Introduction of WGF™ Wire grid polarizer film

Asahi Kasei Corporation

Electronics & Functional Products Division
WGF Project

WGF™ - Outline -

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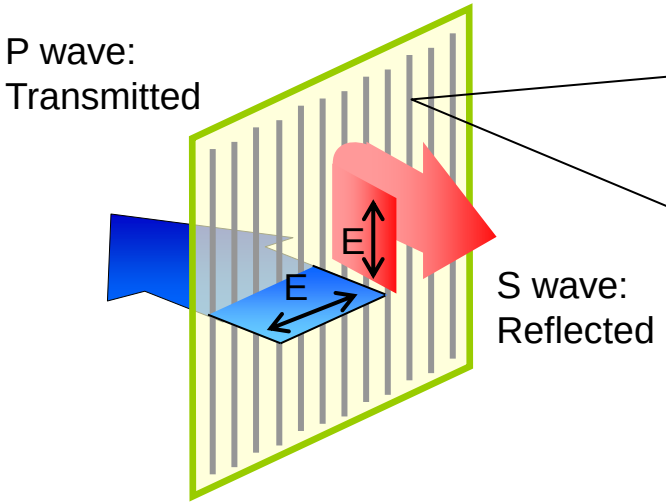
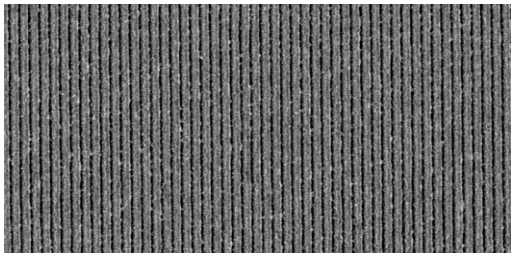
What is WGF™?

"WGF™" is the world's first wire grid polarizer based plastic films. It has a high polarization separation performance in the broad wavelength range by using metal nano-size wires. Furthermore, it has excellent heat resistance compared to a typical absorption polarizer.

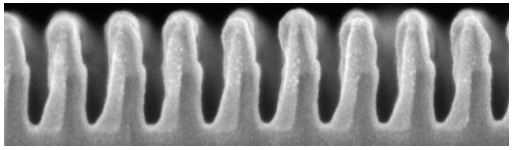
Asahi's Original Technology

- Continuous roll to roll nano-imprint process
- Nano-size structure (100nm pitch Al wire grid)





SEM image (plane view)



SEM image (cross section view)

100nm-size Aluminum wire pitch

WGF Roll

WGF film

Optical performance of HC & HT grade

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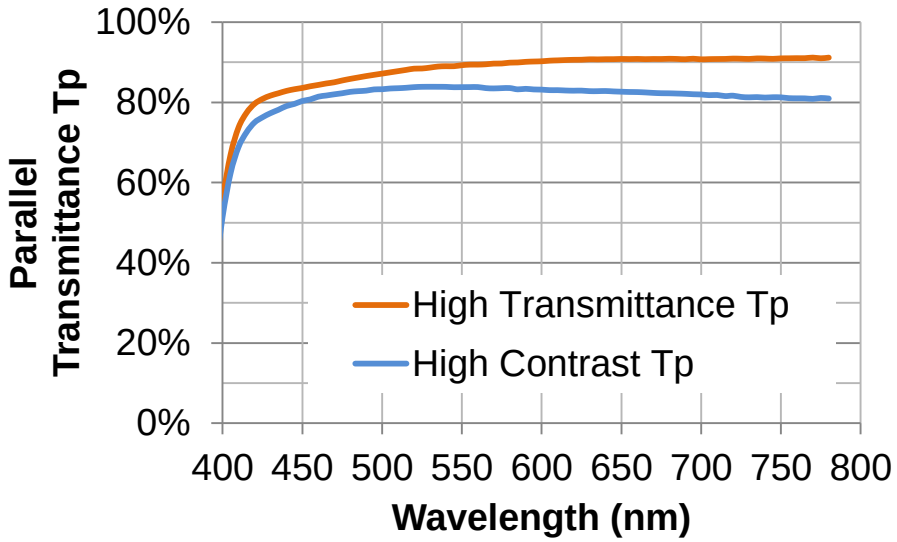
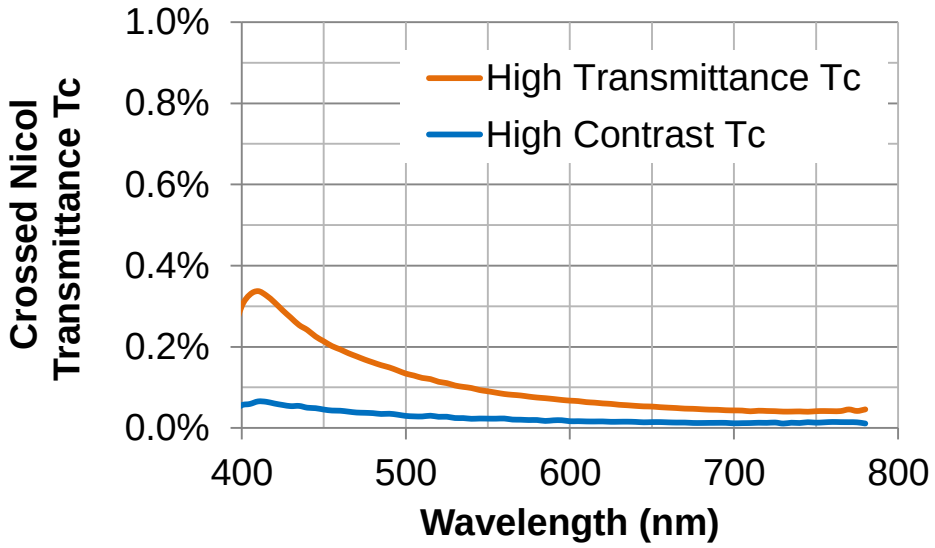
You can choose either standard grade, HC(High Contrast) or HT(High Transmittance) to suite your need. The Adhesive on a backside of substrate is also available.





