

Tubes available for 70.1Ti, 45Ti, 90Ti, 100Ti and SW60Ti rotors, with speed and volume specifications for each tube

70.1Ti

Table 1 Available Tubes and Bottles for the Type 70.1 Ti Rotor

Tube				Required Accessory		Max Speed/ RCF/ <i>k</i> Factor
Dimensions	Description	Part Number	Max Fill Vol	Description	Part Number	
16 × 76 mm	Quick-Seal Ultra-Clear	344322 (pkg/50)	13.5 mL	red aluminum spacer	342695	70 000 rpm 450 000 × <i>g</i> 36
16 × 76 mm	Certified Free & Sterile Polypropylene Quick-Seal	C14306 Carton of 48 (8 packs of 6)	13.5 mL	red aluminum spacer	342695	70 000 rpm 450 000 × <i>g</i> 36
	Certified Free Polypropylene Quick-Seal	C14290 (pkg/50)				
	Standard Polypropylene Quick-Seal	342413 (pkg/50)				
16 × 76 mm	Ultra-Clear	344085 (pkg/50)	13.5 mL	titanium cap (use the red silicone O-ring)	341968	70 000 rpm 450 000 × <i>g</i> 36
16 × 76 mm	thinwall polypropylene	326814 (pkg/50)	13.5 mL	titanium cap (use the black Buna N O-ring)	341968	70 000 rpm 450 000 × <i>g</i> 36
16 × 76 mm	thickwall polypropylene	355640 (pkg/25)	9.3 mL (capped) 8 mL (w/o cap)	aluminum cap	338907 ^a	30 000 rpm 82 700 × <i>g</i> 199

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Table 1 Available Tubes and Bottles for the Type 70.1 Ti Rotor (Continued)

Tube				Required Accessory		Max Speed/ RCF/ k Factor
Dimensions	Description	Part Number	Max Fill Vol	Description	Part Number	
16 × 76 mm	thickwall polycarbonate	355630 (pkg/25)	9.3 mL (capped) 8 mL (w/o cap)	aluminum cap	338907 ^a	50 000 rpm ^b 230 000 × g 71
16 × 76 mm	polycarbonate bottle and cap assembly	355603 (pkg/6)	10.4 mL	—	—	65 000 rpm ^c 388 000 × g 42
	bottle only	355651		Noryl ^d cap	335257	
16 × 67 mm	Quick-Seal polypropylene bell-top	344622 (pkg/50)	10 mL	Noryl spacer	344676	70 000 rpm 450 000 × g 34
16 × 60 mm	OptiSeal bell-top ^e	361623 (pkg/56)	8.9 mL	amber Ultem ^f spacer	361670 (pkg/2)	70 000 rpm 450 000 × g 32
13 × 64 mm	Certified Free & Sterile Ultra-Clear Open-Top	C14296 Carton of 48 (8 packs of 6)	6.5 mL	Acetal adapter	303313	50 000 rpm 212 000 × g 60
	Certified Free Ultra-Clear Open-Top	C14280 (pkg/50)				
	Standard Ultra-Clear Open-Top	344088 (pkg/50)		aluminum cap	346256 ^g	
13 × 64 mm	thinwall polypropylene	326820 (pkg/50)	6.5 mL	Acetal adapter	303313	50 000 rpm 212 000 × g 60
				aluminum cap	346256 ^g	
13 × 64 mm	stainless steel	301099	6.5 mL	Acetal adapter	303313	40 000 rpm ^h 147 000 × g 112
				aluminum cap	305022	
16 × 45 mm	Quick-Seal polypropylene bell-top	345830 (pkg/50)	6.3 mL	Noryl floating spacer	303448	70 000 rpm 450 000 × g 24
16 × 38 mm	Quick-Seal polypropylene bell-top	356562 (pkg/50)	4.2 mL	Noryl floating spacer	345828	70 000 rpm 450 000 × g 17
13 × 64 mm	thickwall polypropylene	355644 (pkg/25)	4 mL	Acetal adapter	303313	50 000 rpm 212 000 × g 60
13 × 64 mm	thickwall polycarbonate	355645 (pkg/25)	4 mL	Acetal adapter	303313	50 000 rpm ^b 212 000 × g 60

