Introduction

Mechanical and physical properties and performance of brittle bodies, including advanced ceramics and glasses, can be difficult to measure correctly unless the proper techniques are used. ASTM Committee C28 on Advanced Ceramics has developed numerous full-consensus standards (e.g., test methods, practices, guides, terminology) to measure various properties and performance of a monolithic and composite ceramics and coatings that, in some cases, may be applicable to glasses. These standards give the “what, how, how not, why, why not, etc.” for determining many mechanical, physical, and thermal, properties and performance of advanced ceramics. Use of these standards result in accurate, reliable, repeatable and complete data. Involvement in ASTM Committee C28 has included users, producers, researchers, designers, academicians, etc. who write and continually update, as well as validate through round robin test programmes, more than 45 standards since the committee’s inception in 1986. Included in this poster is a pictogram of the ASTM Committee C28 standards and how to obtain them either as i) individual copies with full details or ii) a complete collection in one volume. A listing of other ASTM committees that might be of interest is included. Finally, some examples of the tangible benefits of standards for advanced ceramics are employed to demonstrate their practical application.

C28 Advanced Ceramic Standards

Visit the C28 website (http://www.astm.org/COMMITTEE/C28.htm) to purchase C28 standards or join the C28 committee.

Monolithics

- C 1161 Flexural strength
- C 1211 Flexural strength (High Temp)
- C 1368 Slow Crack Growth (Dynamic Fatigue)
- C 1460 Slow Crack Growth (High Temp)
- C 1576 Slow Crack Growth (Stress Rupture)
- C 1684 Flexural strength (Rods)

Composites, Coatings, Porous Ceramics

- C 1424 Compression strength
- C 1678 Fracture Toughness
- C 1425 Shear strength (Hi Temp)
- C 1275 CFCC Tensile strength
- C 1575 CFCC Tensile strength (Hi Temp)
- C 1395 Tensile strength (Hi Temp)
- C 1340 Ultrasonic Evaluation

Powders

- C 1274 Particle size, BET
- C 1293 Particle size, Centrifugal Sed.
- C 1291 Creep, Creep Rupture
- C 1293 Cyclic fatigue

Terms, Workshops, Education

- C 1494 C, N, O in silicon nitride

Subcommittees

- 01 Mech. Prop. + Reliability
- 04 Applicators + Refractories
- 05 Physical Prop. + NDE
- 12 Materials + Composites
- 91 Terminology

Collaborating ASTM Committees: C08 Refractories; C21 Ceramic Whitewares and Related Products; C26 Nuclear Fuel Cycle; D30 Composite Materials; E07 Nondestructive Testing; E08 Fatigue and Fracture; E10 Nuclear Technology and Applications; E28 Mechanical Testing; F04 Medical and Surgical Materials and Devices; F34 Rolling Element Bearings; G02 Wear and Erosion


Standardization: Tangible Benefits

Comparisons Among Authors and Helping to Interpret Data

The Problem: Transparent Armor Ceramics as Spacecraft Windows*

- Standardized fracture toughness tests using Test Method C1421 ensure correct comparisons of different authors’ results --
- Standard-sized circular disks could be used to determine Poisson’s ratio and Young’s modulus via Test Method C1269 as well as the slow crack growth parameters, n and A, via Test Method C1360.

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We thank the more than 90 industry, government, and academic committee members from many countries (~25% non-USA) who have volunteered many hours to develop these standards via work in six technical and four administrative subcommittees.

ASTM Committee F94, Surgical and Medical Devices and the U.S. Food and Drug Administration (FDA) generated standards from Committee C28 Advanced Ceramics for their new standard specification.