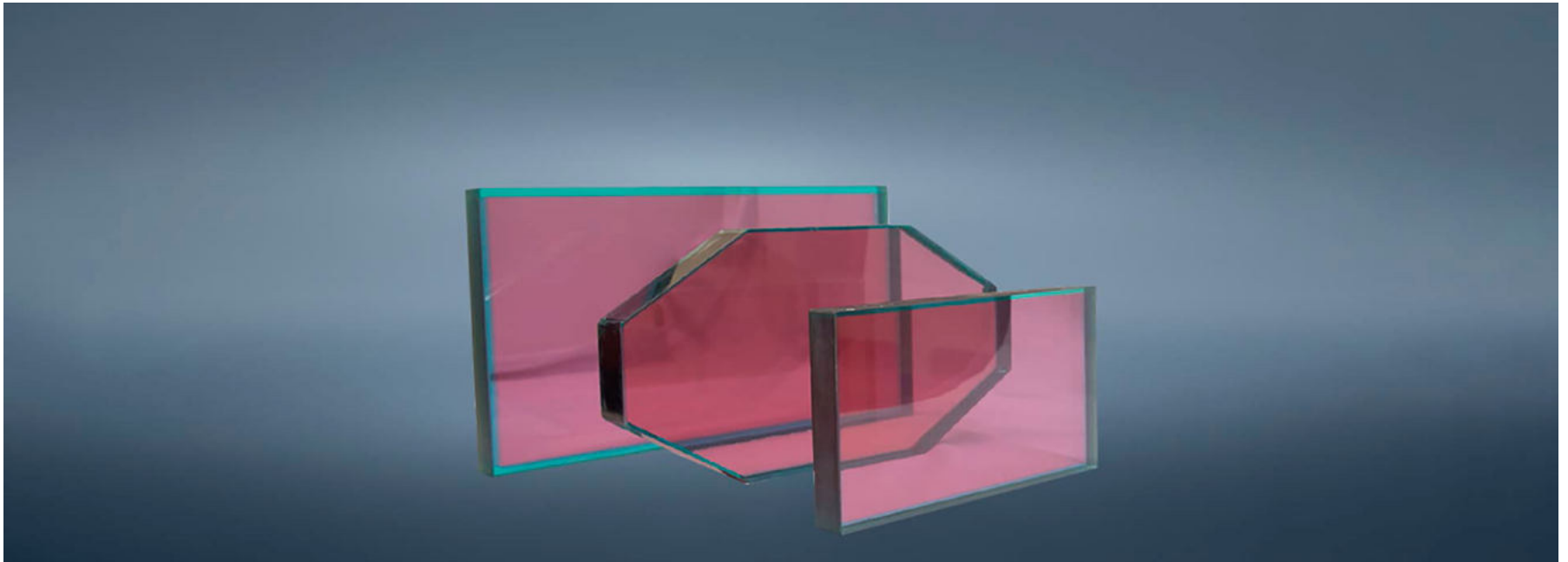


N₃₁ Nd:Glass



DESCRIPTION

N31 phosphate glass is specially developed for high power laser facility. N31 is a good material which has the characteristics of high energy storage, large excitation cross section and long fluorescence lifetime. It is also easy to prepare glass with large size and good optical uniformity, so it is widely used in high-power laser systems. At present, it has been successfully applied in Shen Guang II and Shen Guang III systems.

FEATURES

- High energy storage
- Large excitation cross section
- Long fluorescence lifetime
- Low coefficient of nonlinearity
- High damage threshold

APPLICATIONS

- High-power laser systems
Mainly used for inertial confinement fusion physics experimental research, can provide nearly 200,000 joules, 60TW ultraviolet radiation source
- Ultrashort pulse laser
Used for nonlinear laser microscopies, practical, fiber-based, high-power, wideband sources and practical optical frequency comb system
- Waveguide amplifier
Used for femtosecond laser writing method, optical communication



PARAMETER

Laser Specifications

Nd2O3 (wt%)	3.5
Nd3+ conc.(1020ions/cm3)	3.4±0.1
Cross section for stimulated emission(10-20cm2)	3.8±0.1
Lifetime at 1053nm(µsec)	≥370 (Nd2O3:0.5wt%)
	≥360 (Nd2O3:1.2wt%)
	≥315 (Nd2O3:3.5wt%)
	≥310 (Nd2O3:4.2wt%)
Effective bandwidth(nm)	25.4
Fluorescence peak wavelength(nm)	1053
Absorption coefficient(cm-1)	≤0.0015(1053nm)
	≤0.25(400nm)
	≤1.5(3333nm)

Other Specification

Density(g/cm3)	2.87
Young's modulus(Gpa)	58.3
Poisson' rayio	0.26
Knoop hardness(kg/cm2)	404
Fracture toughness(Mpa.m1/2)	0.58
*The homogeneity is about 2×10^{-6}	

Optical Specifications

Non-linear refractive index coeff.n2($\times 10^{-13}$ e.s.u)	≤1.2
Refractive index(1053nm)	1.535±0.003
Abbe value	65.6
dn/dt(10-6/°C)(20~100°C)	-4.3

Thermal Specifications

Transformation temp.(°C)	445
Softening temp.(°C)	485
Coeff.of linear thermal expansion (10-7/K)(30~100°C)	116
Thermal coeff. Of optical path length(10-6/K)(50~100°C)	1.4
Thermal comductive (25°C)(W/Mk)	0.59
Specific heat(25°C)(J/Gk)	0.75

SPECTRA