Type	grade		450nm	550nm	650nm
HT; High Transmittance	**HT11N (no-adhesive)** **HT11U (with adhesive)**	Tp (%)	83.59%	89.26%	90.81%
		Tc (%)	0.21%	0.09%	0.05%
HC; High Contrast	**HC11N (no-adhesive)** **HC11U (with adhesive)**	Tp (%)	80.33%	83.79%	82.65%
		Tc (%)	0.05%	0.02%	0.01%

* Incident angle 0 deg * No AR coating on WGF
* These figures are typical values , not the values for guaranteeing

Product size & Configuration

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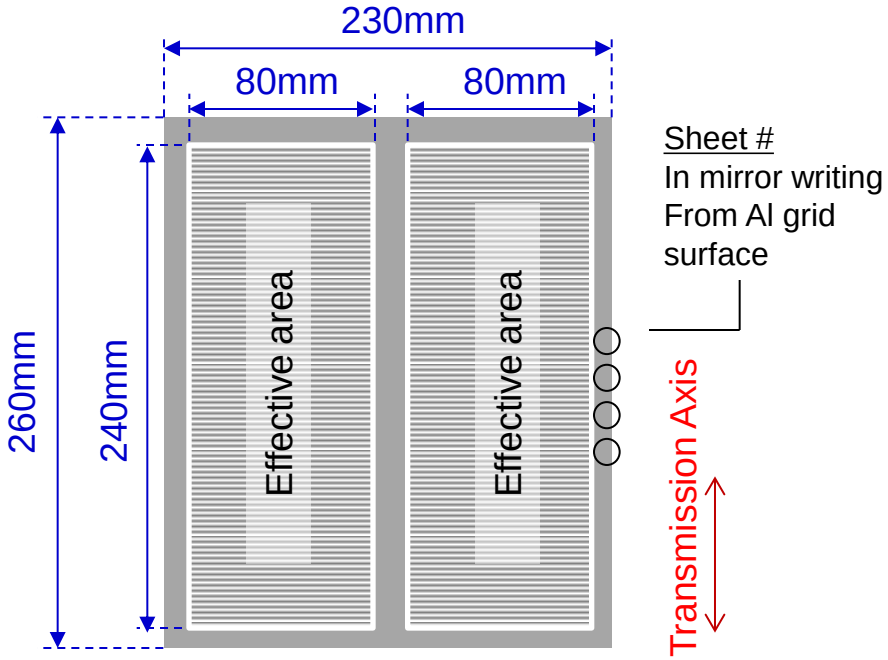
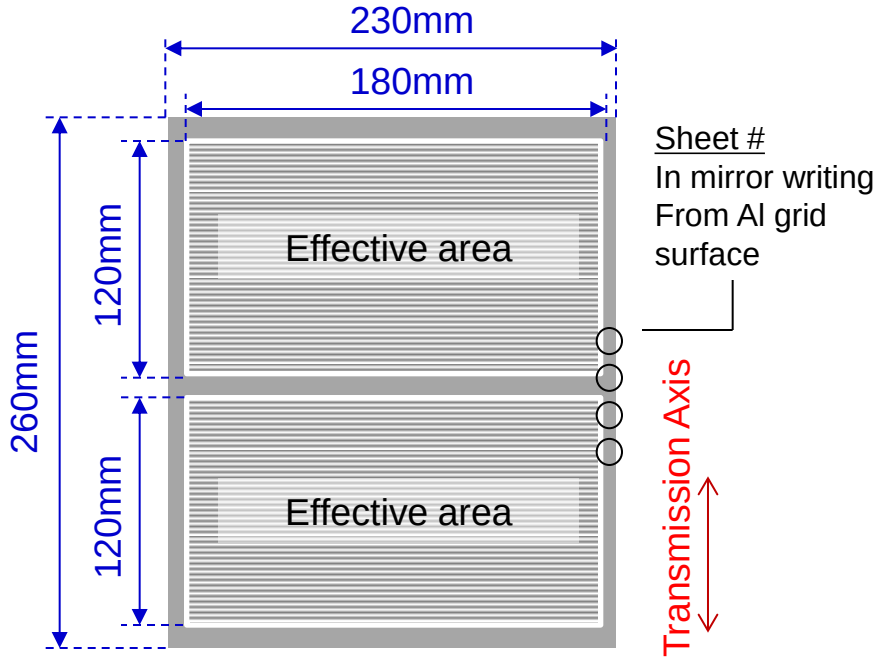
Sheet size

