

# Thermo Scientific Nalgene Centrifugeware Guidelines for Use

Thermo Scientific™ Nalgene™ Centrifugeware includes reusable plastic tubes and bottles. Choose from several premium resins to suit your demanding requirements for mechanical strength, transparency, chemical and temperature resistance and autoclavability.

## Physical Properties

Resin codes	Max. use temp. <sup>1,5</sup> , °C	Brittleness temp. <sup>1,5</sup> , °C	Transparency	Autoclavable	Dry heat <sup>2</sup> sterilization
LDPE	80	-100	Translucent	No	No
HDPE	120	-100	Translucent	No	No
PP	135	0	Translucent	Yes	No
PPCO	121	-40	Contact-Clear <sup>3</sup>	Yes	No
FEP	205	-270	Translucent	Yes	Yes
ETFE	150	-105	Translucent	Yes	No
PC	135	-135	Clear	Yes <sup>4</sup>	No
PS	90	20	Clear	No	No
PSF	165	-100	Clear	Yes <sup>4</sup>	Yes <sup>4</sup>

### Key:

LDPE - Low-Density Polyethylene  
 HDPE - High-Density Polyethylene  
 PP - Polypropylene  
 PPCO - Polypropylene Copolymer  
 FEP - Teflon® FEP (fluorinated ethylene propylene)  
 ETFE - Tefzel® (ethylene-tetrafluoroethylene)  
 PC - Polycarbonate  
 PS - Polystyrene  
 PSF - Polysulfone

- 1 Temperature ranges here are for tube or bottle materials ONLY. For use with closures, check listings for Tefzel ETFE and polypropylene. CAUTION: Do not exceed Max. Use Temp. above, or expose labware to chemicals which, when heated, attack the plastic or are rapidly absorbed.
- 2 Dry heat; 2 hours at 160°C/320°F. All resins can also be gas-sterilized (ethylene oxide).
- 3 Nearly transparent when in contact with clear liquid.
- 4 Reduces mechanical strength.
- 5 These temperatures apply to STATIC USE ONLY. Centrifugation at temperatures above 22°C or below 4°C may cause tube or bottle failure.

## Chemical Resistance Summary

The compatibility between chemicals and plastic centrifuge ware is affected by temperature, chemical concentration, g-force, length of run and other factors. **Because of the stresses associated with centrifugation, these ratings are a general guide only. We recommend a trial run before using a certain chemical.** If any doubt exists about a particular application, refer to the detailed chemical resistance charts in the current Thermo Fisher Labware Catalog or contact Nalgene Technical Service at 1-800-625-4327; Email: Technical.nalgene@thermofisher.com.

## Additional Guidelines

### Cleaning

- 1 Soak centrifuge ware in a mild, non-alkaline detergent (such as Nalgene L900) to loosen debris.
- 2 Hand wash and rinse thoroughly, with a final rinse in distilled water. Do not use abrasive cleansers or brushes.

## Chemical resistance summary

Resin codes	Acids, dilute/weak	Acids, strong/concentrated	Alcohols	Aldehydes	Bases	Esters	Hydrocarbons/aliphatic	Hydrocarbons/aromatic	Hydrocarbons/halogenated	Ketones	Oxidizing agents/strong
LDPE	S	M	M	U	S	M	U	U	U	U	U
HDPE	S	M	M	M	S	M	M	U	U	U	U
PP	S	M	M	M	S	M	M	U	U	U	U
PPCO	S	M	M	M	S	M	M	U	U	U	U
FEP	S	S	S	S	S	S	S	S	S	S	S
ETFE	S	S	S	S	S	S	S	M	S	M	S
PC	S	U	U	U	U	U	M	U	U	U	U
PS	S	U	U	U	S	U	U	U	U	U	M
PSF	S	M	U	U	M	U	M	U	U	U	M

### Key:

S=Satisfactory  
 M=Marginal, may or may not be satisfactory for centrifugation, depending on length of exposure and speed. We suggest testing under operating conditions  
 U=Unsatisfactory; not recommended

## Autoclaving

- 1 These plastics can be autoclaved repeatedly for 15-minute cycles at 121°C/15 psig (1.02 bar): PP, PPCO, FEP, ETFE.
- 2 **PC and PSF can be autoclaved repeatedly, but a loss in mechanical strength will result. Inspect these materials periodically for signs of crazing (minute cracks). Discard product if cracks are readily visible to the unaided eye.**
- 3 Do not autoclave LDPE, HDPE or PS.
- 4 Leave closures (cap and plug) unassembled from units to prevent collapse of tubes or bottles when cooling.

