



Thermo Fisher Scientific

8x50 sealed

Instruction Manual

50121058-3

October 2009

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Certificate of Containment Testing

Containment testing of Thermo Scientific Vessel 75003787

Report No. 77- 08 B

Report prepared for: Thermo Fisher
Issue Date: 1st June 2009

Test Summary

A Thermo Scientific vessel 75003787 with aerosol tight lid (Max rcf 7177 x g) was supplied by Thermo Fisher and containment tested at max rcf 7177 x g using the method described in Annex AA of EN 61010-2-020. The vessel was shown to contain a spill when tested in triplicate.

Report Written By

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Report Authorised By

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Preface

Before starting to use the rotor, read through this instruction manual carefully and follow the instructions.

The information contained in this instruction manual is the property of Thermo Fisher Scientific; it is forbidden to copy or pass on this information without explicit approval.

Failure to follow the instructions and safety information in this instruction manual will result in the expiration of the seller's warranty.

Scope of Supply

Article Number		Quantity	Check
75003694	8x50 sealed	1	<input type="checkbox"/>
50121058	Instruction Manual	1	<input type="checkbox"/>

If any parts are missing, please contact the nearest Thermo Fisher Scientific representative.

Precautions

In order to ensure safe operation of the 8x50 sealed, the following general safety regulations must be followed:

- Do not remove the magnet at the rotor bottom
- Do not use rotors which show any signs of corrosion and/or cracks.
- Use only with rotors that have been loaded properly.
- Never run the rotor with missing stainless steel tube holders.
- Never overload the rotor.
- Use only accessories which have been approved by Thermo Fisher Scientific. Exceptions to this rule are commercially available glass or plastic centrifuge tubes, provided they have been approved for the speed or the RCF value of the rotor.

Preface

- Please observe the safety instructions.

Please pay particular attention to the following aspects:

- Rotor installation: Check that the rotor is locked properly into place before operating the centrifuge.
- Always balance the samples.

Maximum sample density at maximum speed: $1,2 \frac{g}{ml}$



This symbol refers to general hazards.
ATTENTION means that material damage could occur.
WARNING means that injuries or material damage or contamination could occur.



This symbol refers to biological hazards.
Observe the information contained in the instruction manual to keep yourself and your environment safe.

Rotor Specifications

Contents

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- “Sorvall” on page 1-4
- “Thermo Scientific” on page 1-7

Heraeus

Table 1-1. Heraeus 230V 50Hz/60Hz ventilated

Centrifuge	Heraeus Multifuge X1	Heraeus Megafuge 16
Catalog #	75004210	75004230
Weight empty [kg] of rotor	3.3	3.3
max. cycle number	50,000	50,000
Maximum permissible load [g]	8x189	8x189
maximum speed n_{max} [rpm]	6700	6700
maximum RCF value at n_{max}	7177	7177
max. / min. radius [cm]	14,3 / 6,9	14,3 / 6,9
Pitch angle [°]	45	45
Accel. / braking time [s]	30 / 35	30 / 35
sample heating at n_{max} [° C] referred to ambient temperature of 23 °C, running time 60 minutes	12	12
Aerosol-tight *	yes	yes
permissible temperature range autoclavable °C	121	121

* tested by HPA, Porton-down, UK

Table 1-2. Heraeus 230V 50Hz/60Hz refrigerated

Centrifuge	Heraeus Multifuge X1 R	Heraeus Megafuge 16R
Catalog #	75004250	75004270
Weight empty [kg] of rotor	3.3	3.3
max. cycle number	50,000	50,000
Maximum permissible load [g]	8x189	8x189
maximum speed n_{max} [rpm]	6700	6700
maximum RCF value at n_{max}	7177	7177
max. / min. radius [cm]	14,3 / 6,9	14,3 / 6,9
Pitch angle [°]	45	45
Accel. / braking time [s]	30 / 35	30 / 35
Aerosol-tight *	yes	yes
permissible temperature range autoclavable °C	121	121

* tested by HPA, Porton-down, UK

Table 1-3. Heraeus 120V 60Hz ventilated

Centrifuge	Heraeus Multifuge X1	Heraeus Megafuge 16
Catalog #	75004211	75004231
Weight empty [kg] of rotor	3.3	3.3
max. cycle number	50,000	50,000
Maximum permissible load [g]	8x189	8x189
maximum speed n_{max} [rpm]	6500	6500
maximum RCF value at n_{max}	6755	6755
max. / min. radius [cm]	14,3 / 6,9	14,3 / 6,9
Pitch angle [°]	45	45
Accel. / braking time [s]	40 / 40	40 / 40
sample heating at n_{max} [° C] referred to ambient temperature of 23 °C, running time 60 minutes	11	11
Aerosol-tight *	yes	yes
permissible temperature range autoclavable °C	121	121

*Tested by HPA, Porton-down, UK

Table 1-4. Heraeus 120V 60Hz refrigerated

Centrifuge	Heraeus Multifuge X1 R	Heraeus Megafuge 16R
Catalog #	75004251	75004271
Weight empty [kg] of rotor	3.3	3.3
max. cycle number	50,000	50,000
Maximum permissible load [g]	8x189	8x189
maximum speed n_{max} [rpm]	6700	6700
maximum RCF value at n_{max}	7177	7177
max. / min. radius [cm]	14,3 / 6,9	14,3 / 6,9
Pitch angle [°]	45	45
Accel. / braking time [s]	40 / 40	40 / 40
Aerosol-tight *	yes	yes
permissible temperature range autoclavable °C	121	121

*Tested by HPA, Porton-down, UK

1 Rotor Specifications

Sorvall

Sorvall

Table 1-5. Sorvall 230V 50Hz/60Hz ventilated

Centrifuge	Sorvall Legend X1	Sorvall ST 16
Catalog #	75004220	75004240
Weight empty [kg] of rotor	3.3	3.3
max. cycle number	50,000	50,000
Maximum permissible load [g]	8x189	8x189
maximum speed n_{max} [rpm]	6700	6700
maximum RCF value at n_{max}	7177	7177
max. / min. radius [cm]	14,3 / 6,9	14,3 / 6,9
Pitch angle [°]	45	45
Accel. / braking time [s]	30 / 35	30 / 35
sample heating at n_{max} [°C] referred to ambient temperature of 23 °C, running time 60 minutes	12	12
Aerosol-tight *	yes	yes
permissible temperature range autoclavable °C	121	121

* Tested by HPA, Porton-down, UK

Table 1-6. Sorvall 230V 50Hz/60Hz refrigerated

Centrifuge	Sorvall Legend X1R	Sorvall ST 16R
Catalog #	75004260	75004380
Weight empty [kg] of rotor	3.3	3.3
max. cycle number	50,000	50,000
Maximum permissible load [g]	8x189	8x189
maximum speed n_{max} [rpm]	6700	6700
maximum RCF value at n_{max}	7177	7177
max. / min. radius [cm]	14,3 / 6,9	14,3 / 6,9
Pitch angle [°]	45	45
Accel. / braking time [s]	30 / 35	30 / 35
Aerosol-tight *	yes	yes
permissible temperature range autoclavable °C	121	121

* Tested by HPA, Porton-down, UK

Table 1-7. Sorvall 120V 60Hz ventilated

Centrifuge	Sorvall Legend X1	Sorvall ST 16
Catalog #	75004221	75004241
Weight empty [kg] of rotor	3.3	3.3
max. cycle number	50,000	50,000
Maximum permissible load [g]	8x189	8x189
maximum speed n_{max} [rpm]	6500	6500
maximum RCF value at n_{max}	6755	6755
max. / min. radius [cm]	14,3 / 6,9	14,3 / 6,9
Pitch angle [°]	45	45
Accel. / braking time [s]	40 / 40	40 / 40
sample heating at n_{max} [° C] referred to ambient temperature of 23 °C, running time 60 minutes	11	11
Aerosol-tight *	yes	yes
permissible temperature range autoclavable °C	121	121

