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The Effect of Hydrostatic Pressure (14kbar) on the Ultimate Compressive Strength of Various Sintered Materials¹

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This paper reports the investigation of the increase in ultimate compressive strength of sintered materials as a function of hydrostatic support pressures up to 14 kbar. Six tungsten carbide materials and five oxide ceramics were tested. All materials displayed significant increase in axial ultimate compressive strength when radically loaded by fluid pressure. For example: The ultimate compressive strength of WC with 3 percent Co binder is raised from 52 kbar to 92 kbar by 14 kbar fluid support pressure. A schematic design employing this effect in the design of a high-pressure apparatus is included.

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