

US Department of Energy Laboratory

Water Treatment Plant Waste Solidification

Problem: How to solidify LLRW water for transport across country to the Hanford Nuclear Reservation (WA) without doubling/tripling waste volume?



Application of liner to B-25 Box.

The water treatment plant at this site generates about 15,000 gallons of liquid waste which must be solidified and shipped to the Hanford site for disposal.

The LLRW is solidified in steel B-25 boxes.



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The waste is pure liquid and contains contaminants of radioisotopes.

About 100 lbs of *Waste Lock*® is first added to the bottom of the box.

Then, the liquid waste, which is 100-130° F, is added on top to a depth of 2-3" (\pm 200 gallons).

Because the liquid is warm, diffusion into the polymer proceeds rapidly and the layer solidifies in minutes.



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Additional *Waste Lock*[®] is added to the first gel layer.

Again, more liquid waste is added on top of the fresh polymer to a depth of 2-3”.



No agitation is applied.

The polymer swells as liquid is added. More polymer is added to the top of the gel and then more liquid added to the fresh polymer.



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In this step-by-step/layered approach, the entire liquid content of the B-25 box is solidified to meet EPA Paint Filter Test Requirement.

End result for the B-25 box:

400 lbs of Waste Lock®

Plus

600 gallons (or 4,700 lbs)

Time for one box = 90 minutes

Weight / Volume Increase:

No volume increase.

Polymer adds about 7% to weight.

