



# Herolab

*Manufacturer of Life Science Instruments since 1979*



## HiGen<sup>®</sup> T+TR

**High-Speed Tabletop Centrifuges**  
with high performance refrigeration system or air-cooled

## HiCen<sup>®</sup> T+TR High-Speed for your Lab Table

### ➤ High-Speed Centrifuges with Flexible Axis!

- This provides the best smooth running.
- The separation of the own centering of the motor and the centering of the installed rotor protects the bearing of the entire drive system.
- Thus, your centrifuge will be maintenance free for a very long time.

Catalog No.	Description	Voltage	Phases	Hz
21 10 050	HiCen T, Standard for Europe	200-240 V	1	50/60 Hz
21 10 052	HiCen T	115 V	1	50/60 Hz
21 10 060	HiCen TR, Standard for Europe	refrigerated 220-240 V	1	50 Hz
21 10 062	HiCen TR,	refrigerated 115 V	1	60 Hz
21 10 064	HiCen TR,	refrigerated 208-230 V	1	60 Hz

- HiCen T and HiCen TR fit on the laboratory bench
- maximum capacity: 4 x 500 ml
- speed: 500 – 14,000 rpm / 16,000 rpm
- g-force (RCF): 1,968 – 21,913 x g / 26,790 x g
- timer: up to 180 min, in 1 min increments, HOLD for longer runs
- 8 acceleration and deceleration ramps
- maintenance free, brushless induction drive
- stainless steel chamber with additional inner guard ring
- overspeed detection, imbalance detection and cut-off
- motorized lid lock, automatic lid opening, emergency lid lock release
- large color display for both current and preset values of speed/g-force, time and temperature (temperature only at refrigerated model HiCen TR)

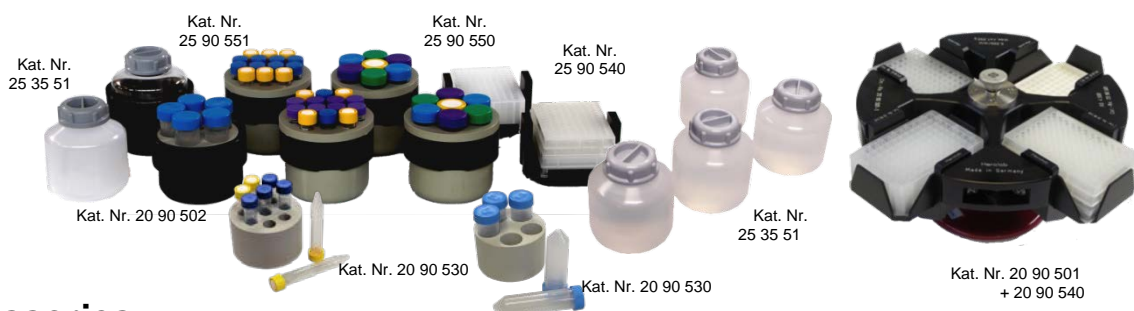


### Swing-out Rotors

HiCen<sup>®</sup> T

HiCen<sup>®</sup> TR

Cat. No.	Type	Max. Capacity		Max. Speed	Max. g-Force	Max. Speed	Max. g-Force
20 97 100	AS 2.6 (w/o photo)	2 x 3 microplates	incl. 2 carriers for plates up to 80 mm high and 2 plate holders	4,000 rpm	1,968 x g	4,500 rpm	2,490 x g
<b>20 90 501</b>	<b>AS 4.500</b>	<b>4 x 500 ml</b>	Basic rotor, buckets to be ordered separately				
20 90 540	Set of carriers for microplates	4 x 4 microplates	Set of 4 carriers	3,000 rpm	1,529 x g	3,000 rpm	1,529 x g
20 90 502	Set of buckets	4 round buckets for 1 x 500 ml resp. for adapters		4,000 rpm	3,130 x g	4,500 rpm	3,962 x g
20 90 550	Trunnion rings	4 x (7x 50 ml F)	set of 4 trunnion rings with adapter	4,000 rpm	3,130 x g	4,500 rpm	3,962 x g
20 90 551	Trunnion rings	4 x (14 x 15 ml F)	set of 4 trunnion rings with adapter	4,000 rpm	3,130 x g	4,500 rpm	3,962 x g



