

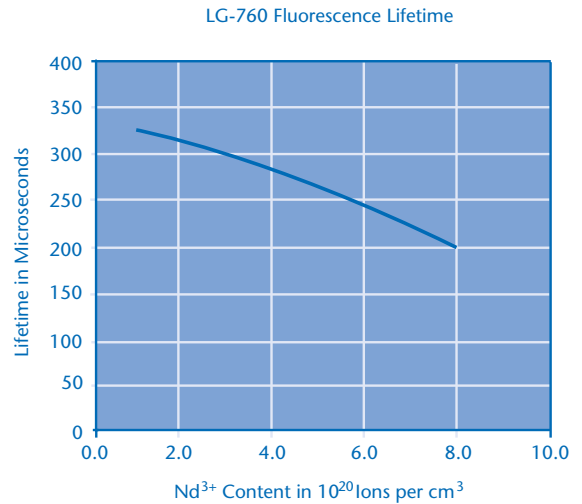
LG-760 Phosphate Laser Glass

For High Energy Applications

LG-760 is a potassium-barium-aluminum-phosphate based glass with a high cross section for stimulated emission, low nonlinear refractive index, and the best athermal characteristics

Neodymium Laser Properties	
Emission Peak, λ [nm]	1054
Emission Width, $\Delta\lambda_{em}$ [nm]	24.3
Radiative Lifetime τ_{Rad} [μ sec]	323
Emission Cross Section σ_{em} [$10^{-20}cm^2$]	4.5
*Quenching Constant-Zero Concentration Lifetime, τ_0 [μ sec]	330
*Quenching Constant-Q Factor, Q [$10^{20}cm^{-3}$]	10.0

*Lifetime as a function of neodymium content is approximated by: $T = \tau_0 / (1 + (Nd / Q)^2)$,
Nd=Nd concentration in 10^{20} ions/cm³



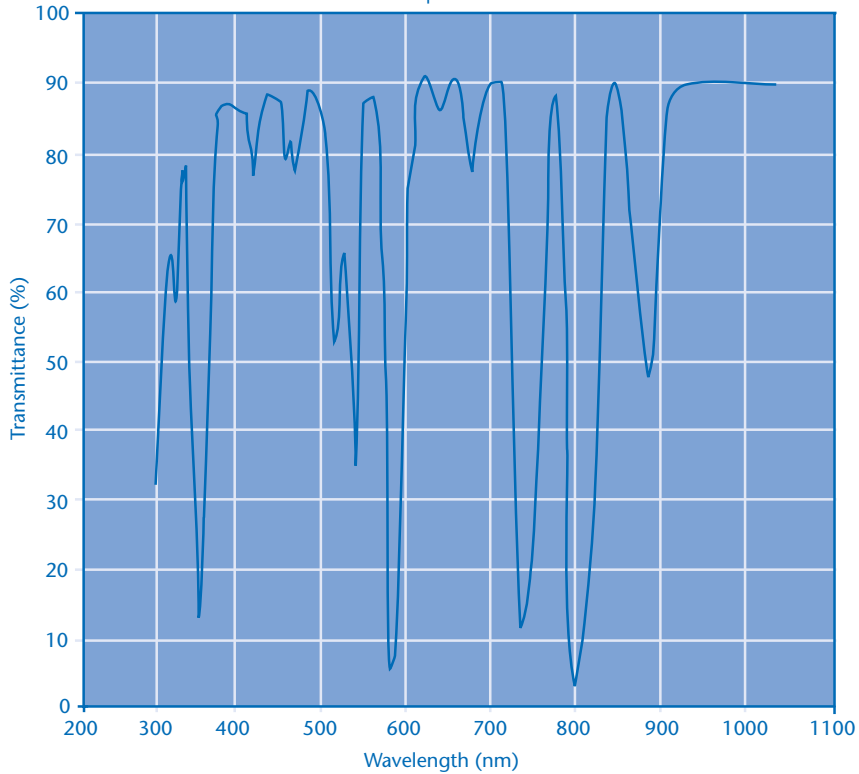
Optical Properties			
n_d	1.5190		
v_d	69.20		
n_{633nm}	1.5140		
n_{1054nm}	1.5080		
Nonlinear Refractive Index at 1054nm, n_2 [10^{-13} esu]	1.02		
Stress-Optic Coefficient, K (588nm, 22°C)[$10^{-6}mm^2/N$]	2.00		
Stress-Optic Coefficient, $-K_{par}$ (632.8nm, 25°C)[$10^{-6}mm^2/N$]	2.02		
Stress-Optic Coefficient, $-K_{per}$ (632.8nm, 25°C)[$10^{-6}mm^2/N$]	4.02		
Temperature Coefficient of Refractive Index, dn/dT_{rel} (1060nm, 20-40°C) [$10^{-6}/^\circ C$]	-6.8		
Temperature Coefficient of Optical Pathlength, $W = \alpha_{20-40^\circ C}(n-1) + dn/dT$ [$10^{-6}/^\circ C$]	-0.4		
Sellmeier Coefficients			
B1		C1	
B2		C2	
B3		C3	
Attenuation Coefficient [cm^{-1}]			
400nm	≤ 0.20	3000nm	≤ 0.80
1054nm	≤ 0.0015	3333nm	≤ 2.00

