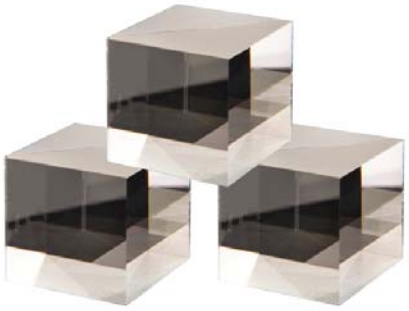
ProFlux
Nanowire® Technology

Polarizing Beamsplitter Cube

PBS ICE Cube Series Datasheet



ICE Cube™

Applications

- Head-Mounted Display (HMD)
- Head-Up Display (HUD)
- 2D & 3D Projection Display
- Interferometry
- Medical/Dental Imaging

Standard Product Options

Product Name	Description
CAS00070	1x1x1 Ince Cube (High Contrast PBS, optimized for large AOI)

Custom sizes and optimization are available. Please contact a sales representative for options and ordering details.

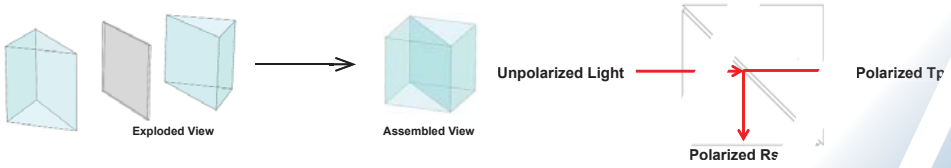
Moxtek's *ICE Cube*™ is optimized for use over a wide range of acceptance angles while maintaining color uniformity and image contrast in the visible wavelength ranges. The *ICE Cube* allows compact optical designs with reduced optical paths. Engineers are now able to design smaller systems while maintaining excellent optical performance. The *ICE Cube* can be optimized for high Index, Contrast, or Efficiency (ICE) and is a superior choice over MacNeille cube designs.

Features	Benefits
Embedded Wire-Grid Polarizer	Large angle of incidence range
	Color uniformity over wide range of angles
	High contrast over wide range of angles
	High transmission over wide range of angles

General Specifications

Material Type:	N-BK7
Dimensions:	25.4mm x 25.4mm x 25.4mm
Operational Wavelength Range:	400-700nm (typical average for azimuthal)
AR Coating:	R (avg) < 0.5% @ 400-700nm (cube faces)
Dimensional Tolerance:	+0.0mm/-0.25mm
Clear Aperture:	> 90%
Angle of Incidence:	Up to ±25°
Maximum Temperature:	90°C
RoHS Compliant:	Yes
Transmission Wavefront Distortion:	< λ/3 (typical) @ 632nm
Surface Quality:	40/20 Scratch - Dig
Transmission Beam Deviation:	< 5 arc minutes
Reflected Beam Deviation:	< 5 arc minutes

ICE Cube Assembly and Performance Details



The ICE Cube is assembled by embedding our polarizing beamsplitter plate between two AR coated glass prisms. These cubes are designed with Nanowire® grid structures centered on the hypotenuse of the ICE Cube.

ICE Cube Polarizing beamsplitters (PBS) separate natural light into two main orthogonal, linearly polarized components; the p-polarized light which is transmitted while the s-polarized light is reflected at a 90˚ degree angle. In principle, half of the incident light is reflected and the other half is transmitted.

