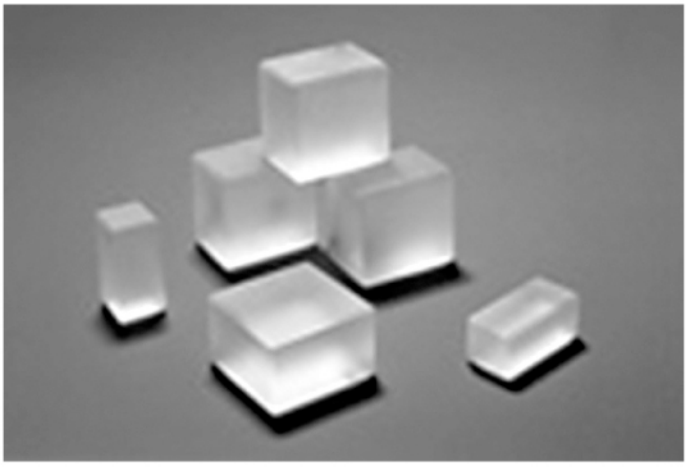
Potassium Dihydrogen Phosphate (KDP)
*Potassium Dideuterium Phosphate (DKDP or KD*P)*

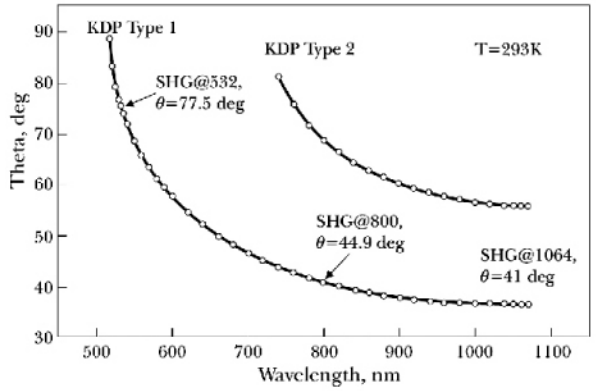
Features

- The most widely-used commercial NLO materials
- High damage threshold
- High birefringence
- Different shapes (Slabs, Cylinders, Brewster ends) are available
- AR, BBAR and P-coatings according to Customer's choice

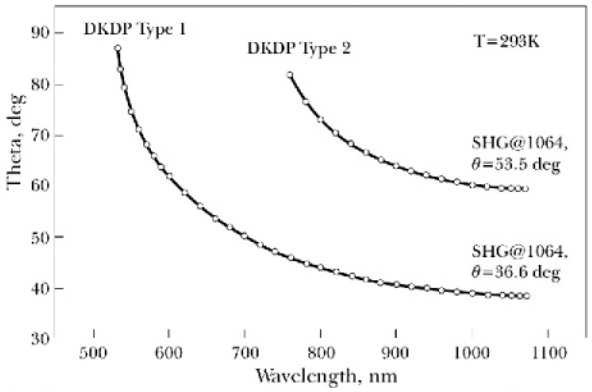


Applications

- Harmonic generators
- Electro-optical modulators.



KDP Second harmonic generation phasematching



DKDP Second harmonic generation phasematching

Physical Properties

Crystals	*KDP*	*DKDP*
chemical formula	KH_2PO_4	KD_2PO_4
symmetry	42 m	42 m
hygroscopicity	high	high
density [g/cm³]	2.332	2.355
thermal conductivity [W/cm x K]	k_{11}=1.9 x 10^{-2}	k_{11}=1.9 x 10^{-2} k_{33}=2.1 x 10^{-2}
thermal expansion coefficients [1K]	a_{11}=2.5 x 10^{-5} a_{33}=4.4 x 10^{-5}	a_{11}=1.9 x 10^{-5} a_{33}=4.4 x 10^{-5}
transmission range [μm]	0.18÷1.5	0.2÷2.0
residual absorption [1/cm] (at 1.06μm)	0.04	0.005
measured refractive index (at 1.06μm)	n_o=1.4938 n_e=1.4599	n_o=1.4931 n_e=1.4582
nonlinear coeff. d_{36} (1.06μm) [pm/V]	0.43	0.40
laser damage threshold [GW/cm²] at 1.06μm	10 ps - 100 1 ns - 10 15 ns - 14.4	250 ps - 6 10 ns - 0.5

Phase matching angles and bandwidths for SHG of 1064 nm

Type fo phase matching	*ooe*	*ooe*	*ooe*	*ooe*
Cut angle, Θ[deg]	*41.2*	*59.1*	*36.6*	*53.7*
acceptances (FWHM) :				
ΔΘ(internal)[mrad x cm]	*1.1*	*2.2*	*1.2*	*2.3*
ΔT thermal [K x cm]	*11*	*13.2*		*6.7*
Δλ Spectral [nm x cm]	*7.25*	*5.57*		*5.57*
walk off [mrad]	*27*	*24*	*25*	*24*