Physical Properties	
Density, ρ [g/cm ³]	2.600
Thermal Conductivity (25°C), K [W/m•K]	0.57
Thermal Conductivity (90°C), K [W/m•K]	0.60
Young's Modulus, E [GPa]	53.70
Poisson's Ratio, ν	0.267
Fracture Toughness, K_{Ic} [MPa•m ^{1/2}]	0.47
Knoop Hardness, $HK_{0.1/20}$	340
Heat Capacity (25°C), C_p [J/g°C]	0.75
Thermal Diffusivity (25°C), σ [$10^{-7}m^2/sec$]	2.92
Thermal Expansion, $\alpha_{20-300^\circ C}$ [$10^{-7}/^\circ C$]	150.4
Thermal Expansion, $\alpha_{20-40^\circ C}$ [$10^{-7}/^\circ C$]	125.0
Transformation Temperature, T_g [°C]	350

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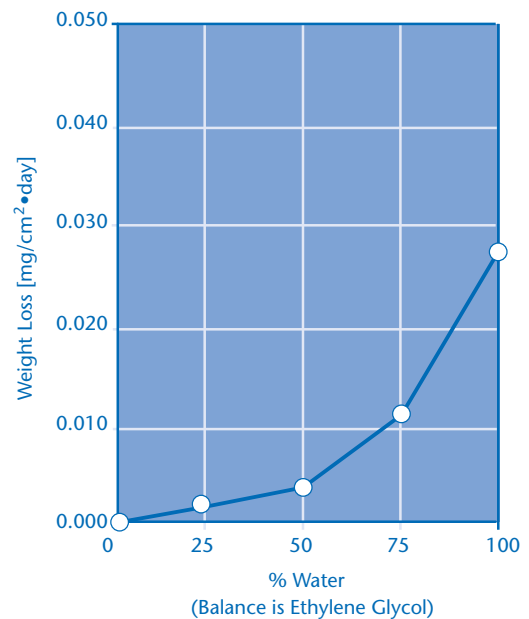
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Transmission Curve for LG-760
Neodymium Content 2wt%Nd₂O₃
Sample Thickness 5.0mm



Chemical Properties	
Weight Loss in 50°C Water [mg/(cm ² •day)]	0.028
Acid Resistance SR pH=0.3 at 25°C	4.0
Alkali Resistance AR pH=12 at 50°C	4.0
Staining Resistance FR pH=4.6 100h at 25°C	1
Climatic Resistance CR Water Vapor at 40-50°C for 30 h	2

LG-760 Ethylene Glycol/Water
Resistance Testing
(24hr at 50°C)



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