### Accessories

Cat. No.	Accessories	for Rotor	Units per pack
25 35 51	Bottles 500 ml PPCO (98 x 114 mm) with screw cap	AS 4.500	4
20 90 530	Adapter for round buckets 20 90 502 for 5 x 50 ml Falcon tubes	AS 4.500	2
20 90 535	Adapter for round buckets 20 90 502 for 8 x 15 ml Falcon tubes	AS 4.500	2

## Angle Rotors (with hermetically sealing lid)

*HiCen<sup>®</sup>T*

*HiCen<sup>®</sup>TR*

Cat. No.	Type	Max. Capacity	Angle	Max. Speed	Max. g-Force	Max. Speed	Max. g-Force
20 96 100	AF 24.2	24 x 1.5/2.2 ml	45°	14,000 rpm	21,913 x g	15,000 rpm	25,155 x g
20 75 100	AF 72.2	72 x 1,5/2,2 ml	40 °	8,000 rpm	9,015 x g	12,500 rpm	22,010 x g
20 94 100	AF 20.10	20 x 10 ml	25°	11,000 rpm	13,257 x g	15,000 rpm	24,652 x g
20 35 00	A 12.24	12 x 14 ml	40°	12,000 rpm	14,972 x g	16,000 rpm	26,617 x g
20 26 100	AF 24.16	24 x 16 ml	28 °	9,000 rpm	8,050 x g	12,000 rpm	14,312 x g
20 45 100	AF 12.30	12 x 30 ml	28°	12,000 rpm	17,145 x g	15,000 rpm	26,790 x g
20 93 005	AF 8.50.1 Biosafe	8 x 50 ml	34°	10,000 rpm	12,074 x g	14,000 rpm	23,666 x g
20 93 100	AF 8.50.2	8 x 50 ml	25°	9,000 rpm	8,694 x g	14,000 rpm	21,036 x g
20 98 105	AF 8.50.3 Biosafe	8 x 50 ml Falcon	40°	9,000 rpm	9,418 x g	12,000 rpm	16,743 x g
20 44 00	A 12.17	12 x 50 ml	34°	7,000 rpm	7,122 x g	9,000 rpm	11,773 x g
20 92 100	AF 6.94	6 x 94 ml	25°	10,000 rpm	10,956 x g	15,000 rpm	24,652 x g
20 71 00	A 8.20	8 x 94 ml	25°	8,000 rpm	8,014 x g	10,000 rpm	12,522 x g
20 22 100	AF 6.250	6 x 250 ml	30°	7,000 rpm	7,943 x g	9,000 rpm	13,131 x g



## Accessories

Cat. No.	Accessories	Units per pack
25 80 60	Rotor stand for all rotors with conical hub	1
25 80 70	Cleaning brush for all rotors with bores of 50 ml	1
25 80 80	Cleaning brush for all rotors with bores of 14/15/16 ml	1
25 80 90	Cleaning brush for all rotors with bores of 250/290 ml	1
25 80 20	Extractor tool for 50 ml tubes with rim	1
25 81 20	Extractor tool for bottom pad for bottles	1
25 81 60	Tool M4 for the extraction of adapters out of rotors	1
25 80 30	Tool M6 for the extraction of adapters out of rotors	1

For detailed Information about the comprehensive range of **centrifuge tubes und bottles** from our production and their possible use in centrifuges of other manufacturers please refer to our catalog "Centrifuge Labware".

We also manufacture the most popular tubes and bottles for Ultra Centrifuges.



