

Curing Mechanism of Reactive Polyurethane Hot Melt Adhesive

Detail Introduction :

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PUR hot melt adhesive has excellent properties in many aspects, such as bonding strength, high-temperature resistance, low-temperature resistance, chemical corrosion resistance, and aging resistance. Next, the curing mechanism of PUR hot melt adhesive is mainly introduced.

We know that PUR hot-melt adhesive is a type of reactive polyurethane hot-melt adhesive, so reactive polyurethane hot-melt adhesive can be divided into moisture-curing polyurethane hot-melt adhesive and closed type polyurethane hot melt adhesive.

WE OFTEN SAY the PUR hot melt adhesive is the first, the moisture-curing reactive polyurethane hot-melt adhesive.

Moisture-curing polyurethane hot melt adhesive

Moisture-curable polyurethane hot-melt adhesive is made of terminal-NCO group prepolymer as basic material. It is made up of thermoplastic resin, tackifying resin, antioxidant, catalyst, filler and other additives that do not react with the isocyanate group.

When applying moisture-curing polyurethane hot melt adhesive, the adhesive is usually heated and melted into a fluid, which is coated on the surface of the substrate to adhere, and then the surfaces of the two adherents are bonded together, and the bonding can be formed after cooling.

So far, the adhesive has not been fully cured, only a preliminary bond has been formed between the two materials, and the bond strength is not high.

In the following time, the moisture-curable polyurethane hot-melt adhesive reacts with the NCO group and extends the chain by using the moisture in the air or the trace moisture in the substrate to adhere to other compounds containing active hydrogen to form a cross-linked network structure. In this way, a polyurethane with high cohesion is formed, which further enhances the adhesion.

Closed polyurethane hot melt adhesive

Of course, in addition to moisture-curing polyurethane hot-melt adhesives, there is also a closed-type polyurethane hot-melt adhesive in the polyurethane system.

The closed type polyurethane hot-melt adhesive is to block the end-NCO group in the polyurethane prepolymer with a blocking agent under certain conditions to form a closed type prepolymer. In fact,

NCO group is protected to make it inactive at room temperature, which increases the storage stability of the glue.

Sealed polyurethane hot melt adhesive sizing is that when heated to a certain temperature, the sealant will dissociate, and the active -NCO group will be exposed so that it can chemically react with active hydrogen-containing compounds such as polyols, amines, water, etc. And cross-linking. Commonly used blocking agents are oximes, phenols, alcohols, sodium bisulphite, pyrrolidone, etc.

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