*tested by HPA, Porton-down, UK

Table 1-8. Sorvall 120V 60Hz refrigerated

Centrifuge	Sorvall Legend X1R	Sorvall ST 16R
Catalog #	75004261	75004381
Weight empty [kg] of rotor	3.3	3.3
max. cycle number	50,000	50,000
Maximum permissible load [g]	8x189	8x189
maximum speed n_{max} [rpm]	6700	6700
maximum RCF value at n_{max}	7177	7177
max. / min. radius [cm]	14,3 / 6,9	14,3 / 6,9
Pitch angle [°]	45	45
Accel. / braking time [s]	40 / 40	40 / 40
Aerosol-tight *	yes	yes
permissible temperature range autoclavable °C	121	121

*tested by HPA, Porton-down, UK

1 Rotor Specifications

Sorvall

Table 1-9. Sorvall 100V 50/60Hz ventilated

Centrifuge	Sorvall Legend 1X	Sorvall ST 16
Catalog #	75004223	75004243
Weight empty [kg] of rotor	3.3	3.3
max. cycle number	50,000	50,000
Maximum permissible load [g]	8x189	8x189
maximum speed n_{max} [rpm]	6,000	6,000
maximum RCF value at n_{max}	5,755	5,755
max. / min. radius [cm]	14,3 / 6,9	14,3 / 6,9
Pitch angle [°]	45	45
Accel. / braking time [s]	35/ 35	35/ 35
sample heating at n_{max} [° C] referred to ambient temperature of 23 °C, running time 60 minutes	10	10
Aerosol-tight *	yes	yes
permissible temperature range autoclavable °C	121	121

* Tested by HPA, Porton-down, UK

Table 1-10. Sorvall 100V 50/60Hz refrigerated

Centrifuge	Sorvall Legend X1R	Sorvall ST 16R
Catalog #	75004263	75004383
Weight empty [kg] of rotor	3.3	3.3
max. cycle number	50,000	50,000
Maximum permissible load [g]	8x189	8x189
maximum speed n_{max} [rpm]	6,500	6,500
maximum RCF value at n_{max}	4,997	4,997
max. / min. radius [cm]	14,3 / 6,9	14,3 / 6,9
Pitch angle [°]	45	45
Accel. / braking time [s]	40 / 35	40 / 35
Aerosol-tight *	yes	yes
permissible temperature range autoclavable °C	121	121

* Tested by HPA, Porton-down, UK

Thermo Scientific

Table 1-11. Thermo Scientific 230V 50Hz/60Hz ventilated

Centrifuge	Thermo Scientific SL 16
Catalog #	75004000
Weight empty [kg] of rotor	3.3
max. cycle number	50,000
Maximum permissible load [g]	8x189
maximum speed n_{max} [rpm]	6700
maximum RCF value at n_{max}	7177
max. / min. radius [cm]	14,3 / 6,9
Pitch angle [°]	45
Accel. / braking time [s]	30 / 35
sample heating at n_{max} [° C] referred to ambient temperature of 23 °C, running time 60 minutes	12
Aerosol-tight *	yes
permissible temperature range autoclavable °C	121

* tested by HPA, Porton-down, UK

Table 1-12. Thermo Scientific 230V 50Hz/60Hz refrigerated

Centrifuge	Thermo Scientific SL 16R
Catalog #	75004030
Weight empty [kg] of rotor	3.3
max. cycle number	50,000
Maximum permissible load [g]	8x189
maximum speed n_{max} [rpm]	6700
maximum RCF value at n_{max}	7177
max. / min. radius [cm]	14,3 / 6,9
Pitch angle [°]	45
Accel. / braking time [s]	30 / 35
Aerosol-tight *	yes
permissible temperature range autoclavable °C	121

* tested by HPA, Porton-down, UK

1 Rotor Specifications

Thermo Scientific

Table 1-13. Thermo Scientific 120V 60Hz ventilated

Centrifuge	Thermo Scientific SL 16
Catalog #	75004001
Weight empty [kg] of rotor	3.3
max. cycle number	50,000
Maximum permissible load [g]	8x189
maximum speed n_{max} [rpm]	6500
maximum RCF value at n_{max}	6755
max. / min. radius [cm]	14,3 / 6,9
Pitch angle [°]	45
Accel. / braking time [s]	40 / 40
sample heating at n_{max} [° C] referred to ambient temperature of 23 °C, running time 60 minutes	11
Aerosol-tight *	yes
permissible temperature range autoclavable °C	121

* Tested by HPA, Porton-down, UK

Table 1-14. Thermo Scientific 120V 60Hz refrigerated

Centrifuge	Thermo Scientific SL 16R
Catalog #	75004031
Weight empty [kg] of rotor	3.3
max. cycle number	50,000
Maximum permissible load [g]	8x189
maximum speed n_{max} [rpm]	6700
maximum RCF value at n_{max}	7177
max. / min. radius [cm]	14,3 / 6,9
Pitch angle [°]	45
Accel. / braking time [s]	40 / 40
Aerosol-tight *	yes
permissible temperature range autoclavable °C	121

* Tested by HPA, Porton-down, UK

Accessories

Contents

- „Rotor data“ on page 2-2
- „Accessories“ on page 2-2

8 x 50ml Individually Sealed Fixed Angle Rotor



Rotor Specifications		
Capacity (ml)	8 x 50	
Tube Dimensions (mm)	17 x 121	
Angle °	45	
Maximum Speed (rpm)	6700*	
K Factor	4107	
Net Weight (kg)	3,3	
* Max Speed may vary depending on centrifuge unit.		
RCF/Radius	RCF (x g)	Radius (cm)
Maximum	7.177	14,3
Minimum	3.459	6,9
* Maximum Speed may vary by centrifuge model.		



8 x 50ml Individually Sealed Fixed Angle Rotor

Cat. No.	Description
75003694	8 x 50ml Individually Sealed Fixed Angle Rotor

Accessories

Cat. No.	Description
75003789	O-ring Refresher Kit

Tube Ordering Information

Cat. No.	Tube Vol. (ml)	Vol. Fill (ml)	Description	Qty.	Max. Speed (rpm)	Dims ØxL (mm)	Sealing Assembly Required:			Adapters Required:			Accessories Required:			
							Cat. No.	Qty /Pkg	Description	Cat. No.	Qty /Pkg	No. of Places	Cat. No.	Qty	Description	
-	50	50	Disposable Conical	-	-	17 x 121	-	-	-	-	-	-	-	-	-	-

AutoLock™

Contents

- “Rotor installation” on page 3-2
- “Removing the rotor” on page 3-3

Rotor installation



CAUTION

Unapproved or incorrectly combined accessories can cause serious damage to the centrifuge.

This rotor is equipped with an AutoLock™-system.

This system is used to automatically lock the rotor to the centrifuge spindle. The rotor does not have to be bolted onto the centrifuge spindle.

Proceed as follows:

1. Open the door of the centrifuge and if necessary remove any dust, foreign objects or residue from the chamber.
AutoLock™ and o-ring must be clean and undamaged.

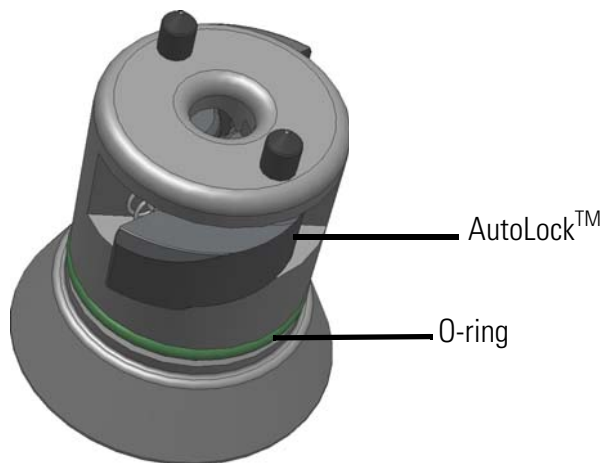


Figure 3-1. AutoLock™

2. Hold the rotor over the centrifuge spindle and let it slide slowly down the centrifuge spindle. The rotor clicks automatically into place.



