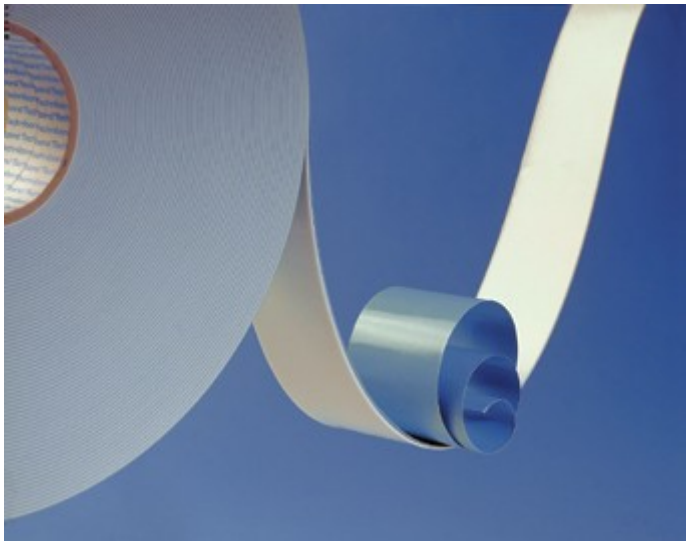
# Technibond HSA

## "High Shear Acrylic"

**Cars, doors, windows, external signage, roofs … you name it, Technibond HSA provides high performance adhesion and proven reliability…**



**Introducing one of our "Best Value" products, which offers top class performance at an everyday price.**

**Compared to the competition, Technibond HSA gives you:**

**A genuine automotive grade adhesive**
So you know you are getting the very best performance available

**A stronger foam; tough but flexible**
Because the foam determines the strength of the whole tape

**Our own production aid film liner as standard**
For easier and faster application

**An affordable price**
To keep you competitive

**HSA has been developed by Technibond during our 30 years of experience. It is unique to Technibond and coated for us to our specification by one of Europe's largest and most respected adhesive coaters.**

**See HSA for yourself - phone on 01628 642800 for a FREE sample or further information, or email us here**

**Where to use Technibond HSA and why**

**HSA** is one of our most widely used tapes. The following illustrates just some of the many applications. Discuss your own application by **phoning us on 01628 642800** and we will tell you whether **HSA** is right for you!

- ## PVC Door Panels
  - **Technibond HSA** is used for glazing the windows into uPVC door panels because:
    - It bonds strongly to glass and to uPVC.
    - It can resist the weight loading of the double-glazed window without needing further support.
    - It resists long term exposure to the elements, retaining a strong bond and seal under adverse conditions.
    - It withstands the high temperature that a dark coloured door skin can reach when exposed to the sun.

- ## Timber and uPVC Window Bars
  - **Technibond** HSA is the best product for fixing window bars to glass because:
    - It bonds strongly to glass, uPVC and painted wood.
    - It withstands long term exposure to water and UV light, and will not yellow.
    - It withstands the movement caused by thermal and hygroscopic changes.
    - It can be used on Pilkington Activ™ Glass

- ## Automotive Badges and Trims
  - **Technibond HSA** is used for mounting trims, and badges on car bodies because:
    - It resists the high temperatures that a dark car in full sun can reach.
    - It resists the coldest temperatures without becoming brittle.
    - It resists petrol, diesel, oil and cleaning fluids as well as water.
    - The strong but flexible foam conforms easily to curved body parts.


- ## Outdoor Signs
  - **Technibond HSA** is used for making and mounting a wide range of signs because:
    - It resists weather and lasts the lifetime of the sign.
    - It bears the weight of heavy metal signs, and the strain of wind loading.
    - It is chemically inert and will not affect sensitive plastics such as acrylic
    - It resists the high temperatures that a sign in full sun can reach


- ## Refrigerated Vehicle Internal Bump Strips
  - **Technibond HSA** is used in this and other commercial vehicle applications because:
    - It provides extremely strong metal to metal bonds.
    - It supports heavy loading and constant flexing.

        - It resists water and high temperatures, and can be steam cleaned.
        - It retains its flexibility and bond strength at low temperatures.

- **Conservatory Roof Bonding**
    - **Technibond HSA** is used for bonding and sealing the roofs in conservatories because:
        - It has the adhesive and shear strength to resist large thermal movements.
        - It has the foam strength to hold the roof against large wind forces.
        - It is chemically inert and will not affect polycarbonate.
        - It resists UV light without yellowing or becoming brittle.

