Thermo Scientific™ Nalgene™ Rapid-Flow™ Filterware Certification Program Guide

Testing Procedures

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CERTIFICATE OF QUALITY

Thermo Fisher Scientific certifies that this product meets the following criteria

Thermo Scientific Nalgene Disposable Filter Unit, OR
Nalgene® Disposable Bottle Top Filter OR
Nalgene Disposable Filter Unit Receiver

Catalog Number:

Pore Size: µm

Lot Number:

PRODUCT CRITERIA

Non-Fiber Releasing Membrane
This product was manufactured using a

microporous membrane which meets the criteria for "non-fiber" releasing filters as defined in 21 CFR 210.3 (b) (6) of the Food Additive Amendment of the U.S. Federal Food and Drug Act.

Component Materials Toxicity

All component materials have been tested and met the requirements for United States Pharmacopoeia (USP) Class VI Biological Test for Plastics, current edition. The plastics meet the requirements of the United States Food and Drug Administration (FDA) for food and beverage contact in 21 CFR 177. *et seq.*

Heavy Metals

The resins used in the manufacture of Nalgene Disposable Filter Units do not require reporting under The Superfund Amendment and Reauthorizaton Act (SARA) Title III Section 313. They would pass Toxicity Characteristic Leaching Procedure (TLCP) testing.

Membrane Gravimetric Extractable

The extractable level of the membrane was less than weight percent of the membrane.

Bacterial Retention

Filter membranes are quantitatively retentive at

organisms using HIMA and/or ASTM methodologies.

Sterilization Validation

Gamma irradiation is validated according to ISO 11137 (sterilization of health care products – requirement for validation and routine control – radiation sterilization).

LOT CRITERIA

The manufacturing lot was sampled, tested and released by Quality Assurance for the following characteristics:

Membrane Bubble Point Integrity

Samples were tested according to an established procedure to determine the water bubble point of the product (isopropanol for PES products and 90mm 0.2µm SFCA products). This lot meets the established release criteria of
> psig (Bar).

Date Stamp Sequence #

Sterilization

Product has been gamma irradiated and dosimetrically released based upon ISO 11137 recommended practices.

Pyrogens

An extract from the lot was tested and certified non-pyrogenic with a documented endotoxin level of < EU/ml in conformance with the Limulus Amebocyte Lysate (LAL) USP test method.

Flow Rate

Samples met a flow rate of < seconds for 100 ml *of deionized water at 20°C at psig (Bar).
*50 mL for Cat. No. 564-0020

AUDIT CRITERIA

Audit criteria tests are conducted on a routine basis as appropriate for each product configuration manufactured.

Bioburden

Samples were evaluated to determine the viable microbial bioburden of the product.

Sterilization Dose Audit

Gamma irradiation is audited on a quarterly basis utilizing the recommended practices of ISO 11137.

This product is not intended for use in direct patient care or diagnostic procedures.

Thermo Scientific Nalgene CERTIFIED

Tresia O'Shea
Manager, Regulatory Compliance

Manufactured under an ISO 13485 registered Quality Management System.

8-0405-78 1013

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Section I - Introduction: Thermo Scientific Nalgene Filtration

The Thermo Scientific™ Nalgene™ Certificate of Quality

The results of 11 specific test parameters are provided on the Thermo Scientific Nalgene Certificate of Quality – test data that you can keep in your files. This information is particularly helpful if you are involved with products subject to GMP, ISO or United States FDA guidelines. Use Thermo Scientific Nalgene Filterware with confidence... it's certified.

Tests Performed and Testing Frequency

Our product has passed the following series of stringent tests and meets the specifications listed on the certificate.

1. Product Specific Criteria:
   - Component Materials Toxicity per USP Class VI
   - Heavy Metal Free per SARA
   - Membrane Bacterial Retention

2. Lot Specific Criteria: Every lot is tested
   - Membrane Bubble Point Integrity
   - Sterilization: gamma irradiated and dosimetrically released per ANSI/AAMI/ISO standards
   - Non-Pyrogenic: meets current USP guidelines
   - Flow Rate: minimum flow rate with DI water or isopropanol per specification

3. Audit Criteria: Test is performed to support lot-specific criteria
   - Bioburden: measured quarterly on product family representative
   - Sterilization Validation: Gamma irradiation validation, performed quarterly on product family representative per ANSI/AAMI/ISO standards

Thermo Scientific is committed to providing the highest quality filtration products to our customers. If you have any further questions, please contact us at the numbers listed on this publication's back page.

