

➤ PROPER HANDLING OF UV CURABLE 3D PRINTING RESINS



Ultraviolet (UV) curable resins for 3D printing/additive manufacturing cure rapidly when exposed to UV light. As with all chemicals, UV curable resins must be handled in a safe manner. This fact sheet is meant as a general guideline for the handling of UV curable resin materials (photopolymers) used in 3D printing systems such as stereolithography (SLA), digital light processing (DLP) and UV inkjet.

CONSULT MANUFACTURER DOCUMENTATION

- Consult Safety Data Sheets (SDSs) provided by suppliers of UV curable resins as the primary safety and handling documents.
- 3D printers have built-in safety features that are designed to prevent operator exposure to uncured photopolymers and UV wavelengths – do not try to change or disable these features.

FOLLOW GOOD HOUSEKEEPING PROCEDURES

DURING SET UP

- Avoid placing a 3D printer over carpeted areas or use a barrier to avoid the possibility of carpet damage.
- Do not expose UV curable resin to heat (at or above 110°C/ 230°F), flames, sparks or any source of ignition.
- 3D Printers and uncured, open resin vats should be stored and operated in a well-ventilated area.
- If UV curable resin comes in a sealed cartridge:
 - Inspect the cartridge before loading it into the printer
 - Do not use a cartridge that is leaking or damaged. Dispose of it according to local regulations and contact the supplier.
- If the UV curable resin is in a pourable bottle, carefully pour the liquid from the storage bottle into the printer tray, avoiding spills and drips.

PRACTICE PERSONAL HYGIENE

- Do not eat, drink or smoke in work area. Remove jewelry (rings, watches, bracelets) prior to handling uncured UV curable materials.
- Avoid direct contact with any UV curable resins or contaminated surfaces, including any parts of the body or clothing. Do not touch the resin without wearing protective gloves and do not get it on your skin.
- Wash hands, face or any body parts that may contact UV curable resin with mild skin cleanser and soaps after handling – do not use solvents.
- Remove and wash contaminated clothing or jewelry; do not reuse any contaminated personal items until properly cleaned with detergent. Discard contaminated shoes and leather goods.

PREPARE FOR DISPOSAL

- Fully cured resin can be disposed of with household items.
- Cure unreacted UV curable resins by leaving them in sunlight for a few hours or expose them to a UV light.
- Partially cured or uncured resin waste may be classified as hazardous waste. Please check your state's website for disposal of chemical waste. Do not pour into the sink or dispose into the water system.
- Clean-up materials containing UV curable resins should be isolated in sealed, labeled containers and disposed of as hazardous waste. Do not pour these materials down the drain or into a water system.

USE PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Wear appropriate chemical-resistant gloves (nitrile or neoprene) – DO NOT use latex gloves.
- Use safety glasses/goggles with UV protection.
- Wear a dust mask when sanding or post-finishing parts.

- Tools that may be contaminated with the material should be cleaned prior to reuse with window cleaner, or plenty of denatured or isopropyl alcohol, followed by a thorough washing with soap and water.

- Keep work area clean.

AFTER PRINTING

- Wear gloves when handling parts directly from the printer.
- Wash the parts before post-cure using a manufacturer's recommended solvent, such as isopropyl or rubbing alcohol.
- Post-cure using UV light as recommended by the manufacturer should follow the wash before the printed object is handled without gloves.
- Ensure that all 3D printed objects are fully post-cured by exposure to a UV light source after forming, in accordance with the printer manufacturer's recommendations.

CLEAN UP WORK AREAS

- Use absorbent rags to clean spills immediately.
- Clean any contacted or exposed surfaces to prevent contamination. Clean with window cleaner, or a denatured or isopropyl alcohol, followed by a thorough washing with soap and water.

KNOW FIRST AID PROCEDURES

- Flush contaminated eyes or skin thoroughly with plenty of water for 15 minutes. Wash skin with soap and plenty of water or waterless cleaner if needed.
- If skin irritation or rash occurs, seek qualified medical attention.
- If ingested, do not induce vomiting. Seek medical attention immediately.

STORE CORRECTLY

- Keep UV curable resins sealed tightly in their containers, out of direct sunlight and within the temperature range suggested by the manufacturer.
- A small headspace of air is needed to keep the resin from gelling. Do not fill resin containers to the top of the opening.
- Do not pour used, uncured resin back into new resin bottles.
- Do not store uncured resin in refrigerators used for food and beverage storage.