



Low Emitting Materials for Better Indoor Air Quality

What are low emitting materials?

In the context of the indoor environment these are building products and furnishings that release no significant amounts of chemicals or dusts into the indoor air. These may include inert materials such as glass, untreated stone and a wide range of other materials that have been demonstrated not to release particular substances at a rate that exceeds defined thresholds.

What benefits do they have?

Chemicals and dusts released into the indoor air can have an adverse impact on indoor air quality (IAQ). Some widely occurring substances are odorous, a number are irritants and others are of concern because of increased risks of a range of occupant health effects including respiratory disease and cancer. Ventilation requirements for buildings aim to remove these substances along with those released by people at a sufficient rate to maintain adequate air quality. By restricting the amount of substances released better air quality can be achieved at the same rate of ventilation, or it may be possible to reduce rates of ventilation to save energy without unacceptable loss of air quality. By specifying low emitting products designers, building owners and services managers can demonstrate that the health and well being of building occupants is an important objective. It will help avoid complaints about a poor indoor environment and studies have shown a link between improved productivity and learning in the presence of good IAQ.

Who is using them?

There has been an established market for many years in some countries, notably in Scandinavian countries. Increased awareness of the impact of poor IAQ on the health of people, particularly children, the sick and the elderly, has resulted in more recent initiatives notably in Germany and France. This has resulted in a range of schemes that label and promote low emitting products.



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I demand low solvent paints and adhesives; am I doing enough?

There has been a general shift away from solvent based paints and adhesives in response to legislative requirements to reduce the release of volatile organic compounds (VOCs) to the general environment where they contribute to air pollution, and, in particular, the formation of photochemical smog. In addition, this change has been driven by the need to reduce occupational exposure to these hazardous chemicals. While beneficial for the indoor environment, these products have not necessarily been formulated and assessed to minimise their impact on IAQ and therefore by using them you may well not be doing enough.

Where can I obtain low emitting products?

The availability of low emitting products is variable throughout Europe. For example in Finland there are some 1,200 products labelled according to the Finnish 'M1' scheme whereas in the UK there is no recognised national scheme. However in the UK some companies participate in industry based schemes, such as for carpets ('GUT' label) and a number of companies have information about their products to allow them to access markets where emission data is required by clients.



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Which labelling scheme is best?

The various labelling schemes have a number of common parameters including the testing of VOC emissions using chambers to quantify the amounts of chemical released. However the schemes have evolved independently and therefore details differ and this can be quite confusing for persons selecting products. For example, some schemes include sensory testing (by a human odour panel) as well as measurement of the amount of chemicals. In recognition of this issue an expert group supported by the European Commission are working towards harmonisation of core requirements of labelling schemes. In the meantime it is probably best to use a scheme administered locally if available or specific to the product of interest.

What are governments doing about this issue?

At European level requirements for emissions from construction products are being developed under the Construction Products Directive (CPD) and its Essential Requirement for Health, Safety and Hygiene. Test methods are being agreed by the European and national standards bodies and these methods will be the subject of validation. Individual Technical Committees within these standardisation bodies are expected to define classes for products based on amounts of chemicals emitted. These classes should be declared as part of labelling of products under the CPD. Currently such labelling is not obligatory in all countries although there is an expectation that under the Construction Products Regulation (CPR), which is planned to supersede the CPD, labelling will be mandatory.

At national level there are a number of initiatives to increase labelling of low emission materials including mandatory schemes in Germany and France. In the UK the importance of emissions from materials is recognised in the guidance contained in Approved Document F supporting ventilation requirements in the building regulations. However currently there is no national labelling scheme in the UK and the government's Code for Sustainable homes does not include any requirements for IAQ.

It is likely that some national and industry based schemes will continue after the CPD requirements have been established in order to address particular local and market needs. It is expected that there will be a convergence of methods of assessment to reduce the requirements for testing to achieve approval under the various mandatory and voluntary schemes.

Main Material Labelling Schemes and contact points

Scheme	Detail	Contact
M1, Finland	Voluntary (private), promoted by Government, all types of construction products	www.rts.fi
Indoor Climate Label (ICL), Denmark	Voluntary (private), promoted by Government; open to all types of products relevant to indoor air	www.indeklima.org
AgBB (Committee for Health-related Evaluation of Building Products), Germany	Is meant for all types of construction products relevant to indoor air; promoted by government and mandatory through inclusion in approval procedure for selected construction products by DIBt (Deutsches Institut für Bautechnik); also applied voluntarily.	http://www.umweltbundesamt.de/buildingproducts/agbb.htm
AFFSET (Agency for Environmental and Occupational Health and Safety), France	Voluntary protocol for building products and finishes promoted by government, initially for solid products and extended to liquid, expected to become mandatory under consensus action 'Le Grenelle Environnement' and may be extended to consumer products.	http://www.afsset.fr
GuT, Germany	Voluntary (private); textile floor coverings.	www.gut-ev.de
EMICODE, Germany	Voluntary (private); products for installation of floor coverings	www.emicode.com
Blue Angel, Germany	Voluntary (private), promoted by Government; several types of products for indoor use	www.blauerengel.de

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What else can I do?

As well as building products, a wide range of consumer products ranging from those used for cleaning and personal care to electrical appliances such as printers and computers emit chemicals and particles into the indoor air. There are a few schemes for example in Germany that address these products but currently this is a neglected topic. In some buildings such as offices local ventilation may be possible for facilities such as photocopiers and printers. Otherwise adequate general ventilation is the main method of control. As a building owner, builder or services manager post construction monitoring of the indoor air quality is a valuable exercise to check that the building is performing appropriately by providing a safe and healthy internal environment.

How can I find out more?

- *ECA (2005)*. Harmonisation of indoor material emissions labelling systems in the EU: inventory of existing schemes. European Collaborative Action; Urban air, indoor environment and human exposure, Report no.24, European Commission, 2005, EUR 21891 EN.
- *Yu C. and Crump D. (2002)*. VOC emissions from building products. BRE Digest 464, Part 1: Sources, testing and emission data, Part 2: Control, evaluation and labelling schemes, BRE press, Watford, UK.
- *Crump D. (2009)*. Harmonisation of material labelling schemes in the EU. Proceedings of the twelfth annual UK review meeting on outdoor and indoor air pollution research, Cranfield University, 20-21 April 2009.
- *Bluyssen P.M. (2009)*. The Indoor Environment Handbook: How to make buildings healthy and comfortable. Earthscan, London.
- *Bluyssen P.M. et al. (2010)*, Actions to reduce the impact of construction products on indoor air: outcomes of the European project HealthyAir, Indoor and Built Environment.

More information

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