

Don't let Poor IAQ ruin your Quality of Life – choose Quality Flooring and Building Materials

It is easy to overlook air as a potential risk factor to our health and well-being; we can't really see it. But, as a vast number of studies over the past 50 years have demonstrated, the quality

Don't let Flooring put a Ceiling on your Health

We're all spending an increasing amount of our time indoors – about 90 percent of every day.¹ Meanwhile, the concentration of pollutants indoors is up to five times higher than outdoors, due to volatile organic compounds (VOCs), chemicals, biologicals and all kinds of particles.² Our modern, indoor lifestyle has created worsening health issues, ranging from short-term illnesses to long-term medical conditions, and even fatalities. These negative effects are encountered across the board, from the general population to particular, vulnerable groups such as children, pregnant women and elderly people.

At home, at the office, in school, in the gym, in public transportation systems – we are constantly exposed to much higher concentrations of pollutants and biological contaminants than would be the case outdoors, where these harmful substances evaporate and disperse much faster. That's why Indoor Air Quality (IAQ) remains a very topical issue, subject to more and more stringent regulations as well. It's also why Avery Dennison performance tapes are low VOC certified, offering a clear advantage over liquid adhesives based on solvents (or containing certain additives), reflecting our commitment to the improvement of health and safety wherever our products are used. Let's talk IAQ and VOC.

1. <https://www.epa.gov/report-environment/indoor-air-quality>

2. <https://www.epa.gov/report-environment/indoor-air-quality>





Indoor Air Quality

Air Pollution

Indoor air quality (IAQ) refers to the air quality within and around buildings and structures, especially as it relates to the health and comfort of building occupants³. Understanding and controlling common pollutants indoors can help reduce your risk of indoor health concerns.

Air pollution is a huge environmental threat to our health according to the World Health Organization. From smog hanging over cities to smoke inside the home, almost all of the global population (99%) are exposed to air pollution levels that put them at increased risk for diseases including heart disease, stroke, chronic obstructive pulmonary disease, cancer and pneumonia⁴. Exposure to air pollution is the cause of eight million premature deaths every year⁵. A comprehensive new report WHO details the health impacts of air pollution, which has now moved ahead of tobacco and poor diet as a risk factor for death⁶.

Moreover, indoor air pollution is up to five times deadlier than outdoor⁷.

IAQ and Health

Especially children, pregnant women and the elderly are highly susceptible to negative effects from air pollution. Prolonged exposure to high levels of air pollution can affect human respiratory and inflammatory systems. Poor IAQ not only causes headaches and dizziness, it can also exacerbate allergies and asthma – the most common disease in childhood. In most cases asthmatic symptoms subside during young adulthood, but one in three relapses during adulthood, strongly linked to poor IAQ in the workplace environment⁸.

The distribution of the disease suggests a strong association and link with our 'Western' environment, possibly reflective of urbanization and our tendency to spend ever more time indoors. Which is where flooring can affect the quality of air through VOCs.

3. <https://www.epa.gov/indoor-air-quality-iaq/introduction-indoor-air-quality>
4. <https://www.who.int/data/gho/data/themes/air-pollution>
5. <https://www.unicef.org/press-releases/air-pollution-accounted-81-million-deaths-globally-2021-becoming-second-leading-risk>
6. <https://www.unicef.org/press-releases/air-pollution-accounted-81-million-deaths-globally-2021-becoming-second-leading-risk>
7. <https://www.ft.com/content/dc088e34-1577-11e8-9376-4a6390addb44>
8. <https://pmc.ncbi.nlm.nih.gov/articles/>

Sick Building Syndrome

Indoor Air Quality is affected by a variety of factors, from climate and outdoor environment, ventilation, cleaning conditions and products used in households. However, building materials, particularly in flooring and walls, play their part as well. They can emit airborne particulates and volatile organic compounds that may be harmful.

The term Sick Building Syndrome (SBS) is used to describe situations where people experience negative health effects from spending time in a home or building⁹. The syndrome was first described and reported during the 1970s among employees working in brand-new office buildings. The affliction was officially acknowledged in 1984, when the WHO published the first report mentioning SBS as a real and valid disease caused by well-determined and clear causes, namely poor IAQ¹⁰.

Research into SBS has demonstrated a clear and unambiguous link with poor IAQ. The most effective remedy against SBS consists of reducing or eliminating the risk factors.

Reducing risks can be done by increasing ventilation, regular and thorough cleaning of floors and furniture, and keeping the ambient temperature low. However, eliminating risks requires a more structural approach – by avoiding building materials that emit harmful chemical components. Which finally brings us to the now-of used abbreviation VOCs.