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Table 1 Available Tubes and Bottles for the Type 70.1 Ti Rotor (*Continued*)

Tube				Required Accessory		Max Speed/ RCF/ k Factor
Dimensions	Description	Part Number	Max Fill Vol	Description	Part Number	
13 × 41 mm	Ultra-Clear	344093 (pkg/50)	4 mL	Acetal adapter	303402	45 000 rpm 152 000 × g 58
				aluminum cap	346256 ^g	
8 × 49 mm	Ultra-Clear	344091 (pkg/50)	2 mL	Acetal adapter	303376	45 000 rpm 138 000 × g 63
				aluminum cap	303624	

- a. Cap is optional.
- b. Max speeds given are those which the tubes could withstand when tested at 25°C for 24 hours. Further tests have shown that the polycarbonate tubes can run at 70 000 rpm for 6 hours or at 65 000 rpm for 8 hours.
- c. For lower fill volumes (not less than 5 mL) centrifuge no faster than 60 000 rpm.
- d. Noryl is a registered trademark of GE Plastics.
- e. Includes disposable plastic plugs.
- f. Ultem is a registered trademark of GE Plastics.
- g. Cap assembly includes neoprene gasket (344672) and stem (346246).
- h. For solution densities of 2.0 g/mL and below; above 2.0, further speed reductions are required. Refer to publication L5-TB-072 before centrifuging stainless steel tubes.

45Ti

Table 1 Available Tubes and Bottles for the Type 45 Ti Rotor. Use only the items listed here.

Tube				Required Accessory		Max Speed/ RCF/ k Factor
Dimensions	Description	Part Number	Max Fill Volume	Description	Part Number	
38 × 102 mm	Quick-Seal Ultra-Clear	345778 (pkg/25)	94 mL	titanium spacer	342697	45 000 rpm 235 000 × <i>g</i> 133
38 × 102 mm	Certified Free & Sterile Polypropylene Quick-Seal	C14305 Carton of 24 (4 packs of 6)	94 mL	titanium spacer	342697	45 000 rpm 235 000 × <i>g</i> 133
	Certified Free Polypropylene Quick-Seal	C14289 (pkg/25)				
	Standard Polypropylene Quick-Seal	345776 (pkg/25)				
38 × 102 mm	Ultra-Clear	345777 (pkg/25)	94 mL	red aluminum cap	330901 ^a	45 000 rpm 235 000 × <i>g</i> 133
38 × 102 mm	thickwall polypropylene	355643 (pkg/25)	81 mL	blue aluminum cap	338905	45 000 rpm 235 000 × <i>g</i> 133
			47 mL	none	—	15 000 rpm 26 200 × <i>g</i> 1195
38 × 102 mm	thickwall polycarbonate	355628 (pkg/25)	81 mL	blue aluminum cap	338905	45 000 rpm 235 000 × <i>g</i> 25
			47 mL	none	—	15 000 rpm 26 200 × <i>g</i> 1195
38 × 102 mm	polycarbonate bottle assembly (bottle only—355655)	355622 (pkg/6)	70 mL	aluminum cap	355623	45 000 rpm ^b 235 000 × <i>g</i> 133
16 × 76 mm	Ultra-Clear	344085 (pkg/50)	13.5 mL	Acetal adapter ^c	303448	39 000 rpm 149 000 × <i>g</i> 107
				aluminum cap	330860	
16 × 76 mm	thinwall polypropylene	326814 (pkg/50)	13.5 mL	Acetal adapter ^c	303448	39 000 rpm 149 000 × <i>g</i> 107
				aluminum cap	330860	
16 × 76 mm	thickwall polypropylene	355640 (pkg/25)	10 mL	Acetal adapter ^c	303448	39 000 rpm 149 000 × <i>g</i> 107
				aluminum cap ^d	338907	

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Table 1 Available Tubes and Bottles for the Type 45 Ti Rotor. Use only the items listed here. (Continued)

