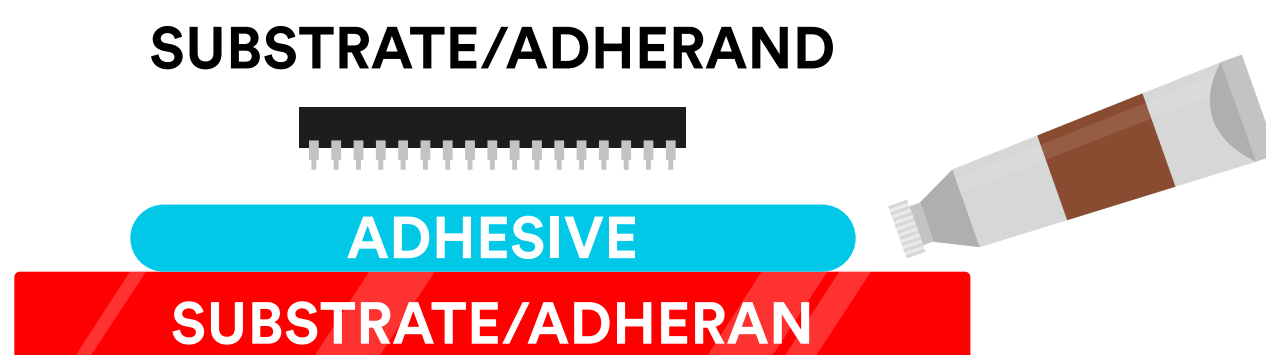
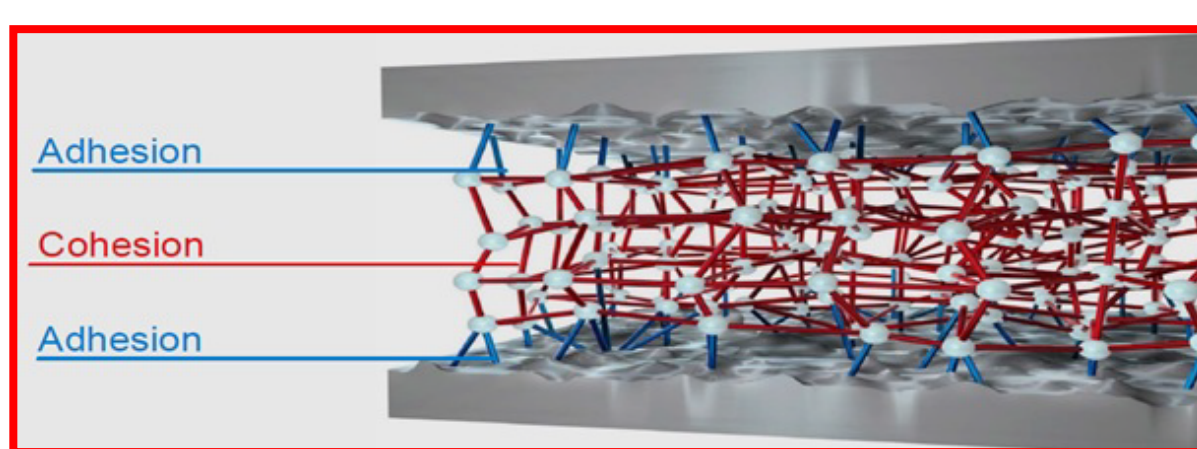


What is an adhesive?

An adhesive is a substance capable of holding materials together by surface attachment.



There are two key factors used to describe the performance of an adhesive



The adhesive must bond with each substrate (sticking to them) so they can be held together.

UNDERSTANDING CUSTOMER AND APPLICATION NEEDS

3M SEAL\$



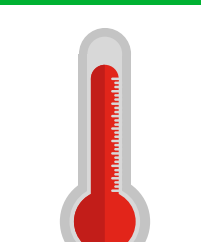
SUBSTRATES



What substrate are you bonding to?



ENVIRONMENT



Both bonding environment (factory/non- factory) but also what environment will the bond be subjected to (internal/external, high/low temperatures, chemicals,salt)?



APPLICATION



- a) What are you doing with your component?
- b) What application characteristics do you need in terms of speed of cure, open time and rheology from the adhesive?



LOAD



What are the stresses on the joint in type, magnitude and direction?

