

Temperature Maximum for Aluminum Foil Lined Headspace Caps - Tech Information

Date: 16-JANUARY-2021 Last Updated: 27-OCTOBER-2025

Understanding the upper temperature limits of headspace screw caps is essential for ensuring seal integrity, preventing septum degradation, and maintaining consistent analytical performance during high-temperature headspace sampling. MICROSOLV metal magnetic screw caps with aluminum foil/silicone septa are engineered specifically to tolerate elevated temperatures that exceed the capabilities of most standard septa materials.

Maximum Safe Operating Temperature

The maximum safe operating temperature for MICROSOLV headspace screw caps equipped with aluminum foil septa is **220 °C**.

This is the upper boundary at which the caps, liners, and sealing assembly maintain structural integrity and reliable sealing performance without deformation or chemical breakdown.

Why These Caps Tolerate Higher Temperatures

MICROSOLV's magnetic headspace screw caps are designed and fabricated specifically for high-temperature headspace analysis. Their ability to withstand 220 °C is due to:

- Aluminum foil / silicone composite septa
Aluminum foil acts as a heat-stable barrier, while silicone provides elasticity for sealing.
- Metal cap construction
The steel cap body maintains structural rigidity at elevated temperatures.
- Heat-resistant design specific to headspace workflows
Unlike many other septa types, these aluminum foil-lined septa do not rapidly degrade when exposed to sustained heat.

How These Caps Compare to Other Septa

Most common septa types—such as PTFE/silicone or PTFE/butyl—generally cannot withstand temperatures this high, often degrading or losing sealing capability at lower temperature ranges. The combination of silicone rubber and aluminum foil enables these caps to outperform typical options in high-temperature headspace environments.

Application Guidance

These high-temperature screw caps are ideal for:

- Oven temperatures approaching the upper limits of standard headspace autosamplers
- Methods requiring aggressive heating to drive volatile compound equilibrium

- Magnetic autosampler systems requiring steel-bodied caps
- Environments where seal integrity under intense heat is critical

Users should still ensure compatibility with their specific autosampler platform and validate performance under actual method conditions.

Click [HERE](#) for headspace vials & caps ordering information & pictures.

AUTOSAMPLER VIALS AND CAPS

Printed from the Chrom Resource Center

Copyright 2025, All Rights Apply

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