



Precious Metal COG Formulations

Description: Ferro's extensive line of dielectric formulations for ceramic capacitors includes products compatible with precious metal and base metal electrode systems.

Precious metal dielectrics are for use with Palladium/Silver electrode systems. They are

available in low, ultra-low, and high fire versions.

These products have excellent sintered density, and most are compatible with both solvent and water-based binders.

Ultra-Low Fire COG Dielectrics ($\leq 1000^{\circ}\text{C}$)

Property	ULF100	ULF140	ULF280	ULF800	ULF900	ULF101
Dielectric Type (TCC)	M7H/K10	COG/K14	COG/K32	COG/K80	COG/K90	COG/K100
Dielectric Constant	8-10	13-15	32	>75	90	>90
Dissipation Factor (%) @ Fired Layer Thickness (μm)	≤ 0.001 @ 35-40	≤ 0.001 @ 35-40	≤ 0.05 @ 35	≤ 0.1 @ 36	≤ 0.1 @ 34	≤ 0.1 @ 34
Insulation Resistance ($\text{G}\Omega$) @25°C @125°C	>5000 >500	>1000 >100	>1000 >100	>1000 >100	>1000 >100	>1000 >100
Particle Size Dist. (μm)						
D90	1.9	1.6	1.7	1.1	1.24	1.1
D50	1.2	0.9	1.0	0.7	0.75	0.7
D10	0.7	0.6	0.6	0.4	0.46	0.4
Surface Area (m^2/g)	12	5.9	5.0	7.0	5.0	6.0
Target Firing Temperature ($^{\circ}\text{C}$)	960 for 3 h	900 for 3 h	960 for 3 h	860 for 3 h	960 for 3 h	960 for 3 h
Lead Content (%)	0	0	0	0	0	1-5 PbO
Electrode Metal	90Ag/10Pd	90Ag/10Pd	90Ag/10Pd	90Ag/10Pd	90Ag/10Pd	90Ag/10Pd
Electrode Ink	EL 44-002	EL 44-002	EL 44-002	EL 44-002	EL 44-002	EL 44-002
Termination Ink	TM 63-149	TM 63-149	TM 63-149	TM 63-149	TM 63-149	TM 63-149

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Low-Fire COG Dielectrics ($\leq 1140^{\circ}\text{C}$)

Property	C0G630L	C0G900L
Dielectric Type (TCC)	C0G	C0G
Dielectric Constant	60	90
Q @ 1 kHz	≥ 1500	≥ 1500
Insulation Resistance (G Ω) @25°C @125°C	>1000 >100	>1000 >100
Particle Size Distribution (μm) D50	0.8	1.1
Surface Area (m ² /g)	3.8	3.2
Target Firing Temperature (°C)	1115 for 3 h	1120 for 3 h
Lead Content (%)	1-5 PbO	<5 PbO
Electrode Metal	70Ag/30Pd	70Ag/30Pd
Electrode Ink	EL 44-040	EL 44-040
Termination Ink	TM 63-149	TM 63-149

High-Fire COG Dielectrics ($> 1200^{\circ}\text{C}$)

Property	C0G620H	NPO610H	1000N141H	N750121H
Dielectric Type (TCC)	C0G	C0G	C0G	C0G
Dielectric Constant	62	58	130	120
Q @ 1 kHz	≥ 1500	>2000	>1000	>1000
Insulation Resistance (G Ω) @25°C @125°C	>1000 >100	>20,000 >2000	>3000 >100	>6000 >200
Particle Size Distribution (μm) D50	0.9	0.8	1.1	1.0
Surface Area (m ² /g)	3.9	3.9	3.7	3.7
Target Firing Temperature (°C)	1260 for 3 h	1280 for 3 h	1280 for 3 h	1280 for 3 h
Lead Content (%)	0	0	0	0
Electrode Metal	30Ag/70Pd	30Ag/70Pd	30Ag/70Pd	30Ag/70Pd
Electrode Ink	EL 44-006	EL 44-006	EL 44-006	EL 44-006
Termination Ink	TM 63-149	TM 63-149	TM 63-149	TM 63-149

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