

Thermo Scientific

MT-12 Rotor

For use with Thermo Scientific Heraeus Megafuge 8,
Sorvall ST 8 and SL 8 Centrifuges

Instruction Manual

50139005-a

February 2013

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Preface

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

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

Items Supplied

	Quantity	Check
MT-12 Rotor	1	<input type="checkbox"/>
Bolt grease	1	<input type="checkbox"/>
Instruction manual	1	<input type="checkbox"/>

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

Intended Use

This rotor is used in combination with the according centrifuge as a laboratory product designed to separate components by generation of Relative Centrifugal Force. It separates human samples (e.g. blood, urine and other body fluids) collected in appropriate containers, either alone or after addition of reagents or other additives.

The rotor in the centrifuge is designed to run other containers filled with chemicals, environmental samples and other non-human body samples.

If the rotor is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

This rotor should be operated by trained specialists only.

Precautions

In order to ensure safe operation of the MT-12 Rotor, 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. Do not touch the electronic components of the rotor and do not make any changes to the electronic or mechanical components.
- Use only with rotors which have been loaded properly.
- 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.
- Observe the safety instructions.

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: $1,2 \frac{\text{g}}{\text{cm}^3}$



This symbol refers to general hazards.
CAUTION 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

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- “Thermo Scientific Sorvall ST 8 Centrifuge” on page 7
- “Thermo Scientific SL 8 Centrifuge” on page 9

2 Rotor Specifications

Thermo Scientific Heraeus Megafuge 8 Centrifuge

Thermo Scientific Heraeus Megafuge 8 Centrifuge

Table 1. Heraeus 230V 50Hz/60Hz

Centrifuge	Heraeus® Megafuge® 8
Catalog #	75007211
Weight empty [kg]	1.8
Max. cycle number	50000
Maximum permissible load [g]	12 x 4
Maximum speed n_{\max} [rpm]	13000
Maximum RCF value at n_{\max}	16438
Max. / min. radius [cm]	8.7 / 4.6
Pitch angle [°]	90
Accel. / braking time [s]	27 / 35
Sample heating at n_{\max} [° C] referred to ambient temperature of 23 °C, running time 60 minutes	22
Aerosol-tight ¹	No
Permissible temperature range autoclavable °C	121

¹Tested by HPA, Porton-down, UK

Table 2. Heraeus 120V 60Hz

Centrifuge	Heraeus® Megafuge® 8
Catalog #	75007210
Weight empty [kg]	1.8
Max. cycle number	50000
Maximum permissible load [g]	12 x 4
Maximum speed n_{\max} [rpm]	13000
Maximum RCF value at n_{\max}	16438
Max. / min. radius [cm]	8.7 / 4.6
Pitch angle [°]	90
Accel. / braking time [s]	24 / 33
Sample heating at n_{\max} [° C] referred to ambient temperature of 23 °C, running time 60 minutes	22
Aerosol-tight ¹	No
Permissible temperature range autoclavable °C	121

¹Tested by HPA, Porton-down, UK

Thermo Scientific Sorvall ST 8 Centrifuge

Table 3. Sorvall 230V 50/60Hz

Centrifuge	Sorvall® ST 8
Catalog #	75007201
Weight empty [kg]	1.8
Max. cycle number	50000
Maximum permissible load [g]	12 x 4
Maximum speed n_{\max} [rpm]	13000
Maximum RCF value at n_{\max}	16438
Max. / min. radius [cm]	8.7 / 4.6
Pitch angle [°]	90
Accel. / braking time [s]	27 / 35
Sample heating at n_{\max} [° C] referred to ambient temperature of 23 °C, running time 60 minutes	22
Aerosol-tight ¹	No
Permissible temperature range autoclavable °C	121

¹Tested by HPA, Porton-down, UK

Table 4. Sorvall 120V 60Hz

Centrifuge	Sorvall® ST 8
Catalog #	75007200
Weight empty [kg]	1.8
Max. cycle number	50000
Maximum permissible load [g]	12 x 4
Maximum speed n_{\max} [rpm]	13000
Maximum RCF value at n_{\max}	16438
Max. / min. radius [cm]	8.7 / 4.6
Pitch angle [°]	90
Accel. / braking time [s]	24 / 33
Sample heating at n_{\max} [° C] referred to ambient temperature of 23 °C, running time 60 minutes	22
Aerosol-tight ¹	No
Permissible temperature range autoclavable °C	121

