



A Quest for the Perfect Rubber Septa

Natural rubber septa, also known as sleeve stoppers, have long been used as temporary closures for a myriad of applications in chemistry, pharmaceuticals, R&D and biology, to name a few. These commercially available septa were developed for general applications and have been adopted by scientists for use in their labs as closures for glassware and tubes and for cannulation of air-sensitive chemicals. Until now, however, little has been done over the years to improve the performance of these products, for chemistry applications in particular.

Based on your feedback and that of our own chemists, Sigma-Aldrich has developed Precision Seal® rubber which addresses specific requirements that apply to chemistry applications:

1. Precision fit – A septum must fit the joint or tube to function properly as a temporary closure. In fact, a proper fit is critical because it impacts all other aspects of performance.

- Precision Seals have a longer, tapered plug that seats firmly inside the glass joint or tube providing a sealing surface that is 50% to 80% higher than standard sleeve stoppers.
- The inner seal design of Precision Seal septa minimizes chemical and solvent vapor migration up the joint to the sleeve, which can swell, leak, or fail from exposure.
- The surface texture of the rubber is similar to that of a ground glass joint and resists movement once seated.

2. Non-contaminating – A rubber formulation in low extractables is required.

- Precision Seals Extractables are 1.9% versus 5-6% for standard sleeve stoppers.
- Precision Seal rubber has a higher density to minimize the effects of solvent degradation.
- Precision Seal rubbers are manufactured from a single, certified lot and packaged under White Room conditions for absolute consistency.

3. Safety and Performance – The septa must not slide through the joint or pop-off during cannulation or when under pressure.

- Pushing on a Precision Seal septum actually tightens the tapered plug to prevent movement.
- The flexible sleeve on the larger septa is oversized to make folding over glass joints easier and safer.
- The seal is made by the plug within the joint and not the flexible sleeve.
- Always secure the sleeve to the glass joint with a Wrap-It Tie or similar device during cannulation and for applications that involve pressure. For non-critical applications the folded-over sleeve alone may provide sufficient anchoring. See Paula's Pointers on the back of this issue for more information about Wrap-It Ties.
- The puncture target area of the larger Precision Seal septa is 40% greater than standard sleeve stoppers. The selection of a suitable puncture point is easy and the septum life is extended when performing multiple cannulations. Always select a new puncture point for each cannulation to preserve the resealability of the septum.

Precision Seal Septa are listed in the new 2007-2008 Sigma-Aldrich Labware Catalog and on our Web site at sigma-aldrich.com/labware.



Paula's Pointers

Wrap-It-Ties one-piece nylon fasteners are self locking fasteners excellent for:

- Securing rubber septa to glass joints
- Attaching tubing to hose barbs
- Closing plastic bags or drum liners.

Simply position the tie around the septum, tubing, or bag, and push the narrow end of the fastener through the locking mechanism until finger tight. Complete the operation by clinching the tie with an installing tool (shown in photo). Ties are easily removed with a side cutter or similar tool.

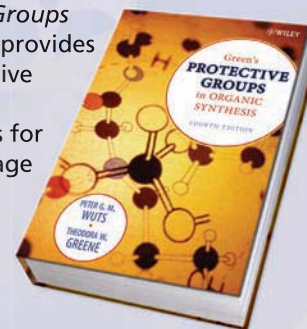
Wrap-it-Ties

- Z105953 250 pieces L 4 in.
- Z105961 250 pieces L 5.6 in.
- Z256331 250 pieces L 7 1/2 in.
- Z256323 Set, 180 pieces 3 1/4 to 7 1/2 in.
- Z256307 Installing Tool



Further Reading

Greene's Protective Groups in Organic Synthesis provides the only comprehensive guide to this topic available. Techniques for formation and cleavage of protective groups are provided, along with a useful reactivity chart and sections on potential undesired side reactions.



Z705942 Greene's Protective Groups in Organic Synthesis, 4th ed.

"Congratulations on having your own separate Catalog! It looks great and is easy to use."

- Susan Gitelson, Pres, Magic Touch Icewares International Corp.

"...the new two-volume format is beautifully done."

- David Kasman, Lab Devices



Latest News

The 2007-2008 Labware Catalog and Aldrich Handbook of Fine Chemicals set is now available! The new Labware catalog contains:

- Approximately 1,300 pages showing 17,000 products carefully selected to support Chemistry and Life Science customers and applications
- Comprehensive 40 page index and thumbnail pictures for easy navigation
- More photos and section tables

To request your 2007-2008 Labware Catalog Aldrich Handbook of Fine Chemicals set, please go to our Web site at sigma-aldrich.com/handbook33. Please continue to send us your comments at labware@sial.com.

Research is easier when you use the right tools!

Labware Listens

Medha Kamat of University of Missouri-St. Louis emailed us to see if we carried a 24/40 threaded septa. Being a leader in the laboratory septa market, we were quickly able to recommend our exclusive product, Suba-Seal® septa (catalog number Z167320). Suba-Seal septa is well-known as the best quality rubber turn-over closure with serrated stopper. This septa is ideal for air and moisture-sensitive chemistry procedures. After piercing with a non-coring needle, the rubber closes around the puncture providing an air and moisture tight seal to protect contents of vessel or container from atmosphere.

This closure has turnover flange molded to grip the outside of the container neck, promoting a double seal in conjunction with annular serrations on a hollow plug. Annular serrations depress themselves against the inside wall of the bottle neck, making each serration a suction sealing point.

We welcome any inquiries that you might have. Please send to labware@sial.com.

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Down Time

Sudoku was published by Nicoli in 1986. The name Sudoku is an abbreviation of the Japanese phrase "suji wa dokushin ni kagiru" meaning "digits must occur only once". Fill in all squares in the grid so that each row, each column and each of the 3x3 squares contain all digits from 1 to 9.

Answers can be found at sigma-aldrich.com/labwarenotes.

Labware Links

For more information on the products featured in this newsletter, protocols and many useful Labware Web links, please visit sigma-aldrich.com/labwarenotes.

