

# Indoor Air Quality...

The thermal and acoustic performance of Thermafleece wool insulation in domestic and industrial settings is widely recognised. However, the wider benefits of using wool in construction are not so well known. Few materials have the ability wool has to absorb and regulate concentrations of indoor pollutants and moisture within buildings. As such, the use of wool insulation has much to offer in helping improve indoor air quality.

## Indoor Air Quality

The drive towards airtightness has focused attention on the amount of fresh air entering buildings and the accumulation of air pollutants within them. This has coincided with an increase in the use of building materials that can generate and emit potentially harmful substances such as formaldehyde. It is therefore imperative that the accumulation of indoor pollutants is not overlooked and all available measures to maximise indoor air quality considered.

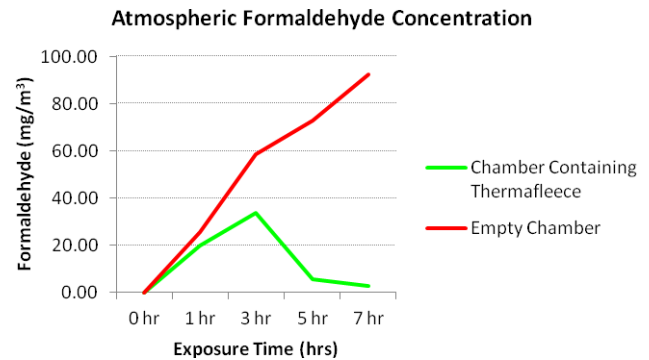
Indoor air pollutants including many volatile organic compounds (VOC's) are widespread. For instance, a survey by the Building Research Establishment identified more than 200 indoor pollutants at total concentrations 10 times higher than outdoors. One of these pollutants, formaldehyde, is a common VOC that can be pervasive in buildings and is released from a variety of processed materials including pressed wood, medium density fibreboard and man-made fabrics.

Exposure to formaldehyde can produce sensory and respiratory effects at extremely low concentrations. Air quality improvement measures including pollutant source reduction and employing ventilation measures are commonly understood. However, there is less awareness of the ability of materials, such as wool, to absorb harmful chemicals within the building envelope. The exceptional ability of wool to permanently absorb formaldehyde and a variety of other harmful substances makes the use of Thermafleece an excellent addition to the range of indoor air quality improvement measures.

## Wool as an Absorbent

The protein building blocks of wool fibres contain residues which vary in both in size and chemical nature allowing wool to bond in complex ways with a wide variety of potentially harmful substances. Many of these reactions are permanent including the reaction with formaldehyde which is locked into the wool fibre, rendering it harmless throughout the life of the insulation. In laboratory tests, formaldehyde levels of approximately 5 parts per million were reduced to near zero within 20 minutes with no re-emission at 30°C.

Tests on Thermafleece exposed to a formaldehyde source showed a reduction in formaldehyde levels of more than 97% compared to the control.



## Blocking Pollutant Movement

Many pollutant gases can move between internal walls and floors constructed from porous building materials including gypsum board through the processes of sorption and diffusion. Some porous materials can also act as strong 'sinks' for pollutants by absorbing VOC's from internal air only to re-emit them over time back into internal air. Whereas most pollutants move freely to atmosphere, many are retained within the building for long periods. Since Thermafleece can permanently absorb many persistent pollutants, including formaldehyde, the use of Thermafleece behind porous materials ensures pollutants diffusing through porous surfaces are unlikely to pass beyond the wool barrier created by Thermafleece. In line with good practice, Thermafleece should be considered in conjunction with the range of measures available when managing indoor air quality.

## Further Information

We offer a comprehensive support to meet all your technical requirements including:

- For technical support call **017684 86285**
- On-site and off-site support throughout the design and build process
- Advice on meeting current regulations including Building Regulations and Code for Sustainable Homes
- U-value and condensation risk analysis
- Advice on environmental impact
- Application guidance notes, comprehensive product data and reports