Type. 1 Standard model 240x80mmx2windows

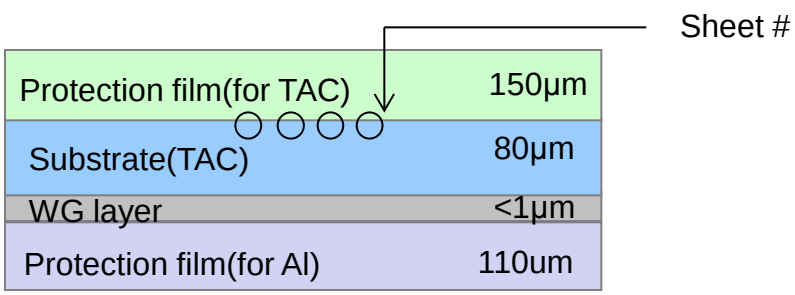


Type.2 developing 120x180mmx2windows

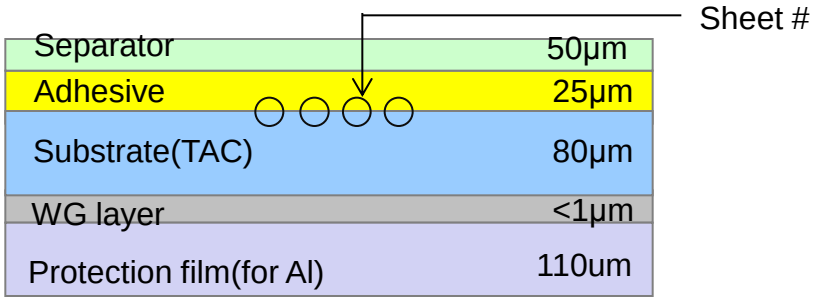


Configuration

HT11N&HC11N grade; no-adhesive



HT11U&HC11U grade; with-adhesive



Optical performance of HC at oblique incident

