and door reveals.

What are the Warranty providers concerns?

In recent years, poor installation of cavity trays using flexible cavity tray systems has been an area of frequent claims - particularly where these products are polyethylene materials, often culminating in water ingress and instability in parapet walls and coping stones due to incorrect detailing and laying being the main contributing factors.

Warranty stance

Where cavity tray specification is not aligned with the intended purpose and lacks the relevant proof and demonstration of performance through testing and accreditation, it is considered to compromise the ability of the material in meeting with the Functional Requirements and Performance Standards stipulated by the Technical Manual, notably those relating to demonstration of a materials capability through recognised testing and accreditation, and those relating to the structural performance of an element of the buildings fabric.

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What Developers should action after reading this document?

Developers should ensure that the materials selected for cavity trays is correct and are supplemented by appropriate proof and demonstration of performance based upon the use and expected performance – the following table is to assist with what the Warranty provider expects as a minimum in each situation:

		Minimum required supporting information			
Position	Installation type	BS EN 14909 Declaration of Performance	UKAS 3rd Party Accreditation	Manufacturers guidance	Engineers specification
Base of a wall	Horizontal Linear DPC	●		●	
Window reveal	Vertical Linear DPC	●		●	
Accommodation of movement e.g. stone heads	Slip plane provision	●			●
Retaining structures	Horizontal Linear DPC	●	●	●	●
Parapet Walls	Horizontal Linear DPC	●	●	●	●
Under Coping stones	Horizontal Linear DPC	●	●	●	●
Base of a wall	Cavity tray	●	●	●	
Under a jointed stone sill	Cavity tray	●	●	●	
Over an obstruction in the cavity or an opening	Cavity tray	●	●	●	
Over a Horizontal Cavity Fire Barrier	Cavity tray	●	●	●	
Over a brickwork support angle	Cavity tray	●	●	●	●
Roof abutments – flat and pitched	Cavity tray – horizontal/stepping	●	●	●	
Parapet Walls	Cavity tray	●	●	●	●

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Developers should ensure that **design teams** and **specifiers** check the guidance provided by manufacturers of flexible DPC materials before use.

The manufacturer's literature should explicitly state the suitability of their product for use as a cavity tray and their recommendations for appropriate use and installation should be followed. The advice of the manufacturer will typically be aligned with the guidance of:

- BS 8215:1991 Code of practice for design and installation of damp proof courses in masonry construction - for design.
- BS 8000-3:2020 Workmanship on construction sites - Code of practice for masonry - for installation.

Where flexible DPC materials are to be used as a cavity tray, they must:

- Have third-party certification (BBA or similar UKAS accredited body) confirming their suitability for use as a cavity tray in the situation they are being proposed. A material that carries 3rd Party Accreditation will often have supporting ancillaries e.g. pre-formed corner 'cloaks' and adhesive tapes for use as a cavity tray.
- Have supporting evidence in the form of a Declaration of Performance to BS EN 14909:2012. This standard stipulates the characteristics required of flexible sheet damp proof courses for buildings. It details the requirements and test methods to determine conformity of the products.

Developers should also ensure that **buyers and suppliers** of materials for their sites are aware that where the material is polyethylene, that meeting the requirements of BS 6515 alone is not enough to support their use as a cavity tray.

Appointed sub-contractors should not substitute materials and site teams should check the material on site against specification given by the designer or Engineer against the Declaration of Performance information – this certification should include reference to **BS EN 14909:2012** and include one of the '**Product Designation Codes**' given within that standard to enable a clear determination.

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AnyCo Ltd, PO Box 21, B-1050 06
EN 14909:2012 Damp proof course 2 mm PE Reaction to fire: Class E Watertightness: Pass Resistance to impact: npd Resistance to low temperature: -20 °C Durability against ageing: Pass against alkali: Pass

THERMOPLASTICS	
EEA	Ethylene/ethyl acrylate
EVAC	Ethylene/vinyl acetate
ECB	Ethylene, Copolymer, Bitumen
PE	Polyethylene
CPE	Chlorinated polyethylene
PP	Polypropylene
PIB	Polyisobutylene
PVC	Polyvinyl chloride
TPO	Thermoplastic polyolefine
FPO	Flexible polyolefins

THERMOPLASTICS- ELASTOMERS	
CSM	Chlorosulfonated polyethylene

ELASTOMERS	
BR	Butadiene rubber
CR	Chloroprene rubber
EPDM	Ethylene Propylene Diene Monomer
IIR	Isobutene-isoprene rubber
NBR	Acrylonitrile-butadiene rubber
POE	Polyolefin elastomer

Example CE marking information and product designation codes – sourced from BS EN 14909:2012

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Developers should also ensure that site teams operate appropriate quality assurance checks which have a stage that looks at cavity trays, and the obvious issues that cause failure.

For example, a cavity tray that is not laid on mortar, e.g. dry laid, can result in movement in the wall where the mortar bond is not created. It can also allow moisture to track under the material, and where this is above an opening, often lead to visible moisture ingress and damp patches on reveals and wall areas below the cavity tray.

Also look out for laps that are not sealed, poor detailing around corners, wind post penetrations leaving open joints or cavity trays that do not terminate in a stopped end. Ideally a pre-formed stop end but more likely to be a perp joint 'turn-in' of the material should be used to terminate a discontinuous cavity tray installation.