Tube				Required Accessory		Max Speed/ RCF/ k Factor
Dimensions	Description	Part Number	Max Fill Volume	Description	Part Number	
16 × 76 mm	thickwall polycarbonate	355630 (pkg/25)	10 mL	Acetal adapter ^c	303448	39 000 rpm 149 000 × g 107
				aluminum cap ^e	338907	
13 × 89 mm	Ultra-Clear	344087 (pkg/50)	10.5 mL	Acetal adapter ^c	303459	39 000 rpm 156 000 × g 110
				aluminum cap	346256 ^f	
13 × 89 mm	thinwall polypropylene	326822 (pkg/50)	10.5 mL	Acetal adapter ^c	303459	39 000 rpm 156 000 × g 110
				aluminum cap	346256 ^f	
13 × 89 mm	thickwall polypropylene	355639 (pkg/25)	6.5 mL	Acetal adapter ^c	303459	39 000 rpm 156 000 × g 110
13 × 89 mm	thickwall polycarbonate	355629 (pkg/25)	6.5 mL	Acetal adapter ^c	303459	39 000 rpm 156 000 × g 110
13 × 64 mm	Certified Free & Sterile Ultra-Clear Open-Top	C14296 Carton of 48 (8 packs of 6)	6.5 mL	Acetal adapter ^c	303449	39 000 rpm 138 000 × g 90
	Certified Free Ultra-Clear Open-Top	C14280 (pkg/50)				
	Standard Ultra-Clear Open-Top	344088 (pkg/50)		aluminum cap	346256 ^f	
13 × 64 mm	thinwall polypropylene	326820 (pkg/50)	6.5 mL	Acetal adapter ^c	303449	39 000 rpm 138 000 × g 90
				aluminum cap	346256 ^e	
13 × 64 mm	thickwall polypropylene	355644 (pkg/25)	4 mL	Acetal adapter ^c	303449	39 000 rpm 138 000 × g 90
13 × 64 mm	thickwall polycarbonate	355645 (pkg/25)	4 mL	Acetal adapter ^c	303449	39 000 rpm 138 000 × g 90

a. Use only neoprene O-ring (346242)

b. For lower fill volumes (not less than 15 mL) reduce maximum speed to 35 000 rpm.

c. Each adapter holds one tube.

d. Caps are optional with these tubes; capless fill volume is 8 mL. When run without caps, reduce speed to 15 000 rpm.

e. Caps are optional with these tubes; capless fill volume is 8 mL. When run without caps, reduce speed to 30 000 rpm.

f. Cap assembly includes neoprene gasket (344672) and stem (346246).

90Ti

Table 1 Available Tubes for the Type 90 Ti Rotor. Use only the items listed here.

Tube			Required Accessory		Tube Rack	Max Speed/ RCF/ <i>k</i> Factor
Dimensions and Volume	Description	Part Number	Description	Part Number		
16 × 76 mm 13.5 mL	Quick-Seal Ultra-Clear	344322 (pkg/50)	red aluminum spacer	342695	348123 ^a	90 000 rpm $694\,000 \times g$ 25
16 × 76 mm 13.5 mL	Certified Free & Sterile Polypropylene Quick-Seal	C14306 Carton of 48 (8 packs of 6)	red aluminum spacer	342695	348123 ^a	90 000 rpm $694\,000 \times g$ 25
	Certified Free Polypropylene Quick-Seal	C14290 (pkg/50)				
	Standard Polypropylene Quick-Seal	342413 (pkg/50)				
16 × 76 mm 13.5 mL	Ultra-Clear	344085 (pkg/50)	titanium cap (use the red silicone O-ring)	341968	none	80 000 rpm $548\,000 \times g$ 32
16 × 76 mm 13.5 mL	thinwall polypropylene	326814 (pkg/50)	titanium cap (use the black Buna N O-ring)	341968	none	80 000 rpm $548\,000 \times g$ 32

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Table 1 Available Tubes for the Type 90 Ti Rotor. Use only the items listed here. (Continued)

