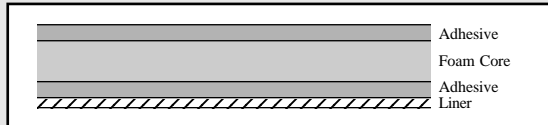


Double Faced Foam Tapes - Explained

First, we have to understand what double faced foam tape is made of. Double faced tape consists of a foam core surrounded by layers of adhesive. To prevent the adhesive from sticking to itself on the roll, a liner is added. This structure is shown in fig.1. The type of adhesive and the type of foam each play very important roles in affecting the strength, cost, ease of use and length of life of the tape.



(figure 1) Cross - section of double faced tape.

WHY FOAM TAPE ?

The foam allows slightly uneven surfaces to be taped together. For the adhesive to do its job it must come in contact with all pieces it is attaching. The foam compensates for any unevenness. Look at an overlay installation. The overlay covers 2 adjacent panels of mirror which may not be in line. The foam allows you to fill in small gaps to correct for this.

WHY BLACK OR WHITE ?

Normally, they should work equally well. Your choice here is between cost and appearance. White tape is less expensive BUT if you're doing something where the tape is visible, like the overlay installation we mentioned, the black tape is more subdued and less eye catching.

FOAM CORES

Let's first look at the foam. Theoretically, any spongy material can be made into a double faced tape, but there are four basic types of foam cores in use today.

POLYETHELENE

This type of material can be made in very light weight densities (4-6 lbs per cubic foot) and is used to make the least expensive type of house brand tapes. Most polyethelene used for tape are "closed cell" type of foams, meaning they won't absorb anything from the environment. They'll also come back to their original shape after being compressed. They are very elastic (stretchy) and should be cut with scissors, although some people still tear off strips. They are available in either black (actually dark grey) or white. The adhesives applied to this type of tape may delaminate in time. Make sure you get the manufacturing date of these tapes. The older the tape gets, the more likely it will be to delaminate.

POLYURETHANE

Medium densities (8-16 lbs per cubic foot) are typically used for making this type of foam. The foams are generally made "open cell" (like a household sponge) and can readily be torn by hand on the job. This feature puts it high on the list of mirror mechanics preferences, but be aware of some of the drawbacks. The white version of this tape yellows with time. Both colors will tend to get brittle & crumbly over time and should not be used in applications which have to remain flexible. You may have seen this effect if you have ever removed an overlay which has been up for a few years. This yellowing and embrittlement is accelerated when the foam is exposed to sunlight. But if this is the tape you're using, don't despair. It's been used in the mirror industry for over twenty years without a hitch and, we're happy to say, has always worked.

VINYL

This type of foam is a big step above the first two. It is similar in density to polyurethanes but has a "closed cell" type of foam and should be cut with a scissor. It is available in black or white and does not suffer from the aging problems that affect polyurethanes. These types of foam are generally used as a gasketing material, not for mounting.

ACRYLIC

This is the newest of the foamed materials and here we're talking serious strong. It has relatively high densities (12-22 lbs per cubic foot). This is another "closed cell" type that has the unique characteristic of being extraordinarily strong and elastic. It will come back to its original form after a strong pull. Acrylics are not affected by sunlight or time. This will give these tapes almost unlimited shelf life. This foam is currently available in white only and is manufactured by 3M under the name VHB (3M's abbreviation for Very High Bond - we call it "Very High Bucks" - guess why?). We can tell you from first hand experience this is the strongest tape we've ever come across. Acrylic foams are directly compatible with acrylic adhesives (explained later) and are therefore the best foam tape system available.

ADHESIVES

There are two basic types of adhesive systems which can be applied to either side of the foam. Again they're listed in order of cost.

RUBBERBASED

These adhesives generally have a very high initial tack meaning they are VERY sticky to the touch and stick very fast. But strength does not increase in time. In fact, it may sometimes deteriorate over time, especially when exposed to sunlight or heat. You have probably seen pieces which seem to have "slid," such as felt pads. It's likely they were held on with rubber based adhesives.

ACRYLICBASED

This synthetic adhesive family is more expensive than rubber. It generally does not have as high an initial tack as rubber adhesives but it's strength does increase with time. Different formulations can be made to work best for different conditions such as sunlight, weatherability, heat or permanence. These formulations can be altered for the particular foam and material to be stuck together.

LINERS

Liners don't do much except prevent the adhesive from sticking to itself when on the roll. They also allow you to apply the tape to one surface and press it in place without touching the tape surface. Liners are available as silicone coated release paper which tears easily or polyethylene (Plastic) which must be cut with a scissor.

WHAT IS SHELF LIFE ?

Time, heat and moisture are the worst enemies of foam tapes. Generally, foam tapes should not be used after one year or they might have dried out. Storage in a hot warehouse or shop will further shorten tape life. If possible store your tape in an area that is cool. If you have an air conditioned office with an unused corner or shelf, use it for your double faced tapes. We store our tape in a special room where the temperature is electronically controlled.

CLEAN AND DRY ?

You have probably heard this a thousand times, now it's a thousand and one. If you want tape to work properly, then the surface MUST be clean and dry. Very slight amounts of oil will greatly reduce the holding power of the tape. We can't emphasize this enough. Slight amounts of oily residue still remain (such as kerosene or mineral spirits used for cutting) even after wiping with ordinary glass cleaners. The area to be taped must be cleaned with a rapidly evaporating solvent such as alcohol or hexane. If it's not, you won't be sure of the bond. Care should be taken not to touch the surface of the tape with your fingers. There is always slight amounts of oil on your fingers. And by all means, don't touch the surface of the tape to see if it's still sticky. If you do, throw away the tape you just "tested."