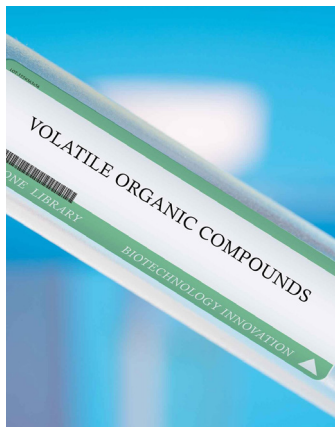
9. <https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/sick-building-syndrome>

10. <https://mens-en-gezondheid.infonu.nl/aandoeningen/101550-oorzaken-en-symptomen-sick-building-syndrome.html>

11. <https://www.epa.gov/indoor-air-quality-iaq/volatile-organic-compounds-impact-indoor-air-quality>

12. <https://www.corrosionpedia.com/definition/1891/low-voc>





VOC: Volatile Organic Compounds

VOC & Low-VOC

The main culprits of poor IAQ are VOCs; organic substances that evaporate at ordinary room temperature, thus easily dispersing throughout buildings, and accumulating to much higher concentrations than outdoors. They include a variety of chemicals, some of which may have short- and long-term adverse health effects. Concentrations of many VOCs are consistently higher indoors (up to ten times higher) than outdoors¹¹.

Low VOC refers to volatile organic compounds that are not harmful to the environment or to humans. It mostly refers to paints and other products that have a very low or zero VOC, including cleaners, sealants and of course adhesives. Low VOC helps to reduce the emission of smog-forming compounds when used in construction and remodeling projects¹².

Low VOC is, in other words, hugely beneficial to the quality of air indoors.

Low VOC PSA: Pressure-Sensitive Adhesives

Pressure-sensitive adhesives (PSAs) are used in a wide array of applications, ranging from floors and construction materials, to labeling and packaging, mounting graphics displays, and assembling electronic devices. PSAs hold two surfaces together solely by surface contact, which is achieved by firm initial external pressure.

These dry adhesives require no activation with water, solvent or heat, and firmly adhere to many dissimilar surfaces with minimal pressure. PSAs can be used for bonding materials such as plastic, paper, metal, glass, and wood, including some of the low surface energy type materials like Polyethylene and Polypropylene.

VOCs in adhesives and sealants are a necessary component to make them fluid and workable. That's one of the reasons pressure-sensitive adhesives have our preference, as they are significantly lower in VOC emission compared to liquid adhesives.

As far as choices for adhesives go, PSAs offer a variety of benefits compared to other alternatives, be it glue-down, click-and-lock, or free-floating installation methods. They are easy to install by way of peel-and-stick installation and are very DIY-friendly, making specific skills and tool sets redundant. What's more, their lower VOC emission results in significantly less exposure to harmful substances throughout the value chain. Thanks to sustainable raw material usage, PSAs reduce waste for landfills as well.

Low VOC, no Solvent

Depending on the actual application, the adhesive used in our tapes has to meet specific requirements, such as low VOC, but also heat, chemical and moisture resistance, and of course excellent adhesion – while at the same time meeting our sustainability goals. Our special UV acrylic solution has been specifically designed for the manufacture of high-quality adhesive tapes for building & construction applications, among other market segments.

We didn't invent the UV acrylic hotmelt, nor do we manufacture the polymer – as we use ready-to-coat resources from an external supplier instead. However, we did develop an acrylic adhesive that is polymerized as a warmmelt, which means no solvent is used in the process. The product contains only pure solids and can be processed immediately on standard hotmelt coaters equipped with commercial UV lamps. No extra drying equipment or flash-off zones are required.

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UV acrylic hotmelt polymers are ideal for pressure-sensitive adhesives for permanent and/or temporary tape applications. Free of water and solvents, these adhesives have many significant advantages over conventional adhesives in terms of processing and environmental impact. Its key features include low VOC, versatility, heat and moisture resistance and its excellent aging and converting properties for a myriad of applications.



Green Alternatives

At the construction level, we're seeing a drive towards bio-based, organic solutions – like bamboo, cork and recycled wood for flooring, or wood fibers and sheep's wool for insulation. In vinyl flooring, phthalate-free solutions are on the rise.

The customer is willing to go the extra mile too. With some natural alternatives for insulation for instance, you need double layers to achieve the same results, but necessary investments are made if green results can be achieved. That drive towards more natural materials is matched by advancements in tapes. For instance, certain rubbers already contain resins from pine trees as bio-based substitutes. At the same time, if carpet specialists introduce new materials, new substrates, it brings new challenges.

