



中国认可  
国际互认  
检测  
TESTING  
CNAS L13445

# TEST REPORT

**Applicant** : JA Solar Technology Co., Ltd.  
**Address** : No.123 Xinxing Road, 055550 Ningjin County, Hebei Province, P.R. China

**Report on the submitted samples said to be:**

**Sample Name(s)** : Mono crystalline silicon photovoltaic (PV) modules  
**Trade Mark** : JA SOLAR  
**Tested Model No.** : JAM66D50-670/GB  
**Model List<sup>##</sup>** : JAM54D40-xxx/LR,JAM54D41-xxx/LR,JAM66D50-xxx/GB  
**Sample Received Date** : September 12, 2025  
**Testing Period** : September 12, 2025 ~ September 18, 2025  
**Date of Report** : September 25, 2025  
**Testing Location** : Room 101-106/202-206, Building 037, No.166, Jinghua Road, Meixu Street, Ningbo High-tech Zone, Yinzhou District, Ningbo, Zhejiang, China  
**Results** : Please refer to next page(s).

TEST REQUEST	CONCLUSION
As specified by client, based on the performed tests on submitted sample, the result of Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), PBBs, PBDEs, Dibutyl Phthalate(DBP), Butylbenzyl Phthalate(BBP), Di-2-ethylhexyl Phthalate(DEHP) and Diisobutyl phthalate(DIBP) content comply with the limits set by RoHS Directive 2011/65/EU with amendment (EU) 2015/863.	<b>See the result</b>

<sup>##</sup> =According to client's declaration, tested material would be produced as relevant product(s).

Signed for and on behalf of LCS

*Miranda Mo*

Miranda Mo /Laboratory Manager



**A1. EU RoHS Directive 2011/65/EU and its amendment directives**

Test method: Refer to IEC 62321-3-1:2013, Screening by X-ray Fluorescence Spectroscopy (XRF).

Test result(s):

Sample No.	Sample Description	Screening Result(s)						Date of sample submission/ Resubmission
		Cd	Pb	Hg	Cr <sup>▼</sup>	Br <sup>▼</sup>		
						PBBs	PBDEs	
1	Silver metal	BL	BL	BL	BL	/	/	2025-09-12
2	Transparent glass	BL	BL	BL	BL	BL	BL	2025-09-12
3	Beige plastic	BL	BL	BL	BL	BL	BL	2025-09-12
4	White glue	BL	BL	BL	BL	BL	BL	2025-09-12
5	Black plastic	BL	BL	BL	BL	BL	BL	2025-09-12
6	Silver metal	X	X	BL	BL	/	/	2025-09-12
7	Black plastic	BL	BL	BL	BL	BL	BL	2025-09-12
8	White glue	BL	BL	BL	BL	BL	BL	2025-09-12
9	Brown plastic	BL	BL	BL	BL	BL	BL	2025-09-12
10	Black plastic	BL	BL	BL	BL	BL	BL	2025-09-12
11	Black thread leather	BL	BL	BL	BL	BL	BL	2025-09-12
12	Silver metal wire	BL	BL	BL	BL	/	/	2025-09-12
13	White sticker	BL	BL	BL	BL	BL	BL	2025-09-12
14	Red soft plastic	BL	BL	BL	BL	BL	BL	2025-09-12
15	Silver metal	OL	BL	BL	BL	/	/	2025-09-12
16	Black plastic	BL	BL	BL	BL	BL	BL	2025-09-12
17	Black coated silver metal	X	X	BL	BL	/	/	2025-09-12
18	Solar panel	BL	BL	BL	BL	BL	BL	2025-09-12
19	Transparent tape	BL	BL	BL	BL	BL	BL	2025-09-12
20	Black sticker	BL	BL	BL	BL	BL	BL	2025-09-12
21	White sticker	BL	BL	BL	BL	BL	BL	2025-09-12
22	Ferrous metal	BL	BL	BL	BL	/	/	2025-09-12
23	Silver metal	X	X	BL	BL	/	/	2025-09-12
24	Silver metal	BL	BL	BL	BL	/	/	2025-09-12
25	Black soft plastic	BL	BL	BL	BL	BL	BL	2025-09-12
26	Black plastic	BL	BL	BL	BL	BL	BL	2025-09-12
27	Grey soft plastic	BL	BL	BL	BL	BL	BL	2025-09-12
28	Black plastic	BL	BL	BL	BL	BL	BL	2025-09-12
29	Red soft plastic	BL	BL	BL	BL	BL	BL	2025-09-12
30	Silver metal	X	BL	BL	BL	/	/	2025-09-12
31	White soft plastic	BL	BL	BL	BL	BL	BL	2025-09-12
32	Black soft plastic	BL	BL	BL	BL	BL	BL	2025-09-12



Ningbo Xuntong Standard Technology Service Co., Ltd.

