

There's no such thing as a universal tape

– practical solutions for a wide range of applications



Introduction

There is no universal adhesive solution. We know, because we've been underlining the advantages of our innovations over traditional liquid-based adhesives for decades now. Our performance tapes have become the option of choice in more than a few industries, as they have proven to be the better alternative for a growing number of applications. But did you know that within the realm of our pressure-sensitive adhesives (PSAs), there's no one size fits all resolution either? Every substrate, every environmental condition and every application method implies unique bonding challenges.

We offer a solution for all of them.

Avery Dennison Performance Tape solutions for every challenge

Selecting the ideal adhesives for construction projects is essential to ensure long-lasting, safe and reliable structures. At Avery Dennison, we recognise that the right adhesive contributes to the overall structural integrity and stability, allowing your commercial or personal construction projects to withstand the test of time.

Whatever the application, adhesives must meet certain performance requirements, like temperature- and chemical resistance or reduced exposure to low-VOC emission during mounting. To increase the safety of all technicians involved, trusting on independently developed, tested and controlled materials is the way to go.

That's not all. The adhesives in our PSA tapes are flame retardant, weather resistant and offer several operational advantages. For instance, you can laminate in place A – under optimal conditions – and mount in place B, appealing health and safety as well. Our PSA tapes cater to a diverse range of applications, while maintaining high quality standards. Our innovative tapes are resistant to plasticisers, extreme temperatures, chemicals, water and UV light. They deliver climate-appropriate structurally and aesthetically pleasing solutions.

Additionally, Avery Dennison tapes offer quick and easy removal without causing damage. Each kind of adhesive solution is tailored to the needs of your construction project, without losing focus on durability, resistance to environmental elements and ease of application.

"From the application of tapes on construction sites to the functionality – they can do more than stick! –, there is no such thing as a universal tape. The application examples in this brochure will explain it all."

Avery Dennison PSAs – a smarter adhesive

The strength of the bond with pressure-sensitive adhesives relies on the amount of pressure that was applied during the bonding. This mechanical factor adds to the chemical factor of the adhesive, creating unique specifications. The absence of cure time is very important. Conventional installation methods and the more traditional solutions such as liquid adhesives have well-known drawbacks. Glue-down systems not only raise air-quality concerns for users, but require hours of curing. While our innovative solutions are fitted with an adhesive as well, it's not comparable to generic liquid adhesives.

The adhesive in our PSA tapes is bonding primarily based on pressing – which is hugely advantageous for installation. But we're not here to talk about the advantages that all of our tape solutions share, but rather about the differences that set them apart. Every substrate, every environmental condition and every application method implies unique bonding challenges and we have them covered.

Specific solutions for specific challenges

The three adhesive properties that are most useful for characterising the nature of a PSA are the tack (initial adhesion), the peel adhesion (adhesion), and the shear strength (cohesion). Tack measures an adhesive's ability to adhere quickly; the adhesion measures the adhesive's ability to resist removal by peeling, and the cohesion measures the adhesive's ability to remain in position under shearing forces.

Hard to bond to substrates like plastics and painted metals can be bonded by a PSA thanks to three stand-out properties: good wetting ability of the adhesive, immediate tack and adhesion, and high bonding surface. Meanwhile, adhesives can have a high variety when it comes to resistance to temperature, moisture / water, UV, chemicals (often migrating from substrates) and plasticisers. Diversity in PSAs also relates to the soft- or hardness, initial tack, resistance stress & load and shear resistance. Avery Dennison Performance tapes has 9 different adhesive technologies in its portfolio to meet a variety of specific needs.



Variety of technologies

Avery Dennison offers an extensive portfolio of emulsion and solvent acrylic and hot melt rubber adhesives suitable for foam and fiber applications, including bonding to challenging Low Surface Energy (LSE) substrates. We have over 80 different adhesive formulas, including hot melt rubber, solvent rubber, pure (and modified) acrylic and silicone adhesives.

