

KDP and its isomorphs

PHYSICAL AND OPTICAL PROPERTIES

Crystals	KDP	DKDP	
chemical formula	KH ₂ PO ₄	KD ₂ PO ₄	
symmetry	42 m	42 m	
hygroscopicity	high	high	
density [g/cm ³]	2.332	2.355	
thermal conductivity [W/cm×K]	k ₁₁ = 1.9×10 ⁻²	k ₁₁ = 1.9×10 ⁻² k ₃₃ = 2.1×10 ⁻²	
thermal expansion coefficients [1/K]	a ₁₁ = 2.5×10 ⁻⁵ a ₃₃ = 4.4×10 ⁻⁵	a ₁₁ = 1.9×10 ⁻⁵ a ₃₃ = 4.4×10 ⁻⁵	
transmission range [μm]	0.18 ÷ 1.5	0.2 ÷ 2.0	
residual absorption [1/cm] (at 1.06 μm)	0.04	0.005	
measured refractive index (at 1.06 μm)	n _o = 1.4938 n _e = 1.4599	n _o = 1.4931 n _e = 1.4582	
Sellmeier coeff. λ – wavelength in μm	$n^2 = A + \frac{B \lambda^2}{\lambda^2 - C} + \frac{D}{\lambda^2 - E}$		
A	n _o n _e	2.259276 2.132668	2.2409 2.1260
B	n _o n _e	13.00522 3.2279924	2.2470 0.7844
C	n _o n _e	400 400	126.9205 123.4032
D	n _o n _e	0.01008956 0.008637494	0.0097 0.0086
E	n _o n _e	0.012942625 0.012281043	0.0156 0.0120
nonlinear coeff. d ₃₆ (1.06 μm) [pm/V]	0.43	0.40	
laser damage threshold [GW/cm ²] at 1.06 μm	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

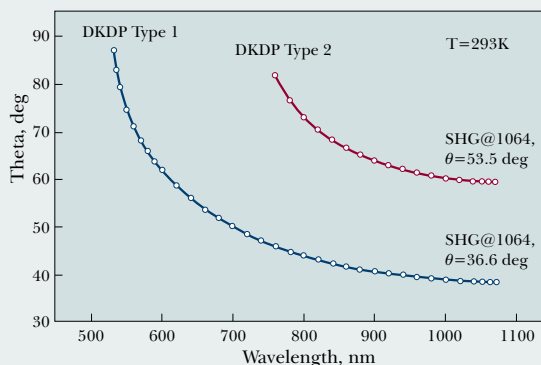
Type of phase matching	ooe	ooe	ooe	ooe
Cut angle, θ [deg]	41.2	59.1	36.6	53.7
acceptances (FWHM):				
$\Delta\theta$ (internal) [$\text{mrad}\times\text{cm}$]	1.1	2.2	1.2	2.3
ΔT thermal [$\text{K}\times\text{cm}$]	11	13.2		6.7
$\Delta\lambda$ spectral [$\text{nm}\times\text{cm}$]	7.25	5.57		5.57
walk off [mrad]	27	24	25	24

CUSTOM MANUFACTURING CAPABILITIES

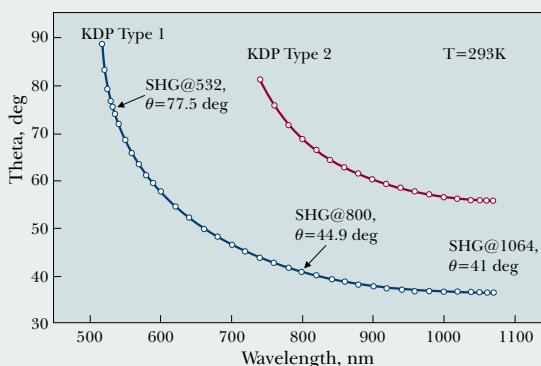
- The mass production of KDP and its isomorphs is available.
- OEM customers are granted with special attractive discounts.
- Different shapes (slabs, cylinders, Brewster ends) are available.
- AR, BBAR and P - coatings according to customer's choice.

APPLICATIONS

- Harmonic generators
- Electro-optical modulators



DKDP Second harmonic generation phasematching



KDP Second harmonic generation phasematching

ADP, DADP, RDP, CDA and DCDA crystals are available too!

Please contact EKSMA for further information or nonstandard specifications.