A4-10	PURCHASE SPECIFICATION GROUP : PHOTOVOLTAICS	PS- 439 - 407 REV. 01 PAGE 01 OF 02

TECHNICAL SPECIFICATION

1. MATERIAL : 157 mm Square Diamond Wire Saw Multi Crystalline Solar Silicon wafer

2. APPLICATION : It is used as starting material for Solar Photovoltaic cells production.

SL. NO.	CHARACTERISTICS	VALUE	UNIT	TESTING METHODS / REF. STANDARDS.
1.0	APPEARANCE	As cut cleaned **Diamond Wire Saw**		Unaided Visual inspection.
1.1	SURFACE CONDITION			

Wafers shall be free from surface stains, water marks, chips, breakages and pin holes.

SL. NO.	CHARACTERISTICS	VALUE	UNIT	TESTING METHODS / REF. STANDARDS.
1.2	SAW MARKS DEPTH	<=15	microns	Visual inspection and surface profiling.
2.0	DIMENSIONS			
2.1	Size (Side to Side)	157±0.25	mm	Vernier/Go-No Go gauges
2.2	Shape	Square		
2.3	Thickness	170 to 200	microns	ASTM-F533
2.4	TTV (Total Thickness Variation)	<=30	microns	ASTM-F533
2.5	BOW	<=50	microns	ASTM-F534

Rev. 01 Thickness revised.	APPROVED BY : SR		
	PREPARED SC	ISSUED Engg.	DATE 17-07-2019

3.0 CHARACTERISTICS

3.1	TYPE	P(Boron, Gallium doped)	ASTM-F42
3.2	RESISTIVITY	0.8 – 2.0 ohm.cm	Four point probe
3.3	OXYGEN CONCENTRATION	<=5 * 10^{17} Atoms/CM^3	ASTM-F121
3.4	CARBON CONCENTRATION	<=8 * 10^{17} Atoms/CM^3	ASTM-F123
3.5	Brick Life time	>= 5 micro seconds	ASTM F28-91

4.0 PACKING

1. Wafers shall be packed in carton box with proper paddings to absorb transit handling shocks.
2. Each carton box shall have 100 nos. of wafers with a label giving manufacturer name, quantity and wafer characteristics.
3. The small carton boxes containing 100 nos. each of wafers shall be packed in a bigger carton box with foam fitments (cushions) on all the sides.
4. Each lot must be accompanied with a test certificate certifying the wafer characteristics.

5.0 NOTE

1. Wafers shall be free from edge chips, cracks, micro cracks, pin holes, stains, water marks and any other contamination.
2. Supplier shall replace free of cost the defective wafers found in the packets at the time of actual processing of the wafers into solar cells.

6.0 SAMPLING SIZE FOR INSPECTION AT BHEL

I. Visual Inspection :

Single Sampling Plan as per IS:10673-1983, General Inspection Level I, AQL 1.0 %.

II. Dimension and Resistivity measurement :

Single Sampling Plan as per IS:10673-1983, Special Inspection Level S-4, AQL 2.5 %.