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Cyanoacrylate Frosting – Blooming – Chlorosis

Whatever you call it, we all recognize it as the unattractive white stuff that can sometimes occur when using instant adhesives.

The residue is a byproduct of the cure process of the adhesive. Once the monomer is in vapor form, it will react with moisture in the air, cure, and settle on the surface around the bond area. The short answer to how to prevent blooming or frosting is “fast cure”, or, choose one of the specialty low blooming Cyanoacrylate (CA’s) formulations.

Cyanoacrylate cure is triggered by trace amounts of moisture on the substrate surfaces. Cure speeds decrease in low humidity conditions. Cure speeds are slower when bonding acidic substrates such as wood or paper, and increase the time needed to achieve handling strength and full cure.

The work area should be well ventilated for best results. Optimum results for curing CA’s start with using a minimal amount of adhesive. This helps to avoid “squeeze out” adhesive and minimizes or eliminates blooming. The end result is an aesthetically pleasing appearance and a strong bond.

Use an accelerator to increase the cure speed of the adhesive. Depending on the application, the accelerator may be applied to the substrate before the adhesive. In other situations, accelerator is applied to the mated surfaces, where it wicks into the joint to help speed the cure time.

Choose a low odor / low bloom product. These formulations have a lower vapor pressure and higher molecular weight to minimize blooming and reduce the characteristic odor associated with instant adhesives. Low odor/low bloom cyanoacrylates have a lower resistance to operating temperatures and may not be suitable for all applications.

The appearance of blooming is primarily an aesthetic consideration. But it is a particular concern when manufactured devices are packed immediately after assembly. This can cause volatiles to be trapped before they have a chance to polymerize and go on to cause blooming.

In summary, choosing the correct cyanoacrylate formula (with or without an accelerator) for the component substrates, along with recommended environmental working conditions to stimulate a fast cure, are the steps needed to reduce or prevent blooming, or chlorosis, when bonding with cyanoacrylate adhesives.