In addition to numerous standard adhesives, an application often requires specific adhesives. Working closely with our customers, our engineers can adjust existing adhesive platforms or develop new systems for various substrate and foam combinations.

Stick to the plan

When you're talking about adhesives, the general purpose of bonding obviously sticks out. Sticking, in fact, is the very goal of adhesives. But that's hardly all our PSAs can do.

Our portfolio consists of PSAs of different coat weights and strengths pre-applied to liners, then covered with a special release liner. They offer a variety of benefits compared to other alternatives, especially when it comes to efficiency gains in construction. Our dry adhesives require no activation with water, solvent or heat, and firmly adhere to many surfaces with minimal pressure without the use of brushes, glue guns or tools of any kind.

Professional contractors can return commercial spaces to service right away—a big plus for facilities like hospitals that cannot afford downtime. It also allows contractors to schedule and complete more jobs in a shorter period.

Adding a tape to a construction can have the sole purpose of bonding, but a variety of other mechanical properties as well;

– Scrim reinforcements

A glass fiber or polyester scrim is essentially a reinforcement net inside the adhesive layer, which can enhance dimensional properties. A scrim can for instance be very useful when laminated to a foam. The scrim will prevent the foam to be stretched when applied, so that it will not suffer from a risk of debonding when the material is returning to its original, not-stretched state.

– Carrier properties

In the case of double coated tapes, there is always a central carrier material. The choice of carrier material can influence properties like the thickness of the tape in the case spacing is required, or to match a substrate to allow for recycling, or to act as a layer with certain properties (strength, shielding, repositioning, et cetera).

– Barrier Properties

Barrier material for gas and moisture tight constructions: thin metalized self-adhesive films can provide a very low moisture-vapor transmission rate (MVTR) and a great gas barrier, for instance in double glazing.

– Additive properties

Additives can provide unique properties for specific applications, including:

- biocides to reduce mold growth;
- fire retardants to meet flammability requirements;
- glass fibers to improve slitting.



5 practical applications of PSAs

1. Warm-Edge Spacer

Warm Edge Spacers (WES) are used in Insulating Glass Units (IGU), more commonly known as double glazing/triple glazing sealed combinations of double or triple glass window panes separated by an air/gas space to reduce heat transfer across part of the building envelope. Saving energy as well as money, it reduces pollution and greatly improves the comfort inside a building! It also provides sound insulation.

A functional self-adhesive film is a component within warm-edge spacer construction in double and triple glazing units. Film and tape have several functions, including acting as a moisture barrier, gas barrier and an adhesion promoter to the sealant. Avery Dennison delivers very high barrier multilayer laminates for warm edge spacer production, offering exceptional water vapor and gas barrier, combined with low thermal bridge. These laminates are delivered with or without PSA. Properties include:

- ultra-high barrier to moisture with market leading properties;
- negligible thermal bridge compared to aluminum or stainless steel foil laminates;
- low gas permeation;
- exceptional surface treatment to enhance adhesion to sealants and spacer;
- very high resistance to corrosion.

2. Flooring

From DIY installers and professional contractors to flooring manufacturers and distributors, the irrefutable advantages of tape solutions are catching on. It's not hard to see why. The easily tearable peel & stick approach, installed simply by adding pressure and without the use of tools, is completely unique to tapes. Avoiding costly wait times with immediately walkable floors and the obvious recyclability benefits are a nice – but important – upside.

Innovative PSA solutions are the new generation for any type of flooring situation. Our portfolio consists of PSAs of different coat weights and strengths preapplied to liners, then covered with a special release liner. They are used for their myriad of advantages, as they offer a variety of benefits compared to other alternatives, be it glue-down, click-and-lock, or freefloating. Our dry adhesives require no activation with water, solvent or heat, and firmly adhere to many surfaces with minimal pressure without the use of brushes, glue guns or tools of any kind. The release liner protects the adhesive before it is removed.

