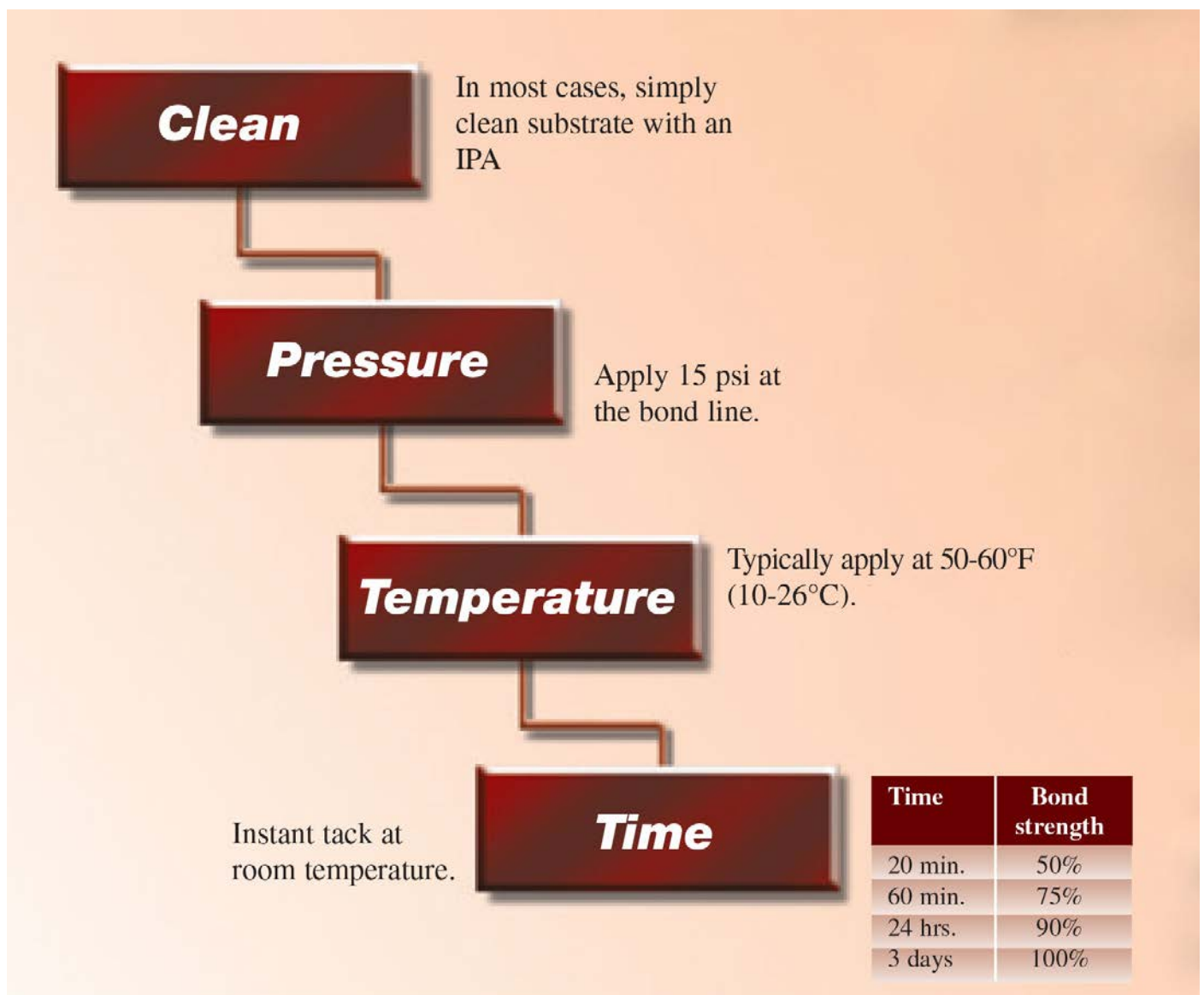


## Application Techniques

### *Installation Procedures for Bumpeez™ 3M Adhered Tactile Range & TASS R11 Anti-slip Resin Discs*

For the best results from your Bumpeez™ Tactile range, the surfaces should be clean and dry, and provide adequate pressure for ensuring a permanent bond with the substrates. Also, ensure the application temperature is sufficient to build adhesion. Bumpeez™ will build adhesion with time. Adhesion promoters can be used to increase adhesion or improve durability on select materials if required.



## Clean

Before applying your Bumpeez™ Tactile range ensure the substrates are cleaned with isopropyl alcohol (IPA)\*. Exceptions to the general procedure, which may require additional surface preparation include:

- **Heavy Oils**  
A degreaser or solvent-based cleaner is required to remove heavy oil or grease from the surface. Note here that this process should begin only after cleaning with IPA.
- **Abrasion**  
This process should begin only after cleaning the surface with the IPA mixture – abrading a surface can remove heavy dirt or oxidation and increases surface area to improve adhesion.
- **Adhesion Promoters**  
To enhance adhesion properties ensure the surface is primed. It also provides excellent adhesion to many materials like plastics and paints.
- **Porous surfaces**  
Most porous and fibered materials such as wood, particleboard, concrete, etc. should be sealed to provide a unified surface
- **Unique Materials**  
Special surface preparation is required for glass and glass-like materials, copper and copper containing metals and plastics or rubber that contain components that migrate (e.g. plasticizers).

## Pressure

Strong adhesion is developed on the amount of adhesive-to-surface contact developed. Firm application pressure develops better adhesive contact and enhances adhesion. Typically, a good surface contact can be attained by applying enough pressure by ensuring that the adhesive experiences 15 psi (100 kPa) pressure (approx.). Note that the rigid surfaces may require 2 or 3 times more pressure to make the tape experience 15 psi.

