# Adhesives

The main advantage of using an adhesive is that it is generally invisible and does not damage or change the materials being joined.

## Adhesive bonding

By definition, an **adhesive** is a non-metallic substance capable of joining materials by surface bonding (adhesion), and the bond possesses adequate internal strength (cohesion).

## Use

Adhesive bonding is the most universal joining technique: all materials can be joined by means of this surface-to-surface and material-joining technique. Adhesive bonding technology offers great flexibility and can easily be integrated into almost all available industrial sequences for mass production.

## Types of adhesives

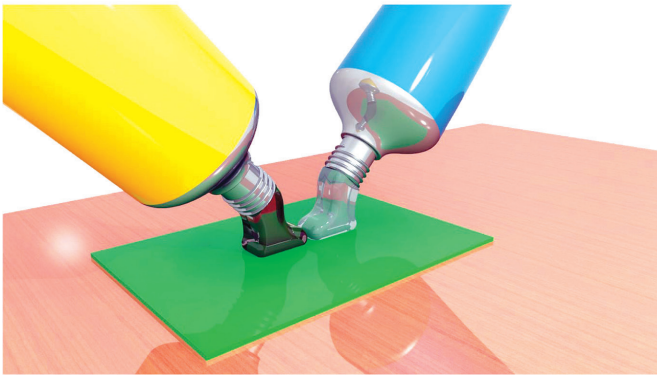
There are a large number of adhesive types for various applications. Here are some examples:

- **Wet adhesives** are only applied to one of the parts to be joined, which is then immediately glued to the second part. Adhesion occurs when the solvents have evaporated;
- **Contact adhesives** are applied to both surfaces. After the flash-off time, which varies depending on the solvent, the parts are pressed together and bond immediately;
- **Reactive adhesives** operate by means of chemical, physical processes or catalysis. Depending on their reactive behaviour, they can have one or two components:

*Hot melt glue*

  - *Single-component reactive adhesives* react with air humidity, UV light, or atmospheric oxygen;
  - *Two-component reactive adhesives* consist of two components, called binder and hardener, in liquid, paste or powder-form, which must be mixed in the correct proportions;
- **High-performance reactive adhesives** are fast, strong and versatile methods that are generally used when a high level of strength is required;
- **Hot-melt adhesives** are thermoplastics that are applied in a molten state;
- **Solvent cement** is a mixture of resin and solvents that is used to join PVC parts such as pipes and fittings. It dissolves the two adjacent surfaces and causes them to re-polymerise into a single piece of plastic, performing a chemical weld between the parts.

*2k Epoxy Adhesive*



**binder:** *legante*
**bonding:** *legame, adesione*
**fitting:** *giunzione, giunto*
**hardener:** *indurente*
**flash-off time:** *tempo di evaporazione del solvente*

## 1 Translate into English.

1. Vantaggio .....
2. Invisibile .....
3. Danneggiare .....
4. Superficie .....
5. Coesione .....
6. Forza .....
7. Incollare .....
8. Solvente .....
9. Fuso .....
10. Giunto .....

## 2 Decide if the sentences are true or false, then correct the false ones.

| | T | F |
|---|---|---|
| 1. Adhesive bonding does not change the joined materials. | ☐ | ☐ |
| 2. An adhesive is a metallic substance used to join the surfaces of the workpieces. | ☐ | ☐ |
| 3. Adhesive bonding is rarely employed in factories. | ☐ | ☐ |
| 4. Wet adhesives are only applied to one of the parts to be joined. | ☐ | ☐ |
| 5. The flash-off time of the solvent is always the same. | ☐ | ☐ |
| 6. Two-component reactive adhesives consist of components that are in liquid, paste or powder-form. | ☐ | ☐ |
| 7. Solvent cement is used to join PET parts. | ☐ | ☐ |
| 8. A chemical weld between the parts is performed with solvent cement. | ☐ | ☐ |

## 3 Fill in the gaps with the words given below.

attach • bond • durable • engine • industry • manufacturers • metal • plastic

### How Hot Melt Adhesive Is Used in Automotive and Truck Manufacturing

When automotive and truck **1.** ..... choose an adhesive to bond parts, they often opt for hot melt adhesives. Hot melt is widely used in the auto and truck manufacturing **2.** ..... and provides a strong, flexible **3.** ..... The body of a car may seem like one big piece of **4.** .....; however, the vehicle body is made up of several different panels. To **5.** ..... these panels, like the doors, the manufacturers use high-performance hot melt adhesives. Using this high-temperature hot melt, the panels are attached in a safe, flexible and **6.** ..... fashion, while also retaining the beauty and seamless curves of the vehicle. Hot melt adhesives are not limited to bonding **7.** ..... and low-temperature metals. The superior strength and extreme durability of these adhesives make them ideal for use in several areas of the **8.** ....., transmission, radiators and batteries.

Adapted from: *//www.hotmelt.com/blogs/blog/how-is-hot-melt-adhesive-used-in-automotive-and-truck-manufacturing*