What's more, all of the aforementioned advantages that make tape solutions unique when it comes to ease of installation apply to de-installation as well. For starters, the removability – on any given subfloor – is a huge upside, especially compared to generic liquid adhesive solutions. Carpet flooring or tiles for instance, can be removed without any residue at all, as the subfloor is immediately ready for the next removable application – which goes a long way when it comes to event carpeting for conferences, exhibitions and trade fairs as well.

There is simply no impact of any kind on subflooring. And that applies to permanent solutions as well. At end-of-life, you just lift up the flooring, tear and remove. In fact, it's so cleanly removable that it's even possible to isolate the tape from the flooring and sort both into different waste streams for easy recyclability. Additionally, many carpet fibers these days are produced from one single material (mostly PP & PET). To be able to completely recycle and reuse it, their mounting tapes can be made with the same carrier material so that both the product and the installation means can be wasted and recycled together.



3. Closure of pipe insulation

There is no single, accepted standard way in which pipes are insulated. Depending on the desired requirements and fire resistance, various insulating materials can be used, ranging from mineral and glass wool to polyurethane, different types of rubber and polyethylene foam. What is consistent, however, is the need for some form of closing solution – something that in many cases is achieved through the use of high-performance tapes.

Much like insulation, there are various closing systems available that can be used to achieve the desired result depending on the given situation. And they have a significant impact on the fire resistance rating of a pipe insulation. Pipe insulation closure tapes are a type of tape used to seal and secure insulation around pipes. These pressure-sensitive adhesives are specifically designed to be compatible with insulation materials and their facing materials, and can help ensure that pipes are properly insulated to prevent heat loss or gain. In addition, the tape helps to protect the insulation from moisture and dust, while it plays a vital role in the fire behavior of the construction.

Benefits of using PSAs as a closure solution:

- **Ease of use**
Pressure-sensitive adhesives (PSA's) are easy to apply and require no mixing or additional tools, making them a convenient solution for sealing and closing pipe insulation.
- **Versatility**
PSAs can be used on a variety of surfaces and materials with high to very low surface energy properties, including fiberglass, foam, aluminum foil and polyethylene-coated aluminum foil.
- **Quick bonding**
PSAs bond quickly and securely to the surface they are applied to, which can help speed up installation times.
- **Resistance to environmental factors**
Many PSAs are designed to be resistant to a range of environmental factors, including temperature changes, moisture, and UV light. This makes them a durable and reliable solution for sealing pipe insulation in harsh or demanding environments.
- **Minimal clean-up**
Unlike other closure solutions that may require additional materials or clean-up, PSAs are clean and easy to work with, reducing the amount of waste and mess.



4. Temporary fixing of construction materials

Building & Construction is an industry full of challenges. Luckily, anything from thermal insulation and sound absorption, heating and cooling units and weather strips, to pipe wrapping, fascia and cladding, and internal and external mounting – either permanent or temporary, and anything from decorative to smoke detectors and protection strips – can be demonstrably improved with the PSA tape solutions from our in-house R&D department.

The removability is a huge upside, especially compared to generic liquid adhesive solutions. Anything temporarily mounted to anything can be removed without any residue at all, and that applies to most permanent solutions as well. It's so cleanly removable that it's even possible to isolate the tape for separated recycling. When liquid adhesive is cured, it is no longer removable. PSA tapes come away clean, separable into different waste streams.

The release liner protects the adhesive before it is removed, which introduces another advantage, as PSA tapes have excellent aging performance, both in application as well as in terms of storage. Shelf-life of liquid adhesives, on the other hand, is an issue. Any liquid adhesive solution in stock will have to be put to use within the year, whereas tape will remain ready for application for much longer than that – as five years is hardly unusual.



5. Bonding of EPDM seals

EPDM in foam, molded or sheet form, is finding its way to more and more industrial applications. EPDM is a non-toxic, synthetic type of rubber that has gained widespread popularity for its excellent durability, great resistance and chemical compatibility properties in the industry. Besides the fact that EPDM rubber is one of the most waterproof rubbers available in the market, the material is also renowned for its excellent resistance to ozone, weather conditions, UV rays, and aging, making it a prime material for exterior applications.

