

12/04

UV/EB - FREQUENTLY ASKED QUESTIONS?

? How safe are UV/EB formulated, coatings, varnishes, adhesives and inks?

The raw materials available allow formulators to create products that are very low in skin irritability potential. However, these products, just like conventional products, are still chemicals that must be used with eye and skin protection. It is before cure, that precautions are advised when the wet product can be transferred to and from a person in handling and use. UV/EB formulations are 100% solids, and cure produces EPA recognized zero-low levels of emissions. The absence of solvents means there is no explosion/fire hazard.

? What concerns should I have about the safety of equipment?

Both UV and EB equipment providers design safety into curing equipment. Interlocks prevent operators from being exposed to the curing zones. Shielding prevents operator exposure to UV light emissions in the form of bright white light, or UV wavelengths and any potentially dangerous EB processor emissions.

? How do I wash up when exposed to wet UV/EB curables?

Wash-up can be as simple as using soap and water. Solvents should not be used for hand-body washing as they open the pores to exposure of UV/EB materials. Equipment wash-up is sometimes better done using low VOC recommended solutions.

? How should I clean up if a UV lamp breaks?

When a UV lamp breaks a small amount of mercury is spilled. Have personnel leave the area. Do not track with shoes. Place contaminated clothes in disposable garbage bags. DO NOT use a vacuum cleaner or broom to collect. USE adhesive tape or an eyedropper to collect. USE a mercury spill kit to bind up the smallest mercury particles. Wash the area with a trisodium phosphate solution and rinse with water. Remove and discard any contaminated carpeting. Discard all collected materials within normal trash pickup.

? What kind of blankets should be used?

Use rubber blankets, supplier recommended as the best for the type of work being done.

? What type of rubber rolls should be used?

100% UV/EB use requires EPDM, butyl nitrilic, vinyl nitrile, or buna-N rollers.

? What type of plates should be used?

Positive and negative deep etch, bi-metallic, or photopolymer are recommended.

? Do I need to be concerned about light & lighting in the pressroom?

There are sufficient UV emissions from sunlight and certain plant lighting to negatively affect UV inks. UV light filter sheets and tubes are recommended to cover exterior windows and florescent bulbs. Formulated products left in ink and coating fountains over a weekend should be covered.

? What is the simple difference between UV and EB formulated products?

UV products contain a photo-initiator package which is used to trigger the cross linking polymerization of the systems 100% solid resins upon exposure to weak photons of UV light. EB curables, without photo initiators, are cured when exposed to the high-energy electrons generated by an EB processor.

? Do I need to be concerned about the temperature of the UV/EB curables that I bring to the press/coater to use?

Very definitely yes! UV/EB formulated products are affected by temperature with viscosity or flow decreasing as temperatures drop and rising as temperatures rise. Formulators design products to run at ambient press room temperatures of 70-77° F., 21.1-25° C. UV curables should be acclimated to ambient press room temperatures before use.

? Can UV/EB curables be stored too long?

Polymerization curing of energy curing products is a chemical reaction, so storage time is limited and affected by temperature. Expect a maximum of one-year shelf life under ideal storage temperature of 12-18° C., 53.6-64.4° F.

? What can cause UV curing to be inadequate?

Lamp output that is below specifications due to age, or power supply issues and dirty lamps and reflectors will diminish cure energy. Coating/printing line speed can be too high exceeding curing equipment and ink/coating cure speed parameters. Wet coat weight could be too heavy for cure capacity. Check line cure capability using a UV radiometer.

? When should a UV dryer be cleaned?

Follow the equipment supplier's guidelines; curing is only as efficient as a dryer putting specified UV light output into the curing zone. Lamp output needs to meet spec with wattage output at par, focused and reflected properly. Clean reflectors weekly using a soft cloth and pure alcohol. DO NOT use UV cleaning solvent. Never touch UV lamps with bare fingers.

? When curing is inadequate what can a printer/coater do?

Try to finish the job at a lower line speed. Check for proper ink density and wet coating weight. Check lamp output performance, clean reflectors, replace lamps.

? What simple test can I use to check cure?

Rub the printed/coated surface with a rag or use the "thumb test" in which the thumb is pressed onto the surface firmly and twisted. If the ink/coating moves cure is insufficient.

? What other tests are used to check cure?

One can use a number of tests such as a felt tipped marker wipe, a solvent resistance test involving MEK rubs, an adhesion test involving tape adhesion and peel, a scratch resistance test involving scratching with a sharp hard fingernail or coin, a potassium permanganate test involving application and a check for staining, a pencil hardness scratch test and abrasion rub resistance testing.

? What is recommended when adhesion is poor?

First check and be sure that the surface tension of the substrate is over 40 using dyne solutions. When over coating inks, be sure that waxes are not lowering surface tension. Films may be corona treated to raise surface tension to an adequate level. Primer coatings can also be applied to better accept over coatings. Be sure that dryer output is effective.

? Are some colors easier to cure?

Opacity leads to an inability for UV light to penetrate the wet film and initiate and complete curing. Typically, metallic, opaque white, black, and dark colors are more difficult to cure.

? Should barrier creams and gloves be used when handling UV curable materials?

A variety of disposable latex surgical type gloves are available and are recommended. Also UV barrier creams can be used. Use protective eye ware.

? How should a spill be cleaned up?

Remember that wet, uncured, UV materials could be transferred easily and sometimes almost invisibly (clears especially). Therefore, it is essential that a spill be dammed and absorbed with clean-up granules, scooped up and disposed of properly.

? Can UV/EB printed/coated paper, paperboard products be recycled?

Yes, a lengthy study conducted by Beloit Corp. concluded that UV/EB cured products are just as recyclable as other conventional materials.

Contact your equipment, formulated UV/EB curable product supplier for their recommendations related to any of the frequently asked questions discussed above.

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