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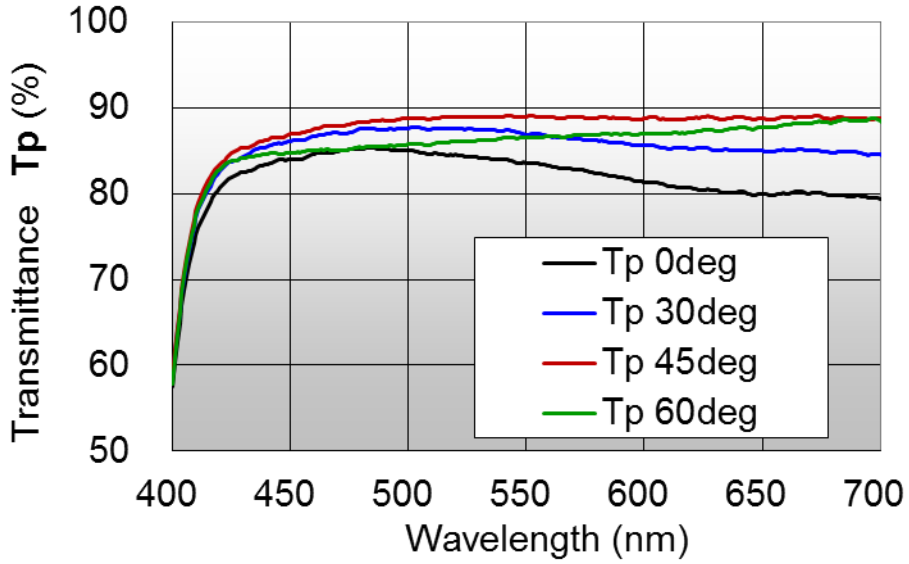
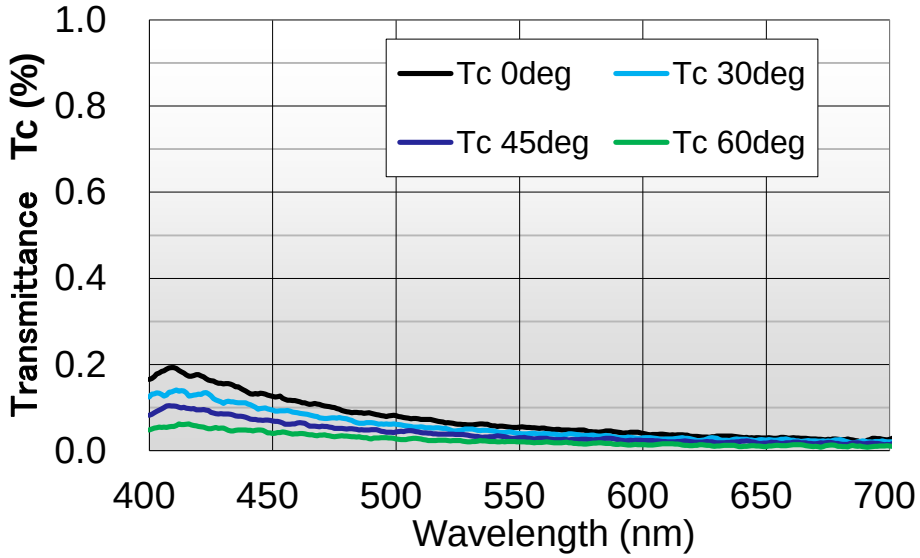
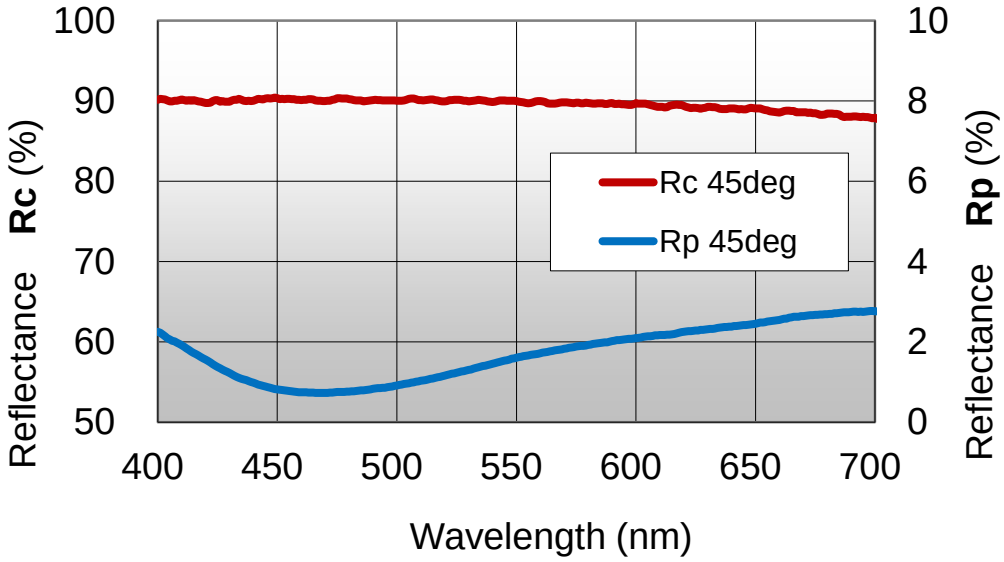
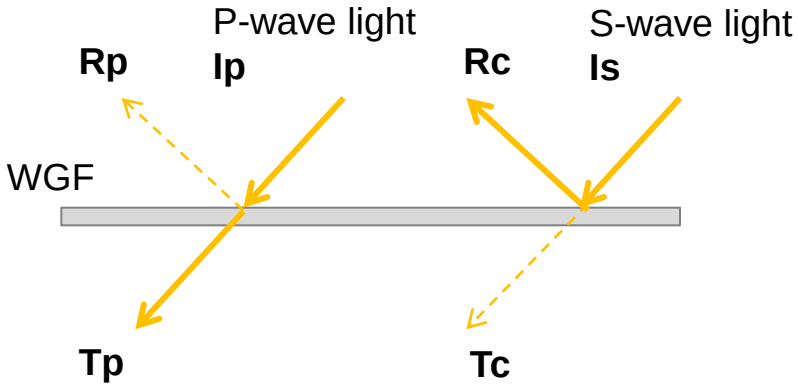
Tp & Tc, Rp & Rc at oblique incident