Add: Room 101-106/202-206, Building 037, No.166, Jinghua Road, Meixu Street, Ningbo

High-tech Zone, Yinzhou District, Ningbo, Zhejiang, China

Tel: +(86) 0574-8790 8011 | E-mail: webmaster@lcs-cert.com | http:// www.lcs-cert.com

Scan code to check authenticity

## Note:

- Results were obtained by XRF for primary screening, and further chemical testing by ICP(for Cd, Pb, Hg), UV-Vis(for Cr(VI)) and GC-MS(for PBBs, PBDEs) are recommended to be performed, if the concentration exceeds the below warning value according to IEC 62321-3-1:2013(Unit: mg/kg).

Element	Polymers	Metals	Composite material
Cd	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$LOD < X < (150+3\sigma) \leq OL$
Pb	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Hg	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Cr	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$
Br	$BL \leq (300-3\sigma) < X$	N/A	$BL \leq (250-3\sigma) < X$

## Remark:

- BL= Below Limit
  - OL= Over Limit
  - X= The range of needing to do further testing
  - $3\sigma$ = The reproducibility of analytical instruments
  - N/A= Not applicable
  - LOD= Detection limit
- The XRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.
  - The maximum permissible limit is quoted from the document RoHS Directive 2011/65/EU with amendment (EU) 2015/863.
  - ▼=For restricted substances PBBs and PBDEs, the results show the total Br content, the restricted substance was Cr(VI), and the results showed the total Cr content.



RoHS Restricted Substances	Maximum Concentration Value (mg/kg) (by weight in homogenous materials)
Cadmium(Cd)	100
Lead(Pb)	1000
Mercury(Hg)	1000
Hexavalent Chromium(Cr(VI))	1000
Polybrominated biphenyls(PBBs)	1000
Polybrominated diphenylethers(PBDEs)	1000
Dibutyl Phthalate(DBP)	1000
Butylbenzyl Phthalate(BBP)	1000
Di-(2-ethylhexyl) Phthalate(DEHP)	1000
Diisobutyl phthalate(DIBP)	1000

**Disclaimers:**

This XRF Screening report is for reference purposes only. The applicant shall make its/his/her own judgment as to whether the information provided in this XRF screening report is sufficient for its/his/her purposes. The result shown in this XRF screening report will differ based on various factors, including but not limited to, the sample size, thickness, area, surface flatness, equipment parameters and matrix effect (e.g. plastic, rubber, metal, glass, ceramic etc.). Further wet chemical pre-treatment with relevant chemical equipment analysis are required to obtain quantitative data.



Ningbo Xuntong Standard Technology Service Co., Ltd.

Add: Room 101-106/202-206, Building 037, No.166, Jinghua Road, Meixu Street, Ningbo  
High-tech Zone, Yinzhou District, Ningbo, Zhejiang, China

Tel: +(86) 0574-8790 8011 | E-mail: [webmaster@lcs-cert.com](mailto:webmaster@lcs-cert.com) | [http:// www.lcs-cert.com](http://www.lcs-cert.com)

Scan code to check authenticity

## A2.EU RoHS Directive 2011/65/EU with amendment (EU) 2015/863 on Lead(Pb), Cadmium(Cd), Mercury(Hg) content

Test method:

Lead(Pb) & Cadmium(Cd) Content:

Refer to IEC 62321-5:2013, by acid digestion and analysis was performed by inductively coupled plasma optical emission spectrometer (ICP-OES) or atomic absorption spectrometer (AAS).

Mercury(Hg) Content:

Refer to IEC 62321-4:2013+AMD1:2017 CSV, by acid digestion and analysis was performed by inductively coupled plasma optical emission spectrometer (ICP-OES).

Test result(s):

### 1) Lead(Pb) & Cadmium(Cd)

Tested Item	MDL (mg/kg)	Test Result(s) (mg/kg)				
		6	15	17	23	30
Lead(Pb) Content	5	28	46	26495	23354	47

Tested Item	MDL (mg/kg)	Test Result(s) (mg/kg)				
		6	15	17	23	30
Cadmium(Cd) Content	5	N.D.	N.D.	N.D.	N.D.	N.D.

