VELCRO® Brand Adhesive Guide

Recommendations for Difficult Surfaces

Here are some additional recommendations to improve the surface area of difficult substrates for better adhesion:

Porous Substrate

This type of surface is one that requires a primer or sealer to provide a suitable bonding area. Allow the treated surface to dry completely before applying your VELCRO® Brand adhesive backed tape. Better adhesion may be obtained when used with a liquid adhesive.

Non-porous Substrate

This would be suitable for a solvent activated VELCRO® Brand pre-coat (40). Better adhesion may be obtained when used with a liquid adhesive.

Smooth Surfaces

Improved bonding can be achieved by roughing up a smooth surface.

Weak Substrate

Paper is a good example of a weak substrate. If the surface is weak, reinforcing the substrate with additional coverage of a liquid adhesive may improve performance.

Important Note–Adhesive Testing

Before using adhesives for production, user should test the adhesive to determine the suitability of the product for the intended use.

Recommended Adhesive for Certain Substrates

SURFACE ENERGY (High / Medium / Low)

SUBSTRATE	ADHESIVE	ADDITIONAL INFORMATION
ALUMINUM	13, 15, 19, 72, 75	Depending on Operating Environment
STAINLESS STEEL	13, 15, 19, 72, 75	Depending on Operating Environment
COPPER	13, 15, 19, 72, 75	Depending on Operating Environment
GLASS	13, 15, 19, 72, 75	Depending on Operating Environment
NYLON	72, 75	
POLYESTER	72, 75	
POLYURETHANE	72, 75	
ABS	72, 75	
POLYCARBONATE	72, 75	
ACRYLIC	72, 75	
PVC	72, 75	
PET	72, 75	
POLYSTYRENE	13, 15, 19	
PVA	13, 15, 19	
EVA	13, 15, 19	
POLYETHYLENE	13, 15, 19	
POLYPROPYLENE	13, 15, 19	
PTFE	13, 15, 19	
PVDF	13, 15, 19	
SILICONE	13, 15, 19	

VELCRO® Brand Adhesive Guide

Step 1 in Choosing an Adhesive

The following five questions are important to answer prior to choosing an adhesive. Having this information available will assist you when going through this guide or talking to a FASTENation® representative so that you can choose the VELCRO® Brand adhesive that meets your needs:

- **What are the temperature conditions the adhesive will be exposed to?** Water-based acrylic adhesives perform better on high temperature applications.
- **How will the adhesive be applied?** Rubber-based adhesives provide quicker set-up times.
- **What type of substrate will the adhesive be adhering to?** See matrix: "Recommended Adhesives for Various Substrates"
- **What texture is my surface?** Rubber-based adhesives are better on uneven or rough surfaces.
- **What VELCRO® Brand material is the adhesive going to be on?** Currently, our rubber-based adhesives are available on most of our products. Water based acrylic adhesives are currently available on some of our knit and HTH products.

Types of Adhesive Systems

Woven VELCRO® Brand tapes have a binder coat, which firmly locks hooks & loops in the ground weave and helps prevent fraying of the tapes when cut. Due to this coating, many commercially available adhesives will not readily adhere to the back of this tape. Therefore, the use of a VELCRO® Brand pre-coated adhesive backing is recommended.

Pressure Sensitive Pre-Coats

Pressure sensitive pre-coats are popular because of the ease of application. Simply remove the release liner and press the VELCRO® Brand tape in place. However, pressure sensitive pre-coats can creep under constant stress or deadload. A general rule of thumb is the greater the tack, the faster the creep; the lower the tack, the better the load-bearing characteristics. Pressure sensitive pre-coats should always be considered semi-permanent bonds.

VELCRO® Brand pressure sensitive adhesives have been engineered to offer specific performance characteristics to meet different requirements. See page 69 for recommended adhesives for various substrates.

VELCRO® Brand molded hook tapes and some of our Soft Hardware® Brand extruded/molded fasteners are also available with a pressure sensitive foam backing, one side of which has been applied to the back of the VELCRO® Brand molded tape, the other side of which serves as a pressure sensitive backing.

Solvent or Heat Activated Adhesive Pre-Coats

Factory applied pre-coated adhesive backings, available on most VELCRO® Brand hook & loop tapes, provide the strongest adhesive bond to the tape itself and can be made ready for instant bonding by many easy methods of application (e.g., solvent, heat, ultrasonic, dielectric, etc.). They can also be used as a tie coat for a liquid adhesive.

