

## NanoSHIELD™ LHV Filter Tubes

### Low Hold-Up Volume Testing of Experimental Photoresists and Ancillary Chemicals








NanoSHIELD LHV filter tubes have been specially designed to provide superior particle retention and low hold-up volume for advanced photoresists and ancillary chemicals. Utilizing Hollow Fiber Technology (HFT), NanoSHIELD filters are able to deliver high flow rates with low hold-up volume, to minimize the waste of experimental photoresist formulations. The tubes are offered in 1/4" and 3/8" outside diameters thereby allowing common compression fittings to connect directly to the outside of the NanoSHIELD LHV tube. In addition, a syringe can also be injected directly into the tube.

These small compact filter tubes allow material suppliers to assess parameters such as material compatibility, photo-speed, particle retention, and lithography in a rapid and cost effective manner. NanoSHIELD LHV filter tubes contain the same filter media as full size NanoSHIELD filter cartridges and capsules, ensuring a consistent level of quality throughout laboratory, pilot, and full-scale production testing. The NanoSHIELD family of products is

offered in several configurations to allow the end user to match the volume of fluid with the appropriate filter in an effort to reduce chemical waste.

NanoSHIELD LHV filter tubes are ideally suited for critical applications requiring high particle retention and high flow rates at 0.01, 0.02, 0.05, and 0.1  $\mu\text{m}$ .

#### Full Scale-Up - The NanoSHIELD Filter Family

SDC		LHV Tubes (Not Shown)	Laboratory Testing on New Formulations
MDC		SDC Capsules	Pilot Scale Production up to 1 gallon
LDC		MDC Capsules	Pilot Scale Production up to 5 gallons
		LDC Capsules	Pilot Scale Production up to 100 gallons
		Filter Cartridges	Full Scale Production greater than 100 gallons

#### Applications

■ 193nm Photoresists	■ Alcohols
■ ARC, BARC, TARC	■ Bases
■ Etchants / Strippers	■ Developers
■ Polyimide	■ Solvents

Features	Benefits
■ Hollow Fiber Technology	<ul style="list-style-type: none"> <li>■ More filtration per surface area as compared to pleated filters</li> <li>■ Provides both lower operating and differential pressure across the filter to minimize outgassing and micro-bubble formation</li> </ul>
■ Polypropylene and Polyethylene Construction	<ul style="list-style-type: none"> <li>■ Excellent chemical resistance to photoresists and ancillary chemicals</li> <li>■ No IPA pre-wetting and system flushing required</li> </ul>
■ 0.01 $\mu\text{m}$ and 0.02 $\mu\text{m}$ Retention Ratings	<ul style="list-style-type: none"> <li>■ Superior removal of particles, gels, and micro-bubbles</li> <li>■ Reduced micro-bridge and wafer level defects for 193nm photoresists</li> </ul>
■ Small Compact Design	<ul style="list-style-type: none"> <li>■ Reduced hold-up volume and waste of expensive chemicals</li> </ul>

**NEW**

## Specifications

Membrane Material	Hollow Fiber Polypropylene
Tubing Material	Polyethylene
Potting Material	Polyethylene
Filtration Surface Area – 1/4" tube	3.9 in <sup>2</sup> (25 cm <sup>2</sup> )
Filtration Surface Area – 3/8" tube	17 in <sup>2</sup> (110 cm <sup>2</sup> )
Outside Diameter (nominal)	1/4" (6.4 mm) , 3/8" (9.5 mm)
Length (nominal)	4.1" (10.5 cm)
Maximum Operating Pressure	58 psig @ 77°F (4 bar @ 25°C)
Maximum Operating Temperature	104°F (40°C)
Absolute Removal Ratings (µm)	0.01, 0.02, 0.05, and 0.1
Maximum Differential Pressure	28 psid @ 77°F (1.9 bar @ 25°C)
Filter Integrity	100% Tested

## NanoSHIELD™ LHV Filter Tube Ordering Guide

Media	Removal Rating	Configuration	Outside Diameter and Length	Quantity
NSP	001 – 0.01 µm 002 – 0.02 µm 005 – 0.05 µm 010 – 0.1 µm	T - Tube	1 – 1/4" x 4" 2 – 3/8" x 4"	5 – 5 per pack

Example – A single package (5 pieces) of 1/4"x 4" tubes, rated at 0.01 micron, would be NSP001T15.

### WARRANTY

Seller warrants its equipment against defects in workmanship and material for a period of 12 months from date of shipment from the factory under normal use and service and otherwise when such equipment is used in accordance with instructions furnished by Seller and for purposes disclosed in writing at the time of purchase, if any. Any unauthorized alteration or modification of the equipment by Buyer will void this warranty. Seller's liability under this warranty shall be limited to the replacement or repair, F.O.B. point of manufacture, of any defective equipment or part which, having been returned to the factory, transportation charges prepaid, has been inspected and determined by the Seller to be defective. THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EITHER EXPRESSED OR IMPLIED, AS TO DESCRIPTION, QUALITY, MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE OR USE, OR ANY OTHER MATTER. Under no circumstances shall Seller be liable to Buyer or any third party for any loss of profits or other direct or indirect costs, expenses, losses or consequential damages arising out of or as a result of any defects in or failure of its products or any part or parts thereof or arising out of or as a result of parts or components incorporated in Seller's equipment but not supplied by the Seller.

### Your Local CUNO Distributor:



a 3M company

CUNO Filtration Asia Pte Ltd  
2A Tuas Avenue 12  
Singapore 693023

CUNO Pacific Pty Ltd  
140 Sunnyholt Road  
Blacktown, NSW 2148  
Australia

CUNO Latina Ltda  
Rua Amf Do Brasil 251  
18120 Mairinque-Sp  
Brazil

Cuno Filtration Shanghai Co, Ltd  
No. 2 Xin Miao San Rd,  
Xin Miao Town,  
Song Jiang District,  
Shanghai, China. 201612

CUNO K.K.  
Hodogaya Station  
Building 6F  
1-7 Iwai-cho, Hodogaya-ku  
Yokohama 240 Japan

CUNO Ltd  
21 Woking Business Park  
Albert Drive  
Woking, Surrey GU215JY  
United Kingdom

## Cuno Incorporated

400 Research Parkway  
Meriden, CT 06450, U.S.A.

Tel: (800) 243-6894  
(203) 237-5541

Fax: (203) 630-4530  
www.cuno.com