### 2) Mercury(Hg)

Tested Item	MDL (mg/kg)	Test Result(s) (mg/kg)				
		6	15	17	23	30
Mercury(Hg) Content	5	N.D.	N.D.	N.D.	N.D.	N.D.



Ningbo Xuntong Standard Technology Service Co., Ltd.

Add: Room 101-106/202-206, Building 037, No.166, Jinghua Road, Meixu Street, Ningbo  
High-tech Zone, Yinzhou District, Ningbo, Zhejiang, China

Tel: +(86) 0574-8790 8011 | E-mail: webmaster@lcs-cert.com | http:// www.lcs-cert.com

Scan code to check authenticity

**B.EU RoHS Directive 2011/65/EU with amendment (EU) 2015/863 on DBP, BBP, DEHP & DIBP content**

Phthalates(DBP, BBP, DEHP &amp;DIBP) Content:

Refer to IEC 62321-8:2017, by solvent extraction and analysis was performed by gas chromatography-mass spectrometer (GC-MS).

Test result(s):

**1) Phthalates(DBP, BBP, DEHP &DIBP)**

Tested Item(s)	MDL (mg/kg)	Test Result(s) (mg/kg)			
		2+3+5			
Dibutyl Phthalate(DBP) Content	50	N.D.			
Butylbenzyl Phthalate(BBP) Content	50	N.D.			
Di-(2-ethylhexyl) Phthalate(DEHP) Content	50	N.D.			
Diisobutyl phthalate(DIBP) Content	50	N.D.			

Tested Item(s)	MDL (mg/kg)	Test Result(s) (mg/kg)			
		7+9+10			
Dibutyl Phthalate(DBP) Content	50	N.D.			
Butylbenzyl Phthalate(BBP) Content	50	N.D.			
Di-(2-ethylhexyl) Phthalate(DEHP) Content	50	N.D.			
Diisobutyl phthalate(DIBP) Content	50	N.D.			

Tested Item(s)	MDL (mg/kg)	Test Result(s) (mg/kg)			
		14	16	11	18
Dibutyl Phthalate(DBP) Content	50	N.D.	N.D.	N.D.	N.D.
Butylbenzyl Phthalate(BBP) Content	50	N.D.	N.D.	N.D.	N.D.
Di-(2-ethylhexyl) Phthalate(DEHP) Content	50	N.D.	N.D.	N.D.	N.D.
Diisobutyl phthalate(DIBP) Content	50	N.D.	N.D.	N.D.	N.D.



Tested Item(s)	MDL (mg/kg)	Test Result(s) (mg/kg)
		13+20+21
Dibutyl Phthalate(DBP) Content	50	N.D.
Butylbenzyl Phthalate(BBP) Content	50	N.D.
Di-(2-ethylhexyl) Phthalate(DEHP) Content	50	N.D.
Diisobutyl phthalate(DIBP) Content	50	N.D.

Tested Item(s)	MDL (mg/kg)	Test Result(s) (mg/kg)
		4+8
Dibutyl Phthalate(DBP) Content	50	N.D.
Butylbenzyl Phthalate(BBP) Content	50	N.D.
Di-(2-ethylhexyl) Phthalate(DEHP) Content	50	N.D.
Diisobutyl phthalate(DIBP) Content	50	N.D.

Tested Item(s)	MDL (mg/kg)	Test Result(s) (mg/kg)
		19
Dibutyl Phthalate(DBP) Content	50	N.D.
Butylbenzyl Phthalate(BBP) Content	50	N.D.
Di-(2-ethylhexyl) Phthalate(DEHP) Content	50	N.D.
Diisobutyl phthalate(DIBP) Content	50	N.D.