Specification	<i>HiCen<sup>®</sup> T</i>	<i>HiCen<sup>®</sup> TR</i>
Catalog No. (230V, 50/60 Hz, 1 Phase)	21 10 050	21 10 060
Maximum Capacity	4 x 500 ml	4 x 500 ml
Maximum Speed	14,000 rpm	16,000 rpm
Max. g-Force/RCF (depending on rotor)	21,913 x g	26,790 x g
Minimum Speed	> 500 rpm	> 500 rpm
Rotor Detection	APRI™ System = Automatic Positive Rotor Identification for Herolab rotors	
Program Memory	30 programs	
Display	Color TFT Display for current and preset values	
User Interface	Operating panel with buttons and one rotary knob	
Preset Time	Up to 180 minutes with increments of 1 min., „HOLD“ for longer runs	
Preset Speed	From 500 rpm up to max. speed with increments of 100 rpm	
Preset g-Force/RCF	With increments of 10 x g	
Drive System	Direct self-centering drive system with brushless induction motor	
Speed Accuracy	Deviation less than 1 % (typical: 0.5 %)	
Acceleration Time (depending on rotor)	30 sec. – 2.5 min.	
Deceleration Time (depending on rotor)	40 sec. – 3.5 min.	
Acceleration/Deceleration Rates	8 ramps in steps of 30 sec. from 0 to 240 sec. in the range of 0 – 1.000 rpm	
Braking System	Dynamic electric brake system	
Temperature Set Range	n.a.	-20°C to +40°C with increments of 1°C
Cooling at Standstill	n.a.	YES
Temperature Control Accuracy	n.a.	±2°C on calibrated rotor
Temperature Control System	n.a.	Bypass System
Sample Protection	n.a.	±4°C to ±10°C from preset temperature
Overtemperature Protection	n.a.	YES
Refrigeration System	n.a.	CFC-free refrigerant
Safety Features	Overspeed detection Imbalance detection and cut-off Four point lid fixing Automatic motor driven lid lock with emergency lid lock release Stainless steel chamber with additional inner guard ring	
Dimensions (W x D x H): in cm (in inches)	49.2 x 67.0 x 49.0 (19.4 x 26.4 x 19.3)	72.1 x 67.0 x 49.0 (28.4 x 26.4 x 19.3)
Shipping Dimensions in cm (in inches)	80.0 x 80.0 x 65.0 (31.5 x 31.5 x 25.6)	105.0 x 95.0 x 92.0 (41.3 x 37.4 x 36.2)
Net Weight	88.0 kg (194 lbs.)	139.0 kg (306 lbs.)
Gross Weight	108.0 kg (238 lbs.)	173.0 kg (381 lbs.)



# Herolab

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All products built by Herolab carry the CE sign.  
Herolab has its own quality management system  
according to ISO 9001.






WEEE-Reg. No.  
DE66734561

Herolab reserves the right to change technical specifications without prior notice.

2022-01

## Tubes and Adapters for Rotors of *HiGen® T+TR*

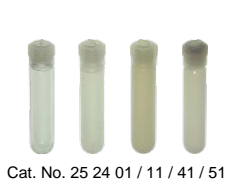
### for Rotor AF 24.2

Tubes	2.0-2.2 ml	1.5 ml	0.5-0.7 ml	0.25-0.4 ml	0.2 ml
Tubes Ø x Length (mm)	11/13 x 40	11/13 x 40	8/10 x 28-31	Ø 6 mm	PCR® Tubes
Material of Tubes + Herolab Cat. No.	Tubes not available from Herolab	conical with lid PP: 25 20 50	Tubes not available from Herolab	Tubes not available from Herolab	Tubes not available from Herolab
Necessary Adapter	---	---			
Herolab Cat. No.	---	---	25 50 06	25 50 05	25 50 07
Tubes per Adapter / Rotor	- / 24	- / 24	1 / 24	1 / 24	1 / 24

