



## DESCRIPTION

Sodium chloride substrate is also known as NaCl substrate. Sodium Chloride Substrate is a wide-band good conductor engaged for research work. It also used in the production of infrared spectroscopy analyzer; ultraviolet and infrared optical components; the single crystal is the material of visual elements used as the transparent material of prisms, lenses, filters and various laser windows, infrared devices, optical, laser crystal instruments.

NaCl single crystal substrates are most suitable for growing epitaxial film and studying interface diffusion and defects. The film can be easily removed from NaCl substrate either by floating it off on water or by dissolving the underlying substrate. Sodium chloride crystal substrates can grow epitaxial films on a featureless substrate. If using appropriate techniques, ultra-smooth polishing substrate can be created and high-quality epitaxial film in a larger area can be achieved. As NaCl is very sensitive to moisture, it is advised to store it in desiccator box.

## APPLICATIONS

- Substrate for Epitaxial growth
- Be used in the production of infrared spectroscopy analyzer
- Ultraviolet and infrared optical components
- Prisms, lenses, filters and various laser windows, infrared devices, optical, laser crystal instruments

## FEATURES

- Wide-band good conductor
- Water-soluble, easy to deliquesce and cannot be chemically polished
- Can grow epitaxial films on a featureless substrate



## PARAMETERS

### Material and Specifications

Orientation	<100>, <110>, <111>
Orientation Tolerance	< 0.5°
Parallelism	5"
Perpendicularity	3'
Surface Quality	10-5 (Scratch/Dig)
Wavefront Distortion	<λ/4@632 nm
Surface Flatness	<λ/8 @632 nm
Clear Aperture	>90%
Chamfer	<0.1×45°
Thickness/Diameter Tolerance	±0.05 mm

### Physical and Chemical Properties

Crystal Structure	Cubic
Symmetry Class	m3m
Lattice Constants	5.642
Specific mass	2.16 g/cm <sup>3</sup>
Melting Point	801°C
Cleavability	(100), perfect
Thermal Conductivity (W·m <sup>-1</sup> ·K <sup>-1</sup> @35°C)	6.15
Specific Heat (J·kg <sup>-1</sup> ·K <sup>-1</sup> )	871
Thermal Expansion (10 <sup>-6</sup> ·K <sup>-1</sup> @60°C)	36.4 ... 40.8
Hardness (Mohs)	3
Vickers Microhardness(GPa)	0.2
Constant of Elastic Compliance(10 <sup>-12</sup> ·Pa <sup>-1</sup> )	S <sub>11</sub> =22.85, S <sub>12</sub> =-4.69, S <sub>44</sub> =78.34
Young Modulus (GPa)	43.7@<100>, 32.7@<111>
Shear Modulus (GPa)	15.9@<100>, 12.8@<111>

### Optical Characteristics

Transmission Range	0.25 ... 22.0μm
Refractive Index	1.4906@10.6μm
Thermo-optic Coefficient (10 <sup>-6</sup> ·K <sup>-1</sup> @60°C,3.4μm)	-0.331 ... -0.373
Poisson Ratio	0.203

### Index of Refraction

λ(μm)	n	λ(μm)	n	λ(μm)	n
0.2	1.7899	5	1.5185	11	1.4878
0.5	1.5516	6	1.5153	12	1.48
1	1.532	7	1.5112	12.5	1.4758
2	1.5254	8	1.5066	15	1.4403
3	1.5242	9	1.5009	20	1.3822
4	1.5217	10	1.4947	30	1.0912

