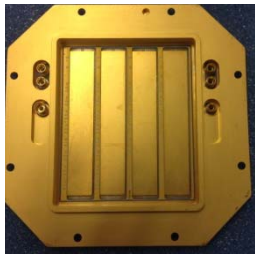
NATEL Multi-Layer Ceramic Reference Guide

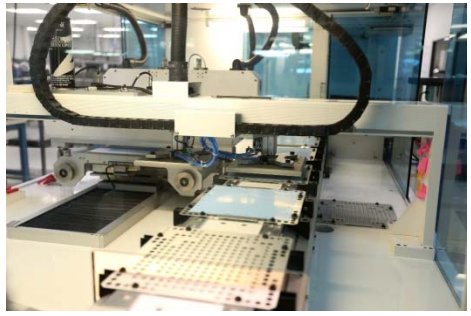
PROPERTY	DUPONT 951	DUPONT 9k7	FERROR A6	NATEL T8800	Natel AIN	Natel HTCC
Color	Blue	Light Blue	White	Blue	Tan	See separate HTCC table
Available Fired Thickness (mils)	3.7, 5.2, 8.2	3.8, 8.3	3.7, 7.4	3.5-10	5, 10	
Dielectric Constant (K)	7.28	7.1	5.9	7.27	8.5	
Insulation Resistance	>10^{12} Ohms	>10^{12} Ohms	>10^{12} Ohms	>10^{12} Ohms	>10^{12} Ohms	
Breakdown Voltage	>1000 V/Mil	>/=1100 V/mil	>900 V/Mil	>10^{12} Ohms	>10^{12} Ohms	
Flexural strength**	207 MPa	230 MPa	>124 MPa	>276 MPa	300 MPa	
Fired Density	3.1 gm/cc	3.1 gm/cc	2.5 gm/cc	3.06	3.26 gm/cc	
Thermal Conductivity	>5 W/mK	4.6 W/mK	>5 W/mK	>5 W/mK	150 W/mK	
X, Y	12.7% ± .2%	9.1± .3%	14.8% ± .2%	13.3% ± .2%	15%± .3%	
Z	15% ± .2%	11.8± .5%	25% ± .2%	14% ± .2%	25% ± .2%	

All LTCC product is available in the following conductor options:

- **Gold**
- **Sliver**
- **Gold/Nickel Plating**
- **Palladium Silver**
- **Platinum/Palladium/Silver**
- **Platinum Gold**
- **Copper**
- **Solderable Silver or Gold**

High Temperature Co-Fired Ceramic			
Color	Black-Brown	White	White
Alumina Content	90%	92%	94%
Bulk Density (gm/cc)	3.6	3.5	3.5
Dielectric Constant (1MHz)	9.8	9.0	8.8
Dielectric Constant (8MHz)	8.7	8.5	8.4
Dissipation Factor 1X10^{-3})	0.98	0.98	0.98
Dielectric Strength (V/m)	1X10^{6}	1X10^{6}	1X10^{6}
Volume Resistivity (25•C) (Ω-cm)	10^{12}	10^{12}	10^{12}
Coefficient Thermal Expansion (-55°C - 300°C)	7.0 X 10^{-6}	6.8 X 10^{-6}	6.7 X 10^{-6}
Thermal Conuctivity (W/mK)	15	15	15
Module of Rupture (MPa)	338	449	460





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