Cat. No. 25 20 50      Cat. No. 25 50 07



Cat. No. 25 50 06      Cat. No. 25 50 05



Cat. No. 25 24 01 / 11 / 41 / 51



Cat. No. 20 94 100



Cat. No. 25 25 70 / 25 80 / 26 60 / 25 90 / 26 90



Cat. No. 20 96 100






### for Rotor

### AF 20.10

Tubes	10 ml AOR	13.5 ml
Tubes Ø x Length (mm)	16 x 80	16 x 76
Material of Tubes + Herolab Cat. No.	PC: 25 24 01 PPCO: 25 24 11 PE: 25 24 41 PF: 25 24 51	PP: 25 24 70
Necessary Adapter	---	---
Herolab Cat. No.	---	---
Tubes per Adapter / Rotor	- / 20	- / 20

### A 12.24

14 ml	5 ml Glass	4.5 / 5 ml	1.5 ml
18 x 75	12 x 75	12 x 75	11/13 x 40
PC: 25 25 70* PP: 25 25 80* PE: 25 26 60* PF: 25 25 90* PA: 25 26 90*	B: 25 10 20	PP: 25 22 30 PS: 25 22 00	conical with lid PP: 25 20 50
---			
---	25 56 40	25 50 73	25 50 71
- / 12	1 / 12	1 / 12	1 / 12

Cat. No. 20 35 00



Cat. No. 25 27 00 / 20 / 40 / 51



Cat. No. 20 26 100

\* Snap-on caps for 14 ml and 16 ml tubes available (Cat No. 25 45 50 / 25 45 51)



Cat. No. 25 29 51 / 61 / 65 / 71



### for Rotor

### AF 24.16






Tubes	16 ml with rim	12/15 ml Glass	10 ml Glass	4.5 / 5 ml	3 ml Glass	1.5 ml
Tubes Ø x Length (mm)	18 x 100	18 x 102	13 x 100	12 x 75	10 x 75	11/13 x 40
Material of Tubes + Herolab Cat. No.	PC: 25 27 00* PPCO: 25 27 20* PE: 25 27 40* PF: 25 27 51*	12 ml: B: 25 11 00 15 ml HS: 25 10 91	D: 25 10 40	PP: 25 22 30 PS: 25 22 00	D: 25 10 10	conical with lid PP: 25 20 50
Necessary Adapter	---					
Herolab Cat. No.	---	25 58 20	25 56 00	25 50 72	25 55 80	25 50 70
Tubes per Adapter / Rotor	- / 24	1 / 24	1 / 24	1 / 24	1 / 24	1 / 24



### AF 12.30

30 ml AOR
25 x 92
PC: 25 29 51 PPCO: 25 29 61 PE: 25 29 65 PF: 25 29 71
---
---
- / 12

## Tubes and Adapters for Rotors of *HiGen® T+TR*

for Rotor **AF 8.50.1 + AF 8.50.2 + A 12.17**



Tubes	50ml AOR	50 ml with rim	50 ml with cap	45 ml Glass	30 ml AOR	30 ml Glass	16 ml with rim	12/15 ml Glass
Tubes Ø x Length (mm)	29 x 103	29 x 103	29 x 103	28 x 102	25 x 92	24 x 105	18 x 100	18 x 102
Material of Tubes + Herolab Cat. No.	PC: 25 32 01 PPCO: 25 32 11 PE: 25 32 15 PF: 25 32 21	PC: 25 31 00 PPCO: 25 31 60 PE: 25 31 30 PF: 25 31 51	PC: 25 31 05 PPCO: 25 31 45	B: 25 12 60	PC: 25 29 51 PPCO: 25 29 61 PE: 25 29 65 PF: 25 29 71	B: 25 11 10 HS: 25 11 41	PC: 25 27 00 PPCO: 25 27 20 PE: 25 27 40 PF: 25 27 51	12 ml: B: 25 11 00 15 ml HS: 25 10 91
Necessary Adapter	---	---	---					
Herolab Cat. No.	---	---	---	<b>25 58 00</b>	<b>25 50 61</b>	<b>25 55 60</b>	<b>25 50 50</b>	<b>25 55 50</b>
Tubes per Adapter / Rotor	- / 8 resp. 12	- / 8 resp. 12	- / 8 resp. 12	1 / 8 resp. 12	1 / 8 resp. 12	1 / 8 resp. 12	1 / 8 resp. 12	1 / 8 resp. 12