CAUTION

Do not force the rotor onto the centrifuge spindle.
If the rotor is very light, then it may be necessary to press it onto the centrifuge spindle with a small amount of pressure.

3. Check if the rotor is properly installed by lifting it slightly on the handle. If the rotor can be pulled up, then it must be reclamped to the centrifuge spindle.



WARNING

If the rotor cannot be properly locked in place after several attempts, then the AutoLock™ is defective and you are not permitted to operate the rotor.
Check for any damage to the rotor: Damaged rotors must not be used.
Keep the hub area clear of objects.



CAUTION

Check that the rotor is properly locked on the centrifuge spindle before each use by pulling it a its handle.



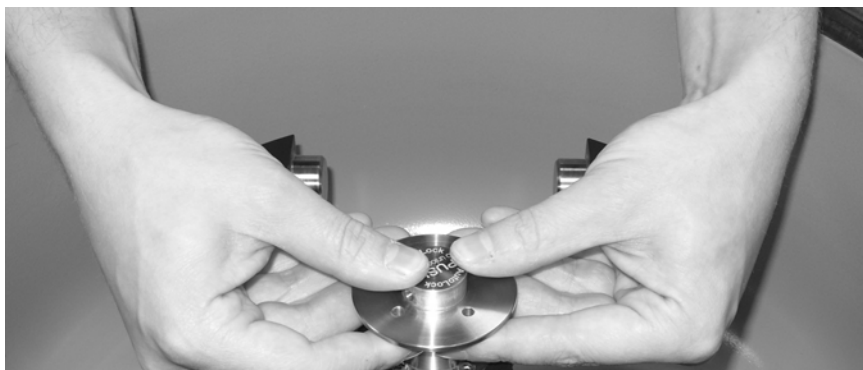
Be sure to check all seals before starting any aerosol-tight applications.

4. Close the centrifuge door.

Removing the rotor

To remove the rotor, proceed as follows:

1. Open the centrifuge door.
2. Grab the rotor handle with both hands and press against the green AutoLock™ key. At the same time, pull the rotor directly upwards with both hands and remove it from the centrifuge spindle. Make sure not to jam the rotor while doing this.



Rotor loading

Contents

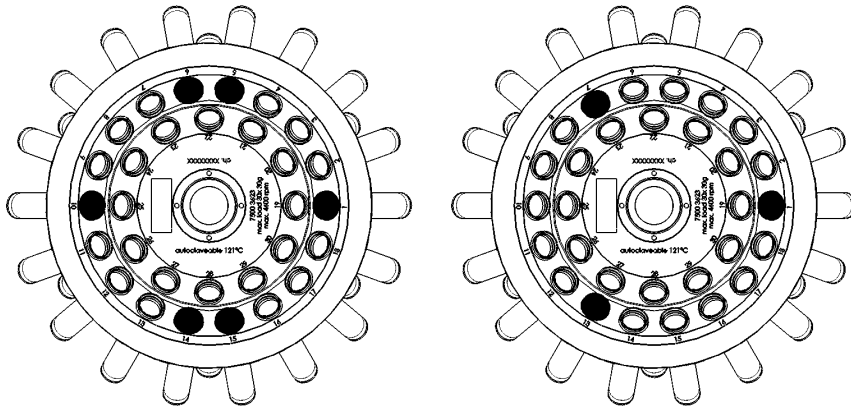
- “Before a run” on page 4-2
- “Proper Loading” on page 4-2
- “Improper Loading” on page 4-2
- “Maximum loading” on page 4-3
- “Cycle Counter” on page 4-3

Before a Run

1. Please read and observe the safety instructions contained in these operating instructions and in the instructions for use.
2. Check the rotor and all accessory parts for damages such as cracks, scratches or traces of corrosion.
3. Check the rotor chamber, the motor shaft and the AutoLock™.
4. Check the rotor's suitability using the “[Chemical Compatibility Chart](#)” on [page B-1](#).
5. Make sure the tubes or bottles do not touch the lid.

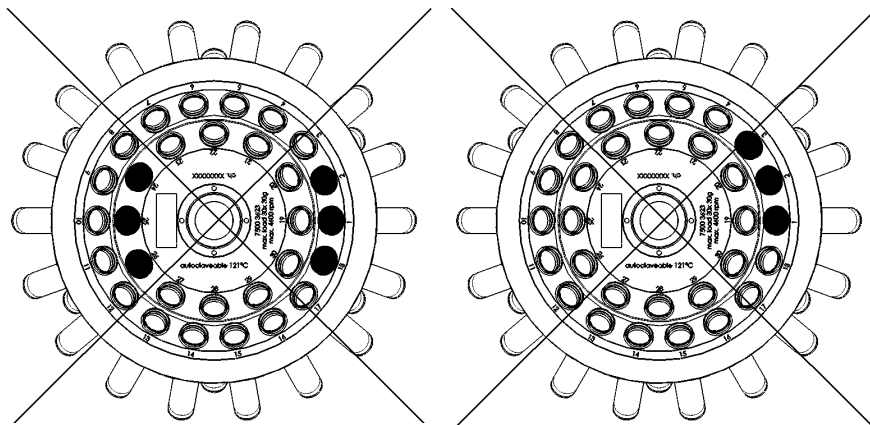
Proper Loading

To ensure safe operation of the centrifuge, the rotor must be evenly loaded at all times.



All places must contain stainless steel tube holders. Running the rotor with missing stainless steel tube holders is forbidden. Start loading the rotor on the outer ring. If you only centrifuge one sample place a test tube with water in the opposite position to balance the load.

Improper Loading



Maximum Loading

The rotor can run at high speeds. The rotor design has sufficient reserve stability even when spinning at top speed.

The safety system of the centrifuge requires that you do not overload the rotor.

There are two options available for centrifuging samples whose weight, including adaptor, exceeds the maximum permissible load:

- Reduce the fill level.
- Reduce the speed.

Use the table or formula below.

Actual Load (g)	RPM _{max}
189	6,700
199	6529
209	6371
219	6224
229	6087
239	5958
249	5837
259	5723
269	5616
279	5514
289	5418
299	5327
319	5157

Recalculate the maximum permissible speed according to the following formula and select the calculated maximum speed for the centrifuge:

$$n_{adm} = n_{max} \sqrt{\frac{\text{Maximum permissible load}}{\text{Effective load}}}$$

n_{adm} = admissible speed

n_{max} = maximum speed

Cycle Counter

The lifetime of rotors is dependent on the amount of mechanical load. Do not exceed the number of cycles recommended for rotors and buckets.

The maximum number of cycles is given in “Rotor Specifications” on page 1-1.



WARNING

Replace the rotor when the specified number of cycles is reached. Due to the mechanical load a rotor can break and thus damage the centrifuge.

Service life examples

Usage profile	Maximum service life at 50,000 cycles
frequent use 30 runs / day 220 days / year	7 years

Aerosol-tight Applications

Contents

- “Basic Principles” on page 5-2
- “Fill Level” on page 5-2
- “Checking the Aerosol-Tightness” on page 5-2

Basic Principles



CAUTION When centrifuging hazardous samples, do not open aerosol-tight rotors or buckets unless placed in a safety cabinet. Always bear in mind the maximum permitted fill levels.



Be sure to check all seals before starting any aerosol-tight applications.

- Check that the sample containers are well suited for the desired centrifugation process.

Placing O-ring

The o-ring fulfills its purpose best, when it is neither stressed nor bulked. Meaning the o-ring should be equally placed in the groove of the lid.