## Note:

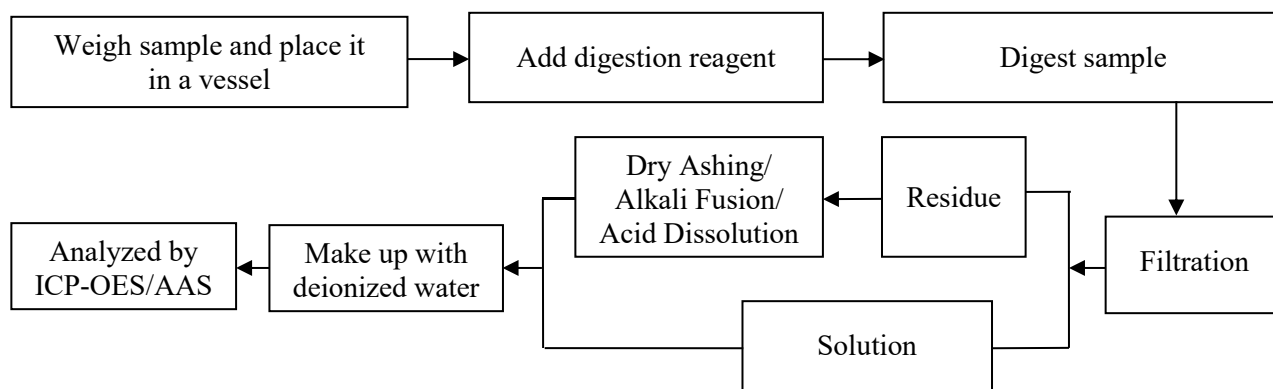
- MDL = Method Detection Limit
- N.D. = Not Detected (<MDL)
- mg/kg= milligram per kilogram=ppm
- According to customer's requirement, only the appointed materials have been tested.



