Tsurupica® is one of the best transparent material for THz-wave applications. It has advantages over existing materials such as Polyethylene and Silicon. Tsurupica shows high transmission and low loss on surface not only for THz-wave but for visible light.

<table>
<thead>
<tr>
<th>Material</th>
<th>Tsurupica®</th>
<th>Polyethylene</th>
<th>Silicon</th>
<th>HR-Silicon</th>
</tr>
</thead>
<tbody>
<tr>
<td>THz-wave transmission</td>
<td>Good</td>
<td>Good (Low freq)</td>
<td>Excellent (High freq)</td>
<td>Excellent</td>
</tr>
<tr>
<td>Visible transmission</td>
<td>Good</td>
<td>Opaque</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Color</td>
<td>Transparent</td>
<td>White</td>
<td>Metallic</td>
<td>Metallic</td>
</tr>
<tr>
<td>Fresnel loss</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

**FEATURES / SPECIFICATIONS**
- Transmission range: 1~12THz
- Refractive index: 1.52 @THz-wave and 633 nm
- Visible laser is applicable as alignment guide.
- Employing Tsurupica® as a detector window, one can confirm the status of sensor element.
- Customized dimensions and finishing available upon request.

**SURFACE FINISH**
Choose from 3 types, as requirement of application.
- Type-RR: High-precision polish. Good transparency for visible light.
- Type-R: Semi-transparent polish. Transparent in visible region.
- Type-S: No polish. Opaque in visible.

<table>
<thead>
<tr>
<th>Type</th>
<th>RR</th>
<th>R</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polish</td>
<td>Precise</td>
<td>Easy</td>
<td>No</td>
</tr>
<tr>
<td>Visible transmission</td>
<td>Good</td>
<td>Available*</td>
<td>Opaque</td>
</tr>
<tr>
<td>Shaping error</td>
<td>&lt;15 μm P-V³</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Surface roughness</td>
<td>&lt;0.05 μm</td>
<td>Intermediate</td>
<td>~2 μm</td>
</tr>
<tr>
<td>Measurement data</td>
<td>Provided</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

*1 Not specified.
*2 <10 μm for standard items

**ORDERING INFO**
For Spherical singlet: (P)>(S)-(A)<(B)-(R)
P: surface finish: R for easy-polish, S for no polish
S: shape: CX for positive singlet, BICX for positive bi-convex, CC for negative singlet
A: diameter: 10~70 mm
B: Focal length: in mm
R: rim: place N for no rim

ex. Spherical negative singlet, polished, diameter 50 mm and focal length -100 mm
R(CC)-CC-30

Below items are standard and always in stock
- Positive aspherical singlet RR-CX-30-1-80-SPS, R=30, 50, 100
- Negative aspherical singlet RR-CC-38-1-80-SPS, R=40, 60
- Positive aspherical cylindrical RR-SIRL100-SPS
- Slide glass RR-PP-26-76-SPS-5, 76 x 26 mm2 plane plate, 5 pcs/pack

Delivery 3~5 weeks ARO except for stock items.
Special shape / dimensions available upon request.

For international orders, please ask Broadband Inc.
ask@bblaser.com / +81-3-5838-0082
ATTN: Kou Sakurai

Tsurupica® is the result of cooperative development of PAX inc. and Terahertzwave research group of RIKEN.
Also refer the Terahertz database on the RIKEN website for the detailed material information.

- Terahertzwave research group, RIKEN:
- The RIKEN Terahertz database:
  http://www.riken.jp/THzdatabase/
High-resistivity Silicon (HR-silicon) is pure material without dopant and contaminations, which is grown using a special technique. It shows considerably lower absorption than normal silicon especially in lower THz frequency region and at residual oxygen-related specific absorption peak at 1100 cm⁻¹.

- MATERIAL CHARACTERISTICS

HR-silicon shows slight absorption <3 THz while Low-res Si considerably high absorption, 36% at 1 THz for 10 mm-thick window.

- Standard item
- Material: Intrinsic silicon
- Resistivity: >20 kΩ cm
- Orientation of ingot: (111) or (100)
- Maximum dimensions*: 3 inch dia x 50 mm

*1 Larger size available upon request

- PRODUCTS

**Thick blank (Window)**

**HR-silicon Ingot**

We can supply various HR-silicon products upon request. Items are cut from premium-grade ingot, and ground and polished precisely.

**Wafer (Beam splitter)**

**Right angle prism**

**Ball lens**

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**PHLUXi, Inc.**

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**PAX, Inc.: Production / domestic sales of Tsurupica®**

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