## Temperature

The ideal temperature for application is between 70°F to 100°F (21°C to 38°C). Pressure sensitive adhesives use a viscous flow to achieve substrate contact area. However, minimum suggested application temperatures for your Bumpeez™ range is 50°F (10°C). External substrates can be warmed by various heating methods such as heat guns, heats mats etc

Note – whilst the initial product application to surfaces that are below the suggested minimum temperature is not advised, if the tape is applied properly, the low temperature bonding is generally satisfactory. To obtain the best performance with all the Bumpeez™ range, ensure that the surfaces are dry and free of condensed moisture.

## Time

After application, the bond strength increases, as the adhesive flows onto the surface. At room temperature, the adhesion becomes stronger - 50% (approx.) after 20 minutes, 90% after 24 hours and 100% after 72 hours.

- This flow is faster at higher temperatures and slower at lower temperatures.
- The best adhesion strength can be achieved more quickly (and in some cases bond strength can be increased) by exposing the bond to elevated temperatures (e.g. 150°F (66°C) for 1 hour). This provides better adhesive wet out onto the substrates.
- Abrasion of the surfaces or the use of primers/adhesion promoters also increases bond strength and attains a strong adhesion more quickly.

## Adhesion Promoters

Whilst adhesion promoters or primers are not essential they can be used in conjunction with your Bumpez™ range to:

- Increase adhesion to otherwise difficult to bond surfaces
- Develop a faster, stronger bond
- Seal non-unified surfaces such as wood or concrete
- Increase bond durability and stability to substrates such as glass and copper
- Provide a barrier from migrating materials such as those found in rubber or plasticized vinyl

The table below offers suggested primers and alternative methods that commonly require primers, adhesion promoters or other surface treatments for successful use with the Bumpeez range. This list is not intended to be fully comprehensive but may be useful for many applications.

Surface	Concern	Suggested Primer	Alternatives
Steel or Aluminum	Surface must be clean	None suggested	Abrasion may clean surface, 3M™ Adhesion Promoter 111 for increased adhesion.
Copper, Brass, Bronze	Oxidation after bonding	Lacquer or varnish <sup>(b)</sup>	Architectural grade coatings
Concrete, Brick	Non-unified or rough surface, moisture	3M™ Rubber and Vinyl Spray 80	Concrete sealer, paint
Glass, Stone, Ceramic Tile	High humidity, moisture	3M™ Silane Glass Treatment AP 115 or similar silane coupling agent in IPA/water mixture <sup>(b)</sup>	3M™ Primer 94
Wood (soft, hard particle board, etc.)	Weak fiber layer on surface (e.g., low surface strength)	3M™ Rubber and Vinyl Spray 80, 3M™ Fastbond™ 30 Contact Adhesive	Urethane paint, varnish
Plastics: Polyolefin Non-olefin	Low adhesion Additives, low adhesion	3M™ Primer 94 (additional surface preparation may be required) 3M™ Primer 94, 3M™ Scotch-Grip™ Plastic Adhesive 2262 <sup>(a)</sup>	Flame treatment, Corona treatment Abrade or 3M™ VHB™ Tapes 4932/4952/5925/5952/5962
Polyurethane (Molded or Rubber)	Mold release, low adhesion	3M™ Adhesion Promoter N-200J, 3M™ Scotch-Grip™ Plastic Adhesive 1099	Abrade and prime
Rubber: Neoprene, Santoprene EPDM	Migrating oils Low adhesion	3M™ Primer 94, 3M™ Scotch-Grip™ Plastic Adhesive 1099 3M™ Primer 94	3M™ Weather Strip Tapes 3M™ Weather Strip Tapes
Paints	Low adhesion	3M™ Adhesion Promoter 111	Abrade or 3M™ VHB™ Tapes 4932/4952/5925/5952/5962, or 3M™ Primer 94, 3M™ Scotch-Grip™ Plastic Adhesive 2262 <sup>(a)</sup> , 3M™ Adhesion Promoter N-200J
Coil Coated Aluminum	Low adhesion	3M™ Adhesion Promoter 111	Abrade or 3M™ VHB™ Tapes 4932/4952/5925/5952/5962, or 3M™ Primer 94, 3M™ Scotch-Grip™ Plastic Adhesive 2262 <sup>(a)</sup> , 3M™ Adhesion Promoter N-200J
Flexible PVC (Vinyl)	Plasticizer migration	3M™ Scotch-Grip Plastic Adhesive 2262 <sup>(a)</sup> , 3M™ Rubber and Vinyl Spray 80	3M™ VHB™ Tapes 4945 and 4941 (test for migration)

- Run an Evaluation

Because 3M cannot anticipate all of the different possible surfaces and contaminants that may exist, it is imperative that the user conduct an evaluation to determine the suitability of Bumpeez Tactile range, surface preparations procedures, and any other processes that may have an influence on the adhesive or the bonded parts. Likewise, where there are any changes in plastic or paint formulation, or suppliers of these materials, it is advisable to run evaluations to ensure that the change has not influenced the compatibility of the surface.

- Product Use

All statements, technical information and recommendations contained in this document are based upon tests or experience that 3M believes are reliable. However, many factors beyond 3M's control can affect the use and performance of a 3M product in a particular application, including the conditions under which the product is used and the time and environmental conditions in which the product is expected to perform. Since these factors are uniquely within the user's knowledge and control, it is essential that the user evaluate the product to determine whether it is fit for a particular purpose and suitable for the user's method of application.