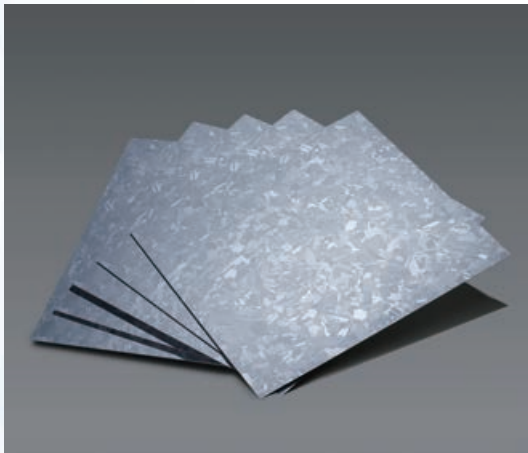


## GCL MULTI-WAFER S2

*GCL is creating an integrated development model for its silicon wafer business. By innovating on in-house R&D of capital equipment, and horizontally integrating into large-scale production of production of auxiliary materials for silicon wafers, GCL is dedicated to improving the overall competitiveness of its PV material business.*

*GCL Multi-Wafer S2 of high efficiency multicrystalline wafer provides customers with higher efficiency, higher endurance and lower cost. GCL Multi-Wafer S2 is a brand new product based on GCL's thorough understanding of production methods of crystalline, we developed innovative processing technology and implemented an unqueie heat sheidling technology. It is produced with the Company's in-house self-produced high-quality silicon under strict quality control and will help our customers in solar cell and module to become more competitive and value-adding products.*



### Product Features

- ▶ *Unique crystalline structure*
- ▶ *Low oxygen and carbon concentration*
- ▶ *Low metal impurities*
- ▶ *Low dislocation, stacking fault, grain boundary and other defected density*
- ▶ *Uniform doping distribution*

### Overall performance

- ▶ *An increase of 0.2 to 0.5% in efficiency as compared with baseline*
- ▶ *Effective cost reduction of solar PV generation (LCOE)*
- ▶ *Capable of producing 250+W multicrystalline modules ( 156mm×60 wafers)*

# Product Specifications

<i>Material properties</i>		
<i>Property</i>	<i>Specification</i>	
<i>Growth Method</i>	<i>DSS</i>	
<i>ConductivityType/Dopant</i>	<i>P/Boron</i>	
<i>Oxygen Concentration</i>	$\leq 5.0 \times 10^{17} \text{ atoms/cm}^3$	
<i>Carbon Concentration</i>	$\leq 8.0 \times 10^{17} \text{ atoms/cm}^3$	
<i>Electrical properties</i>		
<i>Resistivity</i>	$1.0\text{--}3.0 \text{ } \cdot\text{cm}$	
<i>Brick Lifetime</i>	$\geq 4 \mu\text{s}$	
<i>Geometry</i>		
<i>Thickness</i>	$200\pm 20, 180\pm 18\mu\text{m}$	
<i>TTV</i>	$\leq 30 \mu\text{m}$	
<i>Warpage</i>	$\leq 50 \mu\text{m}$	
<i>Width</i>	$156\pm 0.5\text{mm}$	
<i>Right Angle</i>	$90^\circ \pm 0.3^\circ$	
<i>Diagonal</i>	$219.2\pm 0.5 \text{ mm}$	
<i>Chamfer Size</i>	<i>Hypotenuse</i>	$0.5\text{--}2.0\text{mm}$
	<i>Cathetus</i>	$0.35\text{--}1.42\text{mm}$
	<i>Chamfer angle</i>	$45^\circ \pm 10^\circ$
<i>Microcrack</i>	<i>Not allowed</i>	
<i>Saw marks</i>	$\leq 10 \mu\text{m}$ & unlimited in the number of strips; $10\text{--}15\mu\text{m} \leq 5 \text{ strips/1cm}$	
<i>Edge Chip</i>	<i>Depth <math>\leq 0.3 \text{ mm}</math>, Length <math>\leq 0.5 \text{ mm}</math>, Max 2 pieces/wafer</i>	
<i>Breakage</i>	<i>Not allowed</i>	
<i>Micrograin</i>	<i>Single Area <math>&lt; 3 \times 3\text{mm}^2</math>. Total Area <math>&lt; 3 \times 3\text{cm}^2</math></i>	
<i>Hole</i>	<i>Not allowed</i>	
<i>Surface quality</i>	<i>No surface damage, stains, water marks, or contamination allowed</i>	

## About GCL

GCL–Poly Energy Holdings Limited (Constituent Stock of Hang Seng Composite Index: 3800HK) is the largest solar photovoltaic enterprise in the world and a professional large–scale domestic enterprise that supplies clean energy. GCL is dedicated to promoting the extensive application of solar power in the world. After years of expansion and development, GCL has become the world’s leading supplier of PV materials and the expert to provide the most professional PV system solutions. GCL also possesses several large–scale solar farms globally and abundant experience in the operation and management of solar farms.

## Contact GCL

Address: Unit 1703 – 1706, Level 17, International Commerce Centre, 1 Austin Road West, Kowloon, Hong Kong  
 19 Floor, Suzhou International Financial Center, Times Square, Hua Chi St., Suzhou Industrial Park, Suzhou, China  
 E–mail: gclpv\_sales@gcl–power.com