

PRESSURE SENSITIVE ADHESIVE TAPES

pressure sensitive adhesive transfer tapes (PSA)

PSA (also known as adhesive tapes) are adhesives that adhere to a variety of substrates when applied with pressure. The adhesive film bonds to the substrate with or without the need for solvent, heat, or water for activation. Applied pressure is necessary in order to achieve sufficient wet-out onto the substrate surface to provide adequate adhesion. The adhesive film backs the sound insulation product and is protected by a removable release liner. The primary mode of bonding a PSA backed product is not chemical or mechanical, but polar attraction to the substrate surface.

It is a quick and easy 'peel and stick' method of applying Pyrotek acoustic insulation products without the need for solvent based adhesives and reduces the need for mechanical fixing.

CLASSIFICATION

Pyrotek offer products with a choice of 3 grades of PSA backing to suit varied application needs.

Tapes	Alpha-A	Alpha-A1	Alpha-A2
Description	High performance transfer tape suitable for most applications.	Versatile, resilient, high tack adhesive with excellent bonding strength to a wide range of substrates.	Scrim reinforced acrylic backing for extra strength and high durability.

RECOMMENDED TEMP.	Alpha-A	Alpha-A1	Alpha-A2
Continuous service	100°C	80°C	60°C
Peak (Intermittent)	120°C	100°C	80°C
Minimum application	-10°C	-10°C	-10°C
Peel strength (Steel)	25 N/25mm	25 N/25mm	20 N/25mm
Shear Strength	900 kPa	700 kPa	100 kPa
% Bond strength in 15	100%	80%	80%
Loop tack (PET backing)	12 N	6 N	4 N

In addition to the above transfer tapes, double sided PSAs are also available, where good long term bond but low initial tack is required to allow for repositioning of installed parts. (Please consult your Pyrotek consultant for more information)

STORAGE AND SHELF LIFE

PSA coated parts need to be stored away from direct sunlight, in a clean, dry environment with a stable temperature of between 10°C – 30°C. If stored correctly, they typically have a shelf life of 12 months from date of purchase.

EVALUATING ADHESIVES

Shear: Shear is a measure of the internal or cohesive strength of the adhesive, not a measure of the bond between the adhesive and a substrate. Usually, tack and adhesion performance decreases as shear strength increases.

Tack: Tack is a measure of the force required to remove the label and adhesive from the substrate. It usually refers to the measure of initial attraction of the adhesive to the substrate. The degree of tack is a function of adhesive components. It can be and is controlled by manufacturers to create different products based upon user requirements.

Loop Tack: This determines the tack or initial "grab" of an adhesive and gets the name from the 'tear drop' test model of a flexible elastic strip with its ends clamped together. The test determines the impact of factors like stiffness of the backing, and thickness of the adhesive, **the elongation of the adhesive etc. on the performance of the adhesive.**

Peel Adhesion: This measures the bond strength between an adhesive and a substrate after pressure is applied to the adhesive and after allowing for wet-out onto the substrate (adhesive set up). The degree of adhesion can be and is controlled by manufacturers to create different products based on end user requirements. Adhesion will continue to increase for a period of time from the moment of application, typically 24 hours.



CHOOSING AN ADHESIVE

Pressure sensitive adhesives are designed to work in specific temperature ranges depending on the end use of the component and the application environment. As with all pressure sensitive applications, the following factors as well as testing are crucial in determining the correct adhesive selection. Adhesion tests are recommended for powder-coated surfaces. Aging trials should be performed on plasticised PVC and some rubbers.

Surface contour: The contour of the object to which the product is applied is a primary consideration. Where irregular angles are involved, more flexible face stocks should be used. Regardless of the adhesive strength, it is virtually impossible for an adhesive to overcome continuous stress placed on it by a rigid or stiff product attempting to return to its original condition. This is referred to as stock "memory". In such applications, a more conformable face stock should be chosen.

