

ADHESIVE FAILURE

Observation and analysis of the causes of adhesive failure can help avoid repetitive mistakes such as inadequate surface preparation or adhesive selection.

The first step is to identify where the adhesive has failed:

- Cohesive failure: both surfaces are covered with adhesive which has separated; probable cause: wrong type of adhesive
- Adhesive failure: the adhesive has been lifted from one of the surfaces; probable cause: improper surface preparation
- Structural failure: the failure has occurred in the bonded material itself; probable cause: material is unsuitable for intended use
- The design of the joint should also be considered. How are the forces leading to failure being applied?
- Was the joint opened jaw-like by pulling apart the surfaces perpendicularly from each other? Example: wallpaper peeling off in high humidity conditions
- Was the joint sheared in-plane? Example: furniture assemblies, thread locking adhesive or loosening ceramic tiles under floor/wall cracks propagation
- Was the joint sheared out of plane? Example: laminates or composites subjected to high stress or vibration

Environmental conditions should also be considered: the presence of light (especially UV light), of humidity, elevated service temperatures, and very cold conditions leading to brittleness.