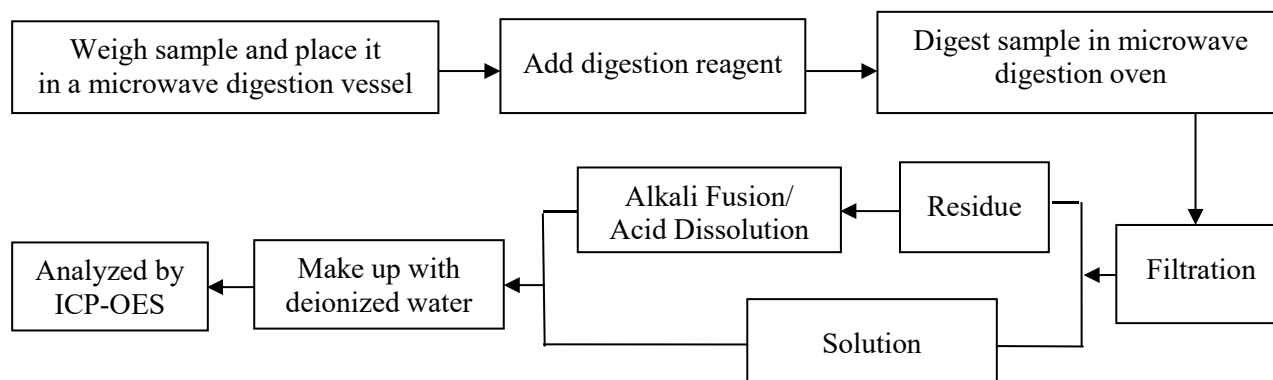
## Test Process

### A

#### 1. Lead(Pb) & Cadmium(Cd): IEC 62321-5:2013

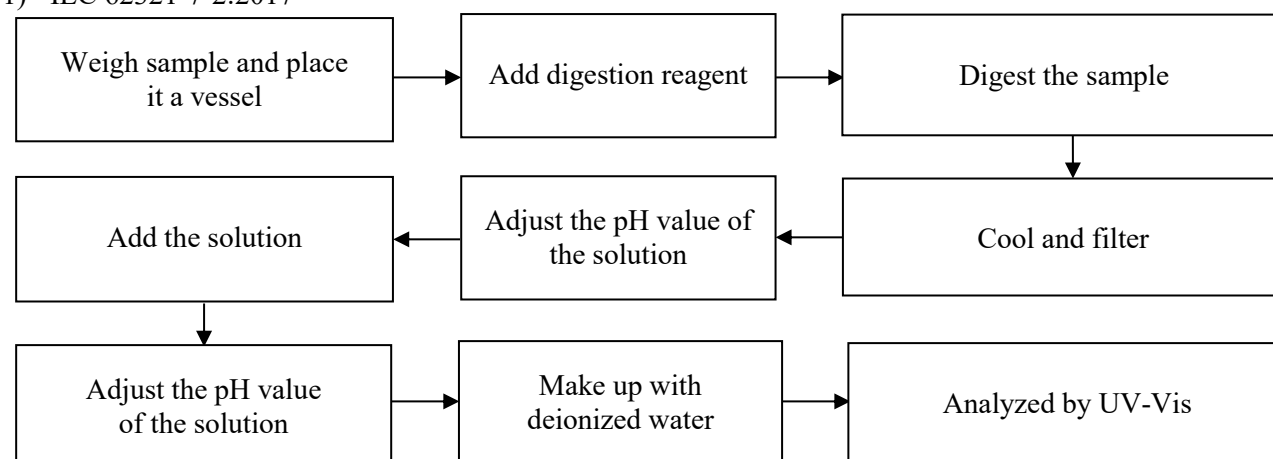


#### 2. Mercury(Hg): IEC 62321-4:2013+AMD1:2017 CSV

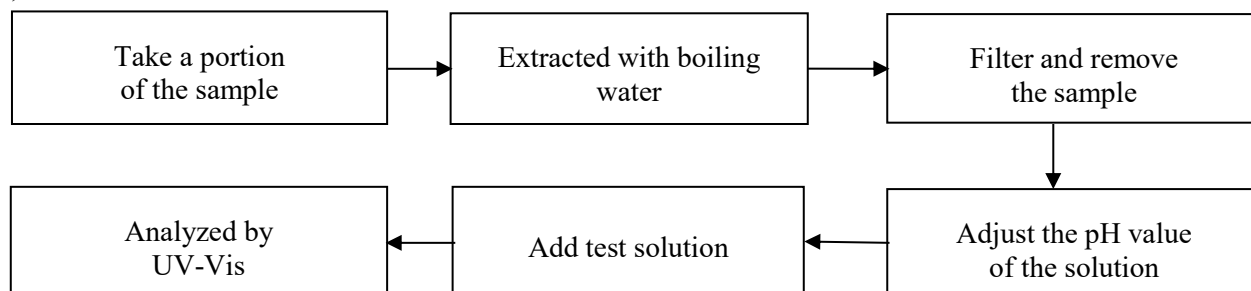