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Reliability

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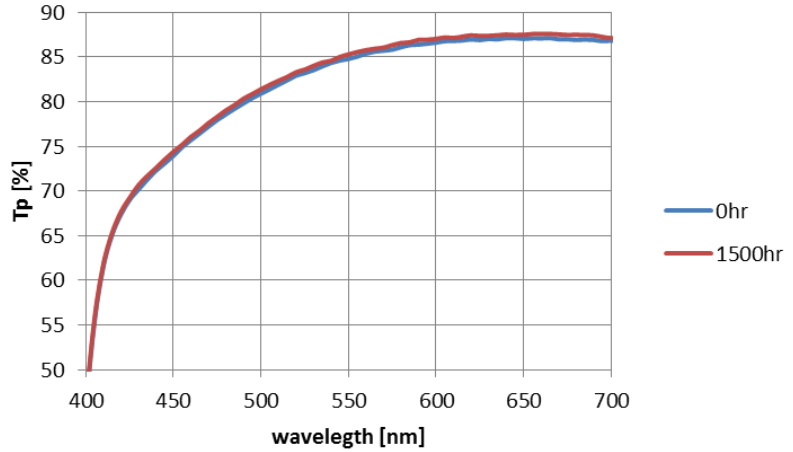
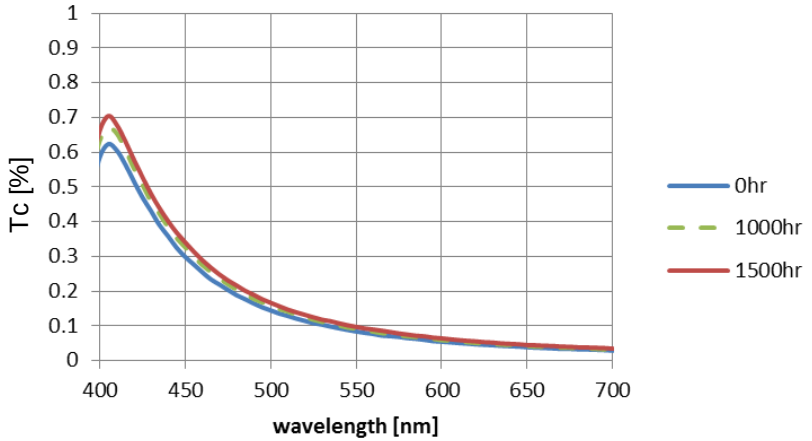
Optical performance of WGF before and after environmental tests

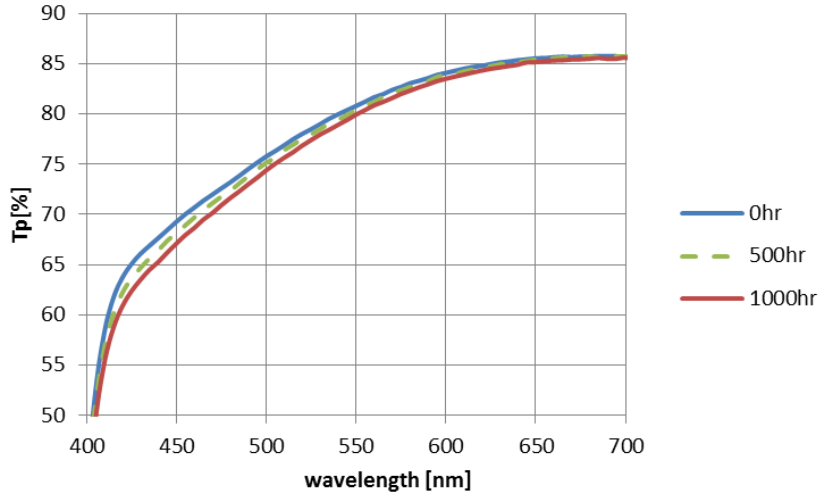
* These figures are typical values, not the values for guaranteeing

