



**Barium titanate ( BaTiO 3 ) :**

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**BaTiO 3 barium titanate** single crystal has excellent photorefractive properties, high self-pumped phase conjugate reflectivity and two-wave mixing (optical amplification) efficiency, and has great potential application prospects in optical information storage; at the same time It is also an important substrate material.

**Material properties:**

|                                                            |                                                                                         |                       |                       |        |
|------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------|-----------------------|--------|
| Crystal structure                                          | Quartet                                                                                 |                       |                       |        |
| density                                                    | 6.02 (g/cm <sup>3</sup> )                                                               |                       |                       |        |
| melting point                                              | 1612°C                                                                                  |                       |                       |        |
| Dielectric constant                                        | ea=3700 ec=135 (free state)                                                             |                       |                       |        |
|                                                            | ea=2400 ec=60 (bleeding status)                                                         |                       |                       |        |
| Refractive index                                           |                                                                                         | 515nm                 | 633nm                 | 800nm  |
|                                                            | no                                                                                      | 2.4912                | 2.4160                | 2.3681 |
|                                                            | no                                                                                      | 2.4247                | 2.3630                | 2.3235 |
| Passed wavelength range                                    | 0.43-6.30mm                                                                             |                       |                       |        |
| photoelectric coefficient                                  | r <sub>1T3</sub> =8±2pm/V; r <sub>T33</sub> =105±10pm/V; r <sub>T42</sub> =1300±100pm/V |                       |                       |        |
| Self-pumped phase conjugate reflectivity<br>(0 degree cut) | 50 - 70 % for l = 515nm(Ce: BaTiO <sub>3</sub> )                                        |                       |                       |        |
|                                                            | 40 - 60 % (PureBaTiO <sub>3</sub> ) for l = 515nm                                       |                       |                       |        |
|                                                            | 50 - 80 % for l = 633nm(Ce: BaTiO <sub>3</sub> )                                        |                       |                       |        |
|                                                            | 40 - 60 % for l = 633nm (PureBaTiO <sub>3</sub> )                                       |                       |                       |        |
| Two-Wave Mixing Coupling Coefficient                       | 10-40 cm <sup>-1</sup>                                                                  |                       |                       |        |
| Absorption loss                                            | l: 515nm                                                                                | 633nm                 | 800nm                 |        |
|                                                            | a: 0.285cm <sup>-1</sup>                                                                | 0.108cm <sup>-1</sup> | 0.033cm <sup>-1</sup> |        |
| Orientation                                                | <100>, <001>, <110>, <111>±0.5°                                                         |                       |                       |        |
| Dimensions (mm)                                            | 10×10×1/0.5mm, 5×5×1/0.5mm can be customized                                            |                       |                       |        |
| polishing                                                  | single or double sided                                                                  |                       |                       |        |
| Surface roughness                                          | Ra ≤ 10Å                                                                                |                       |                       |        |
| Package                                                    | Class 100 clean bag                                                                     |                       |                       |        |