Factors To Consider When Selecting A Lab Press

Choosing the right lab press for your application typically involves an evaluation of the following issues:

- How much load or force will you have to put on the sample?
- How much room do you need inside of the sample compartment of the press?
- What is the daylight opening and the size of the platens?
- How much strength or energy (work) is required to pump the press up to the required load?
- Must the rate of ramp up to the desired clamp force or ramp down from load be controlled?
- How much space do you have for the press in your lab?
- Will you have to move the press?
- How much does it cost for the features you require and how much will be added to that cost for optional features?

Do I Really Need A Hydraulic Press?

If you are doing briquetting for XRF, the answer is yes–there is no alternative. If you are doing KBr pellets, you should first consider a hand press.

Hand presses make excellent transparent KBr pellets with minimal work. They require virtually no lab space and they are portable. Furthermore, they are relatively easy to operate. The major drawbacks of hand-operated presses are that they do not lend themselves well to creating samples that can be stored for future reference and they are either not evacuable or cannot be evacuated with the efficiency of a die set designed for a hydraulic press. If you keep your powder dry and your anvils heated, water absorbances can be

minimized (see above “Making KBr Pellets”). Extra collars for hand press die sets can solve short term pellet storage needs. But, if you are going to make a large number of KBr pellets that must be very dry or that you intend to store in large quantities, you will need a hydraulic press.

Making KBr Pellets

KBr pellets are easy to make if a few simple rules are followed. First, heat the anvils and the body of the die set before you make your pellet. This makes them as dry as possible. Second, use dry KBr powder. Third, make sure that the anvils, the die set and the powder are all the same temperature. Hot powder and cold anvils will produce a cloudy wet pellet. Heating the KBr powder in a dry environment will dry it out and storing it in a heated case or desiccator will keep it dry. If you cannot keep the KBr powder dry, try grinding your own powder from random cuttings of KBr. This can be simplified by using a Wig-L-Bug mill.

Using too much KBr powder is one of the most common mistakes. Use as little KBr powder as possible – usually **just barely** enough to coat the anvils of the die set so that the face of the anvil is completely and **evenly** covered with a very thin coat of powder. To compress an excessive amount of powder requires considerably more force on the press than is required if the proper amount of powder is used; and if inordinate force is not applied to the excessive powder charge, the pellet will either wedge or contain white spots. Grind the sample, not the KBr powder. Grinding the KBr powder opens crystal facets which absorb moisture. Mix (do not grind) the sample into the KBr powder. Last, if you are pulling a vacuum on a die set, make sure that it is properly assembled and that the seals are in good condition and are positioned where they belong. Detailed pellet making instructions applicable to specific accessories are available with all ICL presses and dies.

Applications

Laboratory presses are used for a variety of tasks, but the bulk of the applications involve pressing sample pellets from a matrix of KBr and an organic sample for infrared spectroscopy, briquetting inorganic samples for x-ray fluorescence (XRF) spectroscopy, and pressing thin polymer films using heated platens for transmission sampling by IR spectroscopy. There are, however, numerous other applications such as pill making and laminating. There are also alternatives to lab presses, such as ICL’s new Roto-Film™ and Tensioner™ accessories for producing thin polymer films.

International Crystal Laboratories
11 Erie St., Garfield, NJ 07026
973-478-8944 www.internationalcrystal.net
Em: iclmail@internationalcrystal.net