



Air Fire X7R/X8R/BX Dielectrics

MRA offers an extensive line of Class II X7R/X8R/BX dielectrics for a wide variety of applications where known changes in capacitance at different operation conditions are acceptable. MRA's air fire dielectrics are user and environmentally friendly, easy to process, and offer exceptional reliability for your demanding applications.

	LF-222M	LF-262	LF K3000 X7R/X8R	LF K4000 X7R	HF-402	SF-422
Dielectric Type	X7R/X8R/BX	X7R	X7R/X8R	X7R	X7R	X7R
Dielectric Properties						
Dielectric Constant	2300 ±300	2900 ±400	3050 ±250	4000 ±250	3900 ±400	4650 ±350
Dissipation Factor, % @1kHz, 1Vrms, 20µm AD thickness	≤ 2.0	≤ 2.0	≤ 2.0	≤ 2.0	≤ 2.0	≤ 2.0
Insulation Resistance, MΩ*µF @25°C @125°C	>10,000 >1,000	>10,000 >1,000	> 10,000 >1,000	> 5,000 >1,000	> 5,000 > 500	> 5,000 >500
Dielectric Breakdown Strength, Vdc/µm	≥ 40	≥ 40	≥ 40	≥ 40	≥ 40	≥ 40
Powder Properties						
Particle Size Distribution, µm						
D₉₀	≤1.500	≤2.000	≤1.700	≤2.000	≤2.500	≤2.500
D₅₀	0.600 ±0.150	0.600 ±0.200	0.600 ±0.150	0.800 ±0.200	0.700 ±0.300	0.650 ±0.250
D₁₀	0.350 ±0.150	0.375 ±0.125	0.350 ±0.150	0.400 ±0.200	0.400 ±0.100	0.375 ±0.125
Surface Area, m²/g	2.65 ±0.65	2.50 ±0.50	2.10 ±0.60	2.00 ±0.50	2.55 ±0.45	2.55 ±0.45
Powder Density, g/cm³	≥5.80	≥5.80	≥5.80	≥5.80	≥5.85	≥5.85
L.O.I, % @650°C	≤ 0.30	≤ 0.30	≤ 0.30	≤ 0.30	≤ 0.30	≤ 0.40
Slurry Compatibility	Solvent- and aqueous-base systems	Solvent- and aqueous-base systems	Solvent- and aqueous-base systems	Solvent- and aqueous-base systems	Solvent- and aqueous-base systems	Solvent- and aqueous-base systems
Recommended Firing Conditions	1070°C ±20°C for 3 hours in air	1100°C ±20°C for 3 hours in air	1080°C ±20°C for 3 hours in air	1080°C ±20°C for 3 hours in air	1250°C ±10°C for 3 hours in air	1130°C ±10°C for 3 hours in air
Setters Recommendations	Open ZrO ₂ setters	Open ZrO ₂ setters	Open ZrO ₂ setters	Open ZrO ₂ setters	Open ZrO ₂ setters	Closed Al ₂ O ₃ crucibles
Electrode Metal Compatibility	Up to 85% Ag/ 15%Pd	Up to 75% Ag/ 25%Pd	Up to 85% Ag/ 15%Pd	Up to 80% Ag/ 20%Pd	Up to 30% Ag/ 70%Pd	Up to 70% Ag/ 30%Pd
Electrode Paste	MRA EI-8020-X7R	MRA EI-7030-X7R	MRA EI-8020-X7R	MRA EI-8020-X7R	MRA EI-3070-X7R	MRA EI-7030-X7R
RoHS Compatibility	RoHS Compliant	< 2% PbO	RoHS Compliant	RoHS Compliant	RoHS Compliant	< 2% CdO

The data presented is based on our research and is considered to be fair representation of this product. MRA makes no warranties, expressed or implied, as to its accuracy and assumes no liability out of its use by others.

15 Print Works Drive, Adams, MA, 01220, USA
 Tel: (413) 743-3927, Fax: (413) 743-0305,
 E-mail: mra@mralabs.com, Web: www.mralabs.com