¹Tested by HPA, Porton-down, UK

2 Rotor Specifications

Thermo Scientific Sorvall ST 8 Centrifuge

Table 5. Sorvall 100V 50/60Hz

Centrifuge	Sorvall® ST 8
Catalog #	75007202
Weight empty [kg]	1.8
Max. cycle number	50000
Maximum permissible load [g]	12 x 4
Maximum speed n_{\max} [rpm]	13000
Maximum RCF value at n_{\max}	16438
Max. / min. radius [cm]	8.7 / 4.6
Pitch angle [°]	90
Accel. / braking time [s]	24 / 33
Sample heating at n_{\max} [° C] referred to ambient temperature of 23 °C, running time 60 minutes	22
Aerosol-tight ¹	No
Permissible temperature range autoclavable °C	121

¹Tested by HPA, Porton-down, UK

Thermo Scientific SL 8 Centrifuge

Table 6. Thermo Scientific 230V 50/60Hz

Centrifuge	SL 8
Catalog #	75007221
Weight empty [kg]	1.8
Max. cycle number	50000
Maximum permissible load [g]	12 x 4
Maximum speed n_{\max} [rpm]	13000
Maximum RCF value at n_{\max}	16438
Max. / min. radius [cm]	8.7 / 4.6
Pitch angle [°]	90
Accel. / braking time [s]	27 / 35
Sample heating at n_{\max} [° C] referred to ambient temperature of 23 °C, running time 60 minutes	22
Aerosol-tight ¹	No
Permissible temperature range autoclavable °C	121

¹Tested by HPA, Porton-down, UK

Table 7. Thermo Scientific 120V 60Hz

Centrifuge	SL 8
Catalog #	75007220
Weight empty [kg]	1.8
Max. cycle number	50000
Maximum permissible load [g]	12 x 4
Maximum speed n_{\max} [rpm]	13000
Maximum RCF value at n_{\max}	16438
Max. / min. radius [cm]	8.7 / 4.6
Pitch angle [°]	90
Accel. / braking time [s]	24 / 33
Sample heating at n_{\max} [° C] referred to ambient temperature of 23 °C, running time 60 minutes	22
Aerosol-tight ¹	No
Permissible temperature range autoclavable °C	121

¹Tested by HPA, Porton-down, UK

Accessories

Article	No.
Set of reducing-sleeves for 0.2 ml	76003250
24 reducing-sleeves for 0.4/0.25 ml	76003251
24 reducing-sleeves for 0.5/0.6 ml	76003252

Thermo Scientific Auto-Lock Rotor Exchange

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- “Rotor Installation” on page 14
- “Removing the Rotor” on page 15

Rotor Installation



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

This rotor is equipped with an Auto-Lock™-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 lid of the centrifuge and if necessary remove any dust, foreign objects or residue from the chamber.
Auto-Lock and O-ring must be clean and undamaged.

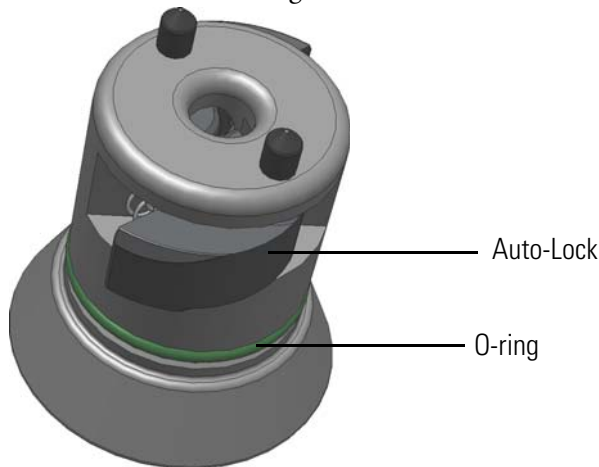


Figure 1. Auto-Lock

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 Auto-Lock 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 at its handle.



WARNING 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 Auto-Lock button. 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.

