



Lead Free Options for LTCC Glass Powders

VIOX Corporation offers a variety of Lead Free LTCC (Low Temperature Co-fired Ceramic) Glass Powder options. Several derivatives of V1449CMA (leaded version) are listed below. Included are Co-mills specifically designed to possess certain characteristics such as: low dielectric constant, low dielectric loss, CTE matching that of V1449CMA or firing profiles similar to V1449CMA. Additional options are currently under development. Contact our glass development team for additional options or samples.

Glass No.	Reference Glass	Lead Free Options				
	V1449	V1802	V1805	V1493	V1613	V1766
Density (g/cm ³)	2.77	2.96	3.04	2.51	2.12	2.52
SP (°C)	815	708	689	700	672	712
CTE (ppm/°C)	5.5	6.8	7.4	4.9	3.9	6.3
T _g (°C)	625	570	576	546	382	637
T _s (°C)	710	642	637	608	606	676
e _r (@ 100kHz)	7.10	7.78	8.11	5.25	4.32	6.71
tan (d) (@ 100kHz)	0.0044	0.0033	0.0017	-0.0006	0.0002	0.0008
Co-mill No.	V1449CMA	V1802CMA	V1805CMA	V1493CMA	V1613CMA	V1766CMA
CTE (ppm/°C)	5.5	6.7	6.4	5.9	5.0	-
e _r (@ 100kHz)	7.55	7.42	7.50	5.34	4.76	-
tan (d) (@ 100kHz)	0.0015	0.0015	0.0009	-0.0007	0.0006	-
Description		Designed to fire similarly to V1449CMA	Designed to fire similarly to V1449CMA	Designed for low Dielectric Loss	Designed for low Dielectric Constant	Designed to match CTE of V1449CMA. Also low Dielectric Loss



VIOX Corporation is the winner of the Washington State Quality Award, and is ISO 9001:2000 certified.

