Centrifuge and Rotor Safety Guide

Three factors that govern a safe life for any rotor are:

- Design and manufacture
- Proper care and handling during use
- Retirement, when damage or fatigue make continued use unsafe

Proper care and handling include:

1. Record the purchase date of each rotor, along with manufacturing date and serial number.
2. Read the manuals for the rotors and tubes before using the equipment. Follow all operational specifications published in each rotor manual.
3. Rotors must be used with the correct centrifuge (Beckman rotors in Beckman centrifuges). Proper rotor and centrifuge combinations will meet laboratory equipment standards and regulations of UL.
4. Maximum speed and sample density ratings designated by the manufacturer for each rotor are intended to prevent stress failures and should always be observed.
5. Speed reductions required for running high-density solutions, plastic adapters, or stainless steel tubes should always be observed.
6. Sample loads must be balanced and swinging bucket rotors must not be run with missing buckets.
7. Before running an ultracentrifuge, check the classification decal on the ultracentrifuge and make sure it matches the classification decal on the rotor.
8. The correct overspeed disk must be used with ultracentrifuges. The disk must be on the bottom of the rotor and the disk must be in good condition.
9. A speed-derating disk must be installed if and when the warranty conditions require it.
10. A well-kept rotor log is essential for continued safe operation of an ultracentrifuge. Include date, user, rotor used, and any problems encountered.
11. Set the proper run speed on each time to prevent overspeeding.
12. Use a titanium rotor if corrosive salt solutions will be used frequently.
13. Do not scratch or otherwise damage the aluminum oxide layer that protects the underlying metal.
14. Rotor cavities and buckets must never be cleaned with an ordinary bottle brush with sharp wire ends. Use special plastic coated brushes.
15. Do not use alkaline detergents or cleaning solutions which may remove the anodized coating. Most commercially available solutions for radioactive decontamination are highly alkaline.
16. If corrosive materials have been run or spilled on the rotor, wash it immediately.
17. Clean all spills or breakage involving radiological, toxic, pathogenic or biological material immediately. Refer to appropriate safety guides for information.
18. Only wash the buckets of a swinging bucket rotor. The body of the rotor should never be immersed: the hanger mechanisms are hard to dry and can rust.
19. Air dry the rotor after it has been cleaned and thoroughly rinsed with water.
20. Store all fixed angle vertical tube and near-vertical tube rotors upside down, with the lids or plugs removed.
21. Swinging bucket rotors should be stored with the bucket caps removed.
22. Store all rotors in a dry environment, not in the centrifuge.
23. Lubricate O-rings and threads as recommended by the manufacturer.
24. Observe warranty period and retirement recommendations for each class of rotor.
25. Consideration should be given to retiring the rotor when the warranty period has expired.
26. Do not use a rotor after the expiration date permanently marked (on some models) on the rotor or rotor accessories. The components must be taken out of service.
27. If using centrifuges with Biosafety Level 2 or higher material, rotors must have aerosol containment (“O-rings”) or be used in a biosafety cabinet. Rotors must be loaded and unloaded in a biosafety cabinet.
28. If using centrifuges with radioactive material, keep centrifuge behind an appropriate shield.
29. Rotors and accessories must be made non-radioactive, non-pathogenic, non-toxic and otherwise safe prior to maintenance or repair. A signed statement must be included with the equipment.

Reference Source: Beckman and Sorvall Technical Guides