General Recommendations for Best Results

Preparation of VELCRO® Brand Tapes - Pointed corners on VELCRO® Brand hook or loop tape may prevent a good bond. Nipping or rounding each corner of the VELCRO® Brand tape may eliminate this vulnerable area. FASTENation® provides a complete range of converting services.

Surface Preparation - It is important that all surfaces be thoroughly cleaned before applying VELCRO® Brand adhesive-backed tape. All cleaning agents should be tested prior to using to be sure that the cleaning agent will not have adverse effects on the substrate or adhesive. (Citrus cleaners are not recommended.) In some circumstances, isopropyl alcohol (rubbing alcohol) may be a sufficient cleaning agent.

Your Plant Conditions - It is important to work in an area that is clean and free from dirt and dust in the air. The adhesive should be applied at room temperature, with the ideal room temperatures being 65˚F to 75˚F, and relative humidity 40% to 65%. (The lower the humidity, the better the bond.) Excessive cold, heat, dirt, and relative humidity will be detrimental to your adhesive performance. If adhesive must be applied at temperatures lower than 65˚F, warm the substrate and the tape to elevate temperature prior to applying. This may help the adhesive cure. (Note: For VELCRO® Brand 72 adhesive, allow full curing time before loading or cycling.)

It is also essential to have a well ventilated area to remove fumes and odors for the safety and comfort of your employees and as required by your local and OSHA standards.

Limitations - VELCRO® Brand adhesives are not recommended for submersion in water or on plastics with high concentrations of plasticizers. Adhesives are not washable or dry cleanable.

VELCRO® Brand Adhesive Guide

Rubber-based Adhesives

Rubber-based pressure sensitive adhesives contain tactifiers that are heated and applied to the surface of the tape. Typically rubber-based adhesives have a good initial tack and quick set-up times. These types of adhesives have a light straw color and may show through on white or light shades of tape.

VELCRO® Brand 19

A rubber-based pressure sensitive adhesive formulated especially for low energy plastics, substrates such as polyethylene and polypropylenes.

- High tack - quick setting
- Achieves 80% bond strength in about an hour; full strength in 24 hours
- Temperature operating range -30˚F to 110˚F
- Short-term heat resistance up to 185˚F

VELCRO® Brand 13

A rubber-based pressure sensitive adhesive with a higher temperature range designed for moist conditions.

- Aggressive – high tack – quick setting
- Achieves 80% bond strength in about an hour; full strength in 24 hours
- Recommended for rough surfaces and moist conditions
- Temperature range -30˚F to 110˚F
- Short-term heat resistance up to 185˚F

VELCRO® Brand 15/32

A rubber-based pressure sensitive adhesive with a medium temperature range that performs well on many substrates, especially uneven or rough surfaces.

- Aggressive - high tack - quick setting
- Achieves 80% bond strength in about an hour; full strength in 24 hours
- Recommended for most room temperature applications
- Temperature operating range -30˚F to 110˚F
- Short-term heat resistance up to 185˚F

See chart on page 1 for the best adhesive recommendations for various substrates.

Water-based Acrylic Adhesives

Water-based acrylic pressure sensitive adhesives contain adhesive polymer that is suspended in water prior to being cured in an oven. Once cured, these types of adhesives tend to withstand moisture and heat elements better than rubber based pressure sensitive adhesives and are more resistant to breaking down over time.

VELCRO® Brand 72

A water-based acrylic pressure sensitive adhesive for high temperature performance and superior bond strength for uses in automotive, computer, medical, and other markets.

- Moderate tack - medium set up
- High temperature use
- High strength
- Full bond strength in 24 hours
- Temperature operating range -30˚F to 140˚F
- Short-term heat resistance up to 225˚F

VELCRO® Brand 75

A water-based acrylic pressure sensitive adhesive especially formulated for vinyl substrates.

- Moderate tack - medium set up
- Full bond strength in 24 hours
- Temperature operating range -30˚F to 140˚F
- Short-term heat resistance up to 225˚F

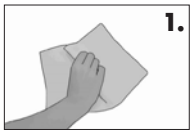
See chart on page 1 for the best adhesive recommendations for various substrates.