**Discuss your own application or request a sample**
**on 01628 642800 or email us here**

## The Benefits of using Technibond HSA

HSA is used in a wide variety of applications where **high performance** is required. By high performance we mean one or more of the following conditions:

- **High Temperature**

    - Particularly where the tape has to withstand temperatures above about 70ºC, but HSA will even show benefits above 40ºC..

*The HSA adhesive itself performs up to at least 150ºC (much more for short term exposure). Like all PE foam tapes, the maximum temperature of the whole tape is limited by the foam. This means that even close to its upper temperature limit HSA retains very good performance, when many tapes are marginal . We regularly test high temperature shear in our laboratory, and no comparable tape out-performs Technibond HSA.*

- **Low Temperature**

    - Surprisingly to most people, the rather "dry" pure acrylics also perform better at very low temperatures, eg below -30ºC, where many adhesives become brittle.

*Once bonded, HSA can be used in refrigerated and freezer conditions and in the coldest climates. It will for instance pass the automotive "cold slam" test at -40ºC.*

- **High Loading**

    - Moderate or high loads over a long period where other adhesives will gradually flow.
    - Low to moderate loads in combination with higher temperatures.

*We extensively research shear performance, because this is the most important property for long term holding. We test at different temperatures, different loads, and over long time periods. HSA is* ***the best product for load bearing*** *under most conditions, particularly at higher temperatures.*

- **Outdoor Exposure**

- Long term exposure to the damaging effects of water and UV light.

*We have performed many weathering tests on HSA both outdoors and in our weathering machine, which greatly accelerates the damaging effects of UV light and water. These tests typically run for several months, equivalent to many years of natural weathering. In this same time we generally destroy materials such as conservatory roof sheeting, uPVC profiles and many coatings - so HSA will usually outlast the components it is bonded to.*

- **Solvent Resistance**

  - Exposure to oil, petrol, diesel and cleaning solvents

*Our HSA tape uses a cross linked pure acrylic adhesive that has excellent solvent resistance (see the section About the HSA Adhesive). It has been tested for resistance to a wide variety of the solvents used in many different industries, including automotive test solvents such as petrol and SPB 3 fluid.*

- **Chemical Stability**

  - Will not affect sensitive plastics - Acrylic, Polycarbonate
  - Will not affect Pilkington's Activ™ Glass
  - Virtually no long term degradation

*Technibond have had HSA independently tested by a number of companies to ensure its full compatibility with some of the more sensitive substrates that adhesive tapes can damage. The testing has included:*

- *Polycarbonate (Lexan) tested by G.E. Plastics, a substrate widely used in the glazing of conservatory roofs and skylights.*
- *Acrylic sheet (Perspex) tested by , a material widely used in the sign industry*
- *And the self cleaning Activ™ glass coating by Pilkington.*

**Discuss your own application or request a sample on 01628 642800 or email us here**

## Variations of HSA

**HSA** is available in six basic forms; with white or black foam; in three foam thicknesses:

| Colour \ Thickness | 1mm | 1.5mm | 2mm |
|---|---|---|---|
| White | ✓ | ✓ | ✓ |
| Black | ✓ | ✓ | ✓ |

**All versions of HSA use the same adhesive**. The foam density varies slightly between products but in all cases we use a strong tough foam.

**The products are supplied as standard with a clear / neutral HDPE film liner for quick and easy application without tearing.** As an option, the following release liners are also available (minimum quantities may apply):

Blue HDPE
Yellow HDPE
Paper

**HSA is available in these formats:**

| | |
|---|---|
| **Rolls** | any width up to 1000mm<br>standard lengths 50 or 100m - other lengths available |
| **Bobbins** | most common widths and many specials are available<br>standard length 1000m; longer lengths may be available |
| **Pads** | most sizes available<br>various formats, numbers of pads per roll etc |
| **Diecut parts** | standard and custom parts<br>please phone to discuss your project |

**Discuss the best format for your own application on 01628 642800**
or email us here

## About the HSA Adhesive:

### There are Acrylics...and there are acrylics.....

**Acrylics**
HSA uses a very special acrylic adhesive, but to understand why it is special we need to understand a little technical information. The term "acrylic" covers a wide range of adhesives with widely varying performance. Chemically, acrylics are polymers or copolymers of the esters of acrylic and methacrylic acid. Some of these polymers are hard and crystalline ("acrylic", "Perspex") but certain acrylic polymers have the unusual property that they are rubbery and intrinsically adhesive. These are the ones we use. Unlike true rubbers, they do not need the addition of tackifying resins to make them perform as pressure-sensitive adhesives.

