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Pressure Calibration of a Tetrahedral Anvil Device

THE tetrahedral anvil high-pressure device was first described by Hall¹ in 1958. The pressure calibration of this device was based on the resistivity measurements of Bridgman². Because the calibration points based on these measurements have been revised downward³, the original linear plot of sample pressure versus applied force no longer has validity. In a preliminary determination of the shape of a calibration curve based on the newer values of the calibration points, curve A (Fig. 1) was obtained. These values were obtained with an apparatus containing 7-in. hydraulic rams and triangular tungsten-carbide anvils which were 0.781 in. in edge-length. The calibration wires were inserted in silver chloride cylinders 5/32 in. in diameter which in turn were inserted in the pyrophyllite tetrahedrons, which were about 25 per cent oversize (edge-length). A thick coating of iron oxide mixed with water was applied to the assembled tetrahedron before it was pressed. The use of tetrahedrons which were 35 per cent oversize caused the samples to be more distorted by the flattening of the ends of the silver chloride cylinders, as described elsewhere⁴. Tetrahedrons which were only 15 per cent oversize transmitted the applied force to the calibration wire less effectively. In this case about 10 per cent more ram force was necessary to attain 25 kbars on the calibration wire.

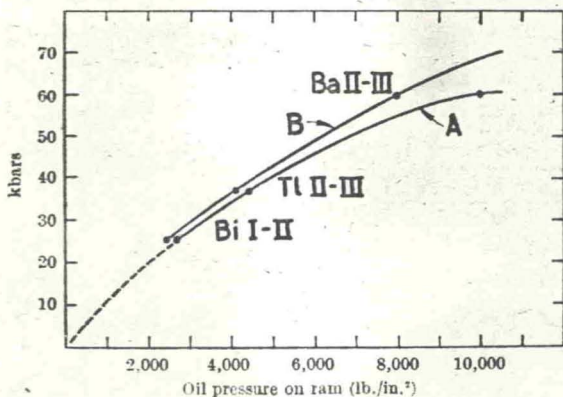


Fig. 1