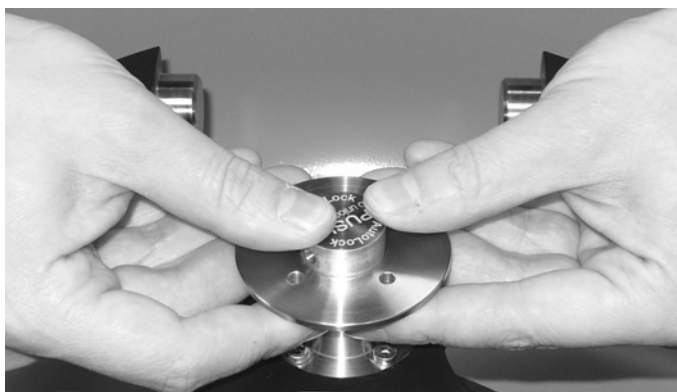


Figure 2. Handling of Auto-Lock

Rotor Loading

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- “Proper Loading” on page 18
- “Improper Loading” on page 19
- “Maximum Loading” on page 19
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Before a Run

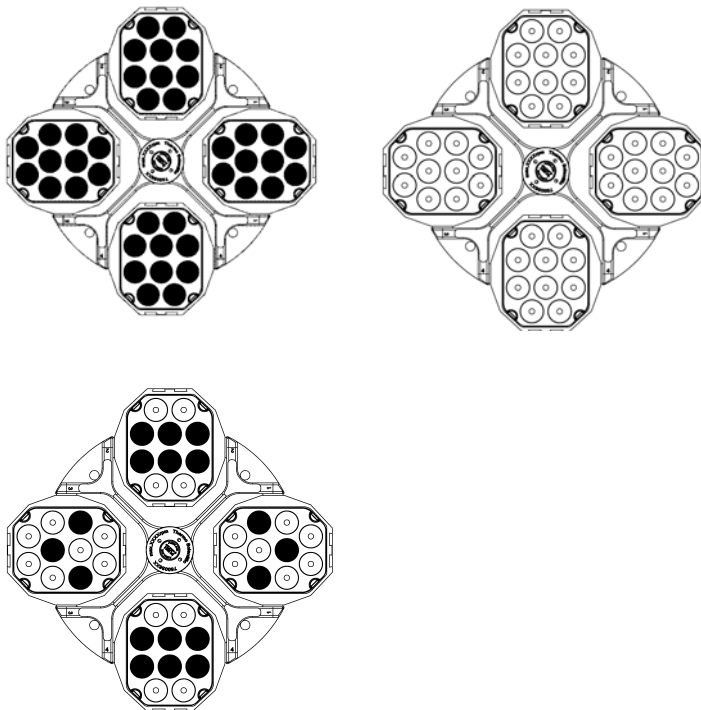
1. Please read and observe the safety instructions contained in these operating instructions and in the instructions for use.
2. Check the rotor and all accessory parts for damages such as cracks, scratches or traces of corrosion.
3. Check the rotor chamber, the centrifuge spindle and the Auto-Lock.
4. Check the rotor suitability using the “[Chemical Compatibility Chart](#)” on [page 31](#).
5. Make sure the tubes or bottles do not touch the bucket caps.
6. Check the rotor bolts and apply grease (part no. 75003786) before using for the first time.
7. Check that each bucket or microplate carrier can swing freely by moving it carefully with your hand. Weigh the bucket content (adapter and tube). Make sure you do not exceed the maximum compartment load.



CAUTION Always use identical bucket types in a rotor. Always be sure to use buckets of the same weight class, which is marked on the buckets themselves.