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Thermo Scientific Nalgene Filterware products are not intended for use in direct patient care or diagnostic procedures.

Product Criteria

Toxicity Test

USP Class VI Plastics Evaluation, *In Vivo*

Objective: To demonstrate that the materials utilized in the manufacture of Thermo Scientific Nalgene Certified Filterware are biologically compatible when tested per United States Pharmacopoeia (USP) current edition Class VI Plastics Evaluation, and are suitable as implantable materials. Though our filterware are not considered medical devices and are not implantable, we strive to maintain the highest quality.

Audit Frequency: Materials utilized in the manufacture of our filterware were evaluated once at the time of initial material qualification for compliance with USP Class VI requirements. Materials were evaluated independently of each other.

Test Method: Three test methods were utilized to determine the biological response of animals to a polymeric or elastic material by injection of extracts intracutaneously, systemically, and direct implant of the material. Test methods were a Systemic Injection Test, an Intracutaneous Injection Test and a Muscle Implant Test.

Dosages were administered as defined by USP. Observations and scoring were conducted as defined by USP for each test method performed.

Test Results: Plastic materials utilized in the manufacture of the Thermo Scientific Nalgene Certified Filterware have passed the USP Class VI Plastics Evaluation for Biological Reactivity;

Table 1. *In Vivo* Toxicity test results provided by Membrane manufacturers.

Membrane Type	Results
aPES	Pass
CN (MCE)	Pass
Nylon	Pass

References: United States Pharmacopoeia, current edition <88> Biological Reactivity Tests, *In Vivo*.

Product Criteria

Toxicity Test

Cytotoxicity, *In Vitro*

Objective: To demonstrate that the materials utilized in the manufacture of the Thermo Scientific Nalgene Certified Filterware are non-cytotoxic when evaluated utilizing a Biological Reactivity *In Vitro* Diagnostic Procedure with a WI38 or MRC-5 cell line.

Audit Frequency: Materials utilized in the manufacture of our filterware were evaluated once at the time of initial material qualification. Materials were evaluated independently from each other.

Test Method: Materials were evaluated for their toxic effect by utilizing a MEM elution technique in conjunction with a WI38 or MRC-5 cell line.

Cell cultures were scored for their reactivity as defined by USP, current edition, Biological Reactivity Tests, *In Vitro*.

Test Results: Materials utilized in the manufacture of our filterware have been demonstrated to be non-cytotoxic by showing that an extract of the material does not cause a difference in the growth of the cells as compared to a negative control.

Table 2. *In Vitro* Toxicity Test Results provided by Membrane manufacturers.

Membrane Type	Results
aPES	Pass
CN (MCE)	Pass
Nylon	Pass

References: United States Pharmacopoeia, current edition <87> Biological Reactivity Tests, *In Vitro*

Product Criteria

Heavy Metals Status

Objective: To demonstrate that the materials utilized in the manufacture of Thermo Scientific Nalgene Certified Filterware meet the criteria specified in the Superfund Amendment and Reauthorization Act (SARA).

Audit Frequency: Material documentation was obtained at the time of initial qualification.

Test Method: Test method consists of an isotopic analysis of the metallic content of an extract prepared from the material utilized in the construction of the filterware. The extract is analyzed by any of a number of methods including Atomic Absorption Spectroscopy (AA) and/or Inductively Coupled Plasma Spectroscopy (ICP).

Test Results: None of the color concentrates used in our filterware contain any reportable substances regulated under SARA. None of the colorants have been formulated with any chemical substances regulated by the EPA under the Toxicity Characteristic Leaching Procedure (TCLP).

The resins used in the manufacture of our filterware do not require reporting under SARA Title III Section 313 but would pass TCLP testing.

Table 3. SARA Test Results provided by Membrane manufacturers.

Membrane Type	Results
aPES	No SARA reportable substances
CN (MCE)	No SARA reportable substances
Nylon	No SARA reportable substances

References: Superfund Amendment and Reauthorization Act (SARA), 1986.

EPA Method 1311: Toxicity Characteristic Leaching Procedure, United States Environmental Protection Agency, 1986.

Product Criteria

Membrane Gravimetric Extractables

Objective: To demonstrate that the membranes utilized in the manufacture of Thermo Scientific Nalgene Certified Filterware meet the water extraction criteria specified.