The growing need to industrialize production steps has proven that EPDM material lends itself to innovation and applications that push the boundaries of its performance. A key element is the seemingly unlimited variety of shapes and forms the material can be processed into for applications in an increasing variety of products. Whether applied to sealing joints or absorb shocks, the material is processed starting from foam- and sheet formats, available in many different densities and converted to the exact mechanical needs it requires to perform. Its ability to strengthen its soft nature through vulcanisation and giving it more rigid properties is often welcomed by the users as well.

An application with EPDM more often than not requires a constant adhesion level in order to achieve a proven and/or certified performance. The constant thickness of engineered adhesive tapes, from low to high coat weights, can deliver the constant adhesive layer thickness that is required. Such reliability gives greater certainty of a consistent performance that is sometimes hard to achieve with liquid applied glues. In addition, the absence of any residual solvent when bonding with tapes is a wellknown advantage in safeguarding the health and safety of technicians who bond and handle EPDM every day.





EPDM applications with PSA tapes

- **Weather strips or seals**

Weather strips or seals are EPDM foams applied to seal gaps around window and door frames. They stop the airflow through these gaps, preventing drafts and keeping conditioned air inside. They are used at installation or during maintenance.

- **Joint seals on exterior wall cladding**

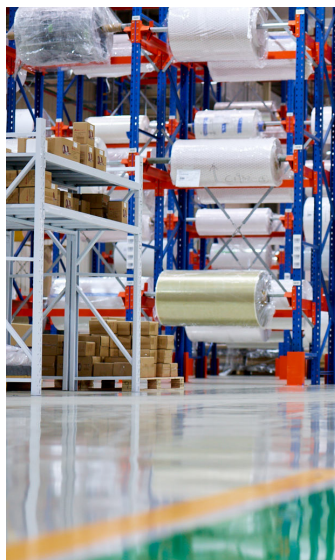
Weather resistant and self-adhesive EPDM strips are installed at the edge of facade panels to absorb minor tolerances in the structure. They also seal off the structure from dirt and water, guiding the flow of rain to the outside of the building envelope.

- **Seals in HVAC applications or appliances and industrial installations**

Various shapes and sizes are used as fluid seals in valves, taps, flanges, and other plumbing. As a positioning and application aid, they are made self-adhesive with PSAs, also crucial when attachment to low surface energy surfaces is needed.

- **Shock and sound absorption pads**

Various shock and sound absorption pads as well as spacer profiles that are capable of accommodating tolerance differences and damping vibrations.



Avery Dennison Performance Tapes

Avery Dennison Performance Tapes combines world-class expertise with a relentless drive for innovation, offering exceptional pressure-sensitive adhesives and tapes in building and construction. We lead the construction industry with comprehensive adhesive solutions that enhance both structural integrity and aesthetic appeal. With 50 years of experience, we offer adhesive solutions in a wide range of B&C market segments across the globe.

As your trusted partner, we take pride in our commitment to the safety and the success of your construction projects. Our cutting-edge adhesive solutions come with both technical and customer service, which will help to elevate your projects to new heights.

We offer an excellent price-performance ratio on a versatile tape portfolio for a wide range of foams, fibers and substrates that includes an extensive choice of adhesive technologies. More importantly, that portfolio is supported by our R&D labs – including in-house testing and evaluation – as well as our expertise in onsite application and technical sales support. Combined with the product quality of our global portfolio, we can reduce supplier complexity and guarantee business continuity on a global scale.



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

Asia Pacific

Kunshan, China,
No. 618 Nanhe Road
Kunshan Economic &
Technological Zone
China 215335
Phone: +86 400 6987 555
Fax: +86 512 57155059

Europe

Tieblokkenlaan 1
B-2300 Turnhout
Belgium
Phone: +32 (0)14 40 48 11
Fax: +32 (0)14 40 48 55

North America

250 Chester Street
Painesville, Ohio
44077 USA
Phone: +1 866-462-8379
Fax: +1 888-358-4469



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