



## Blow molded vial solution provides multiple benefits for tissue adhesive manufacturer

Multilayer single-dose vial solution extends shelf-life up to 4x with no refrigeration



## PROBLEM

A cyanoacrylate tissue adhesive manufacturer was experiencing multiple shelf-life and shipping issues with its injection-molded single-dose package. The monolayer polyethylene vials it was using to house its tissue adhesive product had to be shipped refrigerated, within a narrow temperature range of 32 to 46.4 degrees Fahrenheit (0 to 8 degrees Celsius), in order to prevent product degradation. This made global shipping extremely complicated and expensive. Further, even with this delivery protocol, the monolayer vial could only deliver a limited product shelf-life of six to nine months. Additionally, the lack of moisture barrier in the monolayer structure was causing water droplets to form inside the package tray. This created a visual cue that something might be wrong with the product. This is not an appropriate scenario for an operating room situation.

## CAUSE

The monolayer polyethylene vial originally selected by the company did not have the performance attributes required by the product. What initially began as a cost-effective vial purchase, ended up severely impacting the company on the back end with extremely high refrigerated freight costs and limited barrier/shelf-life attributes.

Single-dose, multilayer, coextruded, blow molded vials



**By transitioning away from the monolayer vial to the multi-layer, barrier vial, they were able to eliminate refrigerated transport and extend their shelf-life.**

### Original Packaging

- Costly refrigerated shipping
- Short product shelf-life



### New Packaging Solution

- Ambient temperature
- Expanded shelf-life



## SOLUTION

TekniPlex Healthcare, a global leader in single-dose packages, had worked previously with the company on other projects. As a result, it was made aware of the multiple issues with the polyethylene vial. The team knew it could help the company eliminate its issues by creating a custom solution.

Taking the product formulation into consideration, as well as the global distribution challenge, the TekniPlex Healthcare business knew that designing a multilayer coextruded barrier structure which is blow molded into a vial would dramatically improve performance. (The vial is filled in a sterile environment.

Five-strip segments are inserted into the filling machine, sealed, then separated and packaged individually in trays for use in surgical settings. The individual packs are bulk packed into another bag prior to a second round of either gamma, beta or EtO sterilization.)

In addition to the multilayer composition, the blow molding process enabled the creation of a vial shape that makes it easier for the healthcare provider to dispense. (To access, the physician twists off the top flange, attaches a fine point nozzle to the open orifice and then squeezes the vial to dispense the adhesive onto the wound.)

## BENEFIT

Converting to the single-dose vial yielded multiple significant benefits for the cyanoacrylate tissue adhesive manufacturer. These include:

- **Shelf-life went from six-to-nine months to 34 months**, representing as much as a **4x improvement**.
- Freight charges were **reduced by 22% annually**
- Product can be shipped at ambient temperature; **no refrigeration is required**.
- Refrigeration also not needed at hospitals and other healthcare facilities, **freeing up valuable/costly space and minimizing storage costs**

Multilayer  
single-dose vial  
yielded multiple  
significant benefits



Shipped at ambient temperature:

**22%** Reduction in freight  
charges annually

Stored at ambient temperature:

**4X** Improved shelf-life

## ABOUT TEKNIPLIX HEALTHCARE

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