Audit Frequency: Membranes were evaluated once at the time of initial qualification.

Test Method: Test method consists of a weight determination of the membrane in a humidity-controlled environment after equilibration in a 70°C drying oven before and after a 30 minute treatment in boiling reagent grade water. The weight difference is expressed as a percent of the dry membrane weight.

Test Results: Table 4. Extractables Test Results provided by Membrane manufacturers.

Membrane Type	Results
aPES	TOC≤15µg C/cm^2
CN (MCE)	<1.0%
SFCA	<0.5%

References: Standard Test Method for Quantity of Water-Extractable Matter in Membrane Filters, ASTM Designation D 3861.Section II - Test Specifications

Section II - Test Specifications

LOT Criteria

Bubble Point Determination

Objective: To determine the integrity of a membrane in the filterware by the use of a bubble point determination.

Audit Frequency: Every lot produced.

Test Method: Random samples are selected from each lot of filterware produced after sterilization and subjected to a bubble point determination. Each filter membrane is wetted with deionized water or isopropanol and then pressurized utilizing a Thermo Scientific Nalgene Bubble Point Tester* according to Thermo Fisher Scientific STP-054. Bubble point is recorded at the point at which a steady stream of bubbles is evident.

Test Results: Our filterware meets the requirements as defined on the Test Data Chart, page 11.

References: Thermo Fisher Scientific STP-054 Post Integrity Testing of Thermo Scientific Nalgene Certified Filterware.

*Should you want to determine bubble point after filtering, contact us for more information on obtaining a Thermo Scientific Nalgene Bubble Point Tester, Cat. No. DS0405-0050. Visit www.thermoscientific for details.

LOT Criteria

Pyrogen Bacterial Endotoxin Test

Objective: To determine that the filterware product is non-pyrogenic.

Audit Frequency: Every lot produced.

Test Method: As defined in USP current edition, each lot of our certified filterware is tested according to the methods described in section <85>.

Inhibition and Enhancement testing is conducted initially to demonstrate that the product does not interfere with the gel clot methodology utilized in the LAL test.
If the product has proven to be acceptable for this test method, routine evaluation is conducted on each lot of our certified filterware produced.

Ten samples are pulled from each production lot and subjected to the LAL test at a sensitivity of 0.25 EU/mL. USP has defined that units are accepted as non-pyrogenic if the concentration of endotoxin was shown to be below 0.5 EU/mL.

Test Results: All Thermo Scientific Nalgene Certified Filterware has passed the 0.5 EU/mL acceptance level.

References: United States Pharmacopoeia, current edition, section <85> Bacterial Endotoxin Test.

LOT Criteria

Flow Rate

Objective: To demonstrate that sterilized Thermo Scientific Nalgene Certified Filterware meets the flow rate criteria as specified.

Audit Frequency: Each lot of filterware is evaluated for flow rate.

Test Method: Consists of obtaining random samples of sterilized filterware and determining the time, in seconds, taken to filter a 100-mL volume of de-ionized water at 25-in. Hg (0.85 bar) of vacuum at 70°F/20°C.

Test Results: All of our filterware complies with the standards set forth in Thermo Fisher Scientific STP-054.

References: Thermo Fisher Scientific STP-054 Post Integrity Testing of Thermo Scientific Nalgene Certified Filterware.

Audit Criteria

Membrane Bacterial Retention

Objective: To determine the microbial retention capabilities of the membrane.

Test Method: Representative samples of sterile membranes are subjected to a microbial challenge with the appropriate challenge organism as indicated in the table below. Organisms are recovered from the filtrate and counted after incubation per protocol.

Table 5. Typical membrane bacterial retention test challenge organisms.

Pore Size, µm	Challenge Organism	Typical Challenge Concentration, cfu/cm^2
0.1	*Acholeplasma laidlawii*	1 x 10^8
0.2	*Brevundimonas diminuta*	1 x 10^7
0.45	*Serratia marcescens*	1 x 10^5
0.8	*Saccharomyces cereviciae*	1 x 10^5

Test Results: Table 6. Bacterial Retention Test Results provided by Membrane manufacturers.