Tubes	10ml AOR	10 ml Glass	10 ml Glass	4.5/5 ml	3 ml Glass	1.5 ml	1 ml
Tubes Ø x Length (mm)	16 x 80	18 x 102	13 x 100	12 x 75	10 x 75	11 x 40	7 x 50
Material of Tubes + Herolab Cat. No.	PC: 25 24 01 PPCO: 25 24 11 PE: 25 24 41 PF: 25 24 51	conical D: 25 10 60	D: 25 10 40	PP: 25 22 30 PS: 25 22 00	D: 25 10 10	conical with lid PP: 25 20 50	PS: 25 20 00
Necessary Adapter							
Herolab Cat. No.	<b>25 50 30</b>	<b>25 55 40</b>	<b>25 55 30</b>	<b>25 50 11</b>	<b>25 55 10</b>	<b>25 50 10</b>	<b>25 50 00</b>
Tubes per Adapter / Rotor	1 / 8 resp. 12	1 / 8 resp. 12	1 / 8 resp. 12	2 / 16 resp. 24	2 / 16 resp. 24	2 / 16 resp. 24	4 / 32 resp. 48



for Rotor **AF 8.50.3**








**AF 6.94 + A 8.20**



Tubes	50 ml Falcon	30 ml AOR	15 ml Falcon
Tubes Ø x Length (mm)	29 x 118	25 x 92	17 x 122
Material of Tubes + Herolab Cat. No.	Tubes not available from Herolab	PC: 25 29 51 PPCO: 25 29 61 PE: 25 29 65 PF: 25 29 71	Tubes not available from Herolab
Necessary Adapter	---		
Herolab Cat. No.	---	<b>25 50 62</b>	<b>25 53 80</b>
Tubes per Adapter / Rotor	- / 8	1 / 8	1 / 8

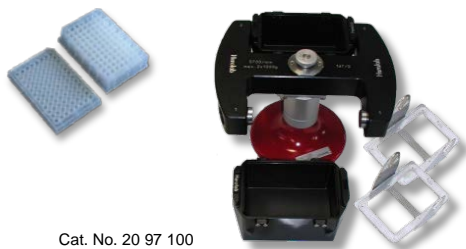
94 ml	94 ml	80 ml AOR
38 x 102	38 x 106	38 x 105
thick-walled PC: 25 32 80 PA: 25 32 60 thick-w. w. thread PC: 25 32 90	PP: 25 32 50	PC: 25 32 41 PPCO: 25 32 45 PE: 25 32 47 PF: 25 32 49
---	---	---
---	---	---
- / 6 bzw. 8	- / 6 bzw. 8	- / 6 bzw. 8

## Tubes and Adapters for Rotors of *HiGen® T+TR*

### for Rotor **AF 6.250**

Tubes/Bottles	250 ml	250 ml	200ml	100/120 ml	30 ml Glass	16 ml with rim	12/15 ml	10 ml
Tubes Ø x Length (mm)	62 x 122	62 x 122	60 x 115	40 x 115	24 x 105	18 x 100	18 x 102	13 x 100
Material of Tubes + Herolab Cat. No.	PC: 25 34 01 PPCO: 25 34 21 PE: 25 34 31 PF: 25 34 39 PP black: 25 34 12	round bottom: PC: 25 34 41 PP: 25 34 43 PPCO: 25 34 45 PE: 25 34 47 PF: 25 34 49	D: 25 12 70	100 ml: PC: 25 33 00 120 ml: PP: 25 33 10	B: 25 11 10 HS: 25 11 41	PC: 25 27 00 PPCO: 25 27 20 PE: 25 27 40 PF: 25 27 51	12 ml: B: 25 11 00 15 ml HS: 25 10 91	D: 25 10 40
Necessary Adapter	---							
Herolab Cat. No.	---	25 51 90	25 58 10	25 51 70	25 51 60	25 51 30	25 51 30	25 51 10
Tubes per Adapter / Rotor	-	1 / 6	1 / 6	1 / 6	3 / 18	5 / 30	5 / 30	9 / 54



