

Hea02

Indoor Air Quality

Emissions from construction products

Action:

- i. Choose product types that meet the required **emission** limits, **testing** requirements and **additional** requirements.
- ii. Produce a summary schedule of the chosen product types.

Product types

There are **five** product types that are considered within this assessment:

- Interior paints and coatings
- Wood based products (including wood flooring)
- Flooring materials (including floor levelling compounds and resin flooring)
- Ceiling, wall and acoustic and thermal insulation materials
- Interior adhesives and sealants (including flooring adhesives)

To achieve **one credit** – **three of the five** product types must meet the criteria. However, if wood-based products are not one of three selected product types, all wood-based products used for internal fixtures and fittings must be tested and classified as **formaldehyde E1 class as a minimum**.

For **two credits** – **all five** product types must meet the criteria.

Scope of assessment

The scope of the VOC credit issues does **not** extend to furnishings, e.g. desks or shelving, it focuses on the **key internal finishes and fittings integral** to the building.

Only products that are installed or applied in parts of the building where their emissions are likely to **affect** indoor air quality need to be assessed. For the purposes of this issue, this means any product installed or applied:

- Inside of the inner surface of the building's infiltration
- Inside of the vapour or waterproof membrane or
- Inside of the inner surface of the building envelope's interior facing thermal insulation layer, where present.

Inherently **non-VOC emitting products** do not need to be assessed and can be deemed fully compliant with the criteria. Examples of non-VOC emitting products include:

Note: This document is intended as guidance only. Consult your BREEAM AP or Assessor to ensure compliance is achieved.

- Brick
- Natural stone
- Concrete
- Ceramic tile
- Glass
- Metal surfaces etc.

This is unless organic-based coatings, binders, or sealants are used in their production or finishes.

When assessing paints used in **wet areas**, evidence must be provided to show that the paints protect against **mould growth**. Evidence could include appropriate test results (e.g. fungal or algal resistance testing) or manufacturer’s product information or declaration. There are European standard tests which could be used: EN 15457 and EN 15458.

Products specified for specialist applications or providing a specific function may be exempted from meeting the emission limits where it can be demonstrated that there are **no alternative products** available that can perform the function and meet the emission limits.

[Guidance Note \(GN22\)](#) available from the BREEAM website provides a list of approved alternative schemes recognised by BREEAM and that can be used to demonstrate compliance for the VOC emission levels. If assessors, clients or scheme operators wish to seek recognition of other schemes not currently listed, please contact the BREEAM office (breeam@bre.co.uk) for details of the application process.

Criteria

Table 1 - Product type specifications that must be met.

Emission limit*			Testing requirement	Additional requirements
Formaldehyde	Total volatile organic compounds (TVOC)	Category 1A and 1B carcinogens		
Interior paints and coatings				
≤ 0.06 mg/m ³	≤ 1.0 mg/m ³	≤ 0.001 mg/m ³	EN 16402 or ISO 16000-9 or EN 16516 or CDPH Standard Method v1.1	Meet TVOC content limits (See Table below) Paints used in wet areas (e.g. bathrooms, kitchens, utility rooms) should protect against mould growth.

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Emission limit*			Testing requirement	Additional requirements
Formaldehyde	Total volatile organic compounds (TVOC)	Category 1A and 1B carcinogens		
Wood-based products (including wood flooring)				
$\leq 0.06 \text{ mg/m}^3$ (Non-MDF) $\leq 0.08 \text{ mg/m}^3$ (MDF)	$\leq 1.0 \text{ mg/m}^3$	$\leq 0.001 \text{ mg/m}^3$	ISO 16000-9 or EN 16516 or CDPH Standard Method v1.1 or EN 717-1 (formaldehyde emissions only)	N/A
Flooring materials (including floor levelling compounds and resin flooring)				
$\leq 0.06 \text{ mg/m}^3$	$\leq 1.0 \text{ mg/m}^3$	$\leq 0.001 \text{ mg/m}^3$	ISO 10580 or ISO 16000-9 or EN 16516 or CDPH Standard Method v1.1	N/A
Ceiling, wall, and acoustic and thermal insulation materials				
$\leq 0.06 \text{ mg/m}^3$	$\leq 1.0 \text{ mg/m}^3$	$\leq 0.001 \text{ mg/m}^3$	ISO 16000-9 or EN 16516 or CDPH Standard Method v1.1	N/A
Interior adhesives and sealants (including flooring adhesives)				
$\leq 0.06 \text{ mg/m}^3$	$\leq 1.0 \text{ mg/m}^3$	$\leq 0.001 \text{ mg/m}^3$	EN 13999 (Parts 1-4) or ISO 16000-9 or EN 16516 or CDPH Standard Method v1.1	N/A
<p>^ The emission limits in this table apply to the finished product, i.e. after any coating or other treatment process has been applied.</p> <p>* Compliance with emission limits shall be demonstrated after 28 days in an emission test chamber or earlier as stipulated by the relevant testing requirements standard. The emission rate obtained from the chamber test method must be extrapolated to predict what the concentration would be in the air of the theoretical model or reference room (as detailed in the respective testing standard) and this extrapolated concentration compared with the emission limit in this table.</p>				

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Emission limit*			Testing requirement	Additional requirements
Formaldehyde	Total volatile organic compounds (TVOC)	Category 1A and 1B carcinogens		
<p># Where test results for a product exceed the TVOC emission limit, compliance with the above requirements can still be achieved where the test results demonstrate an R-value ≤ 1 after 28 days</p>				

Table 2 - Additional interior paints and coatings TVOC content limits that must be met.

Product category	Free TVOC content of ready-to-use product (g/l)	Testing requirements
Interior matt walls and ceilings (Gloss <25@60°)	10	ISO 11890-2 or ISO 17895 or Calculation based on the ingredients and raw materials
Interior glossy walls and ceilings (Gloss >25@60°)	40	
Interior trim and cladding paints for wood and metal	90	
Interior trim varnishes and wood stains, including opaque wood stains	65	
Interior minimal build wood stains	50	
Primers	15	
Binding primers	15	
One-pack performance coatings	100	
Two-pack reactive performance coatings for specific end use such as floors	80	
Multi-coloured coatings	80	
Decorative effect coatings	80	

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