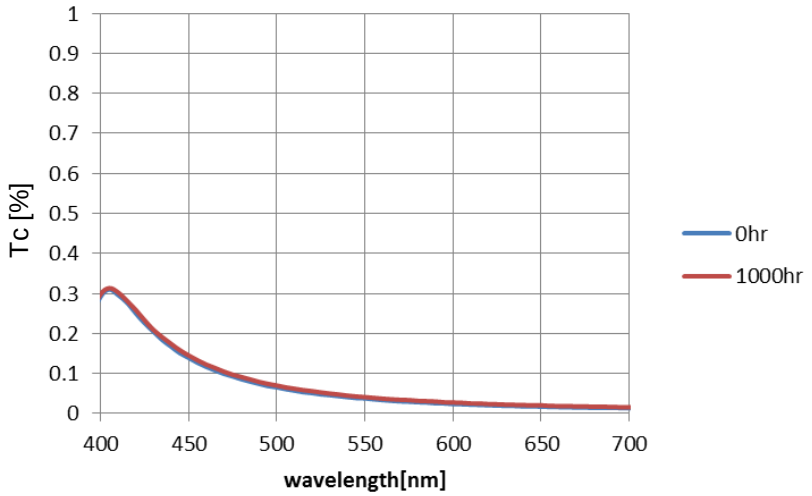
Heat and humid resistance @60degC/90%RH/1500hr)





Heat resistance (105degC/dry/1000hr)

