Guns and Ordnance ▪ Armor

A Ceramic Armor Material Database

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Abstract: This report compiles and documents a Ceramic Armor Material Database. Experimental data obtained from numerous journals and conference proceedings, by researchers of various disciplines, covering over thirty years are documented in this report. The data include nine different ceramic materials. The ceramics are Silicon Carbide, Boron Carbide, Titanium Diboride, **Aluminum** Nitride, Silicon Nitride, **Aluminum Oxide** (85% pure), **Aluminum Oxide** (high purity), Tungsten Carbide and Glass. For each ceramic material, experimental data are tabulated for the following experiment types; (1) mechanical tests, (2) hydrostatic tests, (3) plate impact tests, (4) semi-infinite penetration tests, (5) depth of penetration (DOP) tests, (6) perforation tests and (7) other tests. The data are documented in tabular form in metric units. A schematic of the experimental configuration, and graphs of the data, are also provided when appropriate. Information about each of the materials tested is also provided including such information as elastic wave velocities, density, grain size, porosity, material processing, elastic modulus, Hugoniot Elastic Limit (HEL) and chemical composition. Although this report was not intended to be an exhaustive search of the literature, an attempt has been made to compile as much data as possible.

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