Joint Design

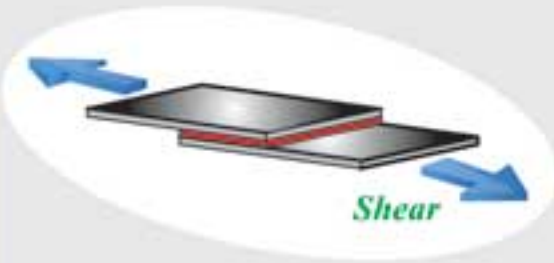
Stress & Strength
Most applications combine stresses.

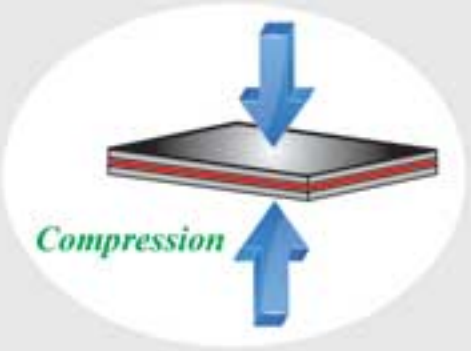
Tensile Stress
Tensile stress is exerted equally over the entire joint straight and away from the adhesive bond.

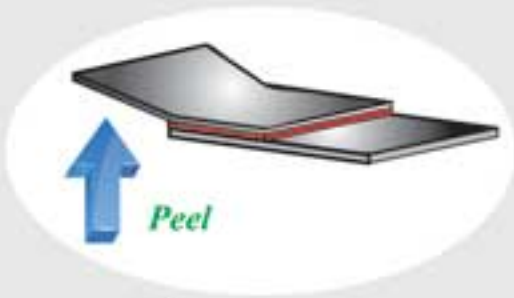
Shear Stress
Shear stress is across the adhesive bond. The bonded materials are being forced to slide over each other.

Cleavage Stress
Cleavage stress is concentrated at one edge and exerts a prying force on the end.

Peel Stress
Peel stressis concentrated along a thin line at the bond's edge. One surface is flexible.

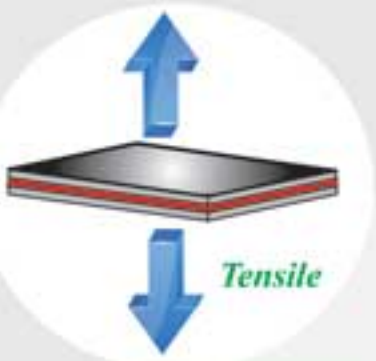


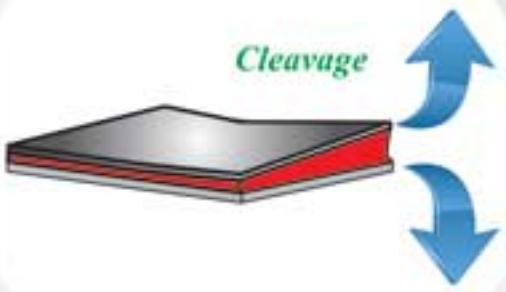




The 5 Steps to insure optimum bonding performance
With either film or liquid adhesive, there are 5 considerations to make and steps to be taken to insure adhesive performance consistent with your specification requirements.

1. Joint Design - Proper design can maximize adhesive performance
2. Surface Preparation - Amount of preparation should be consistent with your requirements.
3. Application Methods - Depends on adhesive type.
4. Heat Curing Equipment - Many methods available.
5. Pressure Equipment - Must provide uniform pressure over entire bonded area.





Joint Design
Generally, joint should be designed so that basic stress is shear or tensile with cleavage and peel minimized. All of the bonded area should equally share the load. The following structural joints and their advantages/ disadvantages illustrate some typical design alternatives. They are not, of course, the limit of possible adhesive bonded joints.

Lap Joints are most common. They are most practical and applicable in bonding thin materials.

The Simple Lap Joint

The Single Cover Plate Lap Joint

The Joggle Lap Joint

The Double Cover Plate Lap Joint

Angle Joints
Give rise to either peel or cleavage stress depending on the gauge of metal. Typical approaches to reduction of cleavage are illustrated.