



CANADIAN PRINTING INK MANUFACTURERS ASSOCIATION

STATEMENT ON THE HEALTH & SAFETY OF UV CURING INKS

All types of UV/EB products can be handled safely as long as the user is well trained and observes all recommended safety procedures. It is the responsibility of the user to educate themselves about these procedures. Health risks can be minimized if good industrial hygiene practices are observed.

UV/EB curing acrylate have low systemic toxicity, but they can cause skin and eye irritation or even chemical blister burns on prolonged direct contact. They do not cause immediate irritation, thus exposure can go unnoticed. Some individuals may develop dermal sensitization to these chemicals as a result of contact. Those who become sensitized should discontinue working in the areas where even low level exposure can occur.

Most acrylate oligomers and monomers have a low vapor pressure, and inhalation of vapors is unlikely to occur at normal ambient temperatures. However, application conditions may generate aerosols which could be inhaled or cause skin and eye irritation. Skin and eye irritation due to oligomer exposure normally is minimal to mild, and oligomers exhibit low acute toxicity.

Most people can work safely with UV/EB curing materials by using the proper protective clothing and handling procedures. Equipment touched with contaminated gloves can be the source of exposure if touched later by unprotected skin. UV/EB curing oligomers and monomers should not be permitted to enter the eyes, and direct skin contact should be avoided.

Protective Clothing

The type of protective clothing recommended depends on the type of potential exposure. Typically, fabric or non-woven long sleeved, full leg clothing or coveralls are worn. Rubber gloves are always worn when direct contact with the materials is possible, and these should be resistant to prolonged contact with cleaning diluting solvents. Barrier creams can be used to facilitate washing off any material that might penetrate gloves or other protective clothing. Barrier creams should be applied to clean skin and should not be applied after exposure. Frequent washing of gloves, hands and arms with soap and water is good practice. A rubber apron or rubber suit is appropriate when there is the possibility of being splashed with solvent or corrosive materials. Shoes must provide full foot covering. Rubber boots should be worn when there is a possibility of walking in solvent or liquid chemicals or in situations when a bulk spill could occur.

Protective clothing contaminated with small amounts of UV/EB curing materials can be laundered in an alkaline detergent and re-used. Always launder at a commercial laundry; do not take contaminated clothing home for cleaning. If protective clothing becomes heavily contaminated, it should be properly discarded. Contaminated shoes, belts, or other leather goods can not be decontaminated to allow safe use and should be discarded.

The vapour pressure of most acrylate oligomers and monomers are so low that vapour inhalation usually is not a problem. Under normal conditions no special respirator equipment is required, but ventilation for odor control is advisable. These products may form aerosols during spray applications, at liquid transfer points or during application with high speed rollers. Such operations should be enclosed and well ventilated. Aerosols also can form under the conditions of fire or uncontrolled polymerization. A fresh air mask or organic vapor respirator should be worn when engineering controls can not prevent exposure to aerosols.

Since UV/EB curing materials do not dry out or cure under normal ambient conditions, they remain liquid and can be cleaned up easily with less aggressive solvents, such as soap and

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water or citrus and vegetable oil cleaners. Solvents can be used for cleaning equipment, but only if the appropriate protective clothing is worn. Solvents should not be used to wash the

skin, because they may increase the possibility of penetration of chemicals into the skin, and dermatitis may occur. Hand creams should be used to prevent irritation of the skin due to frequent washing. A major cause of irritation problems is poor industrial hygiene habits. For example, carrying solvent soaked cleaning rags in a pocket is a common practice, even though physiological effects can go unnoticed and can be serious. The same behaviour with acrylates almost certainly will cause a rash. Retraining in good work practices is the key to preventing dermatitis.

Food and beverages should not be consumed in areas where UV/EB curing materials are handled.

Eye Protection

Wear safety glasses or other adequate eye protection whenever handling any type of chemical. A full face shield is appropriate if splashing is likely.

Never look directly at the UV lamps or strong reflections, even with eye protection. Never adjust UV or EB shielding without qualified supervision. Eye protection materials should absorb UV light to prevent unintended exposure and eye irritation.

Cleaning up Spills

As with all chemicals, spills and leaks of UV/EB curing materials should be cleaned up immediately. It is important to remember that UV/EB curing materials do not evaporate, so spills and incidental contamination will remain until cleaned up. As general good practice, remove all sources of ignition.

Only personnel wearing the proper protective clothing and adequately trained in clean-up and disposal procedures should be permitted in the area. A fresh air mask or organic vapor respirator, chemical safety goggles, impervious gloves, clothing, and rubber boots are recommended. Leaking containers should be removed to well ventilated areas where leakage can be safely contained. Towel and cloths used to clean up spills should never be reused, but disposed of immediately. Large spills can be absorbed using a dry absorbent. Good ventilation should be provided until the area has been cleaned up. Transfer the contaminated absorbent into suitable containers for disposal.

Contaminated areas should be thoroughly washed with a strong alkaline detergent. Washings should be collected for appropriate disposal, and care should be taken to prevent inadvertent contamination of under-ground water. The use of solvents for clean up of large contaminated area is not recommended, since the solvent would introduce significant new toxicity, fire and environmental hazards.

All clean-up and disposal must be carried out in compliance with provincial, federal and local regulations.

Reviewed November, 2010