



25712 Commercentre Drive  
Lake Forest, California 92630  
949.297.5020 Phone  
949.297.5027 Fax

24 January 2022

Ralph Alvarado  
Hanwha Q CELLS  
400 Spectrum Center Drive, Ste 1400  
Irvine, CA 92618  
RE: Solar Pane Q-Peak DUO XL-G10-3/BFG

Enclosed are the results of analyses for samples received by the laboratory on 01/17/22 14:08. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Joann Marroquin  
Director of Operations



25712 Commercentre Drive  
Lake Forest, California 92630  
949.297.5020 Phone  
949.297.5027 Fax

Hanwha Q CELLS  
400 Spectrum Center Drive, Ste 1400  
Irvine CA, 92618

Project: Solar Pane Q-Peak DUO XL-G10-3/BFG  
Project Number: -  
Project Manager: Ralph Alvarado

Reported:  
01/24/22 16:35

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Sample 1	T220114-01	Soil	01/17/22 00:00	01/17/22 14:08
Sample 2	T220114-02	Soil	01/17/22 00:00	01/17/22 14:08
Sample 3	T220114-03	Soil	01/17/22 00:00	01/17/22 14:08

SunStar Laboratories, Inc.

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Joann Marroquin, Director of Operations

Hanwha Q CELLS  
400 Spectrum Center Drive, Ste 1400  
Irvine CA, 92618

Project: Solar Pane Q-Peak DUO XL-G10-3/BFG  
Project Number: -  
Project Manager: Ralph Alvarado

Reported:  
01/24/22 16:35

**DETECTIONS SUMMARY**

**Sample ID:** Sample 1 **Laboratory ID:** T220114-01

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
Lead	1.8	0.10		mg/l	EPA 1311/6010/7000	

**Sample ID:** Sample 2 **Laboratory ID:** T220114-02

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
Barium	0.11	0.10		mg/l	EPA 1311/6010/7000	
Lead	2.7	0.10		mg/l	EPA 1311/6010/7000	

**Sample ID:** Sample 3 **Laboratory ID:** T220114-03

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
Lead	1.8	0.10		mg/l	EPA 1311/6010/7000	

SunStar Laboratories, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Joann Marroquin, Director of Operations

Hanwha Q CELLS  
400 Spectrum Center Drive, Ste 1400  
Irvine CA, 92618

Project: Solar Pane Q-Peak DUO XL-G10-3/BFG  
Project Number: -  
Project Manager: Ralph Alvarado

Reported:  
01/24/22 16:35

**Sample 1**  
**T220114-01 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	-------

**SunStar Laboratories, Inc.**

**TCLP Metals by 6000/7000 Series Methods**

Mercury	ND	2.8	ug/l	1	2011848	01/18/22	01/21/22	EPA 1311/7470	
Arsenic	ND	0.10	mg/l	"	2011847	01/18/22	01/21/22	EPA 1311/6010/7 000	
Barium	ND	0.10	"	"	"	"	"	"	
Cadmium	ND	0.10	"	"	"	"	"	"	
Chromium	ND	0.10	"	"	"	"	"	"	
<b>Lead</b>	<b>1.8</b>	0.10	"	"	"	"	"	"	
Selenium	ND	0.10	"	"	"	"	"	"	
Silver	ND	0.10	"	"	"	"	"	"	

SunStar Laboratories, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Joann Marroquin, Director of Operations



25712 Commercentre Drive  
 Lake Forest, California 92630  
 949.297.5020 Phone  
 949.297.5027 Fax

Hanwha Q CELLS 400 Spectrum Center Drive, Ste 1400 Irvine CA, 92618	Project: Solar Pane Q-Peak DUO XL-G10-3/BFG Project Number: - Project Manager: Ralph Alvarado	Reported: 01/24/22 16:35
---	---	-----------------------------

