

SECTION II: CERAMICS

PURCHASE SPECIFICATION

1.0 SCOPE

The suppliers listed in this specification have been approved to supply ceramics used in vacuum electron device bodies as well as metallized ceramics. Graphite is also included in this section. Where applicable, these suppliers receive periodic process surveillance through supplier audits and process audits coordinated between CPI Purchasing and Process Engineering. The use of suppliers not subject to this level of surveillance is strongly discouraged.

Note: Development materials may be ordered from suppliers other than those listed here with the written approval of Engineering and Materials.

The requirement to utilize these suppliers extends to ceramics procured by CPI's subassembly suppliers. Any deviation from this requirement shall necessitate a Supplier Deviation Request and a First Article Test and should only be considered when extreme urgency offsets the increased technical risk.

2.0 MATERIAL TYPES

The ceramics and their suppliers are organized in the following tables according to material type: Alumina Pressed, Beryllia Pressed, Alumina Extruded, Beryllia Extruded, Graphite, and Miscellaneous. The governing CPI Purchase Specification (P-Spec) is applied.

P14-1				
Aluminum Oxide Ceramic: Die Pressed or Iso-Pressed				
Material	Supplier	Grinding Supplier		P14-8 Metallizing Supplier
AD-94 AD-995	CoorsTek	CoorsTek	Precision Ferrites & Ceramics	CoorsTek
AL-300 AL-500 AL-995	MAM-Wesgo MAM-Duramic MAM-Erlangen	MAM-Wesgo MAM-Duramic MAM-Erlangen	Insaco Accuratus Ceramics	MAM-Wesgo MAM-Erlangen*

* MAM-Erlangen metallizing does not meet P14-8 requirements. Metallizing specifications must be on the drawings.

P14-1				
Beryllium Oxide Ceramic: Die Pressed or Iso-Pressed				
Material	Supplier	Grinding Supplier		P14-8 Metallizing Supplier
Beramic 995	CBL Ceramics	CBL Ceramics	- - -	CBL Ceramics
Thermalox 995	Materion Ceramics	Materion Ceramics	Accuratus Ceramics Stratamet	CBL Ceramics

Revision Information

Added Graphite (P14-19 and P14-21)

P14-7			
Aluminum Oxide Ceramic: Extruded			
Material	Supplier	Grinding Supplier	
AD-85 AD-94 AD-995 AD-998	CoorsTek	CoorsTek	Precision Ferrites & Ceramics Insaco Accuratus Ceramics
AL-300 AL-500 AL-995	MAM-Wesgo	MAM-Wesgo	
Alsimag 614 Alsimag 771 Alsimag 777	McDanel Advanced Ceramic Technologies	McDanel Advanced Ceramic Technologies	

P14-7		
Beryllium Oxide Ceramic: Extruded		
Material	Supplier	Grinding Supplier
Thermalox 995	Materion Ceramics	Materion Ceramics; Accuratus Ceramics; Stratamet

Graphite by P-Spec			
Material	Supplier	Machining or Laser Cutting Supplier	Purification Supplier
Pyrolytic Graphite Cups P14-19	Minteq Pyrogenics Group	None Qualified	N/A
Machined and Purified Graphite P14-21	POCO Graphite	POCO Graphite	POCO Graphite

Miscellaneous Ceramic Types Referenced by CPI P-Spec			
Material	Supplier	Grinding Supplier	P14-8 Metallizing Supplier
AD-999 Vistal Alumina P14-15	CoorsTek	CoorsTek Precision Ferrites & Ceramics Insaco	N/A
Lossy Aluminum Nitride (AlN) P14-17	Ceradyne		N/A
BeO/SiC P14-6	CBL Ceramics		N/A

SECTION II: CERAMICS

PURCHASE SPECIFICATION

Miscellaneous Ceramic Types Referenced by CPI P-Spec (continued)			
Boron Nitride, Hot-Pressed (HPBN) P14-9	Momentive Performance Materials		N/A
Boron Nitride, Anisotropic Pyrolytic (APBN) P14-2001	Momentive Performance Materials		N/A
Low Thermal Expansion Ceramics P14-3	HP Technical Ceramics - Zerotherm	Precision Ferrites & Ceramics Insaco	N/A
Sapphire P14-14	Crystal Systems	Insaco	None Qualified
Aluminum Nitride (AlN) P14-18	Sienna Technologies	Sienna Technologies Accuratus Ceramics	N/A

3.0 REFERENCES

- P14-1 Ceramic Bodies
- P14-3 Low Thermal Expansion Ceramics
- P14-6 Beryllia/Silicon Carbide RF Lossy Material
- P14-7 Extruded Ceramics
- P14-8 Metallized and Nickel-Plated Ceramics and Sapphire
- P14-9 HP Boron Nitride
- P14-14 Gyrotron Sapphire Output Window
- P14-15 Heater Ceramics
- P14-17 Aluminum Nitride Composite RF Lossy Material
- P14-18 Aluminum Nitride Ceramics (AlN)
- P14-19 Pyrolytic Graphite Cups
- P14-21 Machined and Purified Graphite Parts
- P14-2001 APBN (Anisotropic Pyrolytic Boron Nitride)