

What are the Differences Between 33 and 51 Expansion Glass and Which Should I Choose - HPLC Primer

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Technical Overview: Glass Composition and Performance of MICROSOLV™ Autosampler Vials

Material Quality and Manufacturing Standards

MICROSOLV™ brand autosampler vials are manufactured using borosilicate glass tubing, classified as First Hydrolytic Class. This designation ensures:

- High chemical resistance to acidic, neutral, and mildly alkaline solutions
- Low thermal expansion, even under variable manufacturing conditions
- Exceptional mechanical hardness, critical for dimensional stability and autosampler compatibility

Understanding Glass Expansion Classes

First Hydrolytic Class glass is further categorized by its thermal expansion coefficient:

- Type I, Class A (33 Expansion Glass):
 - Lower expansion coefficient
 - Requires higher processing temperatures (~1,200°C)
 - Offers superior hardness and thermal stability
 - Used in **clear RSA™ vials**
- Type I, Class B (51 Expansion Glass):
 - Slightly higher expansion coefficient
 - Processed at lower temperatures (~1,000°C)
 - Used in **amber RSA™ vials** and other applications where light protection is required

Both glass types meet the stringent requirements for chromatographic applications. However, the higher processing temperatures required for 33 expansion glass can increase the risk of surface contamination due to volatilization of glass components during vial formation.

Surface Integrity and Dimensional Precision

During vial manufacturing, temperature differentials between the vial body and features such as the screw thread can lead to localized variations in surface composition. This effect is more pronounced

in 33 expansion glass due to its higher processing temperature. To mitigate this, MICROSOLV™ vials are produced under tight thermal and dimensional control, ensuring:

- Minimal surface leaching
- Consistent internal geometry
- Reliable autosampler fit and function

Conclusion

MICROSOLV™ autosampler vials are engineered for high-performance chromatography, combining:

- First Hydrolytic Class glass
- Precision manufacturing tolerances
- Optimized surface chemistry for analytical consistency

Whether using 33 or 51 expansion glass, MICROSOLV™ vials deliver the reliability and reproducibility required for demanding analytical workflows.

Click [HERE](#) for Autosampler Vial ordering information.

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MicroSolv Technology Corporation

9158 Industrial Blvd. NE, Leland, NC 28451

Tel: (732) 380-8900

Fax: (910) 769-9435

Email: customers@mtc-usa.com

Website: www.mtc-usa.com