## Closures and Sealing Caps

Nalgene centrifuge tube closures (Cat. No. DS3111) are friction-fit closures for Nalgene round and conical-bottom centrifuge tubes. They may not provide a liquid-tight seal during high-speed runs. The Nalgene screw closures supplied with Oak Ridge tubes and bottles provide leakproof service when containers are run partially full. Nalgene sealing caps and sealing cap assemblies are also available to ensure leakproof service when spinning full Oak Ridge tubes and bottles. They are also recommended when spinning hazardous materials.

## Rotor Fit and Balancing

**Make sure your tube or bottle fits your rotor properly.** Consult the current Thermo Fisher Labware Catalog or rotor manufacturer for correct tube and bottle size. Also make sure that tubes and bottles are properly balanced in the rotor.

**Tubes and bottles must be at least 80% full for proper performance unless otherwise noted.**

## Special Note

- FEP Oak Ridge Tubes (Cat. No. 3114) are rated at 50,000 x g only if run completely full in a refrigerated centrifuge. These conditions prevent deformation of the tubes. For guaranteed leakproof service at the rated speed, also use a Nalgene sealing cap assembly (Cat. No. DS3131).
- FEP bottles (Cat. No. 3127) are rated at 4,000 x g only if run tightly capped and 100% full in a refrigerated centrifuge. These conditions minimize leakage of bottles when used with standard closures. For guaranteed leakproof service at the rated speed, also use a Nalgene sealing cap assembly (Cat. No. DS3131).
- PPCO bottles (Cat. No. 3120-9500) are rated to 4,800 x g only when bottles are filled to 75% of total capacity. Fill volumes greater than 75% may leak, deforming bottle and potentially damaging centrifuge equipment. Sealing caps are not available to fit this bottle.
- 175 mL PP bottle (Cat. No. 3143-0175) and 175 mL PC bottle (Cat. No. 3144-0175), are not recommended to use in Thermo Fisher Fiberlite F14-6 x 250 y rotor, due to the cavity depth. You can achieve successful leak proof performance using these two bottles in Thermo Fisher Fiberlite F12-6x500 LEX rotor when used with the 010-0152 adaptor at speeds up to but not exceeding 24,470 x g.

