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APPROXIMATE

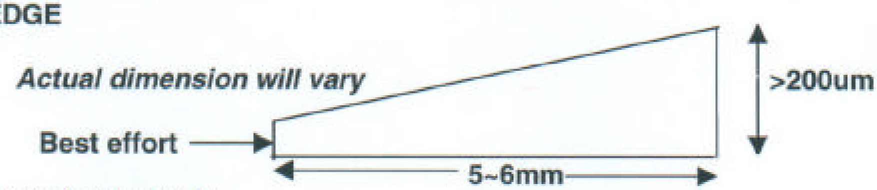
CRYSTAL THICKNESS
VS
PULSE WIDTH

PULSE WIDTH RANGE	*THICKNESS* IN MILLIMETERS (mm)
NANOSECONDS (nsec)	~ 10
PICOSECONDS (psec)	~ 3 to 4
100 of FEMTOSECONDS (fsec)	1.0 ~ 0.5
20 of FEMTOSECONDS (fsec)	0.4 ~ 0.1

NOTES:

1) For thickness less than 0.1mm, wedges are available with a cross-sectional area of approximately 6mm x 6mm with a wedged thickness to 0.05mm ~ 0.02mm.
2) Suprasil slides are used for thickness of less than ~0.25mm for a cross-sectional area of about 10mm x 10mm. This gives support to the crystal.
3) Supracil slides are used for thickness of less than 0.2mm for a cross-sectional area of 6mm x 6mm.

4) WEDGE



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BEAM DISPLACEMENT FORMULA

$$I\ avg = 1/6\,[\pi L (n_0^2 - n_e^2)\, A^2 / 2\lambda\, (n_0 n_e^2)]^2$$

Where:

L = length of the Po9ckels cell and that is 2 x 33mm.
Please note for the Quantum Technology QC-16-2 Pockels cell, that the 16mm is the aperture and the -2 stands for two crystals. Each crystal is 16mm diameter and 35mm long.

A = FWHM, full width half maximum of the input beam angle

n0 = 1.507@650nm

ne = 1.476@650nm

For example:
For a QC-16-2 Pockels cell, the angle for which the contrast ratio falls to 0.05 or 20:1, which is the amounts to a -5% drop of the transmission is ~10.7mRad, actual numbers may be different due to imperfections, etc.

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BEAM – AREA - POWER DENSITY

BEAM DIAMETER	BEAM AREA	POWER DENSITY *with 1 WATT BEAM POWER*	POWER DENSITY *with 10 WATT BEAM POWER*	POWER DENSITY *with 100 WATT BEAM POWER*
0.1mm	78.5 E-6 cm^2	12.7 KW/ cm^2	127 KW/ cm^2	1.27 MW/ cm^2
0.2mm	314 E-6 cm^2	3.18 KW/ cm^2	31.8 KW/ cm^2	318 KW/ cm^2
0.5 mm	1.96 E-3 cm^2	509.3 W/ cm^2	5.1 KW/ cm^2	51 KW/ cm^2
1 mm	7.85 E-3 cm^2	127.4 W/ cm^2	1.3 KW/ cm^2	13 K W/ cm^2
2 mm	31.4 E-3 cm^2	31.85 W/ cm^2	318.5 W/ cm^2	3.2 KW/ cm^2
2.5 mm	49.1 E-3 cm^2	20.4 W/ cm^2	204 W/ cm^2	2.0 KW/ cm^2
3 mm	70.7 E-3 cm^2	14.1 W/ cm^2	141 W/ cm^2	1.41KW/ cm^2
5 mm	196.3 E-3 cm^2	5.09 W/ cm^2	51 W/ cm^2	510 W/ cm^2
6 mm	282.7 E-3 cm^2	3.54 W/ cm^2	35.4 W/ cm^2	354 W/ cm^2
8 mm	502.7 E-3 cm^2	2 W/ cm^2	20 W/ cm^2	200 W/ cm^2
10 mm	785.4 E-3 cm^2	1.27 W/ cm^2	12.7 W/ cm^2	127 W/ cm^2
16 mm	2.01 cm^2	497 mW/ cm^2	4.97 W/ cm^2	49.7 W/ cm^2
20 mm	3.14 cm^2	318 mW/ cm^2	3.18 W/ cm^2	31.8 W/ cm^2
24 mm	4.52 cm^2	221 mW/ cm^2	2.21 W/ cm^2	22.1 W/ cm^2
50 mm	19.6 cm^2	51 mW/ cm^2	510 mW/ cm^2	5.1 W/ cm^2
70 mm	38.5 cm^2	26 mW/ cm^2	260mW/ cm^2	2.6 W/ cm^2
100 mm	78.5 cm^2	12.7 mW/ cm^2	127 mW/ cm^2	1.27 W/ cm^2

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CRYSTAL vs WAVELENGTH CHART

APPLICATIONS and DAMAGE LEVELS

CRYSTAL MATERIAL	*WAVELENGTHS Phase-matching NLO*	*APPLICATIONS and DAMAGE THRESHIOLDS*
ADP	300nm – 800nm	Harmonic generator Damage: 250MW/cm^2 @ 600nm
AD*P	300nm – 1100nm	Harmonic generator Damage: 250MW/cm^2 @ 600nm
BBO	200nm – 2000nm	Harmonic generator/Q-switch Damage: 2GW/cm^2 @ 1064nm
CDA	Phase match @ 1064nm	Harmonic generator Damage: 250MW/cm^2 @ 1064nm
CD*A	Phase match @ 1064nm	Harmonic generator Damage: 500MW/cm^2
KDP	300nm – 800nm	Harmonic generator Damage: 250MW/cm^2
KD*P	300nm – 1100nm	Harmonic generator/Q-switch Damage: 500MW/cm^2
KTP	1064nm – 1330nm Type II	Harmonic generator Damage: 150MW/cm^2 @1064nm
LBO	550nm – 2000nm	Harmonic generator Damage: 5GW/cm^2 @ 1064 nm
LITHIUM IODATE	600nm – 5000nm DIP@ 3900nm	Harmonic generator Damage: 50MW/cm^2
LITHIUM NIOBATE	800nm – 5000nm DIP@ 2800nm	Harmonic generator/Q-switch Damage: 100MW/cm^2
LITHIUM TANALATE	800nm – 2900nm DIP@ 2900nm	Modulator Damage:350MW/cm^2

Standard FLUENCE: Use above damage ratings with a 10nsec pulse @ 1064nm.