

Depending on their material properties, textile fabrics can be stuck, welded, sewed or riveted. However, sticking has established itself as a joining method for many years now in many sectors as a result of the advantages it offers. For example, differing materials can be bonded, the joined parts are not subjected to high temperatures, and the stuck joints can be elastic and can dampen vibrations.

Self-adhesive felt parts can be classified as composite materials made of textile fabrics (felt and/or fleece materials) and adhesive tape systems. Felts are used to provide some of the functions (dampening, insulation, avoidance/reduction of noise, cushioning) of the component itself, taking advantage of the material properties of felt. Adhesive tape systems secure the positioning and support of the component in the relevant application situation.

Users have increasingly been focusing on the selection and use of a suitable adhesive tape system for many years now. The following issues should be taken into account:

Surface material of the adhesive surface

As regards the classification of surfaces into high-energy and low-energy surfaces, there are surfaces (e.g. silicone, Teflon, PP) that adhesives stick to either poorly or not at all. For plastics, the boundaries between these categories are fluid due to differing compositions and additives.

Adhesive tape systems have been developed in recent years for this purpose that stick on low-energy surfaces (or low-emission surfaces).

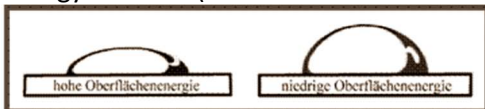
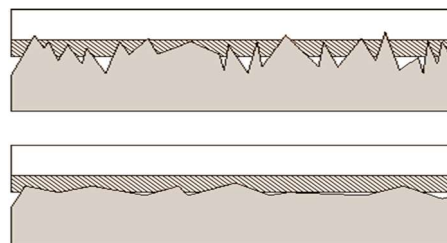


Diagram showing the principle of different surface energies

Surface finish

Grained surfaces (synthetic leather), surfaces with significant surface roughness or lots of recesses (grooves, pleats) often do not allow for full-surface (100%) adhesion of a self-adhesive component. However, full-surface adhesion is required for optimal loading. Recesses or smooth surfaces prevent the joint coming apart later.



The effects of differing surface roughness for the same thickness of the adhesive tape system

Climatic conditions for subsequent application situation

The temperature range is important in terms of the subsequent application situation. Normal application situations involve temperatures of between -40 °C and +120 °C.

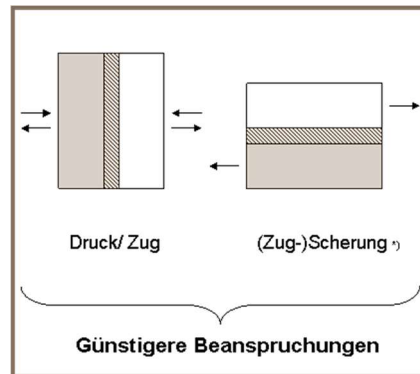
As soon as self-adhesive felt parts are used in humid or wet environmental conditions, the felts, fleece materials and adhesive tape systems too have to be suitable for the relevant application (water-repellent treatment of felts, use of solvent-based adhesives).

Types of loading

Felt, naturally good!

Tensile/compressive loads are uncritical loading states on flat surfaces. Internal stresses within the felt are to be taken into account in the case of curved surfaces. Excessive shear loading often leads to the stuck components “wandering” across a surface. Dynamic component vibrations are frequently the cause of this wandering movement.

For this reason, the adhesion surfaces should be designed to be large enough so that the adhesive forces are greater than the corresponding forms of loading. This often runs contrary to the cost-effectiveness consideration of designing components to be as small and inconspicuous as possible. As a rule of thumb: the thicker and stronger the felt is, the larger the component has to be.

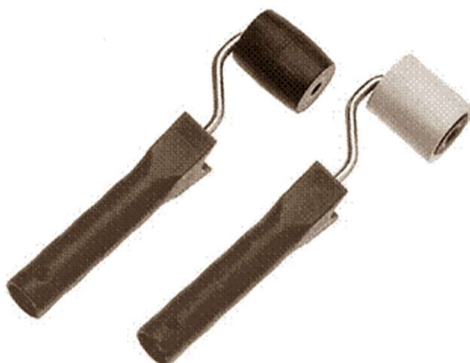


Types of loading (examples)

Sticking/mounting in series production

To achieve optimal adhesion, it is helpful to ensure firm pressing onto clean surfaces (removal of dust, grease, oil, separating agents, etc.). Auxiliary tools are explicitly allowed, even if the possibilities are often very limited. Self-adhesive components are generally stuck by hand.

Careful training of employees and a suitable indoor environment are therefore prerequisites for high-quality processing. All parts to be stuck should be at room temperature. As regards the storing of components in winter, give due consideration to the acclimatisation of components stored outdoors.



Standard commercially available wallpaper rollers as a tool for pressing joints

However, if there are any doubts, then the only option is to test various products under real conditions and to select and verify a suitable product in this way.

Our Technical Sales can provide a pre-selection for this purpose. In the course of discussions with our Technical Sales Service, experience and results obtained at your site can be considered and evaluated.

Please also read our Customer Information SE 003 – Self-adhesive felts | Handling instructions

Felt, naturally good!