Place the o-ring as follows:

1. Place the o-ring above the groove.
2. Push the o-ring on two opposite places into the groove. Make sure the rest of the o-ring is equally distributed.
3. Push the centers of the loose parts into the groove.
4. Push the remaining o-ring into place.

Note If the o-ring seems to be too long or too short, take it off the lid and repeat the process.

Fill Level

The tubes are only to be filled to a level which ensures that the sample is unable to reach the top of the tube during centrifugation. Therefore fill the tube only 2/3 of the rated level.

Checking the Aerosol-Tightness

The aerosol tightness testing of the rotors and buckets depend on the microbiological test process in accordance with the EN 61010-2-020 Appendix AA.

Whether or not a rotor is aerosol-tight depends primarily on proper handling.

Check as needed to make sure your rotor is aerosol-tight.

The careful inspection of the seals and seal surfaces for signs of wear and damage such as cracks, scratches and embrittlement is extremely important.

Aerosol-tight applications are not possible if the lids are open.

Aerosol-tightness requires the correct operation when filling the sample vessels and closing the rotor lid.

Quick Test

As a quick test, it is possible to test the aerosol-tight buckets using the following process:

1. Lubricate all seals lightly.
Always use the special grease 7600 3500 when lubricating the seals.
2. Fill the bucket with approx. 10 ml of carbonated mineral water.
3. Close the bucket as explained in the handling instructions.
4. Shake the bucket vigorously using your hands.
This releases the carbonic acid gas which is bound in the water, resulting in excess pressure. Do not apply pressure to the lid when doing so.

Leaks can be detected by escaping water or the sound of escaping gas.

Replace the seals if you detect any leaks. Then repeat the test.

5. Dry the rotor, rotor cover and the cover seal.



CAUTION Prior to each use, the seals in the bucket are to be inspected in order to assure that they are correctly seated and are not worn or damaged.

Damaged seals are to be replaced immediately.

When loading the rotor, ensure that the rotor lid closes securely.

Damaged or clouded rotor covers are to be replaced immediately!

Maintenance and Care

Contents

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- “Cleaning” on page 6-2
- “Disinfection” on page 6-3
- “Decontamination” on page 6-4
- “Autoclaving” on page 6-5
- “Service of Thermo Fisher Scientific” on page 6-5

Cleaning intervals

For the sake of personal, environmental, and material protection, it is your duty to clean and if necessary disinfect the centrifuge on a regular basis.

Maintenance	Recommended interval
Clean rotor chamber	daily or when polluted
Clean rotor	daily or when polluted
Accessories	daily or when polluted
Cabinet	Once per month
Ventilation holes	Every six months



CAUTION Refrain from using any other cleaning or decontamination procedure than those recommended here, if you are not entirely sure that the intended procedure is safe for the equipment.
Use only approved cleansers.
If in doubt, contact Thermo Fisher Scientific.

Cleaning

When cleaning centrifug

- Use warm water with a neutral solvent.
- Never use caustic cleaning agents such as soap suds, phosphoric acid, bleaching solutions or scrubbing powder.
- Rinse the cavities out thoroughly.
- Use a soft brush without metal bristles to remove stubborn residue.
- Afterwards rinse with distilled water.
- Place the rotors on a plastic grate with their cavities pointing down.
- If drying boxes are used, the temperature must never exceed 50 °C, since higher temperatures could damage the material and shorten the lifetime of the parts.
- Use only disinfectants with a pH of 6-8.
- Dry aluminum parts off with a soft cloth.
- After cleaning, treat the entire surface of aluminum parts with corrosion protection oil (7000 9824). Also treat the cavities with oil.
- Store the aluminum parts at room temperature or in a cold-storage room with the cavities pointing down.



CAUTION Before using any cleaning or decontamination methods except those recommended by the manufacturer, users should check with the manufacturer that the proposed method will not damage the equipment.

Clean centrifuge and accessories as follows:

1. Open the centrifuge.
2. Turn off the centrifuge.
3. Pull out the power supply plug.
4. Grasp the rotor with both hands and lift it vertically off the centrifuge spindle.
5. Remove the centrifuge tubes and adaptors.
6. Use a neutral cleaning agent with a pH value between 6 and 8 for cleaning.
7. Dry all of the rotors and accessories after cleaning with a cloth or in a warm air cabinet at a maximum temperature of 50°C.
8. Clean the housing of the centrifuge as needed.
 - After cleaning, treat the entire surface of aluminum parts with corrosion protection oil (7000 9824). Also treat the cavities with oil.
 - Treat the end of the swing out rotor with grease (75003786).



CAUTION When cleaning, do not allow liquids, especially organic solvents, to get on the drive shaft, the bearings, the AutoLock™ or the locks. Organic solvents break down the grease in the motor bearing. The drive shaft could freeze up.

After some applications there might be ice in the rotor chamber. Let the ice melt and drain it off. Clean the rotor chamber as described above.

Disinfection

Disinfect the centrifuge immediately whenever infectious material has spilled during centrifugation.



WARNING Infectious material can get into the centrifuge when a tube breaks or as a result of spills. Keep in mind the risk of infection when touching the rotor and take all necessary precautions. In case of contamination, make sure that others are not put at risk. Decontaminate the affected parts immediately. Take other precautions if needed.

Use a sprayer whenever possible so that all surfaces are covered evenly.

The rotor chamber and the rotor should be treated preferably with a neutral disinfectant. A disinfectant spray would be most suitable for this purpose so that the rotor and accessory surfaces are covered evenly.



CAUTION Before using any cleaning or decontamination methods except those recommended by the manufacturer, users should check with the manufacturer that the proposed method will not damage the equipment. Observe the safety precautions and handling instructions for the cleaning agents used.

Contact the Service Department of Thermo Fisher Scientific for questions regarding the use of other disinfectants.

Disinfect the rotor and accessories as follows:

1. Open the centrifuge.
2. Turn off the centrifuge.
3. Pull out the power supply plug.
4. Grasp the rotor with both hands and lift it vertically off the centrifuge spindle.
5. Remove the centrifuge tubes and adaptors and dispose of them or disinfect them.
6. Treat the rotor and accessories according to the instructions for the disinfectant (spray or soak in solution). Adhere strictly to the given application times.
7. Be sure the disinfectant can drain off the rotor.
8. Rinse the rotor and rotor lid thoroughly with water and then rub down.
9. Dispose of the disinfectant according to the applicable guidelines.
10. Dry all of the rotors and accessories after cleaning with a cloth or in a warm air cabinet at a maximum temperature of 50°C.
 - After cleaning, treat the entire surface of aluminum parts with corrosion protection oil (7000 9824). Also treat the cavities with oil.
 - Treat the rotor with grease (75003786).

Decontamination

Decantaminate the centrifuge immediately whenever radioactive material has spilled during centrifugation.



WARNING Radioactive material can get into the centrifuge when a tube breaks or as a result of spills. Keep in mind the risk of infection when touching the rotor and take all necessary precautions.
In case of contamination, make sure that others are not put at risk.
Decontaminate the affected parts immediately.
Take other precautions if need be.



CAUTION Before using any cleaning or decontamination methods except those recommended by the manufacturer, users should check with the manufacturer that the proposed method will not damage the equipment.

For general radioactive decontamination use a solution of equal parts of 70% ethanol, 10% SDS and water.

Disinfect the rotor and accessories as follows:

1. Open the centrifuge.
2. Turn off the centrifuge.
3. Pull out the power supply plug.

4. Grasp the rotor with both hands and lift it vertically off the centrifuge spindle.
5. Remove the centrifuge tubes and adaptors and dispose of them or disinfect them.
6. Rinse the rotor first with ethanol and then with de-ionized water.
 - Adhere strictly to the given application times.
7. Be sure the decontamination solution can drain off the rotor.
8. Rinse the rotor and accessories thoroughly with water.
9. Dispose of the decontamination solution according to the applicable guidelines.
10. Dry all of the rotors and accessories after cleaning with a cloth or in a warm air cabinet at a maximum temperature of 50°C.
 - After cleaning, treat the entire surface of aluminum parts with corrosion protection oil (7000 9824). Also treat the cavities with oil.
 - Treat the bottom of the swing out rotor with bold grease (75003786).