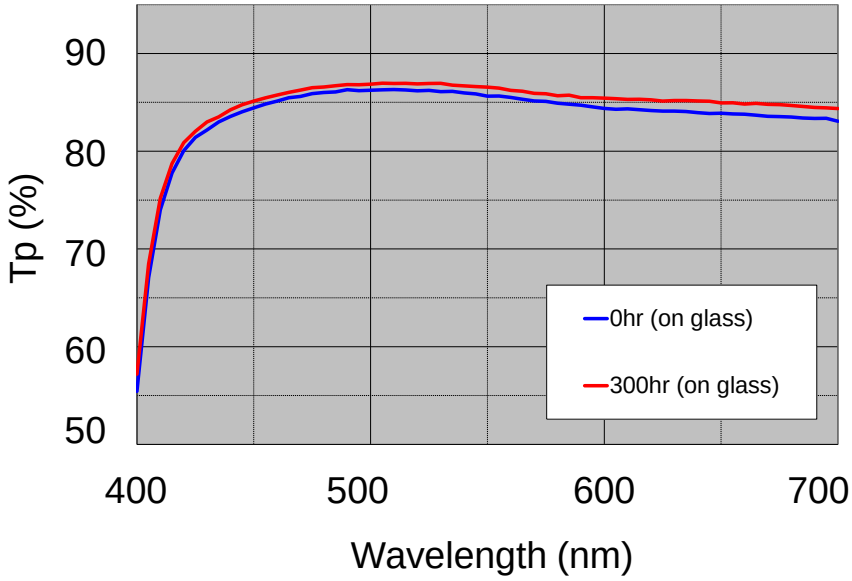


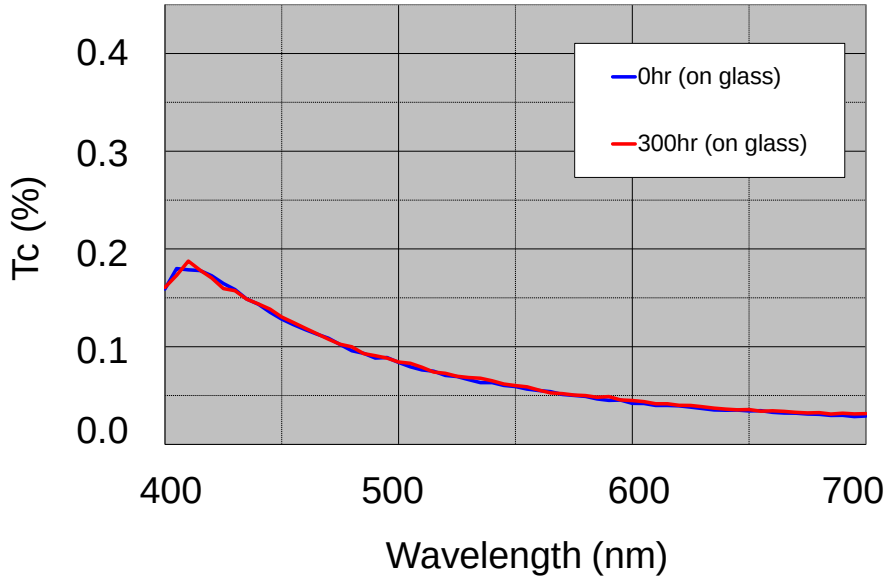


Reliability

Optical performance of WGF before and after light resintance test

Sunshine weather meter 255W/m^2/BPT63degC/spray free





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Optical performance in NIR range

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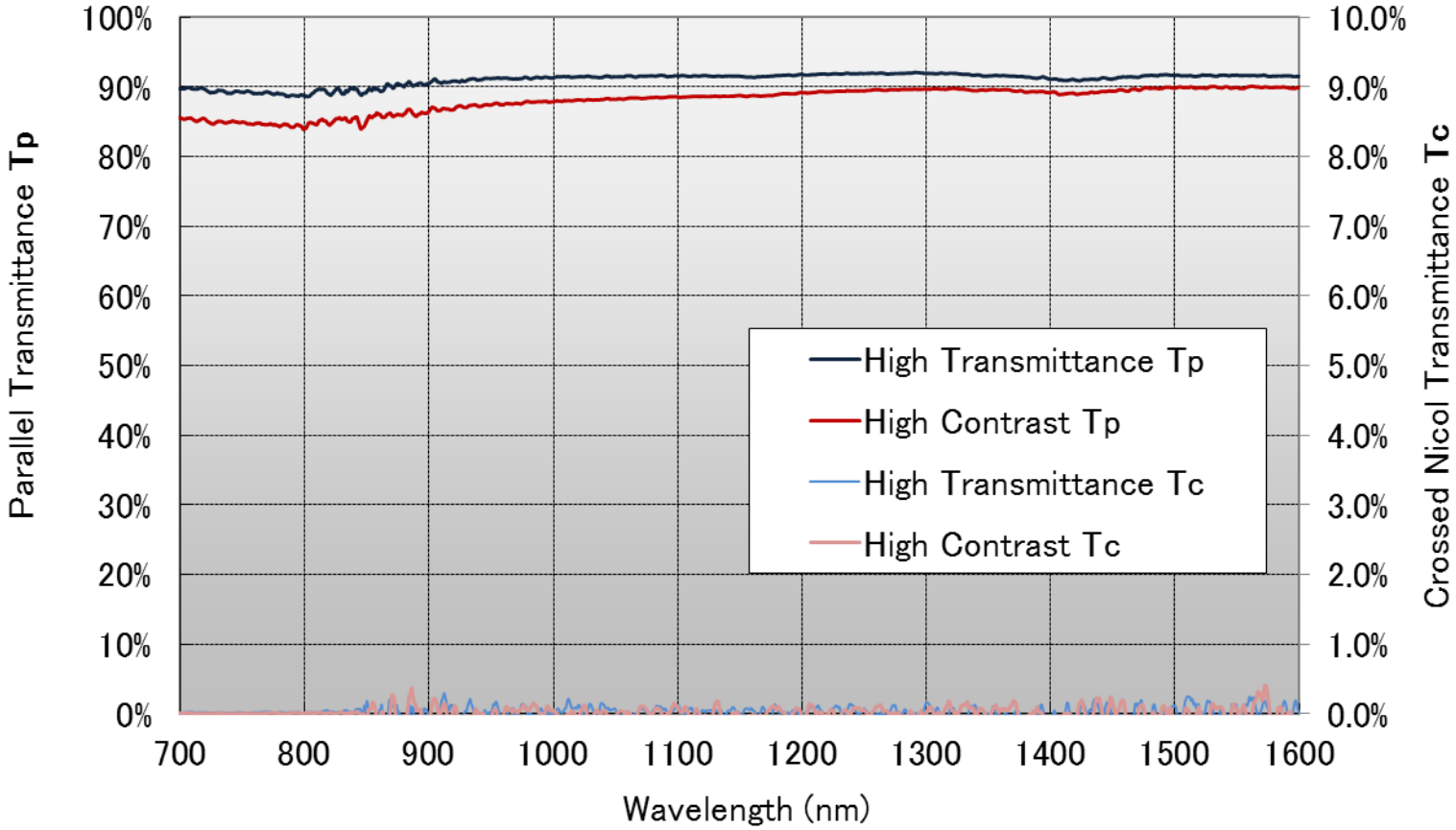
WGF can polarize effectively in a wide range from Visible to NIR.