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Description	Nominal vol., mL	Nom. dim. dia. x ht., mm	Material	Maximum RCF <sup>2,3</sup>		Closure Cat. No.	Sealing cap Cat. No.	Rack' Cat No.	Cat. No.
				4°C	22°C				
Oak ridge tube, screw top	10	16.0 x 81.5	FEP	50,000 <sup>4</sup>	NR			5970-0x16	3114-0010
Oak ridge tube, screw top	10	16.1 x 81.7	PC	50,000 <sup>4</sup>	50,000 <sup>4</sup>			5970-0x16	3118-0010
Oak ridge tube, screw top	10	16.0 x 81.4	PPCO	50,000 <sup>4</sup>	50,000 <sup>4</sup>			5970-0x16	3119-0010
Oak ridge tube, sealing cap	10	16.1 x 82.3	PC	50,000	50,000		Included	5970-0x16	3138-0010
Oak ridge tube, sealing cap	10	16.0 x 82.0	PPCO	50,000	50,000		Included	5970-0x16	3139-0010
Round tube, open top	12	15.9 x 103.0	PPCO	50,000	50,000	DS3111-0016		5970-0x16	3110-0120
Round tube, open top	12	16.0 x 103.5	PC	50,000	50,000	DS3111-0016		5970-0x16	3117-0120
Conical bottom tube, open top	15	16.9 x 118.9	PPCO	6,000	6,000	DS3111-0017		5970-0x16	3103-0015
Conical bottom tube, open top	15	16.9 x 120.2	PC	6,000	6,000	DS3111-0017		5970-0x16	3105-0015
Round tube, open top	15	15.9 x 113.9	PPCO	50,000	50,000	DS3111-0016		5970-0x16	3110-0150
Round tube, open top	15	16.1 x 114.3	PC	50,000	50,000	DS3111-0016		5970-0x16	3117-0150
Oak ridge tube, sealing cap	16	18.2 x 106.9	PC	50,000	50,000		Included	5970-0x16	3138-0016
Oak ridge tube, sealing cap	16	17.9 x 106.9	PPCO	50,000	50,000		Included	5970-0x20	3139-0016
Round tube, open top	16	18.0 x 99.3	PPCO	50,000	50,000	DS3111-0018		5970-0x20	3110-0160
Round tube, open top	16	18.1 x 100.6	PC	50,000	50,000	DS3111-0018		5970-0x20	3117-0160
Oak ridge tube, screw top	28	25.4 x 101.8	PC	50,000 <sup>4</sup>	50,000 <sup>4</sup>			5930-0025	3118-0028
Oak ridge tube, screw top	28	25.4 x 101.9	PPCO	50,000 <sup>4</sup>	50,000 <sup>4</sup>			5930-0025	3119-0028
Oak ridge tube, screw top	30	25.7 x 93.7	FEP	50,000 <sup>4</sup>	NR		DS3131-0020	5930-0025	3114-0030
Oak ridge tube, screw top	30	25.7 x 94.5	PSF	50,000 <sup>4</sup>	50,000 <sup>4</sup>		DS3131-0020	5930-0025	3115-0030
Oak ridge tube, screw top	30	25.7 x 94.5	PC	50,000 <sup>4</sup>	50,000 <sup>4</sup>		DS3132-0020	5930-0025	3118-0030
Oak ridge tube, screw top	30	25.5 x 94.3	PPCO	50,000 <sup>4</sup>	50,000 <sup>4</sup>		DS3132-0020	5930-0025	3119-0030
Oak ridge tube, sealing cap	30	25.7 x 101.6	PC	50,000	50,000	DS3132-0020	DS3132-0020	5930-0025	3138-0030
Oak ridge tube, sealing cap	30	25.5 x 101.4	PPCO	50,000	50,000	DS3132-0020	DS3132-0020	5930-0025	3139-0030
Conical oak ridge tube, sealing cap	35	28.8 x 114.1	PC	50,000	50,000	71-2150-0240	DS3132-0024	5930-0025	3146-0050
Conical oak ridge tube, sealing cap	35	28.6 x 113.8	PPCO	50,000	50,000	71-2150-0240	DS3132-0024	5930-0025	3148-0050
Round tube, open top	38	25.4 x 89.1	PPCO	50,000	50,000	DS3111-0025		5930-0025	3110-0380
Round tube, open top	38	25.5 x 89.4	PC	50,000	50,000	DS3111-0025		5930-0025	3117-0380
Conical bottom tube, open top	50	28.6 x 133.4	PPCO	6,000	6,000	DS3111-0025		5930-0030	3103-0050
Conical bottom tube, open top	50	28.9 x 134.5	PC	6,000	6,000	DS3111-0029		5930-0030	3105-0050
Oak ridge tube, screw top	50	28.8 x 107.7	FEP	50,000 <sup>4</sup>	NR		DS3131-0024	5970-0030	3114-0050
Oak ridge tube, screw top	50	29.0 x 107.7	PSF	50,000 <sup>4</sup>	50,000 <sup>4</sup>	71-2174-0240	DS3131-0024	5970-0030	3115-0050
Oak ridge tube, screw top	50	28.8 x 107.0	PC	50,000 <sup>4</sup>	50,000 <sup>4</sup>	71-2150-0240	DS3132-0024	5970-0030	3118-0050
Oak ridge tube, screw top	50	28.8 x 106.7	PPCO	100,605 <sup>4</sup>	100,605 <sup>4</sup>	71-2150-0240	DS3132-0024	5970-0030	3119-0050
Oak ridge tube, sealing cap	50	29.0 x 115.3	PSF	50,000	50,000	DS3132-0024	DS3132-0024	5970-0030	3137-0050
Oak ridge tube, sealing cap	50	28.8 x 115.0	PC	50,000	50,000	DS3132-0024	DS3132-0024	5970-0030	3138-0050
Oak ridge tube, sealing cap	50	28.8 x 114.1	PPCO	100,605	100,605	DS3132-0024	DS3132-0024	5970-0030	3139-0050
Round tube, open top	50	28.7 x 103.3	PPCO	50,000	50,000	DS3111-0030		5930-0030	3110-0500
Round tube, open top	50	29.3 x 103.8	PC	50,000	50,000	DS3111-0030		5930-0030	3117-0500
Round tube with lip, open top	50	28.7 x 104.2	PPCO	50,000	50,000	DS3111-0029		5970-0030	3110-9500
Round tube with lip, open top	50	28.7 x 106.4	PC	50,000	50,000	DS3111-0029		5930-0030	3117-9500
Oak ridge tube, screw top	85	38.2 x 105.7	PC	50,000 <sup>4</sup>	50,000 <sup>4</sup>				3118-0085
Round tube with lip, open top	100	31.8 x 164.1	PPCO	50,000	50,000	DS3111-0032		5970-0030	3110-1000
Round tube with lip, open top	100	31.8 x 165.1	PC	50,000	50,000	DS3111-0032		5930-0030	3117-1000
Conical wide-mouth bottle, sealing cap	175	61.5 x 143.5	PPCO	24,470	24,470	DS3132-0058	DS3132-0058		3143-0175
Conical wide-mouth bottle, sealing cap	175	61.4 x 144.3	PC	24,470	24,470	DS3132-0058	DS3132-0058		3144-0175
Conical wide-mouth bottle, screw top, sterile	175	61.5 x 135.6	PS	5,800	5,800				3145-0175
Bottle, screw top	250	61.8 x 127.7	PPCO	13,200	13,200	71-2150-0380	DS3131-0038		3120-0250
Bottle, screw top	250	61.8 x 127.6	PC	27,500	27,500	71-2150-0380	DS3131-0038		3122-0250
Wide-mouth bottle, screw top	250	61.2 x 131.9	HDPE	8,000	8,000	71-2150-0430			3121-0250
Spherical bottom bottle, screw top	250	61.9 x 145.8	PC	27,500	27,500	71-2150-0380	DS3131-0038		3123-0250
Bottle, screw top	250	60.0 x 128.8	FEP	4,000	NR		DS3131-0038		3127-0250
Wide-mouth bottle, sealing cap	250	61.5 x 135.1	PC	27,500	27,500	DS3132-0058	DS3132-0058		3140-0250
Wide-mouth bottle, sealing cap	250	60.7 x 133.4	PPCO	27,500	27,500	DS3132-0058	DS3132-0058		3141-0250
Wide-mouth bottle, sealing cap	450	69.5 x 160.0	PC	13,700	13,700	DS3132-0063	DS3132-0063		3140-0500
Wide-mouth bottle, sealing cap	450	69.5 x 160.0	PPCO	13,700	13,700	DS3132-0063	DS3132-0063		3141-0500
Bottle, screw top	500	73.8 x 169.8	PPCO	4,800	4,800				3120-0500
Bottle, screw top	500	69.5 x 170.2	PPCO	13,700	13,700				3120-9500
Bottle, screw top	500	69.5 x 169.6	PC	13,700	13,700				3122-0500
Bottle, screw top	1000	97.5 x 184.5	PPCO	7,100	7,100	71-2150-0630	DS3132-0063		3120-1000
Bottle, screw top	1000	97.6 x 188.4	PC	7,100	7,100	71-2150-0630	DS3132-0063		3122-1000
Bottle, screw top	1000	97.7 x 179.0	PPCO	7,100	7,100	71-2150-0630	DS3132-0063		3120-1010
Bottle, screw top	1000	98.1 x 180.2	PC	7,100	7,100	71-2150-0630	DS3132-0063		3122-1010
Bottle, screw top	1000	97.5 x 195.3	PC	15,810	15,810	DS3132-BLUE	DS3132-BLUE		3140-1002
Bottle, screw top	1000	97.5 x 195.3	PC	15,810	15,810	DS3132-BLUE	DS3132-BLUE		3140-1006
Bottle, sealing cap	1000	97.5 x 195.3	PPCO	15,810	15,810	DS3132-ORED	DS3132-ORED		3141-1002
Bottle, sealing cap	1000	97.5 x 195.3	PPCO	15,810	15,810	DS3132-ORED	DS3132-ORED		3141-1006
Biobottle, sealing cap	2000	111.5 x 209.3	PPCO	7,333	7,333	DS3132-0063	DS3132-0063		3120-2002 <sup>4</sup>
Biobottle, sealing cap	2000	111.5 x 209.3	PPCO	7,333	7,333	DS3132-0063	DS3132-0063		3120-2006 <sup>4</sup>
Biobottle, screw top, sterile	2000	111.5 x 209.3	PPCO	7,333	7,333				3120-2024 <sup>4</sup>