Autoclaving

1. Before autoclaving clean rotor and accessories as described above.
2. Place the rotor on a flat surface.
 - Rotors and adapter can be autoclaved at 121 °C.
 - The maximum permissible autoclave cycle is 20 minutes at 121 °C.

Clean the rotor before autoclaving and rinse it with distilled water. Remove all accessories (tubes, adapters) from the rotor. Place the rotor on a flat surface.

Note No chemical additives are permitted in the steam.



CAUTION Never exceed the permitted temperature and duration when autoclaving. If the rotor shows signs of corrosion or wear, it must be replaced.

Service of Thermo Fisher Scientific

Thermo Fisher Scientific recommends having the centrifuge and accessories serviced once a year by an authorized service technician. The service technicians check the following:

- the electrical equipment
- the suitability of the set-up site
- the lid lock and the safety system
- the rotor
- the fixation of the rotor and the drive shaft

Thermo Fisher Scientific offers inspection and service contracts for this work.

RCF-Values

Speed (rpm)	R _{min}	R _{max}	RCF R _{min}	RCF R _{max}
300	6.9	14.3	7	14
400	6.9	14.3	12	26
500	6.9	14.3	19	40
600	6.9	14.3	28	58
700	6.9	14.3	38	78
800	6.9	14.3	49	102
900	6.9	14.3	62	129
1000	6.9	14.3	77	160
1100	6.9	14.3	93	193
1200	6.9	14.3	111	230
1300	6.9	14.3	130	270
1400	6.9	14.3	151	313
1500	6.9	14.3	174	360
1600	6.9	14.3	197	409
1700	6.9	14.3	223	462
1800	6.9	14.3	250	518
1900	6.9	14.3	278	577
2000	6.9	14.3	309	639
2100	6.9	14.3	340	705
2200	6.9	14.3	373	774
2300	6.9	14.3	408	846
2400	6.9	14.3	444	921
2500	6.9	14.3	482	999
2600	6.9	14.3	521	1081
2700	6.9	14.3	562	1165
2800	6.9	14.3	605	1253
2900	6.9	14.3	649	1345
3000	6.9	14.3	694	1439

A RCF-Values

Speed (rpm)	R _{min}	R _{max}	RCF R _{min}	RCF R _{max}
3100	6.9	14.3	741	1536
3200	6.9	14.3	790	1637
3300	6.9	14.3	840	1741
3400	6.9	14.3	892	1848
3500	6.9	14.3	945	1958
3600	6.9	14.3	1000	2072
3700	6.9	14.3	1056	2189
3800	6.9	14.3	1114	2309
3900	6.9	14.3	1173	2432
4000	6.9	14.3	1234	2558
4100	6.9	14.3	1297	2687
4200	6.9	14.3	1361	2820
4300	6.9	14.3	1426	2956
4400	6.9	14.3	1493	3095
4500	6.9	14.3	1562	3237
4600	6.9	14.3	1632	3383
4700	6.9	14.3	1704	3532
4800	6.9	14.3	1777	3683
4900	6.9	14.3	1852	3839
5000	6.9	14.3	1929	3997
5100	6.9	14.3	2006	4158
5200	6.9	14.3	2086	4323
5300	6.9	14.3	2167	4491
5400	6.9	14.3	2249	4662
5500	6.9	14.3	2334	4836
5600	6.9	14.3	2419	5014
5650	6.9	14.3	2463	5104
5800	6.9	14.3	2595	5378
5900	6.9	14.3	2685	5565
6000	6.9	14.3	2777	5755
6100	6.9	14.3	2870	5949
6200	6.9	14.3	2965	6146
6300	6.9	14.3	3062	6345
6400	6.9	14.3	3160	6548
6500	6.9	14.3	3259	6755
6600	6.9	14.3	3360	6964
6700	6.9	14.3	3463	7177

Chemical Compatibility Chart

CHEMICAL	ALUMINUM	ANODIC COATING for ALUMINUM	BUNA N	CELLULOSE ACETATE BUTYRATE	POLYURETHANE ROTOR PAINT	COMPOSITE Carbon Fiber/Epoxy	DELFIN®	ETHYLENE PROPYLENE	GLASS	NEOPRENE	NORYL®	NYLON	PET®, POLYCLEAR®, CLEARCRIMP®, OCCLEARCRIMP®	POLYALLOMER	POLYCARBONATE	POLYESTER, GLASS THERMOSET	POLYETHERIMIDE	POLYRTHYLENE	POLYPROPYLENE	POLYSULFONE	POLYVINYL CHLORIDE	RULON A®, TEFLON®	SILICONE RUBBER	STAINLESS STEEL	TITANIUM	TYGON®	VITON®
2-mercaptoethanol	S	S	U	-	S	M	S	-	S	U	S	S	U	S	S	-	S	S	S	S	U	S	S	S	S	S	S
Acetaldehyde	S	-	U	U	-	-	-	M	-	U	-	-	-	M	U	U	U	M	M	-	M	S	U	-	S	-	U
Acetone	M	S	U	U	S	U	M	S	S	U	U	S	U	S	U	U	U	S	S	U	U	S	M	M	S	U	U
Acetonitrile	S	S	U	-	S	M	S	-	S	S	U	S	U	M	U	U	-	S	M	U	U	S	S	S	S	U	U
Alconox®	U	U	S	-	S	S	S	-	S	S	S	S	S	S	M	S	S	S	S	S	S	S	S	S	S	S	U
Allyl Alcohol	-	-	-	U	-	-	S	-	-	-	-	S	-	S	S	M	S	S	S	S	-	M	S	-	-	S	-
Aluminum Chloride	U	U	S	S	S	S	U	S	S	S	S	M	S	S	S	S	-	S	S	S	S	S	M	U	U	S	S
Formic Acid (100%)	-	S	M	U	-	-	U	-	-	-	-	U	-	S	M	U	U	S	S	-	U	S	-	U	S	-	U
Ammonium Acetate	S	S	U	-	S	S	S	-	S	S	S	S	S	S	S	U	-	S	S	S	S	S	S	S	S	S	S
Ammonium Carbonate	M	S	U	S	S	S	S	S	S	S	S	S	S	S	U	U	-	S	S	S	S	S	S	M	S	S	S
Ammonium Hydroxide (10%)	U	U	S	U	S	S	M	S	S	S	S	S	-	S	U	M	S	S	S	S	S	S	S	S	S	M	S
Ammonium Hydroxide (28%)	U	U	S	U	S	U	M	S	S	S	S	S	U	S	U	M	S	S	S	S	S	S	S	S	S	M	S
Ammonium Hydroxide (conc.)	U	U	U	U	S	U	M	S	-	S	-	S	U	S	U	U	S	S	S	-	M	S	S	S	S	-	U
Ammonium Phosphate	U	-	S	-	S	S	S	S	S	S	S	S	-	S	S	M	-	S	S	S	S	S	S	M	S	S	S
Ammonium Sulfate	U	M	S	-	S	S	U	S	S	S	S	S	S	S	S	S	-	S	S	S	S	S	S	U	S	S	U
Amyl Alcohol	S	-	M	U	-	-	S	S	-	M	-	S	-	M	S	S	S	S	M	-	-	-	U	-	S	-	M
Aniline	S	S	U	U	S	U	S	M	S	U	U	U	U	U	U	U	-	S	M	U	U	S	S	S	S	U	S
Sodium Hydroxide (<1%)	U	-	M	S	S	S	-	-	S	M	S	S	-	S	M	M	S	S	S	S	S	S	M	S	S	-	U
Sodium Hydroxide (10%)	U	-	M	U	-	-	U	-	M	M	S	S	U	S	U	U	S	S	S	S	S	S	M	S	S	-	U
Barium Salts	M	U	S	-	S	S	S	S	S	S	S	S	S	S	S	M	-	S	S	S	S	S	S	M	S	S	S
Benzene	S	S	U	U	S	U	M	U	S	U	U	S	U	U	U	M	U	M	U	U	U	S	U	U	S	U	S
Benzyl Alcohol	S	-	U	U	-	-	M	M	-	M	-	S	U	U	U	U	U	U	U	-	M	S	M	-	S	-	S
Boric Acid	U	S	S	M	S	S	U	S	S	S	S	S	S	S	S	S	U	S	S	S	S	S	S	S	S	S	S

