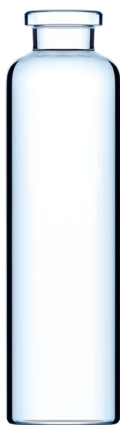


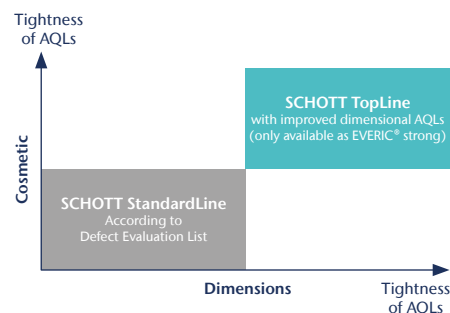
# TopLine cartridges – beyond the industry standard



To secure patient safety, the requirements for pharmaceutical glass cartridges are high, especially for parenteral applications:

- Dimensional inaccuracies can lead to difficulties during filling or even put container closure integrity at risk
- Cosmetic properties are highly relevant for inspectability and imperfections may result in high reject rates during fill-and-finish
- Chemical resistance is crucial to keep drug-container interaction at a minimum

SCHOTT **TopLine cartridges** offer tighter cosmetic and dimensional AQLs\* than StandardLine cartridges. Further customization is possible upon request.



Type I borosilicate glass with high chemical resistance according to pen ISO 13926-1



Manufactured according to cGMP regulations



Unlimited shelf life for glass\*\*



Compliant with all current standards such as Ph. Eur., USP and CP



Tight dimensional control



SCHOTT FIOLAX® clear glass tubing



Formats according to current version of pen ISO 13926-1



Tight cosmetic control



**High chemical resistance**  
due to excellent raw material and converting expertise



**Efficient fill-and-finish and secure CCI** thanks to accurate dimensions



**Low reject rate and excellent inspectability**  
due to high cosmetic quality

\* AQL = Acceptable Quality Level. Indicates how high the maximum proportion of a defective subset can be that is considered acceptable quality in a sample.

\*\* limitations may come from secondary packaging.

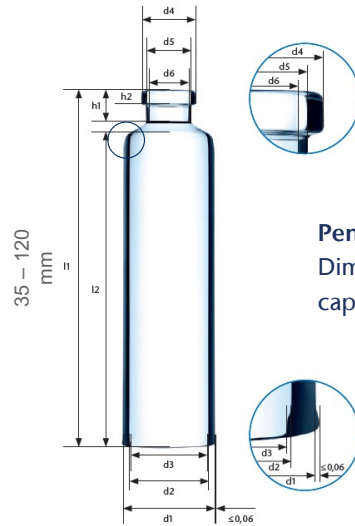
**Release tests**

**Dimensions**

Defined parameters in drawing determine testing

**In-line inspection**

- 100% by camera/sensor
- Defined standard parameters: neck outer diameter, collar outer diameter, collar height, neck and collar height, total height, bottom depth, inner neck diameter
- Plus additional optional parameters (e.g. collar radius, shoulder angle)



**Pen ISO 13926-1**  
Dimensions, brimful capacity and mass

Lengths l1 and l2 shall be agreed upon between manufacturer and customer.

**Statistical off-line inspection**

- Minimum inspection level S-4 (according to ISO 2859-1)
- Standardized global test methods based on off-line camera, profile projector, caliper, etc.
- Defined standard parameters (e.g. outer diameter, bottom thickness, outer heel radius)
- Additional optional parameters

Application & filling volumes: ISO and customizable format	Tubing OD d1 mm		Tubing ID d2 mm		d3 min mm	d4 mm	d5 mm	d6 mm	h1 mm	h2 mm
		Tol		Tol		Tol	Tol	Tol	Tol	Tol
Pen: 0.6–1.5 ml (ISO)/Dent: 1.8–2.2 ml (ISO)	8.65		6.85		6.55					
Double-Chamber 0.1–1.0 ml/Pen. (ISO)	10.75		8.65		8.3					
Pen/Autoinj. Typ: 3.0 ml (ISO)	10.85 ±0.1		8.65 ±0.09		8.35	7.15	5.5 ±0.25	3.15		±0.1
Pen/Autoinj. Typ: 1.6 ml (ISO)	10.95		9.25		8.95				5.0	2.9
Pen/Autoinj. Typ: 3.0 ml (ISO)	11.6		9.7		9.35	±0.2			±0.2	
Pen/Autoinj. Typ: 3.0–5.0 ml	14.0		12.0		11.65		7.2			
Pen/Autoinj. Typ: 3.0–5.0 ml	14.45 ±0.11		11.85 ±0.1		11.5	9.5	±0.35	4.5		±0.15
Pen/Autoinj. Typ: 3.0–10.0 ml	17.05 ±0.17		14.25		13.9		7.75			
Pen/Autoinj. Typ: 3.0–10.0 ml	18.25 ±0.13		16.05 ±0.15		15.5		11.0 max.	7.0	8.0	3.6 ±0.2
Wearable Device 3.0–10.0 ml	22.05 ±0.17		19.05		18.55	13.0			±0.5	

**Cosmetics**

- 100% inline inspection



**Chemical**

- Hydrolytic resistance surface testing according to Pharmacopoeias (USP, Ph. Eur.) and pen ISO 13926-1

**SCHOTT Pharma offers a global manufacturing network paired with outstanding hot forming experience and a continuous drive for innovation**

- ★ Advancing the industry with groundbreaking glass innovations such as borosilicate glass for over 130 years
- 🔍 Providing customers with state-of-the-art quality and inspection technologies
- 🧪 Fueling science and inspiring progress in hot forming with dedicated competence centers
- 📈 Offering supply security for the entire value chain due to vertical integration with the leading borosilicate tubing manufacturer

General ordering information					
Quality level	TopLine				
Neck finish	Crimp				
Packaging	Tray				
Blowbacks	Non-blowback, European blowback for >3.0 ml				
Palletizing	A standard Euro Pallet (1200 x 800 mm) contains 15–18 layers of 18 trays each				
Formats	1.5 ml	3 ml	5 ml	10 ml	20 ml
Pieces per tray	344	344	344	186	186

[schott-pharma.com/cartridges](http://schott-pharma.com/cartridges)

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