

Engineered Coatings, Inc.
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Product Data Sheet: Boron Carbide-Metal PVD Wear Coating

Cermet PVD Coating

- Unbalanced -Magnetron Physical Vapor Deposition (PVD)
- Composition: Boron Carbide and Refractory Metal

Benefits

- Extremely High Hardness, \geq Cubic Boron Nitride (HKN~5000)
- High Toughness from Metal Addition
- High-Temperature Capability
- Low Temp. Deposition, Will Not Temper Steel Parts
- Smooth, As-Coated Surface Finish
- Virtually No Part Growth (Net Shape)
- Scaleable Process

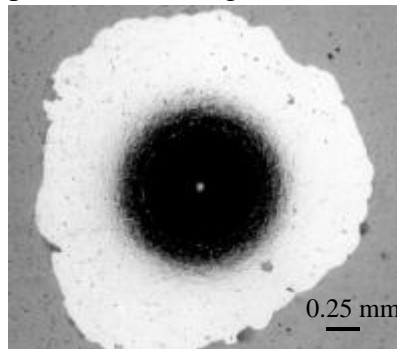
Performance Data

% Metal ¹⁾	L_C , N	HKN (gm load)	Relative Toughness
30	49.2	4001 (S) 3560 (25)	0.92
45	45.5	3415 (S) 2598 (25)	1.0
49	55.7	5351 (S) ²⁾ 5290 (25)	0.9

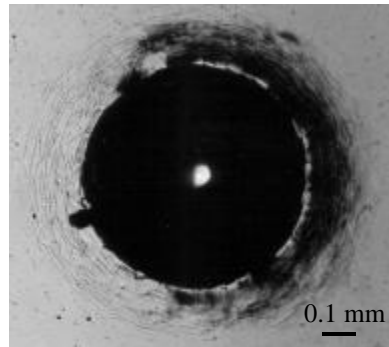
Notes : 1) B_4C Coating With No Metal - Flaked
2) Thicker Coating
 L_C -Scratch Adhesion Force
HKN - Knoop Microhardness Number
S - Extrapolated to Surface Value

Toughening From Metal Addition

- Addition of Metal to Form B_4C Improves Film Toughness and Adhesion



Pure B_4C : Delamination From 150 Kg Indentation



B_4C & Metal: Minor Cracking From 150 Kg Indentation

Applications

- Engine Components
- Forming Tools
- Biomedical Instruments, Implants
- Mechanical Components - Gears, Bearings, Seals

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