B Chemical Compatibility Chart

CHEMICAL	MATERIAL																											
	ALUMINUM	ANODIC COATING for ALUMINUM	BUNA N	CELLULOSE ACETATE BUTYRATE	POLYURETHANE ROTOR PAINT	COMPOSITE Carbon Fiber/Epoxy	DELRIN®	ETHYLENE PROPYLENE	GLASS	NEOPRENE	NORYL®	NYLON	PET*, POLYCLEAR®, CLEARCRIMP®, CCCLEARCRIMP®	POLYALLOMER	POLYCARBONATE	POLYESTER, GLASS THERMOSET	POLYETHERIMIDE	POLYRTHYLENE	POLYPROPYLENE	POLYSULFONE	POLYVINYL CHLORIDE	RULON A®, TEFLON®	SILICONE RUBBER	STAINLESS STEEL	TITANIUM	TYGON®	VITON®	
Cesium Acetate	M	-	S	-	S	S	S	-	S	S	S	S	-	S	S	-	-	S	S	S	S	S	S	M	S	S	S	
Cesium Bromide	M	S	S	-	S	S	S	-	S	S	S	S	S	S	S	-	-	S	S	S	S	S	S	M	S	S	S	
Cesium Chloride	M	S	S	U	S	S	S	-	S	S	S	S	S	S	S	-	-	S	S	S	S	S	S	M	S	S	S	
Cesium Formate	M	S	S	-	S	S	S	-	S	S	S	S	S	S	S	-	-	S	S	S	S	S	S	M	S	S	S	
Cesium Iodide	M	S	S	-	S	S	S	-	S	S	S	S	S	S	S	-	-	S	S	S	S	S	S	M	S	S	S	
Cesium Sulfate	M	S	S	-	S	S	S	-	S	S	S	S	S	S	S	-	-	S	S	S	S	S	S	M	S	S	S	
Chloroform	U	U	U	U	S	S	M	U	S	U	U	M	U	M	U	U	U	M	M	U	U	S	U	U	U	M	S	
Chromic Acid (10%)	U	-	U	U	S	U	U	-	S	S	S	U	S	S	M	U	M	S	S	U	M	S	M	U	S	S	S	
Chromic Acid (50%)	U	-	U	U	-	U	U	-	-	-	S	U	U	S	M	U	M	S	S	U	M	S	-	U	M	-	S	
Cresol Mixture	S	S	U	-	-	-	S	-	S	U	U	U	U	U	-	-	U	U	-	U	S	S	S	S	U	S		
Cyclohexane	S	S	S	-	S	S	S	U	S	U	S	S	U	U	U	M	S	M	U	M	M	S	U	M	M	U	S	
Deoxycholate	S	S	S	-	S	S	S	-	S	S	S	S	S	S	S	-	-	S	S	S	S	S	S	S	S	S	S	
Distilled Water	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
Dextran	M	S	S	S	S	S	S	-	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	M	S	S	S	
Diethyl Ether	S	S	U	U	S	S	S	U	S	U	U	S	U	U	U	U	U	U	U	U	U	S	S	S	S	M	U	
Diethyl Ketone	S	-	U	U	-	-	M	-	S	U	-	S	-	M	U	U	U	M	M	-	U	S	-	-	S	U	U	
Diethylpyrocarbonate	S	S	U	-	S	S	S	-	S	S	U	S	U	S	U	-	-	S	S	S	M	S	S	S	S	S	S	
Dimethylsulfoxide	S	S	U	U	S	S	S	-	S	U	S	S	U	S	U	U	-	S	S	U	U	S	S	S	U	U	U	
Dioxane	M	S	U	U	S	S	M	M	S	U	U	S	U	M	U	U	-	M	M	M	U	S	S	S	S	U	U	
Ferric Chloride	U	U	S	-	-	-	M	S	-	M	-	S	-	S	-	-	-	S	S	-	-	-	M	U	S	-	S	
Acetic Acid (Glacial)	S	S	U	U	S	S	U	M	S	U	S	U	U	U	U	U	M	S	U	M	U	S	U	U	S	-	U	
Acetic Acid (5%)	S	S	M	S	S	S	M	S	S	S	S	S	M	S	S	S	S	S	S	S	M	S	S	M	S	S	M	
Acetic Acid (60%)	S	S	U	U	S	S	U	-	S	M	S	U	U	M	U	S	M	S	M	S	M	S	M	U	S	M	U	
Ethyl Acetate	M	M	U	U	S	S	M	M	S	S	U	S	U	M	U	U	-	S	S	U	U	S	M	M	S	U	U	
Ethyl Alcohol (50%)	S	S	S	S	S	S	M	S	S	S	S	S	U	S	U	S	S	S	S	S	S	S	S	M	S	M	U	
Ethyl Alcohol (95%)	S	S	S	U	S	S	M	S	S	S	S	S	U	S	U	-	S	S	S	M	S	S	S	U	S	M	U	
Ethylene Dichloride	S	-	U	U	-	-	S	M	-	U	U	S	U	U	U	U	U	U	U	-	U	S	U	-	S	-	S	
Ethylene Glycol	S	S	S	S	S	S	S	S	S	S	S	S	-	S	U	S	S	S	S	S	S	S	S	M	S	M	S	
Ethylene Oxide Vapor	S	-	U	-	-	U	-	-	S	U	-	S	-	S	M	-	-	S	S	S	U	S	U	S	S	S	U	
Ficoll-Hypaque®	M	S	S	-	S	S	S	-	S	S	S	S	-	S	S	-	S	S	S	S	S	S	M	S	S	S	S	

