



# Advantages of Glass Precision Tubing

|                        | Product Cost  | R&D & Feasibility  | Chemical Leachability   | Dimensional Stability  | Manufacturing Precision   | Quality Inspectibility  | Patient & Consumer Safety  |
|------------------------|---|--|---|--|---|---|--|
| <b>Precision Glass</b> | <b>Low Finishing Costs</b>  | <b>Low raw material cost; moderate tooling costs; low investment required for feasibility</b>  | <b>Chemically inert</b>   | <b>Excellent against environment, temperature, and chemical interactions</b>   | <b>Excellent dimensional control in manufacturing. Tolerances as low as <math>\pm 0.001</math> microns for inner diameters.</b> | <b>Clear by nature - offers exceptional inspectibility for all facets of each part produced</b>                       | <b>High rate of FDA acceptability for Class I &amp; II devices.</b>  |
| <b>Stainless Steel</b> | <b>Moderate Finishing Costs</b><br>Micro obstructions from cutting often interferes with internal flow path | Tooling and fabrication is often specific to size and not suitable for custom applications; Moderate investment required for feasibility | Iron, Chromium, Nickel, and other metal contamination concerns  | Moderate to Poor stability against environment, temperature, and chemical interactions   | Moderate dimensional control in manufacturing of seamless tubing. Finishing can lead to obstructions of internal flow path      | Destructive testing is mandatory for fast results. Ultrasonic or X-ray inspection techniques are dangerous and costly | Heavy-metal contamination is a concern when used to store or deliver any type of fluids - especially fluids with high Ph levels (acidic) |
| <b>Plastic</b>         | <b>High Finishing Costs</b><br>Requires complex, highly engineered resins                                   | High tooling costs prevent custom samples to prove feasibility   | Hydrophilic (absorbs water), Usually requires complex and costly coatings. Chemical leaching is common. | Poor stability against environment, temperature, and chemical interactions. Outcomes often vary from lot-to-lot of raw material. | Poor dimensional control in manufacturing due to shrink factors and environmental susceptibility                                | Opacity creates near-impossible inspection for certain defects without costly or invasive inspection equipment        | Chemicals known to cause health problems are prevalent in many plastics and leaching is common   |

When precision matters most, market leaders in the **Biotechnology, Medical Devices, Fiber Optic, and Electronic Component** industries have come to rely upon **Accu-Glass** as a trusted resource.

Glass is the only material that can offer **precision, reliability, and flexibility** in manufacturing. It is clean, clear, and strong, as well as versatile and dimensionally stable. From concept to finished product, we invite you to partner with our market-leading expertise in glass technology!



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