**Sample 2**  
**T220114-02 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	-------

**SunStar Laboratories, Inc.**

**TCLP Metals by 6000/7000 Series Methods**

Mercury	ND	2.8	ug/l	1	2011848	01/18/22	01/21/22	EPA 1311/7470	
Arsenic	ND	0.10	mg/l	"	2011847	01/18/22	01/21/22	EPA 1311/6010/7 000	
<b>Barium</b>	<b>0.11</b>	0.10	"	"	"	"	"	"	
Cadmium	ND	0.10	"	"	"	"	"	"	
Chromium	ND	0.10	"	"	"	"	"	"	
<b>Lead</b>	<b>2.7</b>	0.10	"	"	"	"	"	"	
Selenium	ND	0.10	"	"	"	"	"	"	
Silver	ND	0.10	"	"	"	"	"	"	

SunStar Laboratories, Inc.

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Joann Marroquin, Director of Operations



25712 Commercentre Drive  
 Lake Forest, California 92630  
 949.297.5020 Phone  
 949.297.5027 Fax

Hanwha Q CELLS 400 Spectrum Center Drive, Ste 1400 Irvine CA, 92618	Project: Solar Pane Q-Peak DUO XL-G10-3/BFG Project Number: - Project Manager: Ralph Alvarado	Reported: 01/24/22 16:35
---	---	-----------------------------

**Sample 3**  
**T220114-03 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	-------

**SunStar Laboratories, Inc.**

**TCLP Metals by 6000/7000 Series Methods**

Mercury	ND	2.8	ug/l	1	2011848	01/18/22	01/21/22	EPA 1311/7470	
Arsenic	ND	0.10	mg/l	"	2011847	01/18/22	01/21/22	EPA 1311/6010/7 000	
Barium	ND	0.10	"	"	"	"	"	"	
Cadmium	ND	0.10	"	"	"	"	"	"	
Chromium	ND	0.10	"	"	"	"	"	"	
<b>Lead</b>	<b>1.8</b>	0.10	"	"	"	"	"	"	
Selenium	ND	0.10	"	"	"	"	"	"	
Silver	ND	0.10	"	"	"	"	"	"	

SunStar Laboratories, Inc.

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Joann Marroquin, Director of Operations



25712 Commercentre Drive  
 Lake Forest, California 92630  
 949.297.5020 Phone  
 949.297.5027 Fax

Hanwha Q CELLS 400 Spectrum Center Drive, Ste 1400 Irvine CA, 92618	Project: Solar Pane Q-Peak DUO XL-G10-3/BFG Project Number: - Project Manager: Ralph Alvarado	Reported: 01/24/22 16:35
---	---	-----------------------------

**TCLP Metals by 6000/7000 Series Methods - Quality Control**  
**SunStar Laboratories, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

**Batch 2011847 - TCLP Metals**

**Blank (2011847-BLK1)**

Prepared: 01/18/22 Analyzed: 01/21/22

Arsenic	ND	0.10	mg/l							
Barium	ND	0.10	"							
Cadmium	ND	0.10	"							
Chromium	ND	0.10	"							
Lead	ND	0.10	"							
Selenium	ND	0.10	"							
Silver	ND	0.10	"							

**LCS (2011847-BS1)**

Prepared: 01/18/22 Analyzed: 01/21/22

Arsenic	0.563	0.10	mg/l	0.500		113	75-125			
Barium	0.506	0.10	"	0.500		101	75-125			
Cadmium	0.548	0.10	"	0.500		110	75-125			
Chromium	0.509	0.10	"	0.500		102	75-125			
Lead	0.503	0.10	"	0.500		101	75-125			

**Matrix Spike (2011847-MS1)**

Source: T220114-01

Prepared: 01/18/22 Analyzed: 01/21/22

Arsenic	0.539	0.10	mg/l	0.500	ND	108	75-125			
Barium	0.589	0.10	"	0.500	0.0908	99.6	75-125			
Cadmium	0.538	0.10	"	0.500	0.000186	108	75-125			
Chromium	0.500	0.10	"	0.500	0.00182	99.5	75-125			
Lead	2.31	0.10	"	0.500	1.76	111	75-125			

**Matrix Spike Dup (2011847-MSD1)**

Source: T220114-01

Prepared: 01/18/22 Analyzed: 01/21/22

Arsenic	0.538	0.10	mg/l	0.500	ND	108	75-125	0.227	30	
Barium	0.592	0.10	"	0.500	0.0908	100	75-125	0.592	30	
Cadmium	0.536	0.10	"	0.500	0.000186	107	75-125	0.386	30	
Chromium	0.500	0.10	"	0.500	0.00182	99.6	75-125	0.0142	30	
Lead	2.31	0.10	"	0.500	1.76	109	75-125	0.390	30	

SunStar Laboratories, Inc.

