

How does the joint design influence the bond strength? Ways forward.

When joining flexible parts with rigid parts, peel stresses are present at the joint, as the dissimilar materials react differently to the loads applied. How do you know how much stress will make your device fail? And how do you know if failure will happen at the bond line?

Target is to achieve a joint stress far above the requirements set by the related device standard. Ideally, in case of joint beaks, you want the substrate to fail long before the adhesive bond is broken.

As a stress is applied to a flexible-rigid joint, the deformation of the flexible part will create peak loads concentrated at the joint edges. Under load one of the three elements will fail: rigid substrate, flexible substrate or the joining material (i.e., adhesive). If you choose the proper adhesive, the substrate would be failing first.

With our products **LOCTITE® AA 3951™** and **LOCTITE® AA 3953™** a higher bond strength is achieved, and the substrate fails before the bond line.

A proper bond joint design will allow for increased strength before failure. Through the combination of optimum adhesive and bond joint-design, rigid and flexible parts can be efficiently and effectively assembled with the maximum load resistance capabilities.

Want to discuss your challenges further? Loctite experts collaborate with manufacturers regularly supporting their design efforts and evaluate potential solutions that best fit them.