Tubes	4.5/5 ml	3 ml	1.5 ml
Tubes Ø x Length (mm)	12 x 75	10 x 75	11/13 x 40
Material of Tubes + Herolab Cat. No.	PP: 25 22 30 PS: 25 22 00	D: 25 10 10	conical with lid PP: 25 20 50
Necessary Adapter			
Herolab Cat. No.	25 51 00	25 50 90	25 52 10
Tubes per Adapter / Rotor	9 / 54	15 / 90	8 / 48



### for Rotor **AS 2.6**

Plates	Microtiter Plates	Deepwell Plates
Total Height of Plates	up to 80 mm	up to 80 mm
Material of Tubes + Herolab Cat. No.	Plates not available from Herolab	Plates not available from Herolab
Necessary Adapter	---	---
Herolab Cat. No.	---	---
Tubes per Adapter / Rotor	- / 2-6	- / 2-4

### AS 4.500

500 ml	50 ml Falcon	15 ml Falcon
98 x 114	29 x 118	17 x 122
PPCO: 25 35 51	Tubes not available from Herolab	Tubes not available from Herolab
---		
---	20 90 530	20 90 535
- / 4	5 / 20	8 / 32

## Herolab Tubes for Rotors of *HiGen T + TR*

Cat. No.	Description	Ø x Length (mm)	Pieces/Pack
25 10 10	Tubes 3 ml Duran Glass, RB	10 x 75	10
25 10 20	Tubes 5 ml Borex Glass, RB	12 x 75	10
25 10 40	Tubes 10 ml Duran Glass, RB	13 x 100	10
25 10 60	Tubes 10 ml Duran Glass, C/G	18 x 102	10
25 10 91	Tubes 15 ml HS Glass, RB	18 x 102	6
25 11 00	Tubes 12 ml Borex Glass, RB	18 x 102	10
25 11 10	Tubes 30 ml Borex Glass, RB	24 x 105	10
25 11 41	Tubes 30 ml HS Glass, RB	24 x 105	6
25 12 60	Tubes 45 ml Borex Glass, RB	28 x 102	10
25 12 70	Tubes 200 ml Duran Glass, RB	60 x 115	2
25 20 00	Tubes 1.0 ml PS-RB	7 x 50	1000
25 20 50	Tubes 1.5 ml PP-CB with lid (Eppendorf)	11/13 x 40	1000
25 22 00	Tubes 5.0 ml PS-RB	12 x 75	1000
25 22 30	Tubes 4.5 ml PP-RB	12 x 75	1000
25 24 01	Tubes 10 ml PC-AOR with screw cap	16 x 80	10
25 24 11	Tubes 10 ml PPCO-AOR with screw cap	16 x 80	10
25 24 41	Tubes 10 ml PE-AOR with screw cap	16 x 80	10
25 24 51	Tubes 10 ml PF-AOR with screw cap	16 x 80	2
25 24 70	Tubes 13.5 ml PP-RB	16 x 76	10
25 25 70	Tubes 14 ml PC-RB	18 x 75	10
25 25 80	Tubes 14 ml PP-RB	18 x 75	10
25 25 90	Tubes 14 ml PF-RB	18 x 75	2
25 26 60	Tubes 14 ml PE-RB	18 x 75	10
25 26 90	Tubes 14 ml PA-RB	18 x 75	10
25 27 00	Tubes 16 ml PC-RB/FL	18 x 100	10
25 27 20	Tubes 16 ml PPCO-RB/FL	18 x 100	10
25 27 40	Tubes 16 ml PE-RB/FL	18 x 100	10
25 27 51	Tubes 16 ml PF-RB/FL	18 x 100	2
25 29 51	Tubes 30 ml PC-AOR with screw cap	25 x 92	10