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Joann Marroquin, Director of Operations

Hanwha Q CELLS  
400 Spectrum Center Drive, Ste 1400  
Irvine CA, 92618

Project: Solar Pane Q-Peak DUO XL-G10-3/BFG  
Project Number: -  
Project Manager: Ralph Alvarado

Reported:  
01/24/22 16:35

**TCLP Metals by 6000/7000 Series Methods - Quality Control**

**SunStar Laboratories, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

**Batch 2011848 - TCLP Hg CV**

**Blank (2011848-BLK1)**

Prepared: 01/18/22 Analyzed: 01/21/22

Mercury	ND	2.8	ug/l							
---------	----	-----	------	--	--	--	--	--	--	--

**LCS (2011848-BS1)**

Prepared: 01/18/22 Analyzed: 01/21/22

Mercury	6.53	2.8	ug/l	7.00		93.3	75-125			
---------	------	-----	------	------	--	------	--------	--	--	--

**Matrix Spike (2011848-MS1)**

Source: T220114-01

Prepared: 01/18/22 Analyzed: 01/21/22

Mercury	7.07	2.8	ug/l	7.00	0.0124	101	75-125			
---------	------	-----	------	------	--------	-----	--------	--	--	--

**Matrix Spike Dup (2011848-MSD1)**

Source: T220114-01

Prepared: 01/18/22 Analyzed: 01/21/22

Mercury	6.85	2.8	ug/l	7.00	0.0124	97.6	75-125	3.16	30	
---------	------	-----	------	------	--------	------	--------	------	----	--

SunStar Laboratories, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Joann Marroquin, Director of Operations





25712 Commercentre Drive  
Lake Forest, California 92630  
949.297.5020 Phone  
949.297.5027 Fax

Hanwha Q CELLS  
400 Spectrum Center Drive, Ste 1400  
Irvine CA, 92618

Project: Solar Pane Q-Peak DUO XL-G10-3/BFG  
Project Number: -  
Project Manager: Ralph Alvarado

Reported:  
01/24/22 16:35

### Notes and Definitions

DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
RPD Relative Percent Difference

SunStar Laboratories, Inc.

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Joann Marroquin, Director of Operations



# SunStar Laboratories, Inc.

## Chain of Custody Record

PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE  
 25712 Commerce Centre Drive, Lake Forest, CA 92630  
 949-297-5020

Client: Humbly Q Cells  
 Address: 400 Spacethru Center PK #140, Irvine CA 92618  
 Phone: 619-438-4100 Fax: \_\_\_\_\_  
 Project Manager: Ralph Miranda

Date: 11/7/22 Page: 1 of 1  
 Project Name: Solar Panel Wash Q-Rate D10 XL-G103/576  
 Collector: \_\_\_\_\_ Client Project #: \_\_\_\_\_  
 Batch #: T220114 EDF #: \_\_\_\_\_

Laboratory ID #	Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals	6020 ICP-MS Metals	Comments/Preservative	Total # of containers	
1	Sample 1	1-17-22	-	sol &	baggie													
2	Sample 2																	
3	Sample 3																	
4	Sample 4 (T-Box)																	

Relinquished by: (signature) \_\_\_\_\_ Date / Time \_\_\_\_\_  
 Received by: (signature) \_\_\_\_\_ Date / Time \_\_\_\_\_  
 Relinquished by: (signature) \_\_\_\_\_ Date / Time \_\_\_\_\_  
 Received by: (signature) \_\_\_\_\_ Date / Time \_\_\_\_\_  
 Relinquished by: (signature) \_\_\_\_\_ Date / Time \_\_\_\_\_  
 Received by: (signature) \_\_\_\_\_ Date / Time \_\_\_\_\_

Total # of containers: \_\_\_\_\_  
 Chain of Custody seals V  N/A  
 Seals intact? V  N/A  
 Received good condition/cold:  9.8  
 Turn around time: \_\_\_\_\_

Notes  
 Analyze 1-3 individually  
 Use sample 4 to  
 complete TSP weight.

