

 A4-11	PURCHASE SPECIFICATION GROUP: PHOTOVOLTAICS	Spec. No	PS-439-358
		Rev. No	01
		Page 1 of 4	

COPYRIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest of the company

TECHNICAL SPECIFICATION
FOR
SUPPLY OF OXYGEN GAS
AT
ELECTRONICS DIVISION, BHEL, MYSORE ROAD, BANGALORE, INDIA 560026

REVISION DETAILS: (01)	PREPARED SC 		DATE
	APPROVED SR 	ISSUED ENGG	29.10.2016

 A4-11	PURCHASE SPECIFICATION GROUP: PHOTOVOLTAICS	Spec. No	PS-439-358
		Rev. No	01
		Page 2 of 4	

Pre-Qualification Criteria (PQC) The turnkey supplier shall necessarily meet the following pre-qualification criteria.		
S.No.	Item	Supplier Confirmation (Yes No)
1.	Supplier shall have supplied at least one oxygen gas cylinder of 5N or better purity in India. Purchase order, delivery challans or certificate from the customer shall be provided as the supporting document(s).	

Note:

1. The Pre-qualification criteria are mandatory requirements and the technical bids will be considered only if all the above Pre-Qualification Criteria are met.
2. All supporting documents related to PQC shall be enclosed in techno-commercial offer.

Pre-qualification evaluation will be carried out based on the details furnished by the supplier/ feedback from their customers' inspection of the company product if required by BHEL and at its sole discretion.

COPYRIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the company



PURCHASE SPECIFICATION
GROUP: PHOTOVOLTAICS

Spec. No PS-439-358

Rev. No 01

Page 3 of 4

S. No.	Item	Supplier Confirmation															
1.	Scope and application The offers in invited for the supply of ultra-high purity oxygen gas for the manufacturing of the silicon solar cell. Oxygen will be used as a process gas for emitter diffusion on silicon solar cells.																
2.	Gas Specifications a. Semiconductor Grade, Total Purity : $\geq 99.999\%$ (5N) b. Contaminants profile: The maximum concentration of the following contaminants shall not exceed the following specified values in ppm. <table><tr><td>CO2</td><td>1</td></tr><tr><td>CO</td><td>1</td></tr><tr><td>Ar</td><td>5</td></tr><tr><td>Kr</td><td>3</td></tr><tr><td>N2</td><td>5</td></tr><tr><td>H2O</td><td>1</td></tr><tr><td>THC</td><td>0.5</td></tr></table>	CO2	1	CO	1	Ar	5	Kr	3	N2	5	H2O	1	THC	0.5		
CO2	1																
CO	1																
Ar	5																
Kr	3																
N2	5																
H2O	1																
THC	0.5																
3.	Cylinder Specification <table><tr><td>a.</td><td>Gas fill weight</td><td>Approx. 10 m3 (Actual gas fill volume to be indicated on the cylinder).</td></tr><tr><td>b.</td><td>Gas conversion factor</td><td>1 m³ = 1.3 Kg. at 1 atm. and 27 °C</td></tr><tr><td>c.</td><td>Cylinder dimension</td><td>Water capacity: 50 L</td></tr><tr><td>d.</td><td>End connection</td><td>G 5/8" RH</td></tr><tr><td>e.</td><td>Filled pressure</td><td>Approx. 2640 psig</td></tr></table>	a.	Gas fill weight	Approx. 10 m3 (Actual gas fill volume to be indicated on the cylinder).	b.	Gas conversion factor	1 m ³ = 1.3 Kg. at 1 atm. and 27 °C	c.	Cylinder dimension	Water capacity: 50 L	d.	End connection	G 5/8" RH	e.	Filled pressure	Approx. 2640 psig	
a.	Gas fill weight	Approx. 10 m3 (Actual gas fill volume to be indicated on the cylinder).															
b.	Gas conversion factor	1 m ³ = 1.3 Kg. at 1 atm. and 27 °C															
c.	Cylinder dimension	Water capacity: 50 L															
d.	End connection	G 5/8" RH															
e.	Filled pressure	Approx. 2640 psig															

COPYRIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the company

 A4-11	PURCHASE SPECIFICATION GROUP: PHOTOVOLTAICS	Spec. No	PS-439-358
		Rev. No	01
		Page 4 of 4	

4.	Test certificate a. Test Certificate shall be provided by the supplier certifying the gas quantity and purity level for each cylinder.	
5.	Supply and delivery a. The gas conversion factor as mentioned in clause 3.b will be used for measuring the gas supplied. b. Supplier shall supply the cylinders as and when required as per the prior intimation given by BHEL to the supplier. c. The delivery lead time for the cylinders shall be not more than 14 days after the date of intimation.	

COPYRIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the company