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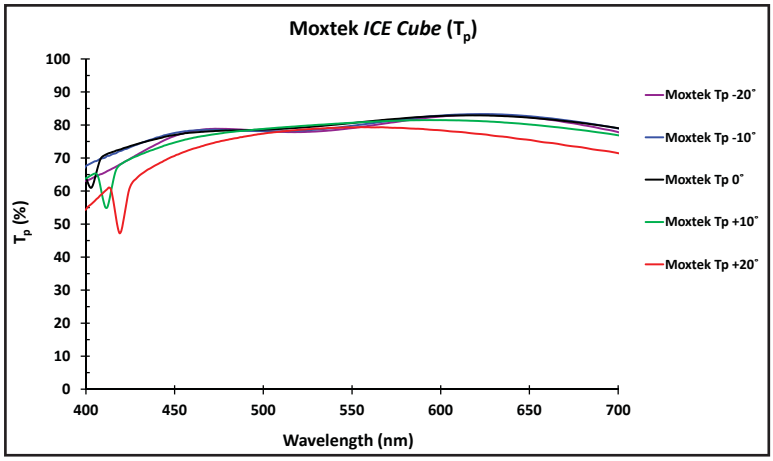
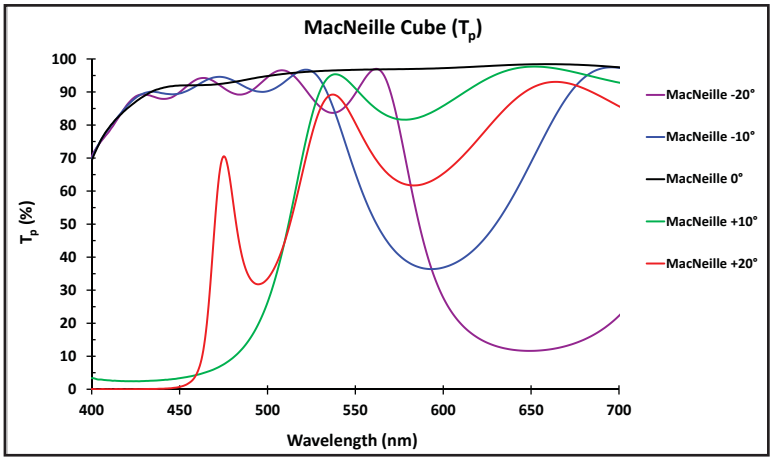
Typical Performance and Specifications

	Typical Performance (Azimuthal Angle of Incidence - averaged 400-700nm)					
	0°	±5°	±10°	±15°	±20°	±25°
T_p %	78	78	77	76	75	73
T_s %	0.016	0.015	0.015	0.017	0.020	0.025
R_s %	84	84	84	84	84	84
R_p %	1.7	1.6	2.2	3	4.3	6
Contrast Ratio	7,100	7,100	7,100	6,700	5,600	4,100
Efficiency	66.3	66.0	65.5	64.7	63.6	62.1

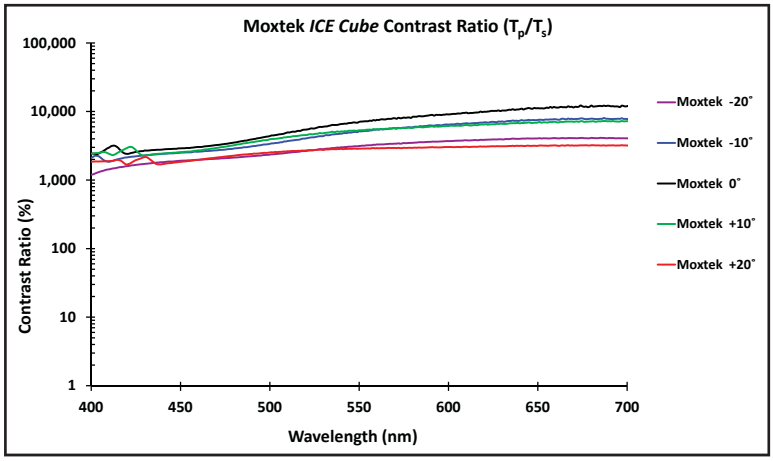
	Performance Specifications (Measured at 0°)		
	T_p %	Efficiency %	Contrast Ratio
450nm	72	62	1,000
550nm	75	65	2,000
650nm	78	65	3,000

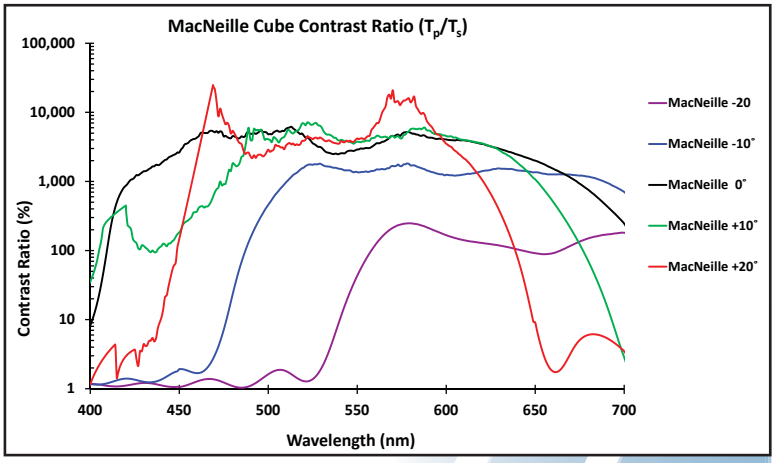
ICE Cube and MacNeille Cube Performance Comparison Charts (typical average for azimuthal)





Typical Transmission (T_p) Performance Curves





Typical Contrast Ratio (CR) Performance Curves

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