APG-760 Phosphate Laser Glass

For High Power Applications at 1.05 µm

Product information

APG-760 is our next generation of our advanced laser glasses with increased thermo-mechanical properties. We recommend it be used as active material in laser systems with high repetition rates. The glass will be available in doping levels from 1 % to 4 % Nd^{3+}. All properties displayed apply to all doping levels, if not otherwise indicated.

Applications

- High Power Applications
- Material processing

Quality assurance

Quality control is conducted under rigorous final inspection of the finished component. Selected glass properties and doping levels are measured for every melt. Measurements include chemical composition control, a range of photometric measurements, physical property testing and inspection of internal quality.

Forms of supply

The glass is available as fully finished components, such as rods, slabs and discs, manufactured according to customer specifications including dielectric coatings (AR, HR, etc.) with high laser damage threshold. Please contact us regarding the availability of the various doping levels are available from stock according to your needs.

Application support

Please contact us with your laser components specification. Our experienced expert application team will find the right solution for your application.

Laser Properties (Calculated, Judd-Ofelt)	
Emission Peak λ [nm]	1054
Effective Linewidth [nm]	29.2
Linewidth FWHM [nm]	24.9
Radiative Lifetime τ_{Rad} [µs]	376
Emission Cross Section σ_{em} [10^{-20} cm^2]	3.2

Optical Properties	
n_d	1.5328
ν_d	68.54
n_2 [10^{-20} m^2/W] (calc.)	3.01
$dn/dT_{rel.}$ (1060 nm, 20 °– 40 °C) [10^{-6}/K]	1.9
$n_{1054\ nm}$ (calc. from Sellmeier)	1.5232
$n_{633\ nm}$ (calc. from Sellmeier)	1.5312
Stress Optical Coefficient K [10^{-6} mm^2/N] (588 nm)	2.33

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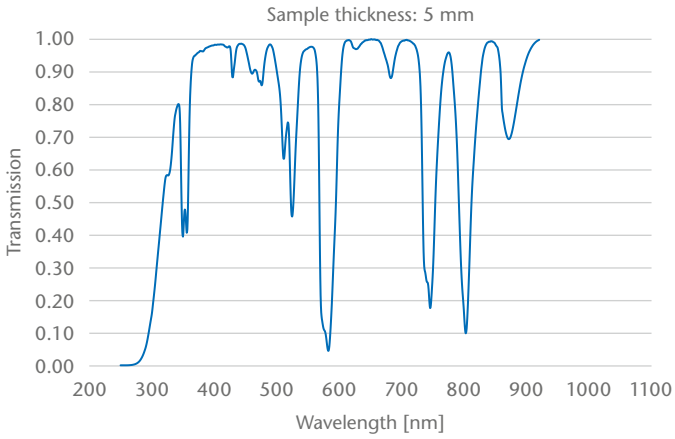
Sellmeier Coefficients			
B1	0.85792298	C1	0.00455294
B2	0.46272994	C2	0.01471901
B3	0.96370235	C3	104.406880

Attenuation Coefficient [cm^{-1}]			
400 nm	≤ 0.20	3333 nm	≤ 2.00
1054 nm	≤ 0.0015		

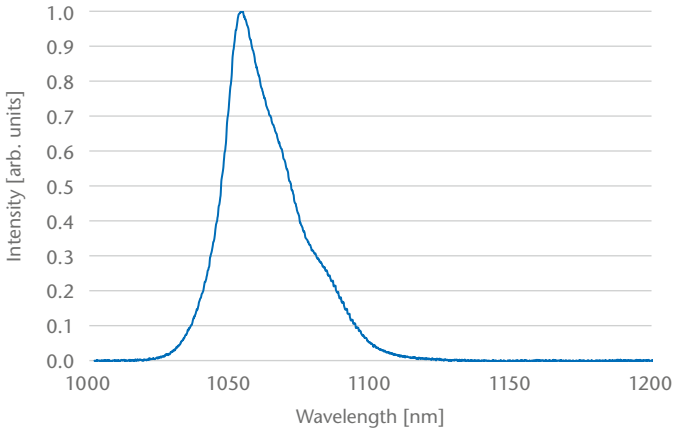
Physical Properties	
Density ρ [g/cm^3]	2.70
Thermal Conductivity $\lambda_{25\,°C}$ [W/(m·K)]	0.76
Thermal Conductivity $\lambda_{90\,°C}$ [W/(m·K)]	0.83
Young's Modulus E [10^3 N/mm^2]	74
Poisson's Ratio μ	0.24
Fracture Toughness, K_{1C} [MPa·m$^{1/2}$]	0.73
Knoop Hardness $HK_{0.1/20}$	472
Heat Capacity $c_{p,\,20\,°C}$ [J/(g·K)]	0.77
Thermal Expansion $\alpha_{(+20/+300\,°C)}$ [10^{-6}/K]	8.9
Thermal Expansion $\alpha_{(+20/+40\,°C)}$ [10^{-6}/K]	6.1
Transformation Temperature T_g [°C]	520

Chemical Properties	
Weight Loss in 50 °C Water [mg/(cm^2 d)]	< 0.004
SR	2.3
AR	3.3
FR	0
CR	1

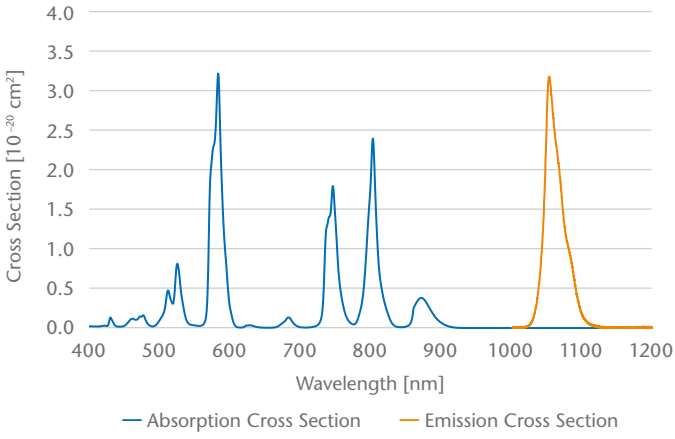
Transmission Curve



Fluorescence Curve



Cross Section



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