



Solar Grade

Mono-crystalline Silicon Materials

CLEC Group is one of the largest manufacturers of solar grade mono-crystalline silicon material in China. We have established a R&D center in Xi'an city and a factory in Yulin city. Main products include mono-crystalline silicon wafer, rod and ingot.

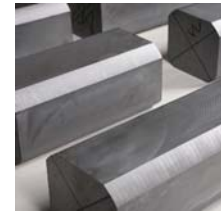
Mono-crystalline Silicon Wafer



		6 Inch (125×125mm)	8 Inch (156×156mm)
Type	Crystal growth method	CZ	
	Conductance type	P	
Capability	Resistivity (ohm.cm)	1.0~3.0	
	Oxygen (atoms/cm ³)	≤1.0×10 ¹⁸	
	Carbon (atoms/cm ³)	≤5.0×10 ¹⁶	
	Life time (μs)	≥10	
	Pulled ingot orientation	100±3°	
	Dislocation density (/cm ²)	≤3000	
Externality	Dimensions tolerance (mm)	125×125±0.5	1156×156±0.5
	Wafer diameter (mm)	150±0.5; 165±0.5	200±0.5
	Center thickness (μm)	200±20; 210±20; 220±20	210±20; 220±20
	Total thickness variation (μm)	≤30	
	Surface roughness (μm)	≤8	
	Perpendicularity (°)	90±0.3	
	Length difference (mm)	≤1.5	
	Bow (μm)	≤40	
Appearance	edge defect depth≤0.5mm edge defect length≤1.0mm	≤2	
	Dirt	none	
	Hole/crack	none	
	Obvious tactility	none	



Mono-crystalline Silicon Rod



Type	Crystal growth method	CZ
	Conductance type	P
Capability	Resistivity (ohm.cm)	1.0~3.0; 3.0~6.0
	Oxygen (atoms/cm ³)	$\leq 1.0 \times 10^{18}$
	Carbon (atoms/cm ³)	$\leq 5.0 \times 10^{16}$
	Life time (μ s)	≥ 10
	Pulled ingot orientation	$100 \pm 3^\circ$
	Dislocation density (/cm ²)	≤ 3000
Size	Dimensions (mm)	125×125±0.5; 156×156±0.5
	Rod diameter (mm)	150±0.5; 165±0.5; 200±0.5
Appearance	edge defect depth \leq 0.5mm edge defect length \leq 1.0mm	≤ 2
	Dirt	none
	Hole/crack	none
	Obvious tactility	none

Mono-crystalline Silicon Ingot*



Type	Crystal growth method	CZ
	Conductance type	P
Capability	Resistivity (ohm.cm)	1.0~3.0; 3.0~6.0
	Oxygen (atoms/cm ³)	$\leq 1.0 \times 10^{18}$
	Carbon (atoms/cm ³)	$\leq 5.0 \times 10^{16}$
	Life time (μ s)	≥ 10
	Pulled ingot orientation	$100 \pm 3^\circ$
	Dislocation density (/cm ²)	≤ 3000
	Rod diameter (mm)	6 inch (150mm); 6.5 inch (165mm); 8 inch (200mm)
Appearance	edge defect depth \leq 0.5mm edge defect length \leq 1.0mm	≤ 2
	Dirt	none
	Hole/crack	none
	Obvious tactility	none

**accept customers' materials for processing*

CLEC Group

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