Membrane Type	Pore Size, µm	Results
aPES	0.1	>7 Log Reduction
aPES	0.2	No passage of *B. diminuta*
aPES	0.45	Pore size determined by retention of *S. marcescens*
CN (MCE)	0.2	No passage of *B. diminuta*
CN (MCE)	0.45	Pore size determined by retention of *S. marcescens*
SFCA	0.2	No passage of *B. diminuta*
Nylon	0.2	No passage of *B. diminuta*
Nylon	0.45	No passage of *S. marcescens*

References: ASTM D3863 Bacteria retention determination for filters equal to or greater than 0.4-0.45 micrometer pore size.

Audit Criteria

Bioburden Determination

Objective: To determine and monitor the viable microbial population on a product prior to sterilization to define the appropriate sterilization dosimetry to achieve a minimum sterility assurance level of 10^{-4}.

Audit Frequency: Bioburden is conducted once a quarter.

Test Method: Representative samples are pulled from a routine production lot and are subjected to a bioburden analysis.

Bioburden determination is conducted by performing a product extraction process in which the bioburden load is recovered.
Extracts are plated for mesophilic aerobes, fungi and mesophilic spores.

Plates are incubated for 3-5 days and microbial counts are determined.

Test Results: Results of the microbial recovery must be within the acceptable range for the validated sterilization dosimetry for the product or revalidation must be conducted.

References: Association for the Advancement of Medical Instrumentation ANSI/AAMI/ISO 11737-current edition.

Audit Criteria

Sterilization Dose Audit/Sterility Assurance

Objective: To demonstrate that the dosimetric sterilization process utilized provides the safety assurance level of 10^{-4} as defined for Thermo Scientific Nalgene Certified Filterware.

Audit Frequency: Dose audit of the sterilization process is conducted on a quarterly basis.

Test Method: A sterilization family dose audit is performed every three months in accordance with ANSI/AAMI/ISO 11137 to demonstrate the continued validity of the sterilization dose.

Test Results: Product is released dosimetrically.

References: ANSI/AAMI/ISO 11137-current edition

Audit Criteria

Sterilization Validation

Objective: To validate the efficacy of the gamma irradiation process at the predetermined sterility assurance level (SAL 10^{-4}).

Audit Frequency: Validation of the sterilization process is conducted during initial product development and validation.

Test Method: The methodology employed is set forth in ANSI/AAMI/ISO 11137; Sterilization of health care products - Requirements for validation and routine control-Radiation sterilization. These guidelines are followed to ensure that the sterilization criteria or standards, which validate the sterilization process, are met prior to and during the manufacturing process of a sterile product.

Test Results: All Thermo Scientific Nalgene Certified Filterware is validated as sterile.

References: Sterilization of health care products - Requirements for validation and routine control - Radiation sterilization, ANSI/AAMI/ISO 11137-current edition

Section III - Technical Information

Materials of Construction

Housing	
LDPE	Low-density polyethylene
PS	Polystyrene
HIPS	High-impact polystyrene
Membrane	
aPES	Asymmetric polyethersulfone
CN	Cellulose nitrate (mixed cellulose ester)
NYL	Nylon
SFCA	Surfactant-free cellulose acetate

Reference Documents

Many procedures and information sources are referenced in this guide. These documents can be requested directly from the sources listed below.

United States Pharmacopeia
www.usp.org

Code of Federal Regulations
www.access.gpo.gov/nara/cfr/cfr-table-search.html

ASTM - Test Methods
www.astm.org

AAMI Guidelines
www.aami.org

ISO Guidelines
www.iso.org

Membrane Properties

Membrane Type	Properties
Asymmetric Polyethersulfone (aPES)	Lowest protein binding; fastest flow rate; extremely low in extractables; no wetting agents; best membrane for media
Surfactant-Free Cellulose Acetate (SFCA)	Low protein binding; fast flow rate; lower extractables than standard CA membrane; Triton-free; good for media
Cellulose Nitrate (CN) (mixed cellulose ester)	High protein binding; High extractables; Triton-free; good for filtering buffers and degassing polyacrylamide gels
Nylon (NYL)	Extremely low in extractables; high protein binding; no wetting agents; alcohol resistant

Section III - Technical Information

Plastic Material Properties

Material Housing	Polystyrene (PS)	High Impact Polystyrene (HIPS)	High Density Polyethylene (HDPE)
Specific Gravity	1.05	1.05	0.95
Temperature Limit, °C	90	90	120
Color	Clear	Colored	Opaque White
Non-Cytotoxicity	Yes	Yes	Yes
Suitability for Food and Beverage Part 21 CFR	177.1640	177.1640	177.1520

General Membrane Specifications - Presented as guidelines only. Refer to the Certificate of Quality for your specific lot of Nalgene filters for the most current information.

