

# MTI Corp

860 South 19<sup>th</sup> Street

Richmond, CA 94804

Website: [www.mtixtl.com](http://www.mtixtl.com) Email: sales@mtixtl.com Tel: 510-525-3070 Fax: 510-525-4705

---

## WSe<sub>2</sub> Tungsten Diselenide

Tungsten Diselenide (WSe<sub>2</sub>) is a very stable semiconductor in the group-VI transition metal dichalcogenides.

Transition metal dichalcogenides are semiconductors with potential applications in solar cells. WSe<sub>2</sub> has a band-gap of ~1.35 eV with a temperature dependence of  $-4.6 \times 10^{-4}$  eV/K. WSe<sub>2</sub> photoelectrodes are stable in both acidic and basic conditions, making them potentially useful in electrochemical solar cells.

The properties of WSe<sub>2</sub> monolayers differ from those of the bulk state, as is typical for semiconductor. Mechanically exfoliated monolayers of WSe<sub>2</sub> are transparent photovoltaic materials with LED properties. The resulting solar cells pass 95 percent of the incident light, with one tenth of the remaining five percent converted into electrical power. The material can be changed from p-type to n-type by changing the voltage of an adjacent metal electrode from positive to negative, allowing devices made from it to have tunable bandgaps. As a result, it may enable LEDs of any color to be made from a single material

Typical Physical Properties	
Molecular Formula	WSe <sub>2</sub>
Appearance	grey to black
Crystal Structure	Hexagonal and Rhombohedral
Lattice Constant	a = 0.3297 nm, c = 1.2982 nm
Density	9.32 g/cm <sup>3</sup>
Molar Mass	341.76 g/mol
Melting Point	> 1200 °C
Solubility in water	insoluble