

Unit No.1, Jivdani Industrial Estate No.1 Off. Western Express Highway, Dhumal Nagar, Vasai (E)-Palghar – 401208 Contact: 8600033151 Email: <u>sales@antsceramics.com</u>, www.antslab.in CIN: U26910MH2005PTC155195

To Whomsoever May Concern

Pellet dies are used to compress powders into solid form using a hydraulic press. Our pellets are made from the highest quality materials and manufactured to high dimensional tolerances to ensure the best results.

These pellet dies are particularly suited to making KBR pellets for FTIR spectroscopy and other spectroscopic techniques. However, almost any powder material can be compressed using these dies, including materials for solid-state chemistry, pharmaceuticals, and soil samples.



Key Features

- Hardened stainless steel construction Increases durability and avoids excessive expansion under load
- Polished inner pressing faces Ensures smooth finish on pellets important for spectroscopy applications.



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Specifications & Pressure Table

"The pellet dies available from Ants are manufactured in a wide range of diameters for both infrared and XRF applications. The standard dies, made from 440C stainless steel, offer an ideal solution for preparing sample discs/pellets prior to analysis. However, care must be taken where extremely hard, corrosive or irregular shaped samples are to be compressed, as stainless steel dies and pellets can be damage"

Diameter	Maximum Load
3mm	2 tons
5mm	2 tons
8mm	2 tons
10mm	5 tons
12mm	10 tons
13mm	10 tons
15mm	10 tons
20mm	25 tons
25mm	25 tons
30mm	40 tons

Die Care and Use with KBr Powder

The dies are made from corrosion resistant steel, but because of the corrosive nature of wet KBr or possibly from other substances used with the dies, it is necessary to take certain precautions.

A. When not in use always ensure that the die and its component parts are thoroughly clean and dry. If possible, it is preferable to store the die and components in a drying cabinet or a desiccator



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- B. When cleaning the die pellets, be careful of the polished faces. Do not use a cloth that has a hard abrasive texture. Always use a soft cloth or tissue. If KBr powder has been used as a sample for compression, any remaining powder should be washed away from the die body, plunger and pellets with distilled water and then rinsed with methanol. After drying the parts with a soft cloth they can be placed on a warming plate to keep warm and dry until use with the next sample
- C. Never exceed the maximum safe load when pressing

Pressing of the Sample Pellet

Place the die assembly into a hydraulic press. Make sure that the die is central on the bottom pressing face of the press.

If a vacuum supply is to be used on the die whilst pressing, connect the vacuum line tubing to the evacuation port (5) of the die. Switch on the vacuum line and maintain the vacuum before, during and after the pressing process.

Ensure that all safety guards on the press are closed and then start to press the die. Apply a load to the plunger (6) to produce the desired glassy quality of KBr/sample pellet. For the 13mm die, a load of 7 tons indicated at the pressure gauge of the press is usually sufficient.

Notes on Sample Pellet Quality

Generally, it is easy to produce a good quality pellet if the die is used correctly. However, some faults in the produced sample pellet may occur due to a variety of reasons. Some of these faults and their remedies are tabulated below. The faults described are for pure KBr or other halide salts, which do not contaminate the sample. When the sample is added to the halide salt the clarity of the disc will depend to a large extent on the quantity and type of sample. Usually 0.1 to 2% of sample to KBr is perfectly adequate. The overall quality of a pellet is largely dependent upon the quality of the KBr or halide salt powder used, which should always be of a spectroscopic grade of purity.



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Fault	Cause	Remedy
Sample pellet not clear. Lacks optical clarity.	Sample damp, contaminated KBr powder or insufficient pressure when compacting.	Dry the KBr powder or sample and increase the compacting pressure.
Sample pellet is clear but shows opaque spots.	Powder not uniformly flat in the die, leaving large particles which do not vitrify when pressed.	Sieve powder to extract coarse grains, then re- grind and re-press
Sample pellet is cloudy.	Insufficient evacuation time or leaky seals.	Check seals on the die and lengthen evacuation period.
Sample pellet is clear at first but quickly becomes cloudy.	Damp powder or damp atmosphere.	Dry the KBr powder or sample, check seals on the die and lengthen evacuation period