We have the toolkit to take them on.

Certification

Various obligatory and voluntary national and international measurement standards have been developed in order to tackle the health issues related to IAQ. These standards set out minimum and maximum values that need to be met by relevant product manufacturers, which in turn are tested and monitored by accredited third-party laboratories.

In the case of Avery Dennison's PSA portfolio, we have selected Eurofins. Eurofins BioPharma Product Testing is a provider of laboratory testing and manufacturing services to the international life sciences market.

Producing low VOC building materials – and having the certifications to back that up – is not a unique approach, as they have become more widely available. However, Avery Dennison performance tapes are preferred over liquid adhesives in a growing number of applications, as they have proven to be the better alternative to the more traditional solutions – most notably for their unique suitability for indoor use as it relates to air quality. That goes for carpet and tile pads, but our portfolio covers everything from resilient flooring and underlayment to skirting boards, profiles, trims and even sports flooring as well.



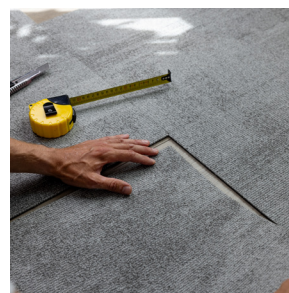
Carpet

Carpet offers acoustical and comfort benefits that are generally not available with other floor coverings. However, the way a new carpet smells is usually an indication of VOC emission, released most notably right after installation. Luckily, the days of complex sets of materials are behind us, as recyclability asked for a different approach to carpets. At any rate, a low VOC carpet has been specifically manufactured to reduce the emission of VOCs from any of its components, whatever the fabric, the backing and the adhesives.

What to look for:

If carpet is your choice of flooring material, be sure to select carpet that:

- has been tested and is compliant with country-bound regulations and eco labels with regards to VOC emissions;
- can be easily cleaned and maintained;
- is specifically manufactured to prevent liquids from penetrating the backing layer;
- can be installed with low VOC adhesive or by way of an adhesive-free free-floating system;
- can be easily removed without the use of toxic chemicals;
- is unrolled and aired out by the supplier in a clean, dry warehouse before installing it.



Resilient Flooring

The second most commonly used floor type for general use is resilient flooring. Resilient flooring is commonly used for high-traffic areas. While there are advantages and disadvantages to any flooring choice, regular and effective cleaning and maintenance is essential in keeping floors dry and clean, thus avoiding soil, pollutants, and moisture from accumulating and subsequently spreading throughout the building.

What to look for:

If resilient flooring is your choice of flooring, select a floor that:

- has been tested and is compliant with country-bound regulations and eco labels with regards to VOC emissions;
- can be easily cleaned and maintained with low VOC cleaners and finishes;
- can be installed with an adhesive-free click-and-lock system or is self-adhesive (pressure-sensitive adhesive on the back of the flooring panels).;
- uses high-performance coatings to reduce maintenance costs and use of cleaners and floor finishes.

Stay Safe

Our modern, indoor lifestyle has created worsening health issues, ranging from short-term illnesses to long-term medical conditions, and even fatalities. There are temporary, reactive measures, such as proper ventilation, thorough cleaning and a low and constant ambient temperature. However, to properly protect the air quality of any indoor environment, one should first and foremost seek to eliminate any and all potential sources of contamination that originate from flooring and other building materials.

Make sure to always opt for low or no VOC options when selecting materials such as flooring, wall and ceiling materials, adhesives, paints, coatings, and sealants. Trusting independently developed, tested, controlled, and issued standards and accreditations are your best bet at installing the safest and healthiest options.

Performance Tapes

Avery Dennison Performance Tapes is a world-class operation focused on developing and manufacturing high performance pressure-sensitive adhesives and tapes for a broad range of applications in automotive, appliances, electronics, building and construction, specialty industrial and personal care segments.

The organization has 50 years of experience in supplying standard and customized pressure-sensitive materials designed to deliver innovative solutions for customers' needs across the globe. Worldwide manufacturing facilities ensure a global presence supported by local sales, technical and customer service throughout the regions.

For more information on our bonding tapes and adhesive solutions, please visit our [flooring page](#). Our technical experts are here to show you how to work with your materials successfully during every phase of your application. You can count on us to approach any challenge with genuine curiosity and care.

Contact your Avery Dennison sales representative or visit tapes.averydennison.com



For more information on technical performance and printing recommendations, please refer to the respective datasheets. Please note that the Avery Dennison product range and service offering can be subject to changes. For an accurate overview, please check our website label. averydennison.com or contact your local Avery Dennison sales representative.

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