Wool Interiors

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Science shows that when used in interior textiles such as carpets and upholstery, wool absorbs and locks away pollutants such as volatile organic compounds (VOCs) from the air more rapidly than other fibres.

High in water and nitrogen content, wool is naturally flame-retardant. Wool does not melt, drip or to stick to the skin causing burns, and when subject to extreme heat it produces less smoke and less noxious fumes.

Fire Protection in the Home

Gas, smoke, and toxic fumes are the most common cause of death following domestic fires. Fatalities are more likely to occur in rooms where soft furnishings are found, making it vital to choose the least flammable materials.

Research indicates that wool used in apparel and furnishing textiles can provide a greater level of fire safety than other fibres[1] :

- Wool is the most flame resistant of fibres commonly used in interiors (cotton, rayon, polyester, acrylic and nylon)
- Due to its high Limiting Oxygen Index (LOI), the amount of oxygen needed to sustain combustion, it is harder to ignite wool than other fibres
- Wool does not melt, unlike polyester and nylon, which melt at 252-292°C and 160-260°C respectively
- Wool – even when warm – does not stick to the skin
- Wool has a low heat combustion level, meaning the amount of heat released in burning

Better Indoor Air Quality

As we spent increasing amounts of time indoors,[2] we increase our exposure to VOCs. Volatile organic compounds, or VOCs, are substances formed from a combination of chemical elements which easily become vapours or gases. VOCs are released from many products found in our homes – not only solvents, paints and thinners but also cleaners and disinfectants, air fresheners, copy machines and printers, building materials and furnishings.[3]

Familiar VOCs include benzene, formaldehyde, and toluene. Concentrations of some air pollutants may be two- to five-fold higher indoors than outdoors. Improvements in thermal insulation, in order to reduce heat loss, and scarce ventilation in modern dwellings, have also led to a deterioration of indoor air quality.[4] The result can be what is known as sick building syndrome (SBS) – feelings of ill health that seem to be linked directly to the time spent in that building.

Studies have shown that common VOCs, which are implicated as a cause of SBS, can be absorbed and chemically bound by wool, improving ambient air quality. When used as furniture, carpets, clothing, or insulation, wool can be a sustainable and natural solution to the problem of accumulating indoor contaminants.[5]

Less Stress through Better Acoustics

Wool is a perfect sound insulating material having the capacity to dampen or absorb both high and low frequency sound. This makes wool an ideal material for public spaces such as theatres, offices or aircrafts. Modern buildings made of concrete, steel and glass improve their sound quality by integrating wool panels, curtains and carpets in their interiors to ensure a comfortable sound level for the people living and working inside the building.[6]

Healthier Indoor Environment through Humidity Control

In unventilated buildings, moisture from human breath and perspiration, plants, cooking and washing can accumulate to give condensation problems such as growth of moulds and mildew, and deterioration of decorations. High indoor humidity levels promote dust mites and may affect human health.

Research has shown that wool carpets, furnishings and curtains exert a significant buffering effect on changes in the humidity of indoor air. Condensation on cold surfaces is inhibited and dehumidifiers may be rendered unnecessary.[7]

[1] Flammability Report, New Zealand Merino Company Limited, http://www.eco-terric.com/flammability-report.pdf (retrieved 26 Nov 2018

[2] A 2001 survey funded by the U.S. Environmental Protection Agency found that respondents spent 87% of their time in enclosed buildings and 7% in enclosed vehicles. The National Human Activity Pattern Survey (NHAPS): A Resource for Assessing Exposure to Environmental Pollutants, by Neil E. Klepeis et al. (Lawrence Berkeley National Laboratory, 2001)

[3] Volatile Organic Compounds: https://toxtown.nlm.nih.gov/chemicals-and-contaminants/volatile-organic-compuounds-vocs (retrieved 26 Nov 2018)

[4] Respiratory health and indoor air pollutants based on quantitative exposure assessments Marion Hulin, Marzia Simoni,et al. European Respiratory Journal 2012 40: 1033-1045; DOI: 10.1183/09031936.00159011. http://erj.ersjournals.com/content/40/4/1033 (retrieved 26 Nov 2018)

[5] Absorption of volatile organic compounds by different wool types. Mansour, Elie & Curling, Simon & Stéphan, Antoine & Ormondroyd, Graham. (2016). Absorption of Volatile Organic Compounds by Different Wool Types. Green Materials. 4. 10.1680/jgrma.15.00031. https://www.researchgate.net/publication/295079483_Absorption_of_Volatile_Organic_Compounds_by_ Different_Wool_Types (retrieved 26 Nov 2018)

[6] McNeil, Steve. (2014). Acoustic advantages of wool carpeting. https://www.researchgate.net/publication/264195999_Acoustic_advantages_of_wool_carpeting. Accessed 27 Sep 2019

[7] Gibson, Phillip. (2008). Effect of Wool Components in Pile Fabrics on Water Vapor Sorption, Heat Release, and Humidity Buffering. Journal of Engineered Fibers and Fabrics. 6. https://www.researchgate.net/publication/216777845_Effect_of_Wool_Components_in_Pile_Fabrics_on_Water_Vapor_Sorption_Heat_Release_and_Humidity_Buffering (accessed 27 Sep 2019)