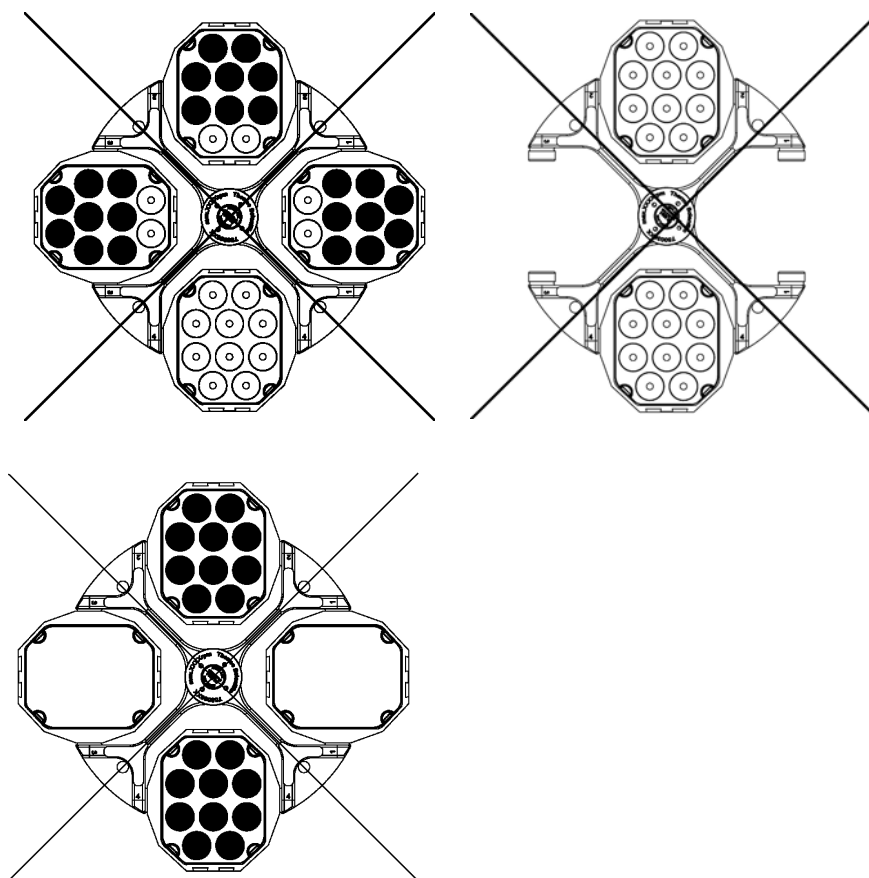
Proper Loading

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



You can use two rectangular buckets or two round buckets or two microplate carriers. Make sure that the opposing receptacles are holding tubes of the same weight.

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 adapter, exceeds the maximum permissible load:

- Reduce the fill level.
- Reduce the speed.

Use the table or the formula:

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

n_{adm} = admissible speed

n_{max} = maximum speed

Actual Load (g/cavity)	RPM _{max}
4.0	13000
4.2	12687
4.4	12395
4.6	12123
4.8	11867
5.0	11628
5.2	11402
5.4	11189
5.6	10987
5.8	10796
6.0	10614

Cycle Counter

The lifetime of rotors and buckets 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 the rotor table in the rotor specification section.

The maximum number of cycles for buckets is marked on the buckets themselves.



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. Replace the buckets when the specified number of cycles is reached.

Service life examples

Usage profile	Maximum service life at 50,000 cycles
frequent use 20 runs / day 220 days / year	7 years

Maintenance and Care

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- “Cleaning” on page 22
- “Disinfection” on page 24
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Cleaning Intervals

For the sake of personal, environmental, and material protection, you have 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 the centrifuge:

- 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 (part no. 70009824). 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 adapters.
6. Use a neutral cleaning agent with a pH 6-8 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 (part no. 70009824). Also treat the cavities with oil.
 - Tread the bolt of the swing out rotor with bolt grease (part no. 75003786).



CAUTION When cleaning, do not allow liquids, especially organic solvents, to get on the drive shaft, the bearings, the Auto-Lock 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 need be.

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.



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 adapters 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 (part no. 70009824). Also treat the cavities with oil.
 - Tread the bolt of the swing out rotor with bolt grease (part no. 75003786).

Decontamination

Decontaminate 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 needed.



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 adapters 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 (part no. 70009824). Also treat the cavities with oil.
 - Treat the bolt of the swing out rotor with bolt grease (part no. 75003786).

Autoclaving

1. Before autoclaving clean rotor and accessories.
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.



WARNING Dangerous materials through leaky seals. The O-ring of a sealed bucket will be damaged through heat exposure. Remove it before autoclaving a sealed bucket. Use a new O-ring.

