

Three Point Bend Testing Aids the Formulation and Manufacture of New Tablets

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The mechanical properties of new formulations for use in tablet form can be obtained from the three point bend test. The three point bend test is a well-known mechanical strength test and it will accurately give properties such as the Youngs Modulus and the Tensile Strength of a material. These properties govern the eventual strength of the tablet and are a function of amount of compressive force used whilst making the tablet or specimen.



A typical test program would be to make small beams at various increasing pressures (which decrease the porosity) down to zero porosity, using the new formulation and then test in three point bending to obtain the material characteristics.

The beams would be made in a small punch and die arrangement and would typically be rectangular with sides of 2-4mm. (The minimum beam width/depth must be at least 10 times the particle diameter). A suitable beam can be made from approximately 0.2gm of powder. The force (pressure) required would typically be 2-8 tonnes and an IR (Infra Red) press (commonly found in pharmaceutical labs) can be used for the compression.

The information obtained from such tests can be stored in a database and manipulated so as to provide a good indication of the characteristics of prospective new formulations.

Testing machines such as the [Engineering Systems CT6](#) (previously the CT5) shown here on the right are used worldwide for the three-point bend testing of these small beams.



Much work has been published in the English technical journals by authors such as Prof. J.M. Newton, Prof. P. Stanley, Dr. R.C. Rowe