Membrane Material	Pore Size, µm	Bubble Point, psig, (water)	Extractebles, %	Pyrogens, EU	Retention		Temp. Limit C°	Color	Non-Cytotoxicity
					Level	Organism			
Asymmetric Polyethersulfone (aPES)	0.2	>20[1]	<0.5	<0.25	le7	*Brevundimonas diminuta*	130	Opaque White	Yes
Asymmetric Polyethersulfone (aPES)	0.45	>10[1]	<0.5	<0.25	le7	*Brevundimonas diminuta*	130	Opaque White	Yes
Asymmetric Polyethersulfone (aPES)	0.1	>24[1]	<0.5	<0.25	le7	*Acholeplasma laidlawii*	130	Opaque White	Yes
Cellulose Nitrate (CN) (mixed cellulose ester)	0.2	>40	<10	<0.25	le7	*Brevundimonas diminuta*	130	Opaque White	Yes
Cellulose Nitrate (CN) (mixed cellulose ester)	0.45	>25	<10	<0.25	le5	*Serratia marcescens*	130	Opaque White	Yes
Cellulose Nitrate (CN) (mixed cellulose ester)	0.8	>10	<10	<0.25	le5	*Saccharomyces cerevisiae*	130	Opaque White, black grid	Yes
Nylon	0.2	>40	<0.5	<0.25	le7	*Brevundimonas diminuta*	125	Opaque White	Yes
Nylon	0.45	>25	<0.5	<0.25	le5	*Serratia marcescens*	125	Opaque White	Yes
Surfactant-Free Cellulose Acetate (SFCA)	0.2	>40[2]	<1.0	<0.50	le7	*Brevundimonas diminuta*	130	Opaque White	Yes
Surfactant-Free Cellulose Acetate (SFCA)	0.45	>25	<1.0	<0.50	le5	*Serratia marcescens*	130	Opaque White	Yes

[1] Using Isopropanol

[2] Bubble point of 90mm diameter SFCA 0.2um is 13 using Isopropanol.

Filterware Chemical Resistance

This chemical resistance information is intended as a general guide only. For more complete information, visit our web site: www.thermoscientific.com/filtration. Since actual chemical resistance depends on many variables, such as temperature, pressure and length of exposure, you may want to test under your own conditions. The information on this page includes both certified and non-certified products.

Key:

- S - Satisfactory
- M - Marginal, may be satisfactory for short-term contact and/or small volume filtration. Trial testing is advised.
- U - Unsatisfactory
- — - No data available

- HDPE - High Density Polyethylene
- NYL - Nylon
- PTFE - Teflon PTFE
- PS - Polystyrene
- PSF - Polysulfone

- ACR - Acrylic
- PP - Polypropylene
- aPES - Asymmetric polyethersulfone
- CA - Cellulose acetate
- CN - Cellulose nitrate (mixed cellulose ester)
- GFP - Glass-fiber prefilter
- SFCA - Surfactant-free cellulose acetate