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Reducing a reflected light with WGF

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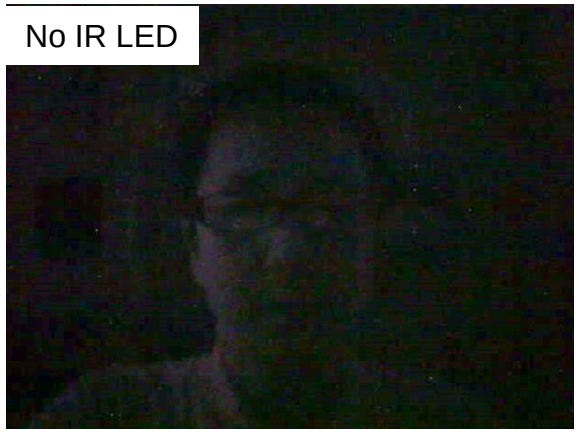
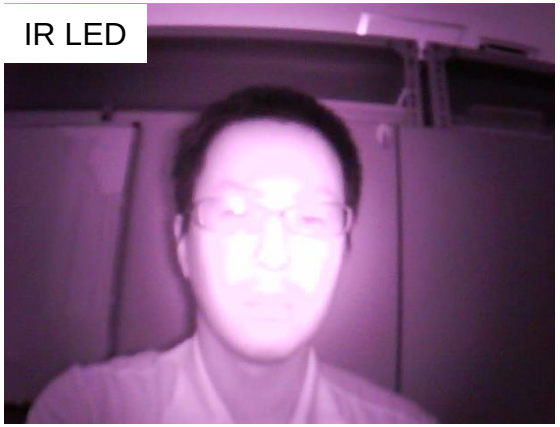
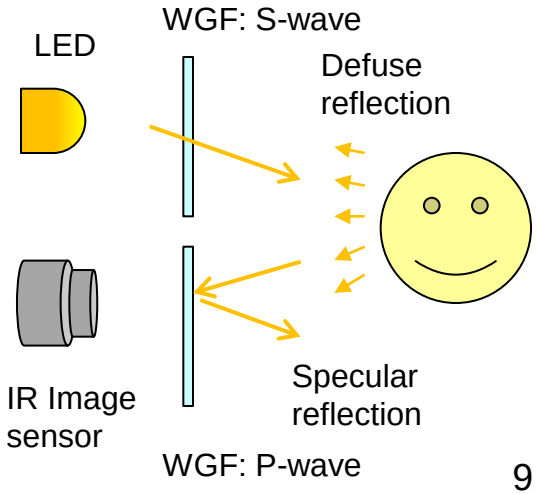
Cutting specular reflection of IR light with WGF; With a objection illuminated by S-wave and detected by P-wave, excessive specular reflection can be reduce.





Illuminating a object from the front, specular reflection of light could be so strong that disturb software recognition. By detecting only defuse reflection, the image can be improved.



A example of scanning a barcode

Summary

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Feature

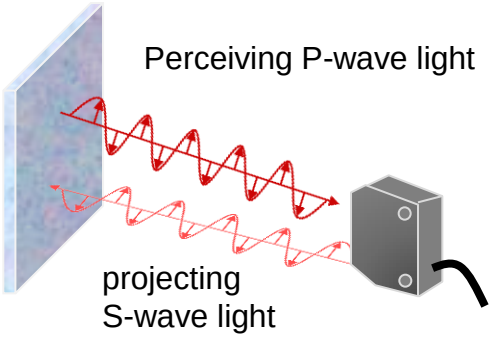
- Reflective polarization film without absorption loss
- Flexible & excellent processability for cutting and laminating
- Less incidence dependence
- Effective in a wide range from Visible to NIR
- Excellent durability in a hard environment as high temperature (105degC/dry/1000hr) and humidity (60degC/90%RH/1500hr)

Applications

EVF(Electric View Finder)

Optical parts for HMD, head mounted display)

HUD, Head-up display



Noise reduction and anti-reflection of IR sensor

Contact us

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