PROTECH LAB CORP.
Materials Testing Services
147 Island Dr, Hilton Head, SC 29926 843 682-2772 fax 682-2771
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Source:	Kermetico	Date Received:	10/11/12	Protech Lab:	12-0888
PO:	2012-1745	Part Drawing #:	Not Provided	Part Serial #:	Not Provided
Spray Date:	Not Provided	Part Model:	Not Provided	Job #:	Not Provided
Quantity Provided:	1 Panel	Customer:	Not Provided	Cell/Booth #:	Not Provided

Additional Data: WC-12Co Sample #1028-3 Gun: AK-06

Coating Material Spec.: Not Provided Coating Vendor: Not Provided Coating Lot #: Not Provided

Protech Polishing Procedure: Carbide Mount Identification: 12-0888 Wc-12Co Gun AK-06 Sample 1028-3

Microstructure Evaluation

Requirements	Characteristics	Found	Accept/Reject	Comments:
MICROSTRUCTURE				
Not Provided	Porosity	0.0140% via Image Analysis	For Info Only	See Image Data Page
Not Provided	Oxide Content	See Photos	For Info Only	
Not Provided	Interface Contamination	< 1%	For Info Only	Calculated by Filar Point Count
Not Provided	Unmelted Particles	None Found	For Info Only	
Not Provided	Cracks/Delaminations	None Found	For Info Only	
Not Provided	Uniformity	Uniform	For Info Only	

Additional Comments: **Overall Coating Analysis:** Coating polished in a manner to highlight carbide content. Rounding may occur at coating surface and near coating-substrate interface.

MICROSTRUCTURE EVALUATION FOR INFORMATION ONLY

Tensile Test

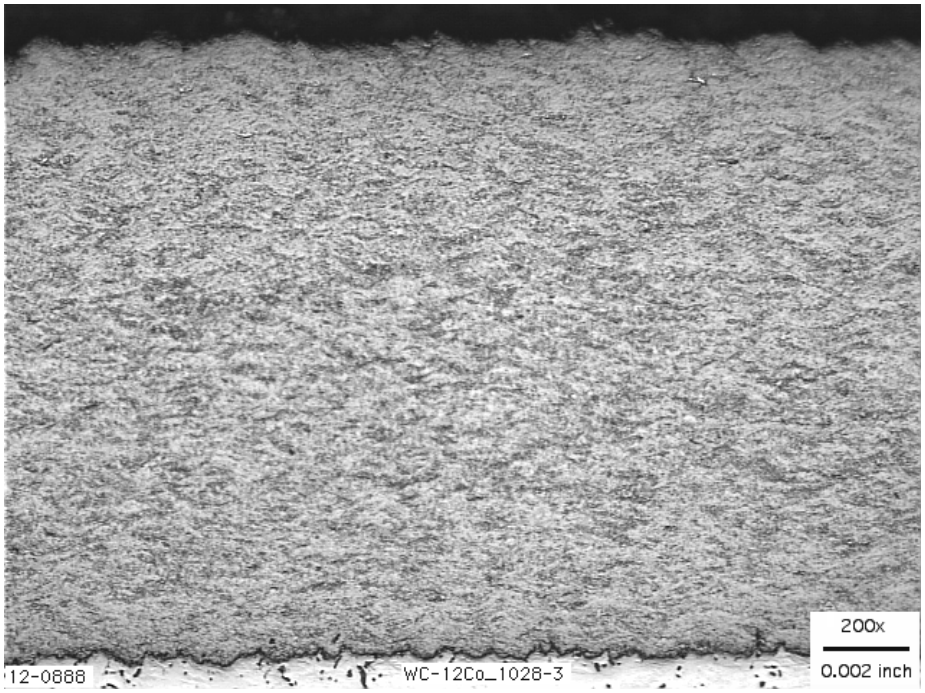
Adhesive Used:	EC2086	Specification #:	ASTM C633-01 (2008)
Adhesive Lot #:	0152AT	Procedure #:	PLC-004
Coating Material:	WC-12Co	Requirement:	Info Only

SAMPLE ID	POUNDS	PSI	FAILURE MODE
1028-1_#1	10319	13145	100% Adhesive
1028-1_#2	9880	12586	100% Adhesive
1028-1_#3	10085	12847	100% Adhesive
AVERAGE FAILURE	**10095**	**12859**	
EC2086 Adhesive Standard	**10065**	**12822**	

TENSILE DATA FOR INFORMATION ONLY

Average Coating Thickness
12.2 mils

Micro Hardness Results
Indenter Type: Vickers
Load: 300g
Requirement: Not Provided
Spec: ASTM 384-11E1
Reading
1564
1547
1421
1547
1467
1482
1616
1539
1652
1564
Average Hardness
1539.9
For Information Only



Laboratory Signature: _____ **Date:** 10/16/12

Reviewed By: _____ **Date:** 10/16/12

Porosity Content - Raw Data via Image Analysis

Reading #	% Porosity
1	0.0144
2	0.0187
3	0.0074
4	0.0050
5	0.0150
6	0.0177
7	0.0123
8	0.0246
9	0.0119
10	0.0131
Average	**0.0140**

Area	Porosity
138760	20
246132	46
241935	18
242316	12
246768	37
243205	43
251460	31
255905	63
235585	28
228600	30

Operator Settings
Objective: 20x
Aperture: 2/3
Voltage: 4
Threshold: 40

Microstructure as Viewed at 500x