Sample disposal instructions: Disposal @ \$2.00 each \_\_\_\_\_ Return to client \_\_\_\_\_ Pickup \_\_\_\_\_

## SAMPLE RECEIVING REVIEW SHEET

Batch/Work Order #: T220114

Client Name: Hanwha Q Cells Project: Solar Pane Q. Peak

Delivered by:  Client  SunStar Courier  GLS  FedEx  UPS

If Courier, Received by: \_\_\_\_\_ Date/Time Courier Received: \_\_\_\_\_

Lab Received by: Jean Date/Time Lab Received: 1-17-22 1408

Total number of coolers received: \_\_\_\_\_ Thermometer ID: SC-1 Calibration due :8/24/22

Temperature: Cooler #1	°C +/- the CF (+0.1 °C) =	°C corrected temperature
Temperature: Cooler #2	°C +/- the CF (+0.1 °C) =	°C corrected temperature
Temperature: Cooler #3	°C +/- the CF (+0.1 °C) =	°C corrected temperature
<b>Temperature criteria = ≤ 6°C (no frozen containers)</b>		Within criteria? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
<b>IF NO:</b>		
Samples received on ice?	<input type="checkbox"/> Yes	<input type="checkbox"/> No → <b>Complete Non-Conformance Sheet</b>
If on ice, samples received same day collected?	<input type="checkbox"/> Yes → Acceptable	<input type="checkbox"/> No → <b>Complete Non-Conformance Sheet</b>

- Custody seals intact on cooler/sample  Yes  No\*  N/A
- Sample containers intact  Yes  No\*
- Sample labels match Chain of Custody IDs  Yes  No\*
- Total number of containers received match COC  Yes  No\*
- Proper containers received for analyses requested on COC  Yes  No\*
- Proper preservative indicated on COC/containers for analyses requested  Yes  No\*  N/A
- Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times  Yes  No\*

\* Complete Non-Conformance Receiving Sheet if checked Cooler/Sample Review - Initials and date: DB 1-17-22

**Comments:**  
\_\_\_\_\_  
\_\_\_\_\_

**WORK ORDER**

**T220114**

**Client:** Hanwha Q CELLS **Project Manager:** Joann Marroquin  
**Project:** Solar Pane Q-Peak DUO XL-G10-3/BFG **Project Number:** -

**Report To:**

Hanwha Q CELLS  
 Ralph Alvarado  
 400 Spectrum Center Drive, Ste 1400  
 Irvine, CA 92618

Date Due: 01/24/22 17:00 (5 day TAT)  
 Received By: Joann Marroquin Date Received: 01/17/22 14:08  
 Logged In By: Joann Marroquin Date Logged In: 01/17/22 14:19

Samples Received at:  
 Custody Seals No Received On Ice No  
 Containers Intact Yes  
 COC/Labels Agree Yes  
 Preservation Confirmed No