		Membranes						Closure	Housings			
	Chemicals	aPES	CN*	CA/SFCA	GFP	NYL	PTFE	HDPE	PS	PSF	ACR	PP
Acids	Acetic acid, 25%	S	S	M	M	M	S	S	M	M	M	S
	Acetic acid, 100% (glacial)	M	U	U	M	M	S	S	U	U	U	S
	Formic acid, 25%	S	S	M	S	U	S	S	U	M	M	S
	Formic acid, 100%	M	M	U	S	U	S	S	U	U	U	S
	Hydrochloric acid, 25%	S	U	U	S	U	S	S	S	M	M	S
	Hydrochloric acid, 37% (conc.)	S	U	U	S	U	S	S	M	U	M	S
	Nitric acid, 25%	U	M	M	M	U	S	S	U	M	M	S
	Nitric acid, 60%	U	U	U	S	U	S	M	U	U	U	M
	Phosphoric acid, 25%	–	S	S	–	U	S	S	M	S	M	S
	Sulfuric acid, 25%	U	S	M	S	U	S	S	S	S	S	S
	Sulfuric acid, 98% (conc.)	U	U	U	M	U	S	M	U	U	U	M
Ethylene Alcohols	Amyl alcohol	U	S	S	S	S	S	S	M	M	M	S
	Benzyl alcohol	U	M	M	S	S	S	M	U	U	U	S
	Ethanol (ethyl alcohol), 70%	M	M	S	S	S	S	M	M	S	U	S
	Ethanol (ethyl alcohol), 98%	M	U	S	S	S	S	S	M	M	U	S
	Glycol	M	M	S	S	S	S	S	S	S	M	S
	Glycerol	M	S	S	S	S	S	S	S	S	M	S
	Isopropanol	M	M	S	S	S	S	S	S	M	U	S
	Methanol (methyl alcohol), 98%	M	U	S	S	S	S	S	M	M	U	S
	n-Propanol (propyl alcohol)	M	M	M	S	S	S	S	S	M	U	S
	Phenol	U	U	U	S	S	S	U	U	U	U	U
	Propylene glycol	M	U	M	S	M	S	S	S	M	M	S
Bases	Ammonium hydroxide, 25%	U	U	M	U	S	S	S	M	U	S	S
	Ammonium hydroxide, 1N	S	S	S	S	S	S	S	S	S	S	S
	Potassium hydroxide, 1N	S	U	U	S	S	S	S	S	M	S	S
	Sodium hydroxide, 5%	S	U	M	S	S	S	S	S	M	S	S
	Sodium hydroxide, 5%	M	U	M	S	S	S	S	S	S	S	S
	Sodium hydroxide, 6N	M	U	U	M	M	S	S	S	U	S	S
Esters	Amyl acetate	U	U	M	S	S	S	S	U	U	U	S
	Benzyl benzoate	U	S	S	–	S	S	–	U	U	U	M
	Butyl acetate	U	U	M	S	S	S	S	U	U	U	M
	Ethyl acetate, Methyl acetate	U	U	U	S	S	S	S	U	U	U	M
	2-Ethoxyethyl acetate	S	U	U	S	S	S	S	–	U	–	S
	Methyl cellosolve acetate	S	U	U	S	U	S	–	U	U	M	M
	Propyl acetate	U	U	M	S	S	S	S	U	U	U	M
Hydrocarbons (aliphatic)	Gasoline	M	S	S	S	S	S	M	U	U	U	M
	Hexane	U	S	S	S	S	S	S	U	M	M	M
	Kerosene	S	S	S	S	S	S	M	U	M	U	M
Hydrocarbons (aromatic)	Toluene	M	S	S	S	S	S	U	U	U	U	M
	Xylene	U	S	S	S	S	S	M	U	U	U	M
Hydrocarbons (halogenated)	Carbon tetrachloride	U	S	M	S	S	S	S	U	U	U	M
	Chloroform	U	S	U	S	S	S	M	U	U	U	U
	Freon	M	S	S	S	S	S	S	U	U	U	M
	Methylene chloride	U	M	U	S	S	S	M	U	U	U	M
	Monochlorobenzene	U	S	S	S	S	S	U	U	U	U	U
	Perchloroethylene	M	S	S	S	S	S	U	U	U	U	M
	1,1,1-Trichloroethane	M	M	U	S	S	S	M	U	U	U	U
	1,1,2-Trichloroethane	M	U	U	S	S	S	M	U	U	U	U
	Trichloroethylene	U	S	S	S	S	S	U	U	U	U	M
Ketones	Acetone	U	U	U	S	S	S	U	U	U	U	M
	Cyclohexanone	U	U	U	S	S	S	M	U	U	U	M
	Methyl ethyl ketone	U	U	U	S	S	S	U	U	U	U	M
Miscellaneous	Acetonitrile	M	U	U	S	S	S	S	U	U	U	S
	Acrylamide	S	S	S	S	S	S	S	S	S	S	S
	Dimethylsulfoxide (DMSO)	U	U	U	S	S	S	S	M	U	U	S
	Dioxane	M	U	U	S	S	S	S	U	U	U	S
	Ethyl ether	S	M	M	S	S	S	M	U	U	U	M
	Formaldehyde, 30%	S	S	M	S	S	S	S	U	M	U	S
	Hydrogen peroxide, 30%	–	U	S	S	S	S	S	S	S	M	S
	Methyl cellosolve	–	U	U	S	S	S	–	U	U	U	S
	Pyridene	U	U	U	S	M	S	U	U	U	U	U
	Tetrahydrofuran	U	U	U	S	S	S	M	U	U	U	U

* Do not use CN membranes for EDTA or TRIS.

thermoscientific.com/rapidflow

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