Thermo Fisher Scientific Service

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	4.6	8.7	5	9
400	4.6	8.7	8	16
500	4.6	8.7	13	24
600	4.6	8.7	19	35
700	4.6	8.7	25	48
800	4.6	8.7	33	62
900	4.6	8.7	42	79
1000	4.6	8.7	51	97
1100	4.6	8.7	62	118
1200	4.6	8.7	74	140
1300	4.6	8.7	87	164
1400	4.6	8.7	101	191
1500	4.6	8.7	116	219
1600	4.6	8.7	132	249
1700	4.6	8.7	149	281
1800	4.6	8.7	167	315
1900	4.6	8.7	186	351
2000	4.6	8.7	206	389
2100	4.6	8.7	227	429
2200	4.6	8.7	249	471
2300	4.6	8.7	272	515
2400	4.6	8.7	296	560
2500	4.6	8.7	321	608
2600	4.6	8.7	348	658
2700	4.6	8.7	375	709
2800	4.6	8.7	403	763
2900	4.6	8.7	433	818
3000	4.6	8.7	463	875
3100	4.6	8.7	494	935
3200	4.6	8.7	527	996
3300	4.6	8.7	560	1059
3400	4.6	8.7	595	1124
3500	4.6	8.7	630	1192

A RCF-Values

Speed (rpm)	R _{min}	R _{max}	RCF R _{min}	RCF R _{max}
3600	4.6	8.7	667	1261
3700	4.6	8.7	704	1332
3800	4.6	8.7	743	1405
3900	4.6	8.7	782	1479
4000	4.6	8.7	823	1556
4100	4.6	8.7	865	1635
4200	4.6	8.7	907	1716
4300	4.6	8.7	951	1798
4400	4.6	8.7	996	1883
4500	4.6	8.7	1041	1970
4600	4.6	8.7	1088	2058
4700	4.6	8.7	1136	2149
4800	4.6	8.7	1185	2241
4900	4.6	8.7	1235	2335
5000	4.6	8.7	1286	2432
5100	4.6	8.7	1338	2530
5200	4.6	8.7	1391	2630
5300	4.6	8.7	1445	2732
5400	4.6	8.7	1500	2836
5500	4.6	8.7	1556	2942
5600	4.6	8.7	1613	3050
5700	4.6	8.7	1671	3160
5800	4.6	8.7	1730	3272
5900	4.6	8.7	1790	3386
6000	4.6	8.7	1851	3502
6100	4.6	8.7	1914	3619
6200	4.6	8.7	1977	3739
6300	4.6	8.7	2041	3860
6400	4.6	8.7	2106	3984
6500	4.6	8.7	2173	4109
6600	4.6	8.7	2240	4237
6700	4.6	8.7	2309	4366
6800	4.6	8.7	2378	4498
6900	4.6	8.7	2448	4631
7000	4.6	8.7	2520	4766
7100	4.6	8.7	2592	4903
7200	4.6	8.7	2666	5042

Speed (rpm)	R _{min}	R _{max}	RCF R _{min}	RCF R _{max}
7300	4.6	8.7	2741	5183
7400	4.6	8.7	2816	5326
7500	4.6	8.7	2893	5471
7600	4.6	8.7	2970	5618
7700	4.6	8.7	3049	5767
7800	4.6	8.7	3129	5918
7900	4.6	8.7	3210	6070
8000	4.6	8.7	3291	6225
8100	4.6	8.7	3374	6382
8200	4.6	8.7	3458	6540
8300	4.6	8.7	3543	6701
8400	4.6	8.7	3629	6863
8500	4.6	8.7	3716	7027
8600	4.6	8.7	3804	7194
8700	4.6	8.7	3893	7362
8800	4.6	8.7	3983	7532
8900	4.6	8.7	4074	7704
9000	4.6	8.7	4166	7879
9100	4.6	8.7	4259	8055
9200	4.6	8.7	4353	8233
9300	4.6	8.7	4448	8413
9400	4.6	8.7	4544	8594
9500	4.6	8.7	4641	8778
9600	4.6	8.7	4740	8964
9700	4.6	8.7	4839	9152
9800	4.6	8.7	4939	9341
9900	4.6	8.7	5040	9533
10000	4.6	8.7	5143	9727
10100	4.6	8.7	5246	9922
10200	4.6	8.7	5351	10120
10300	4.6	8.7	5456	10319
10400	4.6	8.7	5562	10520
10500	4.6	8.7	5670	10724
10600	4.6	8.7	5778	10929
10700	4.6	8.7	5888	11136
10800	4.6	8.7	5999	11345
10900	4.6	8.7	6110	11556