Nominal Dimensions include any required Nalgene adapters and sealing caps, sealing cap assemblies, where appropriate.

Included: Closures are provided; no replacement closures are available.

1. The "x" represents the color code digit for the catalog number. Available colors are white, yellow, orange, blue, green and red.

2. For use above 20,000 RCF, always pretest tubes.

3. No sealing cap assembly available; leakage may occur at speeds > 10,000 xg

4. Sealing cap assembly must be used for leak-proof performance at speeds >10,000 xg.

5. Speed ratings are guidelines only. Tubes must be appropriately fitted to the rotor to achieve max speed rating; tubes should be tested at application speed prior to first use to confirm proper rotor fit. For information regarding rotor make/model used to establish max speed ratings, contact technical support at [nnitech@thermofisher.com](mailto:nnitech@thermofisher.com).

6. For use in Thermo Scientific H12000 rotor only.

Manufactured under an ISO 13485 registered quality management system.

#### Important Note

The written warranty on your centrifuge does not prohibit you from using Nalgene Centrifuge Ware. Should the centrifuge manufacturer or representative inform you that the use of tubes other than those they manufacture affects the warranty on your centrifuge, please contact your Nalgene representative.

Find out more at [thermofisher.com/centrifugeware](http://thermofisher.com/centrifugeware)

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