DKDP (KD*P) Crystals - Potassium Dideuterium Phosphate Crystal

Potassium Dideuterium Phosphate (DKDP or KD*P) are among the most widely-used commercial NLO's crystals, characterized by good UV transmission, high damage threshold, and high birefringence, though their NLO coefficients are relatively low. They are usually used for doubling (SHG), tripling (THG) and quadrupling (FHG) of a **Nd:YAG laser** at the room temperature. In addition, they are also excellent electro-optic crystals with high electro-optic coefficients, makes it be widely used as electro-optical modulators, such as **EO Q-switches**, EO Pockels Cells, etc.

Basic Properties

Physical and optical properties	
Chemical Formula	KD2PO4
Curie temperature	222K
Symmetry	42m
Density	2.355g/cm3
Absorption	0.005/cm
Extinction ratio	1:10000
Deuterium ratio	>98%
Transmission band	200-1600nm
Non-linear coefficient	d36=0.40pm/v
Longitudinal half-wave voltage	2.98KV(I=546nm)
Electric resistance	>2x109Ω/cm
Electric –optical coefficient	r41=8.8pm/v, r63=25pm/v

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SPECIFICATIONS

Specifications	
Dimension Tolerance	(W±0.1mm) × (H±0.1mm) × (L+0.2mm/-0.1mm) or (Dia. ± 0.1mm) ×(L+0.2/-0.1mm)
Wavefront Distortion	< λ/8 @ 633nm
Clear Aperture	> 90% of central area
Chamfer	≤0.3mm @45°
Flatness	λ/8 @ 633 nm (L≥ 2.5mm); λ/4 @ 633nm (L< 2.5mm)
Chips	≤ 0.1mm
Surface Quality (S/D)	20/10
Parallelism	< 10"
Perpendicularity	≤ 10'
Angle Tolerance	≤ 0.2°
Interior Quality	No visible scattering paths or centers [inspected by 50mW green laser]

Note:

- The blanks, laser grade polished DKDP crystals are available.
- For the DKDP crystals used in pockels cells, please click: the DKDP crystals for pockels cells.
- For DKDP pockels cells, please click: DKDP pockels cells.

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Application Notes

- SHG (doubling), THG (tripling) and FHG (quadrupling) for Nd:YAG lasers
- Electro-optical modulators, Q-switches, Pockels Cells

Designation	Operation	Input	Output
53.7 °	SHG (II)	1064nm	532 nm
59.5°	THG (II)	1064 nm + 532 nm	355 nm
63.7°	SFM (II)	1064 nm + (421-1000 nm)	302-515 nm
86°	FHG (I) angle tune	532 nm	266nm
90°	FHG (I) temp. tune	532 nm	266 nm
36.6°	SHG (I)	1064 nm	532 nm
46.8°	THG(I)	1064 nm + 532 nm	355 nm

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