Analysis	Due	TAT	Expires	Comments
<b>T220114-01 Sample 1 [Soil] Sampled 01/17/22 00:00 (GMT-08:00) Pacific Time (US &amp;</b>				
TCLP Leaching Procedure Metals	01/24/22 15:00	5	07/16/22 00:00	Use Sample 04 to complete the 100g weight requirement for samples 01-03
TCLP RCRA 8	01/24/22 15:00	5	07/16/22 00:00	Use Sample 04 to complete the 100g weight requirement for samples 01-03
<b>T220114-02 Sample 2 [Soil] Sampled 01/17/22 00:00 (GMT-08:00) Pacific Time (US &amp;</b>				
TCLP Leaching Procedure Metals	01/24/22 15:00	5	07/16/22 00:00	Use Sample 04 to complete the 100g weight requirement for samples 01-03
TCLP RCRA 8	01/24/22 15:00	5	07/16/22 00:00	Use Sample 04 to complete the 100g weight requirement for samples 01-03
<b>T220114-03 Sample 3 [Soil] Sampled 01/17/22 00:00 (GMT-08:00) Pacific Time (US &amp;</b>				
TCLP Leaching Procedure Metals	01/24/22 15:00	5	07/16/22 00:00	Use Sample 04 to complete the 100g weight requirement for samples 01-03
TCLP RCRA 8	01/24/22 15:00	5	07/16/22 00:00	Use Sample 04 to complete the 100g weight requirement for samples 01-03
<b>T220114-04 Sample 4 [Soil] Sampled 01/17/22 00:00 (GMT-08:00) Pacific Time (US &amp;</b>				
[NO ANALYSES]				<b>Use this sample to complete the 100g weight requirement for samples 01-03</b>

Reviewed By \_\_\_\_\_

Date \_\_\_\_\_

**WORK ORDER**

**T220114**

**Client: Hanwha Q CELLS**

**Project Manager: Joann Marroquin**

**Project: Solar Pane Q-Peak DUO XL-G10-3/BFG**

**Project Number: -**

**Analysis groups included in this work order**

TCLP RCRA 8

sub TCLP RCRA 8

sub TCLP Hg CV



# Excelchem Laboratories, Inc.

A Silver State Analytical Company

## TCLP

### Toxicity Characteristic Leaching Procedure Regulatory Levels

Metals	TCLP Reg Level	units
Arsenic	5.0	mg/L
Barium	100.0	mg/L
Cadmium	1.0	mg/L
Chromium	5.0	mg/L
Lead	5.0	mg/L
Mercury	0.2	mg/L
Selenium	1.0	mg/L
Silver	5.0	mg/L

Volatile Organics	TCLP Reg Level	units
Benzene	0.5	mg/L
Carbon Tetrachloride	0.5	mg/L
Chlorobenzene	100.0	mg/L
Chloroform	6.0	mg/L
1,4-Dichlorobenzene	7.5	mg/L
1,2-Dichloroethane	0.5	mg/L
1,1-Dichloroethylene	0.7	mg/L
Methyl Ethyl Ketone	200.0	mg/L
tetrachloroethylene	0.7	mg/L
Trichloroethylene	0.5	mg/L
Vinyl Chloride	0.2	mg/L

Semi-Volatile Organics	TCLP Reg Level	units
o-Creosol*	200.0	mg/L
m-Creosol*	200.0	mg/L
p-Creosol*	200.0	mg/L
Creosol*	200.0	mg/L
2,4-Dinitrotoluene**	0.1	mg/L
Hexachlorobenzene**	0.1	mg/L
Hexachlorobutadiene	0.5	mg/L
Hexachloroethane	3.0	mg/L
Nitrobenzene	2.0	mg/L
Petachlorophenol	100.0	mg/L
Pyridine**	5.0	mg/L
2,4,5-Trichlorophenol	400.0	mg/L
2,4,6-Trichlorophenol	2.0	mg/L

\* If o-, m-, and p-Creosol cannot be differentiated, total Creosol can be used.

\*\* Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.



Excelchem Laboratories, Inc.  
A Silver State Analytical Company

## TCLP

### Toxicity Characteristic Leaching Procedure Regulatory Levels

<b>Organochlorine Pesticides</b>	TCLP Reg Level	units
Chlordane	0.03	mg/L
Endrin	0.02	mg/L
Heptachlor (and Heptachlor Epoxide)	0.008	mg/L
Lindane (gamma-BHC)	0.40	mg/L
Methoxychlor	10.0	mg/L
Toxaphene	0.50	mg/L

<b>Chlorophenoxy Acid Herbicides</b>	TCLP Reg Level	units
2,4-D	10.0	mg/L
2,4,5-TP (Silvex)	1.0	mg/L