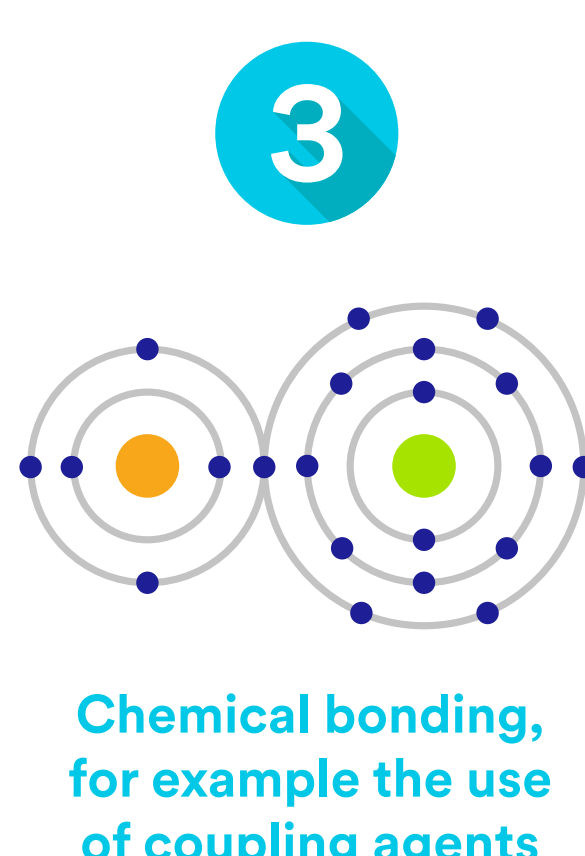
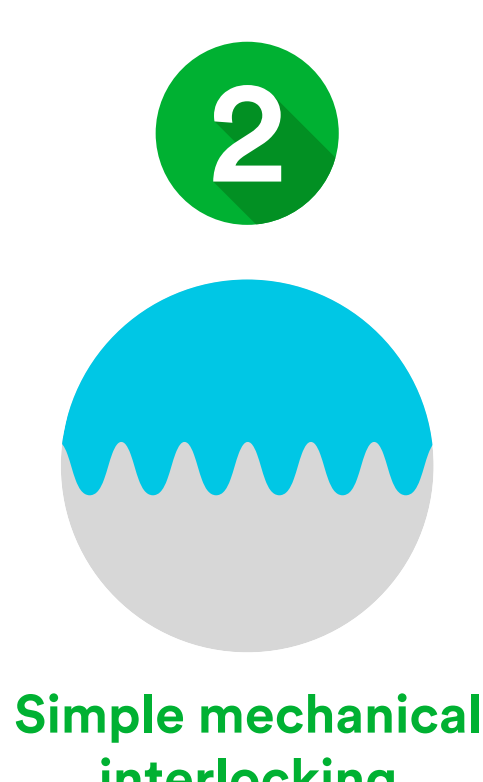
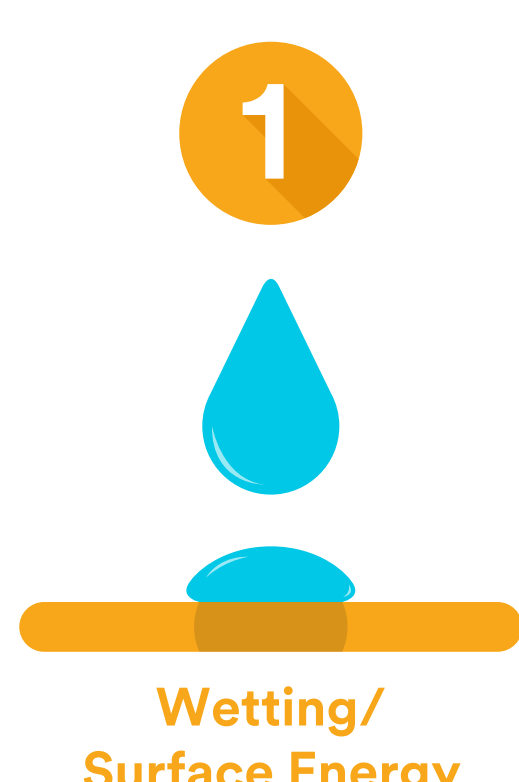


SIZE



How many units are you producing - per month, per quarter or per year?

There are a number of adhesion mechanisms and more than one can be at play



Dr Antonio Pagliuca says...



"A modern adhesive is a polymer based material that can be used to join a wide variety of different surfaces together without the need to create discontinuities in the substrate materials – i.e. – no need to create holes etc. Adhesives can create some of the strongest bonds and joints between two different substrates known to man – which can be stronger than welds and mechanical fixtures. Adhesives work by utilising the same molecular forces that hold materials together but they need to “wet out” the substrates first to create intimate and strong bonds. This ability to “wet out” and form the necessary close contact between adhesive and substrate is defined by surface free energy. Adhesion is developed by surface interactions which can be broadly defined as: Mechanical interlocking / Adsorption forces / Chemical bonds / Hydrogen bonding."

Senior Technical Specialist – Application Engineering – 3M
PhD: Joining Technology Research Centre, Oxford

Ask an expert by contacting us at
bondingsolutions.uk@mmm.com