Tube			Required Accessory		Tube Rack	Max Speed/ RCF/ k Factor	
Dimensions and Volume	Description	Part Number	Description	Part Number			
16 × 76 mm 10 mL	thickwall polypropylene	355640 (pkg/25)	aluminum cap	338907	none	30 000 rpm 77 000 × <i>g</i> 190	
16 × 76 mm 10 mL	thickwall polycarbonate	355630 (pkg/25)	aluminum cap	338907	none	50 000 rpm ^b 197 000 × <i>g</i> 69	
16 × 76 mm 10.4 mL	polycarbonate bottle assembly (bottle only- 355651)	355603 (pkg/6)	Noryl ^c cap	355604	none	65 000 rpm ^d 362 000 × <i>g</i> 48	
16 × 67 mm 10 mL	Quick-Seal polypropylene	344622 (pkg/50)	Noryl spacer	344676	348123 ^e	90 000 rpm 694 000 × <i>g</i> 21	
16 × 60 mm 8.9 mL	OptiSeal bell-top ^f	361623 (pkg/56)	amber Ultem ^g spacer	361670 (pkg/2)	361642	90 000 rpm 694 000 × <i>g</i> 21	
13 × 64 mm 6.5 mL	Certified Free & Sterile Ultra-Clear Open-Top	C14296 Carton of 48 (8 packs of 6)	Acetal adapter	303313	none	50 000 rpm 197 000 × <i>g</i> 69	
	Certified Free Ultra-Clear Open-Top	C14280 (pkg/50)	aluminum cap	346256 ^h			
	Standard Ultra-Clear Open Top	344088 (pkg/50)					
16 × 64 mm 6.5 mL	thinwall polypropylene	326820 pkg/50)	Acetal adapter	303313	none	50 000 rpm 197 000 × <i>g</i> 69	
			aluminum cap	346256 ^h			
16 × 64 mm 6.5 mL	stainless steel	301099	Acetal adapter	303313	none	40 000 rpm ⁱ 126 000 × <i>g</i> 108	
			aluminum cap	303319			
16 × 45 mm 6.3 mL	Quick-Seal polypropylene	345830 (pkg/50)	Noryl floating spacer	345828	348123 ^j	90 000 rpm 694 000 × <i>g</i> 14	
16 × 45 mm 6.3 mL	Quick-Seal polypropylene	357334 (pkg/50)	Noryl floating spacer	345828	348123 ^j	90 000 rpm 694 000 × <i>g</i> 14	
16 × 38 mm 4.2 mL	Quick-Seal polypropylene	356562 (pkg/50)	Noryl floating spacer	345828	348123 ^a	90 000 rpm 694 000 × <i>g</i> 11	

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Table 1 Available Tubes for the Type 90 Ti Rotor. Use only the items listed here. (Continued)

Tube			Required Accessory		Tube Rack	Max Speed/ RCF/ k Factor
Dimensions and Volume	Description	Part Number	Description	Part Number		
16 × 38 mm 4.2 mL	Quick-Seal polypropylene	357332 (pkg/50)	Noryl floating spacer	345828	348123 ^a	90 000 rpm $694\,000 \times g$ 11
13 × 64 mm 4 mL	thickwall polypropylene	355644 (pkg/25)	Acetal adapter	303313	none	50 000 rpm $197\,000 \times g$ 69
13 × 64 mm 4 mL	thickwall polycarbonate	355645 (pkg/25)	Acetal adapter	303313	none	50 000 rpm ^b $197\,000 \times g$ 69
13 × 41 mm 4 mL	Ultra-Clear	344093 (pkg/50)	Acetal adapter	303402	none	45 000 rpm $138\,000 \times g$ 67
			aluminum cap	346256 ^h		
8 × 49 mm 2 mL	Ultra-Clear	344091 (pkg/50)	Acetal adapter	303376	none	40 000 rpm $128\,000 \times g$ 72
			aluminum cap	303624		

a. Tube Topper rack; if using the older tabletop tube sealer, use tube rack 342488.

b. Max speeds given are those that the tubes could withstand when tested at 25°C for 24 hours. Further tests have shown that the polycarbonate tubes can run at 75 000 rpm for 6 hours or at 65 000 rpm for 8 hours.

c. Noryl is a registered trademark of GE Plastics.

d. For lower fill volumes (not less than 5 mL) centrifuge no faster than 60 000 rpm.

e. Tube Topper rack, if using the older tabletop tube sealer, use rack 344641.

f. Includes disposable plastic plugs.

g. Ultem is a registered trademark of GE Plastics.

h. Cap assembly includes neoprene gasket (344672) and stem (346246).

i. For solution densities of 2.0 g/mL and below; above 2.0, further speed reductions are required. Refer to publication L5-TB-072 before centrifuging stainless steel tubes.

j. Tube Topper rack; if using the older tabletop tube sealer, use rack 344641 and use spacer (345828) upside-down in the bottom of the tube rack before inserting a tube (to remove the spacers, turn the rack upside-down).

