Question Checklist for Tape Applications

Tape is tape, right? You stick it down and voila, success! If only it were that easy. The truth is that selecting the best tape for an application involves asking good questions; not only of the supplier but of yourself and your company. It involves learning and research. Put all that together and you dramatically increase your chances for success. It is not merely a matter of selecting a brand of tape despite all the good brands out there!

1 WHAT IS THE END USE OF THE PRODUCT?

More specifically, what are you trying to accomplish? Are you simply bonding one thing to another? Trying to save time? Trying to achieve light-weighting or cost reduction goals? The clearer you can be about what you want to achieve, the higher the probability that you will succeed.

Here's an example of a well thought out objective:

"We want to bond our gasket in place using a tape applied on one side of the gasket. We need to the tape to bond to unpainted metallic surfaces that will likely contain oils from upstream fabrication operations. The tape will affix the gasket in place until it is put under compression."

2 WHAT ENVIRONMENTAL CONDITIONS AND CHEMICALS WILL THE TAPE ENCOUNTER?

Is the tape used indoors, outdoors, or both? Will it be exposed to UV light, elevated temperatures, low temperatures, or high humidity? Will the tape encounter cleaning chemicals, rain, snow, soldering operations, sand blasting, and anything else you can name?

Get this part right and you're well on your way to success, ignore it and failure is lurking around the corner.

3 HOW WILL THE TAPE BE APPLIED?

Many tapes are applied by hand and that is perfectly fine. In fact, in some cases it's the best option. But what if you're trying to reduce cycle time during an assembly operation? You might need to investigate application equipment or consider having the tape delivered as a die cut part instead of a roll. Good tape suppliers can help you figure this out and can make recommendations from simple hand applicators up to very sophisticated automated dispensing equipment.

4 WHAT SURFACES (SUBSTRATES) ARE TO BE BONDED?

This is the critical question. Tapes are not designed to work on very surface even though they may exhibit some degree of adhesion. In fact, the reason there are so many choices is because tape manufacturers have designed tapes to work on the increasing variety of plastics, metals (both bare and painted) as well as fabrics, wood, elastomers, and host of other materials.

Pressure-sensitive tapes work primarily via wet out which is the mechanical wetting or spreading of the adhesive into the microscopic contours of the surface. The useful analogy is a freshly waxed car. Water beads up and doesn't wet out on fresh wax but has no trouble wetting out on an un-waxed car. Similarly, some adhesives wet out some surfaces extremely well but struggle on others.

Many tape manufacturers have selection grids that list their tapes or adhesive systems on one axis and various substrates on the other. You can locate the surfaces you intend to bond and see which products are recommended. Your tape supplier can usually answer those questions too. It's what they do.

5 ARE THERE ANY PERFORMANCE SPECIFICATIONS OR QUALIFICATION TESTING REQUIREMENTS?

In some instances, engineers have determined necessary adhesion levels or required shear strength based on calculations. In the building and construction sector, forces such as wind loads must be calculated and tape width appropriately sized to meet the projected wind forces. In other cases, there can be outgassing tests, LEED certifications, and many other testing protocols that must be understood before the right tape candidates can be recommended.

6 ARE THERE ANY COMPATIBILITY CONCERNS?

This is somewhat similar to the second question about chemical contact. Sometimes tapes are expected to work alongside other adhesives or sealants. This is especially true in the fenestration and building envelope industries where silicones and other sealants will be applied directly onto or beside the tape itself. It is important make sure the adhesive on the tape does not react poorly with the sealant or the entire joint may be at risk.

7 WHAT SIZE OR FORMAT DO YOU REQUIRE?

Tape products can be supplied in rolls or as die cut parts. Sometimes tape width is strictly specified as when using tapes for glazing applications in buildings. The “bite width” (width of the taped joint) is critical to proper performance. Too narrow and you risk failure. Too much and you’re wasting money.

Thickness can also be a critical parameter. Some surfaces are not very flat even if they appear to be. Tapes come in a variety of thicknesses to help compensate for lack of planarity and fill the gaps. In other cases, there might be height restrictions or complex curves that require very thin bond lines. This can usually be accommodated.

While rolls of tape are useful in many applications, in some instance it’s better if the tape is cut to a particular shape or geometry. This matches the tape precisely to the shape of the part or component, speeds application time, and reduces waste.

These questions are the most basic ones for selecting the best candidates for an application. Your convertor is well versed in the variety of products offered from many different suppliers and can help you to match your application to the right products.

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