



Single-dose vials become the more reliable choice for anesthesia drug

How a switch to polypropylene vials enabled a drug manufacturer eliminate breakage problems, and improve dosing precision



PROBLEM

A pharmaceutical manufacturer was using large-volume glass bottles for its liquid anesthetic solutions. The bottles featured a luer lock finish and were used to fill multiple syringe doses, which would then either be injected into the patient or connected to an IV bag for therapeutic dosage.

Since glass bottles can break, they posed safety and cleanup issues which could become hazardous in hospital or other clinical environments for both the patient and medical professionals. Additionally, glass is heavy to transport, requiring additional protective packaging. Vibration and incorrect package handling could also cause the glass to break during transport, creating another set of problems.

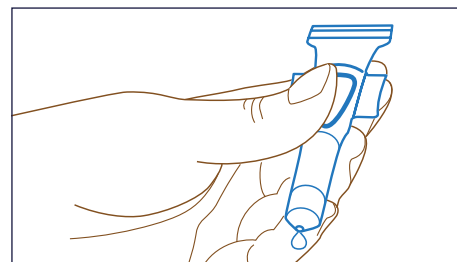
CAUSE

By definition, glass is both heavy and prone to damage/breakage. The large volume bottle also lacked the precision provided by single-dose containers.

SOLUTION

To meet the anesthetic's performance requirements, a 1ml injection molded, polypropylene, single-dose vial was specified. The vial features a luer lock finish which enables easy transfer from the single-dose vial to the syringe, or can attach directly to the IV bag fitment.

Luer lock finish enables easy transfer to the syringe.



Glass bottles to polypropylene (PP) vials



Current Packaging
Large-volume
glass bottles

**TekniPlex
Healthcare**
10ml PP vial



Polypropylene (PP) vials, sold in strips of five.

BENEFIT

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

- **Elimination of breakage.** Approximately 3 percent glass bottle breakage during manufacturing
- **Improved safety** for both medical professionals and patients
- Single-dose vial **enables precision**, no wasted product
- Elimination of the additional protective packaging required by glass, **improving environmental footprint**
- Monolayer PP can handle both EtO (prior to aseptic filling) and **autoclave sterilization** (after filling) methods
- **Transportation costs reduced** approximately 70 percent due to reduced volume and lighter weight containers



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