Rotor Safety

While most researchers are aware of the maintenance and use log needs of metal rotors, proper care for **plastic** rotors used in microcentrifuges is not as well known.

A recent plastic rotor disruption (a euphemism for when the rotor breaks apart at high RPM sending its shrapnel in all directions) in one of our labs makes clear the need for sharing safety information about plastic rotor care.

- Review your *rotor use guide* for manufacturer safety instructions.
- Is an annual replacement of your plastic rotor recommended?
- Visually inspect the rotor for mechanical or chemical damage prior to each use. Look at:
    - The underside of the rotor

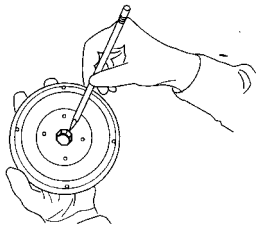

Figure 1. Checking the rotor hub.

    - The web area of the rotor

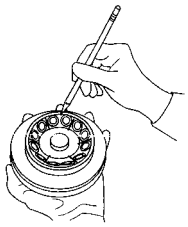

Figure 2. Checking the rotor web area.

    - The outer rim of the rotor, being sensitive to any movement between bottom pieces and the top pieces.

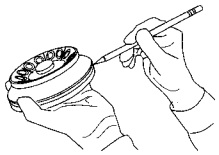

Figure 3. Checking the outer rim of the rotor.

- Understand that certain chemicals like phenol attack the rotor plastic; some nucleic acid extraction kits damage the rotor in a matter of minutes.
- Mechanical damage can often be visually observed and include cracks, scratches or gouges.
- Hidden mechanical damage may be detected by an increase in noise or vibration during a spin.
- Chemical damage appears as discoloration, crazing, granulation, peeling or similar deterioration of the finish.

- Always use the rotor cover. Use an aerosol seal for containment of pathogenic materials. If you see scoring around the circumference of the top of the plastic rotor cover, this is symptomatic of rotor deformation. Replace the rotor.

Red Flag:
Rotor Cover
Scoring

- Do not ignore excessive vibration that does not resolve after rebalancing and checking the fit of the rotor cover. Replace the rotor.
- Do not use the rotor if any damage or change is evident.

As with any centrifuge, always wear shatterproof full-coverage, wraparound eye protection with long sleeves. Periodic cleaning of the rotor and chamber is necessary to keep the unit in proper working order. Clean any spills immediately.

In the recent rotor disruption, the researcher suffered injuries to the arms and abdomen. The accident had the potential to be far worse. Please take centrifuge rotor care seriously. While your manufacturer's rotor care guides provide the information necessary for centrifuging safely, it is up to us to follow the procedures consistently. For further information, please contact your school's EHS Coordinator.

While EH&S does not recommend any particular vendor, our Fisher Scientific rep Janell has a message for UC Irvine centrifuge users:

> In support of a new Fiberlite Rotor technology, Fisher Scientific offers a free inspection program on the Aluminum Rotors for the Beckman / Sorvall High Speed Floor Models and gives the catalog number and pricing of the equivalent Fiberlite Rotor. These rotors are carbon fiber and replace the aging aluminum and titanium alloy rotors. These rotors are made with the same composite material technology used in the space shuttle. With Strength matching that of steel at a fraction of the weight. The reduced weight makes them easier to handle and significantly reduces the risk of lower-back injury that could result from lifting heavy metallic rotors in and out of centrifuges.
>
> Call or Email Janell Raica with Fisher Scientific for a free inspection of your centrifuge rotor. 1-800-955-6666 ext. 5533 or Janell.Raica@fishersci.com.

Please check with vendor of choice for similar offerings.