25 29 61	Tubes 30 ml PPCO-AOR with screw cap	25 x 92	10
25 29 65	Tubes 30 ml PE-AOR with screw cap	25 x 92	10
25 29 71	Tubes 30 ml PF-AOR with screw cap	25 x 92	2
25 31 00	Tubes 50 ml PC-RB/FL	29 x 103	10
25 31 05	Tubes 50 ml PC-RB/FL with Loop Cap	29 x 103	10
25 31 30	Tubes 50 ml PE-RB/FL	29 x 103	10
25 31 45	Tubes 50 ml PPCO-RB/FL with Loop Cap	29 x 103	10
25 31 51	Tubes 50 ml PF-RB/FL	29 x 103	2
25 31 60	Tubes 50 ml PPCO-RB/FL	29 x 103	10
25 32 01	Tubes 50 ml PC-AOR with screw cap	29 x 103	10
25 32 11	Tubes 50 ml PPCO-AOR with screw cap	29 x 103	10
25 32 15	Tubes 50 ml PE-AOR with screw cap	29 x 103	10
25 32 21	Tubes 50 ml PF-AOR with screw cap	29 x 103	2
25 32 41	Tubes 80 ml PC-AOR with screw cap	38 x 105	10
25 32 45	Tubes 80 ml PPCO-AOR with screw cap	38 x 105	10
25 32 47	Tubes 80 ml PEC-AOR with screw cap	38 x 105	10
25 32 49	Tubes 80 ml PF-AOR with screw cap	38 x 105	2
25 32 50	Tubes 94 ml PP-RB	38 x 106	10
25 32 60	Tubes 94 ml PA thick-walled UC	38 x 102	25
25 32 80	Tubes 94 ml PC thick-walled UC	38 x 102	25
25 32 90	Tubes 94 ml PC thick-walled with thread UC	38 x 102	25
25 33 00	Tubes 100 ml PC-RB/G	40 x 115	2
25 33 10	Tubes 120 ml PP-RB	40 x 115	10
25 34 01	Bottles 250 ml PC-FB with screw cap	62 x 122	6
25 34 12	Bottles 250 ml PP black FB with screw cap	62 x 122	6
25 34 21	Bottles 250 ml PPCO-FB with screw cap	62 x 122	6
25 34 31	Bottles 250 ml PE-FB with screw cap	62 x 122	6
25 34 39	Bottles 250 ml PF-FB with screw cap	62 x 122	2
25 34 41	Bottles 250 ml PC-RB with screw cap	62 x 122	6
25 34 43	Bottles 250 ml PP-RB with screw cap	62 x 122	6
25 34 45	Bottles 250 ml PPCO-RB with screw cap	62 x 122	6
25 34 47	Bottles 250 ml PE-RB with screw cap	62 x 122	6
25 34 49	Bottles 250 ml PF-RB with screw cap	62 x 122	2
25 45 50	Snap-on Caps for Tubes 14 ml and 16 ml (except for PE)		10
25 45 51	Snap-on Caps for Tubes 14 ml and 16 ml PE		10
25 46 82	Screw cap, aluminum, for UC tubes 94 ml thick-w. with thread		1
25 52 41	Support ring for bottles 500 ml		6

B	Borex Glass	AOR	Advanced Oak Ridge	PF	Polyflor®	CB	Conical Bottom
D	Duran Glass	PA	Polyallomer	PP	Polypropylene	FB	Flat Bottom
HS	High-Speed Glass	PC	Polycarbonate	PPCO	Polypropylene Copolymer	RB	Round Bottom
UC	Ultra Centrifuge Tubes	PE	Polyethylene	PS	Polystyrene	FL	Flange (Rim)