A RCF-Values

Speed (rpm)	R_{min}	R_{max}	RCF R_{min}	RCF R_{max}
11000	4.6	8.7	6223	11769
11100	4.6	8.7	6336	11984
11200	4.6	8.7	6451	12201
11300	4.6	8.7	6567	12420
11400	4.6	8.7	6684	12641
11500	4.6	8.7	6801	12863
11600	4.6	8.7	6920	13088
11700	4.6	8.7	7040	13315
11800	4.6	8.7	7161	13543
11900	4.6	8.7	7283	13774
12000	4.6	8.7	7406	14006
12100	4.6	8.7	7530	14241
12200	4.6	8.7	7655	14477
12300	4.6	8.7	7781	14715
12400	4.6	8.7	7908	14956
12500	4.6	8.7	8036	15198
12600	4.6	8.7	8165	15442
12700	4.6	8.7	8295	15688
12800	4.6	8.7	8426	15936
12900	4.6	8.7	8558	16186
13000	4.6	8.7	8691	16438

Chemical Compatibility Chart

CHEMICAL	MATERIAL	ALUMINUM	ANODIC COATING for ALUMINIUM	BUNA N	CELLULOSE ACETATE BUTYRATE	POLYURETHANE ROTOR PAINT	COMPOSITE Carbon Fiber/Epoxy	DELTRIN®	ETHYLENE PROPYLENE	GLASS	NEOPRENE	NORYL®	NYLON	PET ¹ , POLYCLEAR®, CLEARCRIMP®, CCCLEARCRIMP®	POLYALLUMER	POLYCARBONATE	POLYESTER, GLASS THERMOSET	POLYETHERIMIDE	POLYTRHYLENE	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	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	S	U
Allyl Alcohol	-	-	-	U	-	-	S	-	-	-	-	-	S	-	S	S	M	S	S	S	-	M	S	-	-	S	-	-
Aluminum Chloride	U	U	S	S	S	S	U	S	S	S	S	S	M	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	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	-	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	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	

B Chemical Compatibility Chart

CHEMICAL	MATERIAL	ALUMINUM	ANODIC COATING for ALUMINIUM	BUNA N	CELLULOSE ACETATE BUTYRATE	POLYURETHANE ROTOR PAINT	COMPOSITE Carbon Fiber/Epoxy DELRIN®	ETHYLENE PROPYLENE	GLASS	NEOPRENE	NORYL®	NYLON	PET ¹ , POLYCLEAR®, CLEARCRIMP®, CCCLEARCRIMP®	POLYALLUMER	POLYCARBONATE	POLYESTER, GLASS THERMOSET	POLYETHERIMIDE	POLYTHYLENE	POLYPROPYLENE	POLYSULFONE	POLYVINYL CHLORIDE	RULON A®, TEFLON®	SILICONE RUBBER	STAINLESS STEEL	TITANIUM	TYGON®	VITON®
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
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	-	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	S	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

CHEMICAL	MATERIAL	ALUMINUM	ANODIC COATING for ALUMINIUM	BUNA N	CELLULOSE ACETATE BUTYRATE	POLYURETHANE ROTOR PAINT	COMPOSITE Carbon Fiber/Epoxy	DELTRIN®	ETHYLENE PROPYLENE	GLASS	NEOPRENE	NORYL®	NYLON	PET ¹ , POLYCLEAR®, CLEARCRIMP®, CCCLEARCRIMP®	POLYALLOMER	POLYCARBONATE	POLYESTER, GLASS THERMOSET	POLYETHERIMIDE	POLYRTHYLENE	POLYPROPYLENE	POLYSULFONE	POLYVINYL CHLORIDE	RULON A®, TEFLON®	SILICONE RUBBER	STAINLESS STEEL	TITANIUM	TYGON®	VITON®
Acetic Acid (5%)	S	S	M	S	S	S	M	S	S	S	S	S	M	S	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	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	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	S	S	M	S	S	S
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	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	-	-	
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	
Guanidine Hydrochloride	U	U	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	
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	U	S	S	U	S	U	M	S	S	S	S	S	S	S	S	S	M	M	M	
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	M	S	S	S	
Potassium Carbonate	M	U	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	U	S	S	S	