WHY NON-POROUS SURFACES ?

A porous surface (like drywall) can absorb things like oils, which we know isn't healthy for your holding power. Porous surfaces can also absorb the solvents in the adhesives of the tape. This might cause the same problem as oil. If the surface can be cleaned (as we've already described) and won't absorb the cleaner, then tape will generally work. Non-porous surfaces such as glass, tile, mica, and marble work well with double faced tapes, and so will gloss painted drywall.

WHY THE DIFFERENT TYPES OF TAPES ?

You wouldn't want to spend more money than you need to for a particular application. Tapes can get pretty expensive if not used prudently.

HOUSEBRANDS

These can be used when the tape does not have to be permanent and some other adhesive is used for ultimate holding. The tape merely holds the pieces in place until the other adhesive sets up. An example is an overlay strip permanently held in place by small dabs of silicone which has been held in place by small strips of foam tape. The tape only has to hold the piece in place for 24 hours until the silicone or Ultra Bond sets up.

SCOTCH MOUNT®

Use this when a more permanent adhesion is desired and no other adhesive is used. The pieces to be attached should not be flexible. Again using the overlay as an example, full strips of tape are applied to each of the long edges of the overlay with no additional adhesives. A/C Grills and other light objects can be permanently attached to mirror using this tape.

VHB™

Due to its very high cost, this type of tape should be used sparingly. It's tremendous holding powers allow tape to be used instead of screws in some cases. When extraordinarily strong fastening is required, such as installing door bells or light shelves onto mirror, then VHB™ might be your answer.

YOU DECIDE?

Well there you have it. "Everything you ever wanted to know about double faced tape but were afraid to ask." Now, the ultimate decision is yours. So whichever brand you choose, it will now be an educated choice.

Silicon Carbide Abrasives - Explained



What is a coated abrasive?

It consists of a single layer of abrasive grain on a flexible backing. An adhesive layer is deposited on the backing. Before the glue has a chance to set, the grain is electrostatically drawn upward and implanted in the adhesive. This orients the grain so the elongated particles are perpendicular to the backing. Then a second adhesive layer is deposited over the grain to lock it in place.

With the ability to adhere abrasive grain to paper backing, coated abrasives for simple hand sanding were developed. The first mechanized use of coated abrasives was probably achieved by adhering pieces of abrasive paper onto rotating drums. Drum sanding is still popular today in the woodworking industry. It was not long before portable and stationary floor and bench sanders employing abrasive discs and belts became popular.

Slitting coated abrasives into specific lengths, splicing the ends together forming an endless belt gave us a tool we could run under power over two or more pulleys to provide quick stock removal and quality finishes. Coated abrasive belts are made today in widths as narrow as 1/4" and as wide as 75" and wider. For example, narrow belts are popular in the metalworking industry and very wide belts are very popular in the particle board and woodworking industries.

Why silicon carbide?

Silicon carbide was developed in an effort to produce a man made diamond. The effort was anything but a failure, and we now enjoy one of the sharpest cutting grains in use today. The bondings have greatly improved. Phenolic resins along with modifications now anchor the grain securely to the backing. Application of the grain to the backing by electrostatic coating methods affixes the grain with the sharp edges protruding. This gives the sharpness and durability to perform glass sanding operations.

Improvement in the cloth backing has assured a real tool for glass work. Cotton, "X" weight backing, when properly finished, provides excellent dry sanding belts for the tempering and other glass industries. The ability to properly treat the cotton has produced excellent abrasive belts for wet sanding, and the introduction of polyester backing has added further waterproof backings.

Most abrasive belts made for the industry are confined to 3" or 4" widths and are used on stationary or portable sanders. Unfortunately the portable belt sander manufacturers have not standardized on specific belt lengths; so we find our-

selves with a dozen or so different sizes. 3"x 24" and 3"x 21" are just two examples of the more popular sizes. Since these standards have been developed for dry sanding, they should be used in that manner. While a waterproof belt can be run wet or dry, a phenolic resin bond "X" wt. cloth dry sanding belt (our Powerkut belt) will abrade as well as and better than a waterproof cloth belt on dry sanding operations and at a lower initial cost.

Portable belt sanders employ a steel platen. The platen holds and contacts the belt splice on each rotation of the belt. Since portable belts are quite short, there is very little cooling time for the splice before it once again meets the platen. Besides subjecting the splice to heat, the platen also supplies a hard steel surface. A strong splice that is too thick provides a bump on each rotation, so the splice must be made thinner without sacrificing strength. Since the splice is the weakest part of the belt, it must be made stronger than ever before since the coated abrasive manufacturers are producing abrasive cloth that lasts longer.

There are a number of different splices. In addition to the variations in the splice angle, there are variations in the type of lap at the splice. Overlap splices are very popular and have been for decades. This type of splice is available in two types, "skived" or "unskived". The unskived splice retains a full coat of mineral on the top of the lap. Of the two, the skived splice is preferred on platen applications. Overlap splices should be run in one direction only in accordance with the directional arrow stamped on the back of the belt. Butt splices have the two ends of the belt cut at an angle, butted together and anchored with a piece of cloth or plastic film material pressed onto the backside of the belt. These belts can be run in either direction. Some operators felt they get added service from the belts by running them in the opposite direction after they are partially used. Butt splices must have a smooth joint with high tensile strength and proper flexibility for the intended use. Splices are factory made by the coated abrasive manufacturers. All our portable belts have factory made butt splices.