

Shipping Instructions for Experiments at HPCAT

(Rev. December 2024)

These instructions are for non-hazardous materials ONLY. For instructions on shipping hazardous materials, see: <https://www.aps.anl.gov/Safety-and-Training/Safety/Using-Material-Samples/Transporting-Hazardous-Materials>

HPCAT is accepting diamond anvil cells that have been properly loaded, shipped, and scheduled to be measured on our beamlines. To assure the highest probability for success in these measurements, several key procedures must be followed during scheduling, cell preparation, and shipping.

Scheduling

DACs must arrive at HPCAT at least two business days before the beginning of the scheduled beamtime. This will allow the relevant staff members to come to the lab to prepare sample holders and pressure control devices before the beamline scientist brings the DACs to the beamline end station. Please coordinate with your local contact well ahead of your experiment.

During Limited Operations, the APS allows samples categorized as low hazard level, as well as some materials that have been categorized as medium hazard level. If your material has been classified as medium hazard level on previous ESAFs, it is recommended that you submit an ESAF several weeks ahead in order to confirm that the sample will be allowed to run.

Cell Preparation

- If at all possible, prepare multiple samples for each measurement.
- If the HPCAT membrane canisters will be used to change pressure during measurements, please make sure that washers do not protrude more than 0.01" outside the diameter of the cell.
- Use a scribe to make any necessary alignment marks on the DAC.
- Documentation must be included with each DAC. It should include any needed orientation requirements, cell pressure at time of shipping, sample material and any other information that will be necessary for staff. If you have microscopic images of the sample load, these can be very helpful to the beamline staff during alignment.
- Beryllium gaskets can be used in cells shipped to the APS. If you are sending DACs with beryllium gaskets, contact Curtis Kenney-Benson before shipment with specific information on how you have applied the secondary containment. All cells must arrive at the APS with secondary windows covering the diamonds, and with all side holes sealed (typically with Kapton tape) to prevent beryllium dust from escaping in the event of a shattered diamond.

Shipping and handling

- Packing materials must be assembled in a way that makes them simple to re-use for the return shipment.
- Please avoid over packaging (i.e., stuffing boxes with polystyrene filler, loose tissue or paper, etc.) and only ship the items necessary for the current experiment.
- DACs should be addressed to:
Curtis Kenney-Benson
9700 S. Cass Ave., Bldg. 434E
Lemont, IL 60439
Ph: 630-252-0495 Cell: 815-514-4278
curtkb@anl.gov
- Return shipping address must be included (if possible, request your shipping facility to include a return label).
- Safety Data Sheets (SDS) are required for all sample materials. These can be transmitted electronically to your local contact, or shipped as a printed copy with the DACs.
- See APS shipping instructions: <https://aps.anl.gov/Safety-and-Training/Safety/Shipping/Shipping-Samples-and-Equipment-An-Introduction>

Liability Statement

The staff of HPCAT will handle DACs sent for measurements with the utmost care, but it is not possible to remove all potential for accidents. HPCAT does not accept liability for damage to DACs or the diamond anvils mounted in them that occurs during shipping, handling, or experiments.