

Microwave / Millimeterwave Materials

Microwave / Millimeterwave Materials	Crystal Class	Empirical Formula	4 π M _s Ranges (in Gauss)	Ferrimagnetic Resonance Linewidth* (Δ H) (in Oersted)	Minimum Useable Frequency** (Room Temp & 0 dBm) (in GHz.)
YIG (Yttrium Iron Garnet)	Garnet	Y ₃ Fe ₅ O ₁₂	1800	0.3	3.4
CVBIG (Calcium Vanadium Bismuth Iron Garnet)	Garnet	Ca ₂ VBiFe ₄ O ₁₂	200 to 800	3 to 1	0.4
Ga:YIG (Gallium doped YIG)	Garnet	Ga _x Y ₃ Fe _{5-x} O ₁₂	100 to 1700	4 to 0.4	0.2
LiFe (Lithium Ferrite)	Spinel	Li _{0.5} Fe _{2.5} O ₄	3700	1	6.9
Al:LiFe (Aluminum doped LiFe)	Spinel	Al _x Li _{0.5} Fe _{2.5-x} O ₅	2150 to 3400	5 to 2	4.0
NZF (Nickel Zinc Ferrite)	Spinel	Ni _{1-x} Zn _x Fe ₂ O ₄	4400 to 5400	4 to 2	8.2
BaF (Barium Ferrite) (a.k.a. Ba-M, (M-phase))	Hexagonal Ferrite	BaFe ₁₂ O ₁₉	4800	3	52
BaScF (Barium Scandium Ferrite) (a.k.a. Sc-M, (M-phase))	Hexagonal Ferrite	BaSc _{0.9} Fe _{11.1} O ₁₉	3800	4	26
BaZnF (Barium Zinc Ferrite) (a.k.a. Zn-Y, (Y-phase))	Hexagonal Ferrite	Ba ₂ Zn ₂ Fe ₁₂ O ₂₂	2850	5	9

* Narrowest Linewidths possible with these materials

* Linewidth is frequency dependent

** Lower Frequencies can be achieved via heating