UCR Environmental Health & Safety

Spotlight On Safety

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Centrifuge Safety

Rotors on high-speed centrifuges and ultracentrifuges are subject to mechanical stress that can result in rotor failure. There have been cases where the rotor was driven through the centrifuge or the entire centrifuge moved with a force sufficient to penetrate cinder block walls and cause personal injury. Incidents can also occur through failure to put the lid on the rotor, secure the lid, properly secure the rotor to the drive, overloading beyond the rotor's maximum mass without reducing the rated rotor speed, running swinging bucket rotors with missing buckets, and hooking buckets incorrectly or not allowing them to move freely on a horizontal rotor.

Tube Care

- Before use, tubes should be checked for cracks and adhering matter should be removed (metal or plastic tubes, other than nitrocellulose, should be used if possible).
- Tubes must be properly balanced in the rotor (0.5g at 1 G is roughly equivalent to 250Kg @ 500,000 G's).
- Check compatibility of the tube material to the solvent medium (some solvents may cause the tubes to swell or crack in the rotor).

Safe Centrifuge Operation

- Check that the centrifuge chamber, drive spindle, and tapered mounting surface of the rotor are clean and free of scratches or burrs.
- Damaged rotors must not be used.
- If the temperature of the chamber is above room temperature, pre-cool the rotor to a lower temperature before securing the rotor (this will minimize the chance of it seizing to the tapered spindle).
- Make sure rotor, tubes, and spindle are dry and the rotor is properly seated/secured to the drive hub.
- Do not operate the centrifuge without the appropriate rotor cover securely fitted and with seals in place.
- Never try to open the lid of a centrifuge, or slow the rotor by hand, while the rotor is in motion - serious injury may result
- Balance the rotor within the limits specified (place materials of similar densities in opposite positions)

  If a tube breaks:

  1. Turn off the centrifuge, and allow to stand undisturbed for 30 minutes before opening
  2. Clean and disinfect the rotor; cleaning the components requires considerable care since the various manufacturer recommendations must be followed to avoid rotor fatigue, distortion, and corrosion.
- After use, tubes, rotors, and centrifuge interiors should be cleaned and/or disinfected.
- Always complete the logbook, since the number of hours of operation determines the life of the rotor.

For more information, visit www.ehs.ucr.edu or call 951-827-5528.