Surface Energy: This is a measure of how well an adhesive wets out over the surface of the material to which it is applied. Materials with low surface energy (LSE) do not allow adhesives to wet out, while materials with high surface energy (HSE) provide excellent wet-out, providing the best adhesion. Rubber-based adhesives such as Alpha-A usually provide better adhesion to LSE surfaces. Some substrates require special treatment such as corona treating, primers, top coating, etc., in order to achieve better adhesion. On some LSE substrates, adhesion levels improve the longer adhesive is applied.

Surface Contamination: The presence of contamination such as dust, paper debris, oils, etc. on the surface of the substrate can prevent contact of the adhesive with the substrate. Many types of surface contamination are not visible but can be identified analytically. It may be necessary to clean the surface in order to obtain an acceptable bond.

Surface Texture: The texture of a substrate can impact the adhesive bond. Textured materials do not allow complete contact of the adhesive with the substrate. Less surface contact results in a smaller bonding area and lower adhesion levels. Where substrates have texture, more aggressive adhesives are recommended.

Please note: Under extreme temperature conditions or where the substrate surfaces cannot be free from contaminants, mechanical fixing will be required. For installing products weighing over 4 kg/m², such as Sorberbarrier®, mechanical fixing is highly recommended in addition to PSA adhesion, on all inverted installations including ceiling installations.

APPLICATION GUIDELINES

Make sure to avoid air pockets and contamination of adhesive.

Exposure to air : While air exposure has little effect on PSA, it attracts airborne contaminants that may reduce performance.

Minimise exposure to air by peeling off the liner just before use.

1 - Surface preparation

- Ensure that all target surfaces (whatever the substrate) are clean, dry and free of contaminants (e.g. liquid, dirt, dust, oil, loose paint, rust, wax, grease, fibreglass release agents)
- PSA products are best cut to size (as required) before installation

2 - Measure and pre cut product where required

- Measure surfaces to be installed. Check for allowances at corners and bends.
- Transfer measurements /dimensions on product with a marker (this could also be achieved by making paper/ cardboard templates)
- Where possible, cut the long lengths of required parts along the width of the product. This will minimise foam shrinkage when installing.
- If using templates, lay panel on flat, clean and dry surface with face up, (PSA backing down) . Place templates on facing side of panel and make reference marks (with marker or cleanable chalk as desired)
- To cut, use straight edge or level and cut with sharp utility knife.
- If the product is foam, you may need to compress the foam while cutting through or alternately you can make a series of cuts rather than cut through in one go. Do a trial to check for correct fits and allowances before peeling off the release liner for installation.
- When installing pre-cut parts, do not remove entire release liner. Partially remove the liner from the side of the product to be installed first, and apply the product with firm pressure to the mounting surface. Gradually peel off the rest of the liner, simultaneously installing the product as the rest of the liner is peeled off.



3 - Install

- Remove the liner and allow the adhesive backed material to relax for 10-30 seconds before applying to the substrate to release tension during application.
- Peel off the liner carefully to avoid tearing the liner or touching the PSA.
- Using reference lines as a guide, peel liner from the side to be adhered first and apply product to the surface and press firmly.
- Do not stretch material as you apply. Once the release liner is removed, the product should be applied to the entire surface without tension or stretching with uniform pressure, which is best achieved by using a roller. Stretching material during application can cause undue stress.
- For products 1 to 2 mm thick use a wooden scraping block or stiff-bladed scraping tool.
- For products 3 to 50 mm thick (e.g. Sorberfoam™ or Sorberbarrier®) use a 150 mm thick x 200 mm wide rubber roller.
- Avoid air pockets, press firmly with uniform pressure in one direction only. Move the block/tool/roller in the same direction each time making sure the entire surface is covered. Firm pressure develops better adhesive contact and improves bond strength.



Thicker PSA products are best rolled

(Please use these instructions as a general guide. The responsibility to assess application requirements within a specific environment lies with the installer.)