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SureStop 9mm Vials and AVCS Closures



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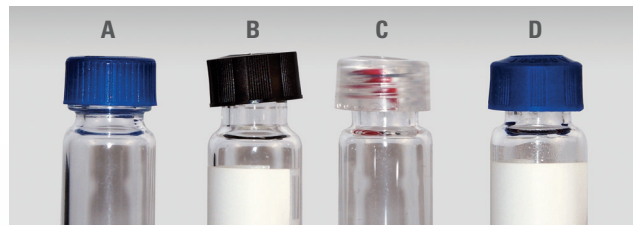
AVCS Closures and SureStop Vials

The next generation of sample handling

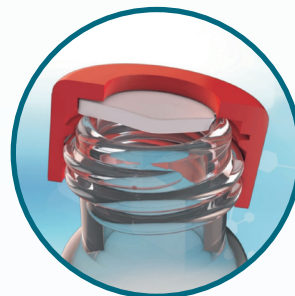
Thermo Scientific™ SureStop™ 9mm vials, are designed as part of the Advanced Vial Closure System (AVCS), and remove subjectivity around achieving the optimal seal compression when closing a vial. As an integral component of AVCS technology, SureStop vials offer the sealing and performance characteristics of a crimp top vial and the versatility and convenience of a threaded vial. This is achieved by incorporating a definite stop point into the design of the vial finish, preventing over tightening of the closure.

Features of 9mm wide opening, integral membrane and solid top closures:

1. AVCS closures along with SureStop vials significantly reduce the error rate of analysis that results from evaporation of solvent in improperly sealed vials
2. Re-analysis costs are reduced, sample data integrity and sample throughput increases
3. No need to use bulky crimpers – AVCS closures with SureStop vials seal as well as crimp top vials
4. The leveling feature of AVCS designed vials gives more autosampler compatibility with less autosampler interruptions, due to mishandled vials
5. AVCS design allows for consistent sealing, eliminating user-to-user variance
6. SureStop design provides a positive feedback closure that creates more consistent data, which for a researcher is almost as important as the actual result



Examples of vial and closure misalignment/deformation. (A) SureStop vial self aligning cap; (B) generic vial, cap tilt; (C) generic vial, septum dislodged; and (D) generic vial, deformed top.



Cap tilt and septum displacement due to over tightening



SureStop provides optimal cap positioning

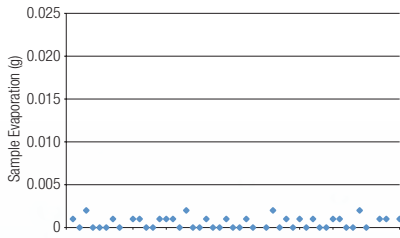


A study of the effects of the typical operator response to evaporative sample loss and septum dislodging during the use of 9mm screw thread and 11mm crimp vials and closures was conducted. Sample losses were measured for both overtightened vials and for vials perceived to be optimally tightened and these were compared to losses from new vials designed to provide a definite sealing point.

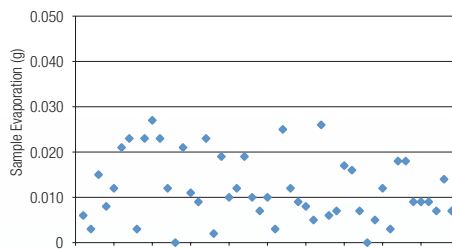
Test conditions

- 1.3mL of pure methanol was added to each vial (always 50 in total)
- All vials were incubated at a temperature of 40 °C for 72 hours
- After 72 hours the final weight was taken and subtracted from the initial 40 °C temperature weight to yield the sample loss in grams

