

# What Do I Do With My Waste Resin?

All resin-based 3D printing technologies produce waste resin. Although waste resin is considered hazardous in its liquid form, there are several options available to deal with waste resin. This paper touches on most of the issues related to this subject and points out that users may be subject to a combination of federal, state, and local regulations.

## Option 1: Hazardous Waste Disposal Service

The first option is to hire a Hazardous Waste Disposal Service (HWDS) to pick up your waste resin. There are many different companies that offer this service. Please note, providers in your area may or may not process waste locally.

## US Environmental Protection Agency (EPA) Registration

HWDS companies require your registration with the EPA, which requires a one-page application and a \$40 fee. This will classify your company as a generator of hazardous waste, and you will be required to file a biannual report and renew your registration annually.

Depending on how much waste resin is generated, users will be assigned a classification, such as Small Quantity Generator (SQG) >2,200 lbs. per year or Large Quantity Generator (LQG) <2,200 lbs. per year. Among other regulations, classification determines the length of time a waste generator is allowed to store hazardous waste onsite; an SQG has up to 180 days and an LQG has up to 90 days.

To manage and ship hazardous waste, most HWDS companies require customers to complete Resource Conservation and Recovery Act (RCRA) training. As the waste generator, the user maintains all liability for the storage drum and is required to complete a Uniform Hazardous Waste Manifest Form prior to sealing, labeling and shipment. Additional documentation may be required based on a user's location.

## Material Safety Data Sheets (MSDS)

You will be asked to provide the MSDS of your resin to the HWDS. Their staff will review the MSDS and upon receipt of the waste resin, they will perform lab testing prior to disposal.

## Type of Disposal

HWDS companies offer two types of waste resin disposal 1) Landfill and 2) Waste to Energy Incineration. The latter being the more expensive option. Depending on your area and HWDS, typical costs for disposal of a 55 gallon drum of waste resin could be \$125 to \$175 for landfill and \$200 to \$300 for incineration.

**Other Considerations:** Subject to location, HWDS companies are, by law, limited to storing hazardous waste at holding sites for a maximum of 10 days. In the current environment, many HWDS companies are backed up due to the overproduction of hand sanitizers, which, due to high alcohol content and flammability, must be sent off to incinerators. For example, users located in California should consider how the timing of disposal may be impacted by the additional regulations for storage and shipment placed on HWDS companies, which must dispose of hazardous waste at sites located out of state. Also, storing location, floor space and general liability of hazardous waste storage should be considered.



## Amount of Waste Resin

The amount of waste resin produced will determine the cost of your service. Typically, waste resin is stored in a 55 gallon drum (\$75 to \$300). Drums and storage containers can either be sourced through the HWDS or from an industrial equipment supplier, such as Grainger.

## Other Fees

With each pick up, or “Milk Run,” there are several fees to be aware of, including: driver fees (\$85 to \$100 per hour, typically 2 hour minimum), manifest fees (\$25 to \$50), and environmental services charges (typically 15% surcharge).

## Cost Overview of Disposal of a 55 Gallon Drum of Waste Resin

Item	Cost
55 Gallon Drum	\$75
Waste Disposal Cost of 55 Gallon Drum in Landfill	\$130
15% Environmental Service Charge	\$20
Manifest Fee	\$35
Driver Labor Charges (2 Hours)	\$200
<b>Total Cost For One-Time Disposal</b>	<b>\$460</b>

## Option 2: California Lunch Tray Method

The second option is a DIY process, in which users pour waste resin onto a lunch tray or metal baking pan and let it cure outside under sunlight. The UV light from the sun will slowly cure the resin. The resin must be poured periodically in thin layers to maximize the surface area of sun exposure. The user must periodically stir the waste resin to ensure that underlayers of uncured resin are exposed to the UV light.

Face masks and gloves are required for protection from the caustic process. Processing times can vary, depending on temperature and weather. When cured, the solid resin can be disposed of as common household waste.

## Option 3: Waste Resin Axial Printing (WRAP) Technology

A third option is to use Waste Resin Axial Printing (WRAP) Technology to cure waste resin. WRAP technology enables the safe curing through a patented process in which a user pours the resin into the system’s vat. The resin is slowly dispensed in drips onto a disposable paper-based cylinder located in a chamber with high powered UV lights. As the resin drips and the cylinder rotates, the resin is instantly cured. The process continues until the full volume of waste resin in the vat is exhausted, leaving a cylinder of cardboard and solid cured plastic stock. When



cured, the solid resin can be disposed of as common household waste or repurposed for various applications, including low-cost media for CNC machining.

Cost of a W7500 unit is \$4,999 through the manufacturer, Onulis. You can purchase the W7500 through the Onulis storefront, or an authorized reseller.