CHEMICAL	MATERIAL	ALUMINUM	ANODIC COATING for ALUMINUM	BUNA N	CELLULOSE ACETATE BUTYRATE	POLYURETHANE ROTOR PAINT	COMPOSITE Carbon Fiber/Epoxy	DELRIN®	ETHYLENE PROPYLENE	GLASS	NEOPRENE	NORYL®	NYLON	PET®, POLYCLEAR®, CLEARCRIMP®, CCCLEARCRIMP®	POLYALLOMER	POLYCARBONATE	POLYESTER, GLASS THERMOSET	POLYETHERIMIDE	POLYRTHYLENE	POLYPROPYLENE	POLYSULFONE	POLYVINYL CHLORIDE	RULON A®, TEFLON®	SILICONE RUBBER	STAINLESS STEEL	TITANIUM	TYGON®	VITON®
Hydrofluoric Acid (10%)	U	U	U	M	-	-	U	-	-	U	U	S	-	S	M	U	S	S	S	S	M	S	U	U	U	-	-	
Hydrofluoric Acid (50%)	U	U	U	U	-	-	U	-	-	U	U	U	U	S	U	U	U	S	S	M	M	S	U	U	U	-	M	
Hydrochloric Acid (conc.)	U	U	U	U	-	U	U	M	-	U	M	U	U	M	U	U	U	-	S	-	U	S	U	U	U	-	-	
Formaldehyde (40%)	M	M	M	S	S	S	S	M	S	S	S	S	S	M	S	S	S	U	S	S	M	S	S	S	M	S	M	U
Glutaraldehyde	S	S	S	S	-	-	S	-	S	S	S	S	S	S	S	S	-	-	S	S	S	-	-	S	S	S	-	-
Glycerol	M	S	S	-	S	S	S	S	S	S	S	S	S	S	S	S	S	-	S	S	S	S	S	S	S	S	S	S
Guanidine Hydrochloride	U	U	S	-	S	S	S	-	S	S	S	S	S	S	S	S	-	-	S	S	S	S	S	S	U	S	S	S
Haemo-Sol®	S	S	S	-	-	-	S	-	S	S	S	S	S	S	S	S	-	-	S	S	S	S	S	S	S	S	S	S
Hexane	S	S	S	-	S	S	S	-	S	S	U	S	U	M	U	S	S	U	S	S	M	S	U	S	S	U	S	
Isobutyl Alcohol	-	-	M	U	-	-	S	S	-	U	-	S	U	S	S	M	S	S	S	-	S	S	S	-	S	-	S	
Isopropyl Alcohol	M	M	M	U	S	S	S	S	S	U	S	S	U	S	U	M	S	S	S	S	S	S	S	S	M	M	M	S
Iodoacetic Acid	S	S	M	-	S	S	S	-	S	M	S	S	M	S	S	-	M	S	S	S	S	S	M	S	S	M	M	
Potassium Bromide	U	S	S	-	S	S	S	-	S	S	S	S	S	S	S	S	S	S	S	S	-	S	S	S	M	S	S	S
Potassium Carbonate	M	U	S	S	S	S	S	-	S	S	S	S	S	S	U	S	S	S	S	S	S	S	S	S	S	S	S	S
Potassium Chloride	U	S	S	-	S	S	S	S	S	S	S	S	S	S	S	S	-	S	S	S	S	S	S	S	U	S	S	S
Potassium Hydroxide (5%)	U	U	S	S	S	S	M	-	S	S	S	S	-	S	U	S	S	S	S	S	S	S	M	U	M	S	U	
Potassium Hydroxide (conc.)	U	U	M	U	-	-	M	-	M	S	S	-	U	M	U	U	U	S	M	-	M	U	-	U	U	-	U	
Potassium Permanganate	S	S	S	-	S	S	S	-	S	S	S	U	S	S	S	M	-	S	M	S	U	S	S	M	S	U	S	
Calcium Chloride	M	U	S	S	S	S	S	S	S	S	S	S	S	S	M	S	-	S	S	S	S	S	S	M	S	S	S	S
Calcium Hypochlorite	M	-	U	-	S	M	M	S	-	M	-	S	-	S	M	S	-	S	S	S	M	S	M	U	S	-	S	
Kerosene	S	S	S	-	S	S	S	U	S	M	U	S	U	M	M	S	-	M	M	M	S	S	U	S	S	U	S	
Sodium Chloride (10%)	S	-	S	S	S	S	S	S	-	-	-	S	S	S	S	S	-	S	S	S	S	-	S	S	M	-	S	
Sodium Chloride (sat'd)	U	-	S	U	S	S	S	-	-	-	-	S	S	S	S	S	-	S	S	-	S	-	S	S	M	-	S	
Carbon Tetrachloride	U	U	M	S	S	U	M	U	S	U	U	S	U	M	U	S	S	M	M	S	M	M	M	M	U	S	S	
Aqua Regia	U	-	U	U	-	-	U	-	-	-	-	-	U	U	U	U	U	U	U	-	-	-	-	-	S	-	M	
Solution 555 (20%)	S	S	S	-	-	-	S	-	S	S	S	S	S	S	S	-	-	S	S	S	-	S	S	S	S	S	S	S
Magnesium Chloride	M	S	S	-	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	M	S	S	S	S
Mercaptoacetic Acid	U	S	U	-	S	M	S	-	S	M	S	U	U	U	U	-	S	U	U	S	M	S	U	S	S	S	S	
Methyl Alcohol	S	S	S	U	S	S	M	S	S	S	S	S	U	S	U	M	S	S	S	S	S	S	S	M	S	M	U	
Methylene Chloride	U	U	U	U	M	S	S	U	S	U	U	S	U	U	U	U	U	U	M	U	U	U	S	S	M	U	S	U

B Chemical Compatibility Chart

CHEMICAL	MATERIAL	ALUMINUM	ANODIC COATING for ALUMINUM	BUNA N	CELLULOSE ACETATE BUTYRATE	POLYURETHANE ROTOR PAINT	COMPOSITE Carbon Fiber/Epoxy	DELRIN®	ETHYLENE PROPYLENE	GLASS	NEOPRENE	NORYL®	NYLON	PET®, POLYCLEAR®, CLEARCRIMP®, CCCLEARCRIMP®	POLYALLOMER	POLYCARBONATE	POLYESTER, GLASS THERMOSET	POLYETHERIMIDE	POLYRTHYLENE	POLYPROPYLENE	POLYSULFONE	POLYVINYL CHLORIDE	RULON A®, TEFLON®	SILICONE RUBBER	STAINLESS STEEL	TITANIUM	TYGON®	VITON®
Methyl Ethyl Ketone	S	S	U	U	S	S	M	S	S	U	U	S	U	S	U	U	U	U	S	S	U	U	S	S	S	S	U	U
Metrizamide®	M	S	S	-	S	S	S	-	S	S	S	S	-	S	S	-	-	S	S	S	S	S	S	S	M	S	S	S
Lactic Acid (100%)	-	-	S	-	-	-	-	-	-	M	S	U	-	S	S	S	M	S	S	-	M	S	M	S	S	-	S	
Lactic Acid (20%)	-	-	S	S	-	-	-	-	-	M	S	M	-	S	S	S	S	S	S	S	S	M	S	M	S	S	-	S
N-Butyl Alcohol	S	-	S	U	-	-	S	-	-	S	M	-	U	S	M	S	S	S	S	M	M	S	M	-	S	-	S	
N-Butyl Phthalate	S	S	U	-	S	S	S	-	S	U	U	S	U	U	U	M	-	U	U	S	U	S	M	M	S	U	S	
N, N-Dimethylformamide	S	S	S	U	S	M	S	-	S	S	U	S	U	S	U	U	-	S	S	U	U	S	M	S	S	S	U	
Sodium Borate	M	S	S	S	S	S	S	S	S	S	S	U	S	S	S	S	-	S	S	S	S	S	S	M	S	S	S	
Sodium Bromide	U	S	S	-	S	S	S	-	S	S	S	S	S	S	S	S	-	S	S	S	S	S	S	M	S	S	S	
Sodium Carbonate (2%)	M	U	S	S	S	S	S	S	S	S	S	S	S	S	U	S	S	S	S	S	S	S	S	S	S	S	S	
Sodium Dodecyl Sulfate	S	S	S	-	S	S	S	-	S	S	S	S	S	S	S	-	S	S	S	S	S	S	S	S	S	S	S	S
Sodium Hypochlorite (5%)	U	U	M	S	S	M	U	S	S	M	S	S	S	M	S	S	S	S	M	S	S	S	M	U	S	M	S	
Sodium Iodide	M	S	S	-	S	S	S	-	S	S	S	S	S	S	S	-	-	S	S	S	S	S	S	M	S	S	S	
Sodium Nitrate	S	S	S	-	S	S	S	S	S	S	S	S	S	S	S	S	-	S	S	S	S	S	U	S	S	S	S	
Sodium Sulfate	U	S	S	-	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	M	S	S	S	
Sodium Sulfide	S	-	S	S	-	-	-	S	-	-	-	S	S	S	U	U	-	-	S	-	-	-	S	S	M	-	S	
Sodium Sulfite	S	S	S	-	S	S	S	S	M	S	S	S	S	S	S	M	-	S	S	S	S	S	S	S	S	S	S	
Nickel Salts	U	S	S	S	S	S	-	S	S	S	-	-	S	S	S	S	-	S	S	S	S	S	S	M	S	S	S	
Oils (Petroleum)	S	S	S	-	-	-	S	U	S	S	S	S	U	U	M	S	M	U	U	S	S	S	U	S	S	S	S	
Oils (Other)	S	-	S	-	-	-	S	M	S	S	S	S	U	S	S	S	S	U	S	S	S	S	-	S	S	M	S	
Oleic Acid	S	-	U	S	S	S	U	U	S	U	S	S	M	S	S	S	S	S	S	S	S	S	M	U	S	M	M	
Oxalic Acid	U	U	M	S	S	S	U	S	S	S	S	S	U	S	U	S	S	S	S	S	S	S	S	U	M	S	S	
Perchloric Acid (10%)	U	-	U	-	S	U	U	-	S	M	M	-	-	M	U	M	S	M	M	-	M	S	U	-	S	-	S	
Perchloric Acid (70%)	U	U	U	-	-	U	U	-	S	U	M	U	U	M	U	U	U	M	M	U	M	S	U	U	S	U	S	
Phenol (5%)	U	S	U	-	S	M	M	-	S	U	M	U	U	S	U	M	S	M	S	U	U	S	U	M	M	M	S	
Phenol (50%)	U	S	U	-	S	U	M	-	S	U	M	U	U	U	U	U	S	U	M	U	U	S	U	U	U	M	S	
Phosphoric Acid (10%)	U	U	M	S	S	S	U	S	S	S	S	U	-	S	S	S	S	S	S	S	S	S	U	M	U	S	S	
Phosphoric Acid (conc.)	U	U	M	M	-	-	U	S	-	M	S	U	U	M	M	S	S	M	S	M	S	U	M	U	-	S		
Physiologic Media (Serum, Urine)	M	S	S	S	-	-	S	-	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
Picric Acid	S	S	U	-	S	M	S	S	S	M	S	U	S	S	S	U	S	S	S	S	U	S	U	M	S	M	S	