100Ti

Table 1 Available Tubes for the Type 100 Ti Rotor^a

Tube			Required Accessory		Max Speed/RCF/ k factor
Dimensions/Nominal Volume/	Description	Part Number	Description	Part Number	
13 × 57 mm 6.0 mL	Quick-Seal polypropylene, bell-top	344619 (pkg/50)	Noryl ^b floating spacer	365470 (pkg/8)	100,000 RPM $801,920 \times g$ 15
13 × 51 mm 5.1 mL	Quick-Seal polypropylene, bell-top	362248 ^c (pkg/50)	Noryl floating spacer	360270 (pkg/8)	100,000 RPM $801,920 \times g$ 13.5
13 × 30 mm 3.5 mL	Quick-Seal polypropylene, bell-top	349621 ^d (pkg/50)	Noryl floating spacer	360270 (pkg/8)	100,000 RPM $801,920 \times g$ 9.4
13 × 25 mm 2.0 mL	Quick-Seal polypropylene, bell-top	345829 ^e (pkg/50)	Noryl floating spacer	360270 (pkg/8)	55,000 RPM $801,920 \times g$ 7

a. Use only the items listed here..

b. Noryl is a registered trademark of GE Plastics.

c. Tube 362248 is also available as part of *g*-Max Kit 363960..

d. Tube 349621 is also available as part of *g*-Max Kit 363961.

e. Tube 345829 is also available as part of *g*-Max Kit 363962.

SW60Ti

Table 1 Available Tubes for the SW 60 Ti Rotor^a

Tube			Required Accessory		Max Speed/ RCF/ k factor
Dimensions/ Nominal Volume/	Description	Part Number	Description	Part Number	
11 × 60 mm 4 mL	Ultra Clear	344062 (pkg/50)	none	—	60,000 RPM 485,000 × <i>g</i> 45
11 × 60 mm 4 mL	thinwall polyallomer	328874 (pkg/50)	none	—	60,000 RPM 485,000 × <i>g</i> 45
11 × 60 mm 3 mL	thickwall polyallomer	355636 (pkg/50)	none	—	60,000 RPM 485,000 × <i>g</i> 45
11 × 60 mm 3 mL	thickwall polycarbonate	355635 (pkg/50)	none	—	60,000 RPM 485,000 × <i>g</i> 45
11 × 60 mm 3 mL	konical polyallomer	355818 (pkg/50)	thermoplastic polyester elastomer adapter	358152	60,000 RPM 485,000 × <i>g</i> 45
11 × 60 mm 1.5 mL	konical polyallomer	355817 (pkg/50)	thermoplastic polyester elastomer adapter	358152	60,000 RPM 485,000 × <i>g</i> 45
11 × 60 mm 3 mL	Quick-Seal konical	358648 (pkg/50)	thermoplastic polyester elastomer adapter	358152	60,000 RPM 485,000 × <i>g</i> 45
			polyphenylene oxide (PPO) floating spacer	344674	
11 × 25 mm 1.5 mL	Quick-Seal polyallomer	344642 (pkg/50)	polyphenylene oxide (PPO) floating spacer	344674	60,000 RPM 485,000 × <i>g</i> 32
11 × 35 mm 1.3 mL	Quick-Seal konical, polyallomer	358655 (pkg/50)	thermoplastic polyester elastomer adapter	358152	60,000 RPM 485,000 × <i>g</i> 30
			polyphenylene oxide (PPO) floating spacer	344674	
11 × 32 mm 2 mL	Quick-Seal polyallomer	344625 (pkg/50)	polyphenylene oxide (PPO) floating spacer	344674	60,000 RPM 485,000 × <i>g</i> 36

a. Use only the items listed here..