B Chemical Compatibility Chart

CHEMICAL	MATERIAL	ALUMINUM	ANODIC COATING for ALUMINIUM	BUNA N	CELLULOSE ACETATE BUTYRATE	POLYURETHANE ROTOR PAINT	COMPOSITE Carbon Fiber/Epoxy	DELRIN®	ETHYLENE PROPYLENE	GLASS	NEOPRENE	NORYL®	NYLON	PET ¹ , POLYCLEAR®, CLEARCRIMP®, CCCLEARCRIMP®	POLYALLOMER	POLYCARBONATE	POLYESTER, GLASS THERMOSET	POLYETHERIMIDE	POLYTHYLENE	POLYPROPYLENE	POLYSULFONE	POLYVINYL CHLORIDE	RULON A®, TEFLON®	SILICONE RUBBER	STAINLESS STEEL	TITANIUM	TYGON®	VITON®	
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	
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	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	
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	
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	M	U	U	U	S	S	M	U	S	U	
Methyl Ethyl Ketone		S	S	U	U	S	S	M	S	S	U	U	S	U	S	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	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	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	

CHEMICAL	MATERIAL	ALUMINUM	ANODIC COATING for ALUMINIUM	BUNA N	CELLULOSE ACETATE BUTYRATE	POLYURETHANE ROTOR PAINT	COMPOSITE Carbon Fiber/Epoxy	DELRIN®	ETHYLENE PROPYLENE	GLASS	NEOPRENE	NORYL®	NYLON	PET ¹ , POLYCLEAR®, CLEARCRIMP®, CCCLEARCRIMP®	POLYALLOMER	POLYCARBONATE	POLYESTER, GLASS THERMOSET	POLYETHERIMIDE	POLYRTHYLENE	POLYPROPYLENE	POLYSULFONE	POLYVINYL CHLORIDE	RULON A®, TEFLON®	SILICONE RUBBER	STAINLESS STEEL	TITANIUM	TYGON®	VITON®
Sodium Borate	M	S	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	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	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	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	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	S	S	U	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	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	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	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	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	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	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	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	S	U	M	U	S	
Phosphoric Acid (conc.)	U	U	M	M	-	-	U	S	-	M	S	U	U	M	M	S	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	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	
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	

B Chemical Compatibility Chart

CHEMICAL	MATERIAL	ALUMINUM	ANODIC COATING for ALUMINIUM	BUNA N	CELLULOSE ACETATE BUTYRATE	POLYURETHANE ROTOR PAINT	COMPOSITE Carbon Fiber/Epoxy	DELRIN®	ETHYLENE PROPYLENE	GLASS	NEOPRENE	NORYL®	NYLON	PET ¹ , POLYCLEAR®, CLEARCRIMP®, CCCLEARCRIMP®	POLYALLOMER	POLYCARBONATE	POLYESTER, GLASS THERMOSET	POLYETHERIMIDE	POLYRTHYLENE	POLYPROPYLENE	POLYSULFONE	POLYVINYL CHLORIDE	RULON A®, TEFLON®	SILICONE RUBBER	STAINLESS STEEL	TITANIUM	TYGON®	VITON®
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	S	M	S	M	U	U	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	S	U	U	U	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	S	U	U	U	M	
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	

CHEMICAL	MATERIAL	ALUMINUM	ANODIC COATING for ALUMINIUM	BUNA N	CELLULOSE ACETATE BUTYRATE	POLYURETHANE ROTOR PAINT	COMPOSITE Carbon Fiber/Epoxy	DELRIN®	ETHYLENE PROPYLENE	GLASS	NEOPRENE	NORYL®	NYLON	PET ¹ , POLYCLEAR®, CLEARCRIMP®, CCCLEARCRIMP®	POLYALLOMER	POLYCARBONATE	POLYESTER, GLASS THERMOSET	POLYETHERIMIDE	POLYRTHYLENE	POLYPROPYLENE	POLYSULFONE	POLYVINYL CHLORIDE	RULON A®, TEFLON®	SILICONE RUBBER	STAINLESS STEEL	TITANIUM	TYGON®	VITON®	
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	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	

¹Polyethyleneterephthalate

Key

S Satisfactory

M 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 U = Unsatisfactory, not recommended.

-- No data available. Because no organized chemical resistance data exists for materials under the stress of centrifugation, when in doubt we recommend pretesting sample lots. suggest testing, using sample to avoid loss of valuable material.

Chemical resistance data is included only as a guide to product use.

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