**Polymers**
Polymers are long molecules made up of the same repeating chemical block, and there are generally thousands of units in a very long chain. These very long chains are physically tangled up, and this tangling gives the polymer much of its strength. If we stress a long chain polymer, the chains have to disentangle or break in order to flow, which takes a large force. Short chains of the same material would behave as liquids and will easily flow under the same conditions .It is like a saucepan of spaghetti compared to macaroni. The spaghetti will tend to act as one solid lump, whereas macaroni will easily separate. The longer the chain length (higher molecular weight) the more cohesive the polymer.

**Modified Acrylics**
Be aware, however, that many adhesives simply described as "acrylics" are not wholly composed of acrylic polymers. Although acrylics do not need tackifying, many (probably most) acrylic adhesives do contain tackifying resins. This addition often improves adhesion, particularly to difficult materials. It also significantly reduces the cost, as resins are much cheaper than acrylic polymers. These tackifying resins are short chain polymers, so this addition does make the adhesive much more liquid, particularly if too much of the cheaper ingredient is used. It reduces the cohesion (shear strength) and the temperature resistance. Technibond do use these "modified" acrylics in our

tape range (HTA for example), but we always specify whether our adhesive is "pure" acrylic or "modified" acrylic. Many suppliers do not, and if not specified they are probably using the cheaper modified acrylics. Fine in their own right, but not comparable.

In addition, HSA is a solvent based, cross-linked pure acrylic adhesive. What does this mean?

**Cross-linking**
Firstly, to explain cross-linking. We said earlier that the cohesion of the adhesive results from the very long, tangled polymer chains. The longer they are, the greater the cohesion or ultimate strength of the adhesive. There is a practical limit, however, because the longer the chains, the more difficult they are to get into a liquid form to allow them to be coated. Cross-linking gets around that by forming chemical bonds (links) between the chains, after the adhesive has been coated. The effect is to give very long and branched chains, that provide even more entanglement and therefore significantly higher cohesion. This gives the strongest possible adhesive.

Modified acrylics can also be cross-linked, but the cross-linking only affects the acrylic polymer, not the resin. The resin is a very short chain polymer which in effect acts as a lubricant. A cross-linked modified acrylic is stronger than a non cross-linked modified adhesive, but nothing like as strong as a cross-linked pure acrylic.

Cross-linking is most effective and best developed in solvent based adhesives. These adhesives are the only ones currently able to pass the most stringent tests in the automotive industry, which demand high strength, high temperature resistance, and excellent solvent resistance. The acrylic is dissolved in a solvent mixture and coated at the required thickness. The coated material then goes through a drying oven where the solvent is evaporated leaving the dry adhesive film. During and after this coating process, the cross-linking takes place.

There are two other coating techniques for acrylic adhesives; water based and radiation cured, both very different. Water based adhesives (also known as emulsion, dispersion or latex adhesives) use water instead of a solvent to liquefy the adhesive for coating. Acrylic polymers are not soluble in water, so they are made in the form of a suspension of tiny particles. Like other suspensions or emulsions, the solids would naturally settle out, so the dispersion is kept stable by using surfactants, which are forms of soap. This surfactant is still present in the dried adhesive film, which does reduce its performance. It also makes the adhesive rather moisture sensitive. In addition, water based acrylics cannot effectively be cross-linked, so the shear strength is limited. They are cheaper than solvent adhesives and certainly have a place in most suppliers' tape ranges, including our own. They do not have comparable performance. Again, not all suppliers readily disclose whether their acrylics are solvent or water based.

Radiation cured acrylics are coated as a liquid pre-polymer. This liquid is 100% polymer so requires no drying, but it does require curing (cross-linking) to become solid. These adhesives are closer in performance to solvent acrylics but the technology is not as flexible or controllable. Despite being around for 30 years or so, these adhesives have only a small presence in the tape market.

**So HSA is a solvent based cross-linked pure acrylic adhesive. The best possible adhesive for the applications that demand it.**

**Discuss your own application or request a sample on 01628 642800 or email us here**