CHEMICAL	MATERIAL																										
	ALUMINUM	ANODIC COATING for ALUMINUM	BUNA N	CELLULOSE ACETATE BUTYRATE	POLYURETHANE ROTOR PAINT	COMPOSITE Carbon Fiber/Epoxy	DELRIN®	ETHYLENE PROPYLENE	GLASS	NEOPRENE	NORYL®	NYLON	PET®, POLYCLEAR®, CLEARCRIMP®, CCCLEARCRIMP®	POLYALLOMER	POLYCARBONATE	POLYESTER, GLASS THERMOSET	POLYETHERIMIDE	POLYRTHYLENE	POLYPROPYLENE	POLYSULFONE	POLYVINYL CHLORIDE	RULON A®, TEFLON®	SILICONE RUBBER	STAINLESS STEEL	TITANIUM	TYGON®	VITON®
Pyridine (50%)	U	S	U	U	S	U	U	-	U	S	S	U	U	M	U	U	-	U	S	M	U	S	S	U	U	U	U
Rubidium Bromide	M	S	S	-	S	S	S	-	S	S	S	S	S	S	S	-	-	S	S	S	S	S	S	M	S	S	S
Rubidium Chloride	M	S	S	-	S	S	S	-	S	S	S	S	S	S	S	-	-	S	S	S	S	S	S	M	S	S	S
Sucrose	M	S	S	-	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Sucrose, Alkaline	M	S	S	-	S	S	S	-	S	S	S	S	S	S	U	S	S	S	S	S	S	S	S	M	S	S	S
Sulfosalicylic Acid	U	U	S	S	S	S	S	-	S	S	S	U	S	S	S	-	S	S	S	-	S	S	S	U	S	S	S
Nitric Acid (10%)	U	S	U	S	S	U	U	-	S	U	S	U	-	S	S	S	S	S	S	S	S	S	M	S	S	S	S
Nitric Acid (50%)	U	S	U	M	S	U	U	-	S	U	S	U	U	M	M	U	M	M	M	S	S	S	U	S	S	M	S
Nitric Acid (95%)	U	-	U	U	-	U	U	-	-	U	U	U	U	M	U	U	U	U	M	U	U	S	U	S	S	-	S
Hydrochloric Acid (10%)	U	U	M	S	S	S	U	-	S	S	S	U	U	S	U	S	S	S	S	S	S	S	S	U	M	S	S
Hydrochloric Acid (50%)	U	U	U	U	S	U	U	-	S	M	S	U	U	M	U	U	S	S	S	S	M	S	M	U	U	M	M
Sulfuric Acid (10%)	M	U	U	S	S	U	U	-	S	S	M	U	S	S	S	S	S	S	S	S	S	S	U	U	U	S	S
Sulfuric Acid (50%)	M	U	U	U	S	U	U	-	S	S	M	U	U	S	U	U	M	S	S	S	S	S	U	U	U	M	S
Sulfuric Acid (conc.)	M	U	U	U	-	U	U	M	-	-	M	U	U	S	U	U	U	M	S	U	M	S	U	U	U	-	S
Stearic Acid	S	-	S	-	-	-	S	M	S	S	S	S	-	S	S	S	S	S	S	S	S	S	M	M	S	S	S
Tetrahydrofuran	S	S	U	U	S	U	U	M	S	U	U	S	U	U	U	-	M	U	U	U	U	S	U	S	S	U	U
Toluene	S	S	U	U	S	S	M	U	S	U	U	S	U	U	U	S	U	M	U	U	U	S	U	S	U	U	M
Trichloroacetic Acid	U	U	U	-	S	S	U	M	S	U	S	U	U	S	M	-	M	S	S	U	U	S	U	U	U	M	U
Trichloroethane	S	-	U	-	-	-	M	U	-	U	-	S	U	U	U	U	U	U	U	U	U	S	U	-	S	-	S
Trichloroethylene	-	-	U	U	-	-	-	U	-	U	-	S	U	U	U	U	U	U	U	U	U	S	U	-	U	-	S
Trisodium Phosphate	-	-	-	S	-	-	M	-	-	-	-	-	-	S	-	-	S	S	S	-	-	S	-	-	S	-	S
Tris Buffer (neutral pH)	U	S	S	S	S	S	S	-	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Triton X-100®	S	S	S	-	S	S	S	-	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Urea	S	-	U	S	S	S	S	-	-	-	-	S	S	S	M	S	S	S	S	-	S	S	S	M	S	-	S
Hydrogen Peroxide (10%)	U	U	M	S	S	U	U	-	S	S	S	U	S	S	S	M	U	S	S	S	S	S	S	M	S	U	S
Hydrogen Peroxide (3%)	S	M	S	S	S	-	S	-	S	S	S	S	S	S	S	S	M	S	S	S	S	S	S	S	S	S	S
Xylene	S	S	U	S	S	S	M	U	S	U	U	U	U	U	U	M	U	M	U	U	U	S	U	M	S	U	S
Zinc Chloride	U	U	S	S	S	S	U	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	U	S	S	S
Zinc Sulfate	U	S	S	-	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Citric Acid (10%)	M	S	S	M	S	S	M	S	S	S	S	S	S	S	S	S	M	S	S	S	S	S	S	S	S	S	S

B Chemical Compatibility Chart

*Polyethyleneterephthalate

Key

S Satisfactory

M Moderate attack, may be satisfactory for use in centrifuge depending on length of exposure, speed involved, etc.; suggest testing under actual conditions of use.

U Unsatisfactory, not recommended.

-- Performance unknown; suggest testing, using sample to avoid loss of valuable material.

Chemical resistance data is included only as a guide to product use. Because no organized chemical resistance data exists for materials under the stress of centrifugation, when in doubt we recommend pretesting sample lots.

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 - Thermo Scientific 230V 50Hz/60Hz ventilated
..... 1-7

