

KDP and its Isomorphs

PHYSICAL AND OPTICAL PROPERTIES

Crystals	KDP	DKDP	
chemical formula	KH_2PO_4	KD_2PO_4	
symmetry	42 m	42 m	
hygroscopicity	high	high	
density [g/cm^3]	2.332	2.355	
thermal conductivity [$\text{W}/\text{cm}\times\text{K}$]	$k_{11} = 1.9 \times 10^{-2}$	$k_{11} = 1.9 \times 10^{-2}$ $k_{33} = 2.1 \times 10^{-2}$	
thermal expansion coefficients [$1/\text{K}$]	$a_{11} = 2.5 \times 10^{-5}$ $a_{33} = 4.4 \times 10^{-5}$	$a_{11} = 1.9 \times 10^{-5}$ $a_{33} = 4.4 \times 10^{-5}$	
transmission range [μm]	0.18 ÷ 1.5	0.2 ÷ 2.0	
residual absorption [$1/\text{cm}$] (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	oeo	ooo	ooo
Cut angle, θ [deg]	41.2	59.1	36.6	53.7

acceptances (FWHM):

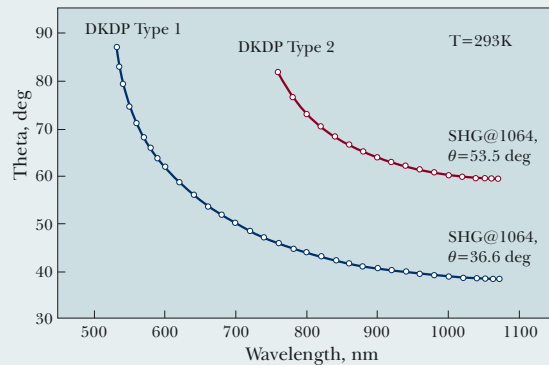
$\Delta\theta$ (internal) [$\text{mrad}\times\text{cm}$]	1.1	2.2	1.2	2.3
ΔT thermal [$\text{K}\times\text{cm}$]	11	13.2		6.7
$\Delta\lambda$ spectral [$\text{nm}\times\text{cm}$]	7.25	5.57		5.57
walk off [mrad]	27	24	25	24

CUSTOM MANUFACTURING CAPABILITIES

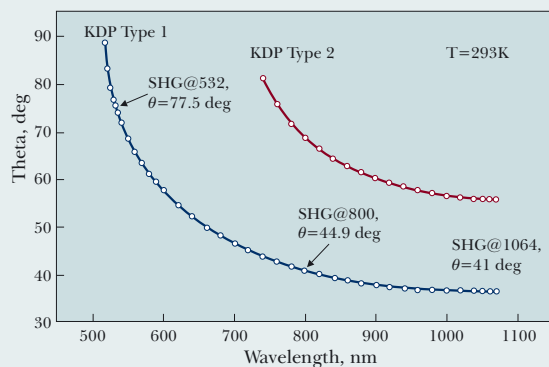
- The mass production of KDP and its isomorphs is available
- OEM customers are granted with special attractive discounts
- Different shapes (slabs, cylinders, Brewster ends) are available
- AR, BBAR and P - coatings according to customer's choice.

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!



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