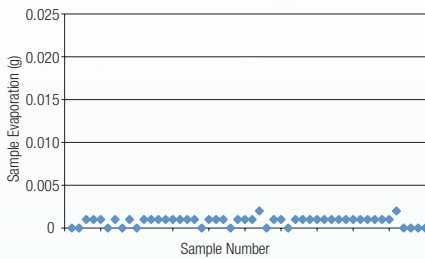
Crimp Seal Reference: Optimal Crimp



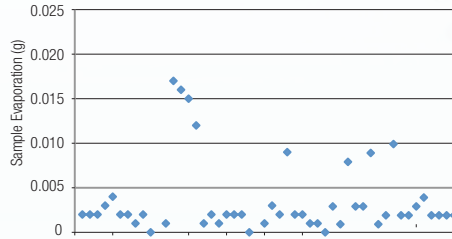
Optimal Tightening Attempt, 9mm Closure Source C



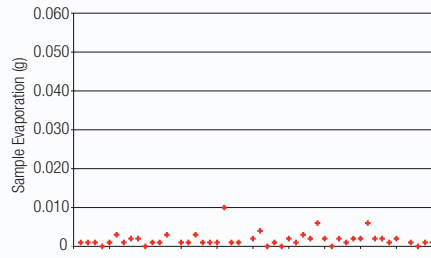
Normal Tightening, SureStop Vial/AVCS Closure



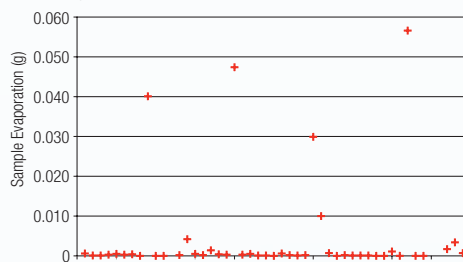
Optimal Tightening Attempt, 9mm Closure Source D



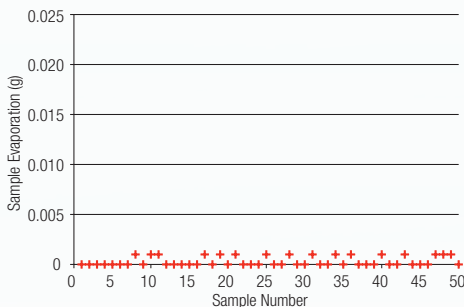
Crimp Seal Reference, Overcrimped



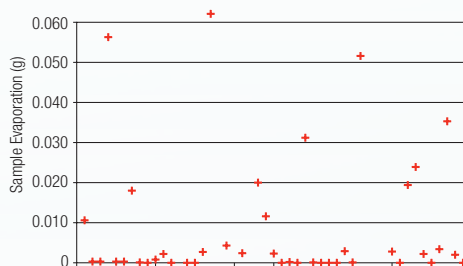
Overtightened 9mm Closure Source C



Overtightened, SureStop Vial/AVCS Closure



Overtightened 9mm Closure Source D



Benefits of SureStop Closures with AVCS Closures

SureStop/AVCS vs. Crimp Caps	SureStop/AVCS vs. Snap Caps	SureStop/AVCS vs. Bonded Caps
The hassle of crimping is removed; crimping and de-capping tools are not required. Screw thread closures are easier to attach and remove reducing time required for sample prep	Positive feedback makes AVCS and SureStop as convenient to use as snap cap	AVCS screw-top closure and SureStop vial design. (See illustration below)
AVCS closures and SureStop vials offer identical performance to crimp caps (based on solvent loss studies), which make SureStop products a viable alternative for GC use	Provides a fast closing alternative for volatile solvents/compounds of interest	AVCS closures and SureStop vials have multiple septa qualities (bonded caps very limited in septa offering) and considerably less expensive than bonded caps and vials
AVCS and SureStop provides a "like crimped" product tightness and reliable quantification even for low boiling compounds; remove user-to-user vial/closure sealing variability that results from user subjectivity	Eliminates variable evaporation rates that can be caused by environmental conditions	AVCS closures and SureStop vials seal more securely than bonded caps



Non-AVCS push through examples

AVCS no push through

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