Application Guidelines for Pressure Sensitive Adhesives

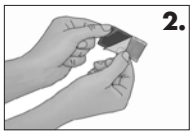
Surface Preparation

When applying your pressure sensitive (adhesive) fastener, it is extremely important to thoroughly clean and dry your application surface. Prior to use, test your cleaning agent on a sample and attempt to apply it to be sure it does not adversely affect the bond. For best results, adhesive should be applied at a room temperature of 68°F or higher. If adhesive must be applied at a temperature below 68°F, warm the tape and surface prior to applying to ensure optimal bonding.

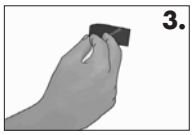
Note: Pointed corners may be detrimental to a good bond. Nipping or rounding each corner will help eliminate this vulnerable area.



1. Using a cloth and rubbing alcohol, thoroughly clean & dry surface prior to application. Avoid any cleaner that may leave a film or oily residue on the surface.



2. Peel release liner from back of tape being careful not to touch the adhesive with your fingers.



3. Apply tape to surface with firm pressure and allow time for it to fully bond (see our adhesive guide for recommended bonding time based on your adhesive type).

VELCRO® Brand Adhesive Guide

Heat Activated Pre-Coat (43)

A non-tacky adhesive pre-coat applied to the back of VELCRO® Brand tapes. This product is activated by the use of ultrasonics and dielectrics (RF) machinery or other common heat-generating equipment. This adhesive will bond to a wide range of fabrics and plastics and has excellent water resistance. Ultimate bond strength is achieved in 24 hours. The service temperature of this adhesive is -40˚ to 160˚F.

Bonding Methods

1. ULTRASONIC WELDING–Pre-coated tape should be positioned on top of substrate. A perimeter weld at least 1/8" wide should be used to prevent peel delamination. Machine settings including pressure, weld, and dwell (hold time) should be varied according to weld patterns, materials utilized, and bond strength desired.

2. DIELECTRIC WELDING (RF)–Pre-coated tape should be positioned on top of substrate (commonly vinyl). A perimeter weld at least 1/8" wide should be used to prevent peel delamination. Machine settings including energy level, pre-seal, seal, and cool times may vary according to weld patterns and materials being used.

3. IRON–Substrate (commonly fabric) should be positioned on top of pre-coated tape. Pass iron over substrate several times at incremental heat settings until adhesive softens onto substrate. Do not allow adhesive to contact hot iron surface. Allow to cool before hand peel testing.

Recommended Application Method

Application Method	Solvent Activated Pre-Coat (40)	Heat Activated Pre-Coat (43)
MEK (Methyl Ethyl Ketone)	X	
RF Weld/Dielectrics	X	X
Heat		X

Solvent Activated Pre-Coat (40)

A non-tacky adhesive pre-coat applied to the back of VELCRO® Brand tapes. This product is recommended for applications where a more permanent bond is desired. This adhesive system is activated by MEK, acetone, or MCL. This system can also be used with liquid adhesive or ultrasonically welded when porous substrates exist. Ultimate bond strength is achieved in 24 hours. The service temperature of this adhesive is -40˚ to 250˚F.

Bonding Methods

If substrate is a non-porous smooth surface, apply the recommended solvent activator freely to the back of the pre-coated VELCRO® Brand tape with a brush or sponge applicator and allow the adhesive to become tacky. (Proper tackiness occurs when the adhesive clings to a finger placed on it.) When tacky, position the tape on a cleaned substrate using finger pressure to smooth tape. (This is most important on edges and corners.) Follow a few minutes later with additional hand pressure to ensure a complete bond. Let dry overnight or speed up drying with a 140˚F heat source.

Please be sure to use appropriate safety precautions when using a solvent activator (i.e. proper ventilation, gloves, etc.).

Important Notice to Purchaser

User shall determine the suitability of the product for their intended use and user assumes all risks and liability whatsoever in connection therewith. All statements, technical advice, and recommendations contained herein are based on tests believed to be reliable, but the accuracy there of is not guaranteed and the following is made in lieu of all warranties, express or implied: seller's and manufacturer's only obligation shall be to replace the quantity of product proven to be defective. Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct or consequential, arising out of the use of or the inability to use the product. No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by officers of seller and manufacturer.