#### 3. Hexavalent Chromium(Cr(VI))

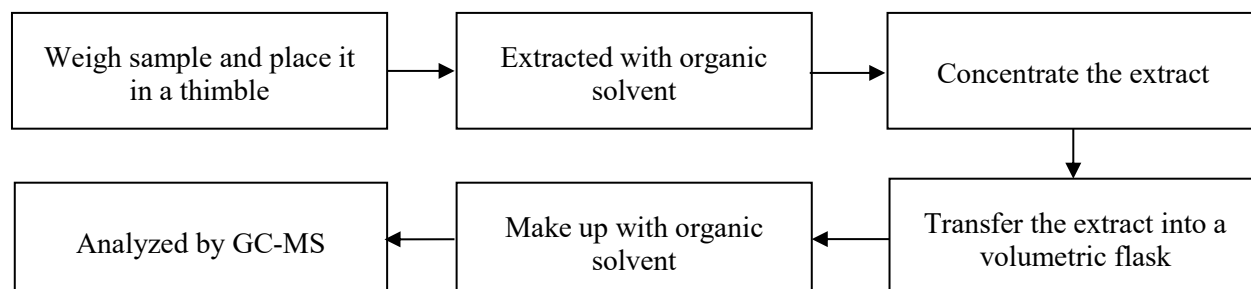
##### 1) IEC 62321-7-2:2017



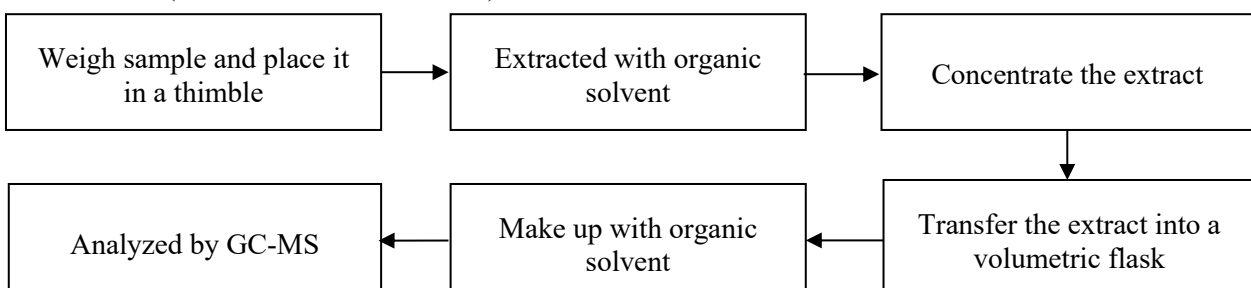
## 2) IEC 62321-7-1:2015



## 4. Polybrominated Biphenyls(PBBs) &amp; Polybrominated Diphenyl Ethers(PBDEs) : IEC 62321-6:2015

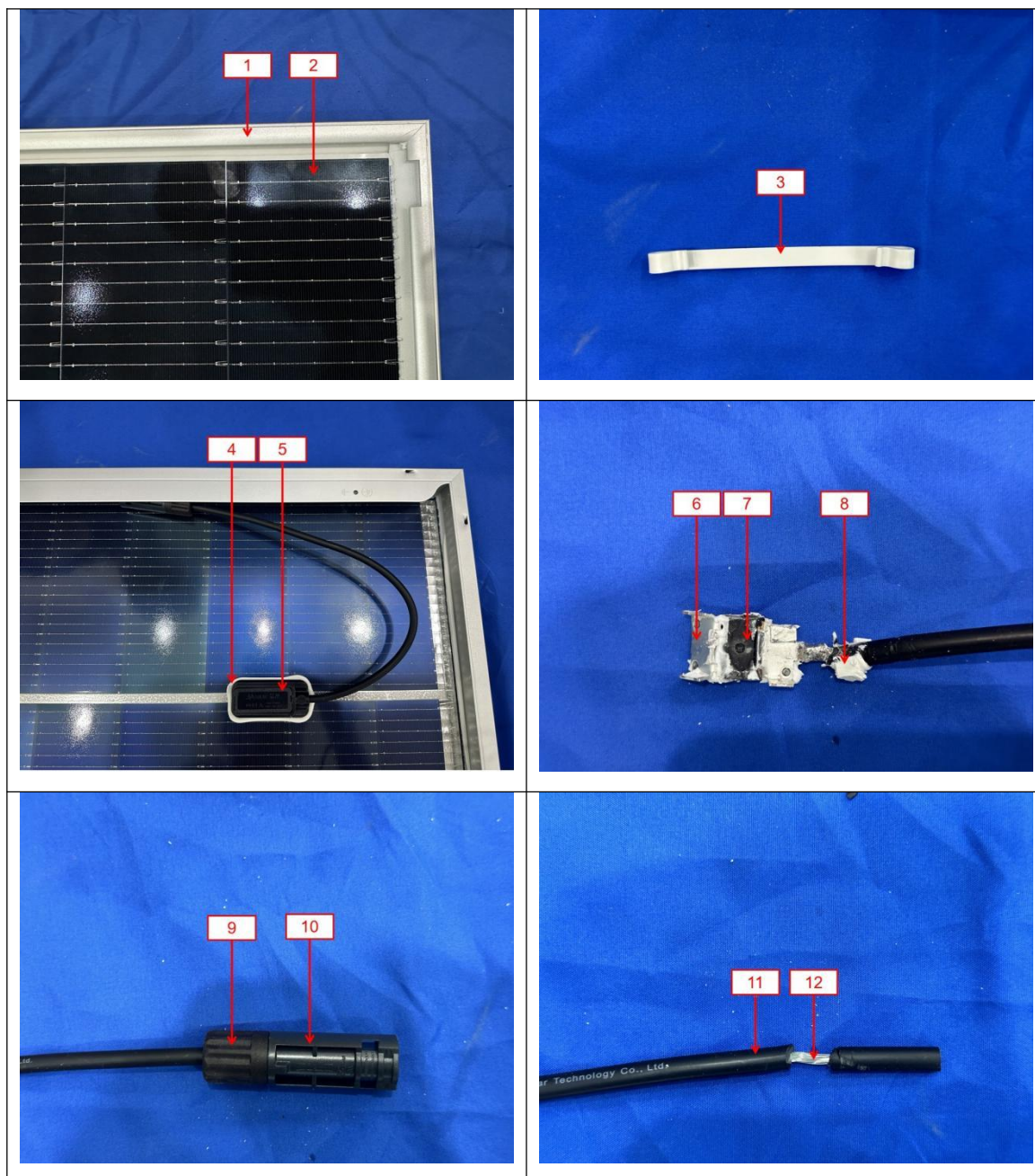
**B**

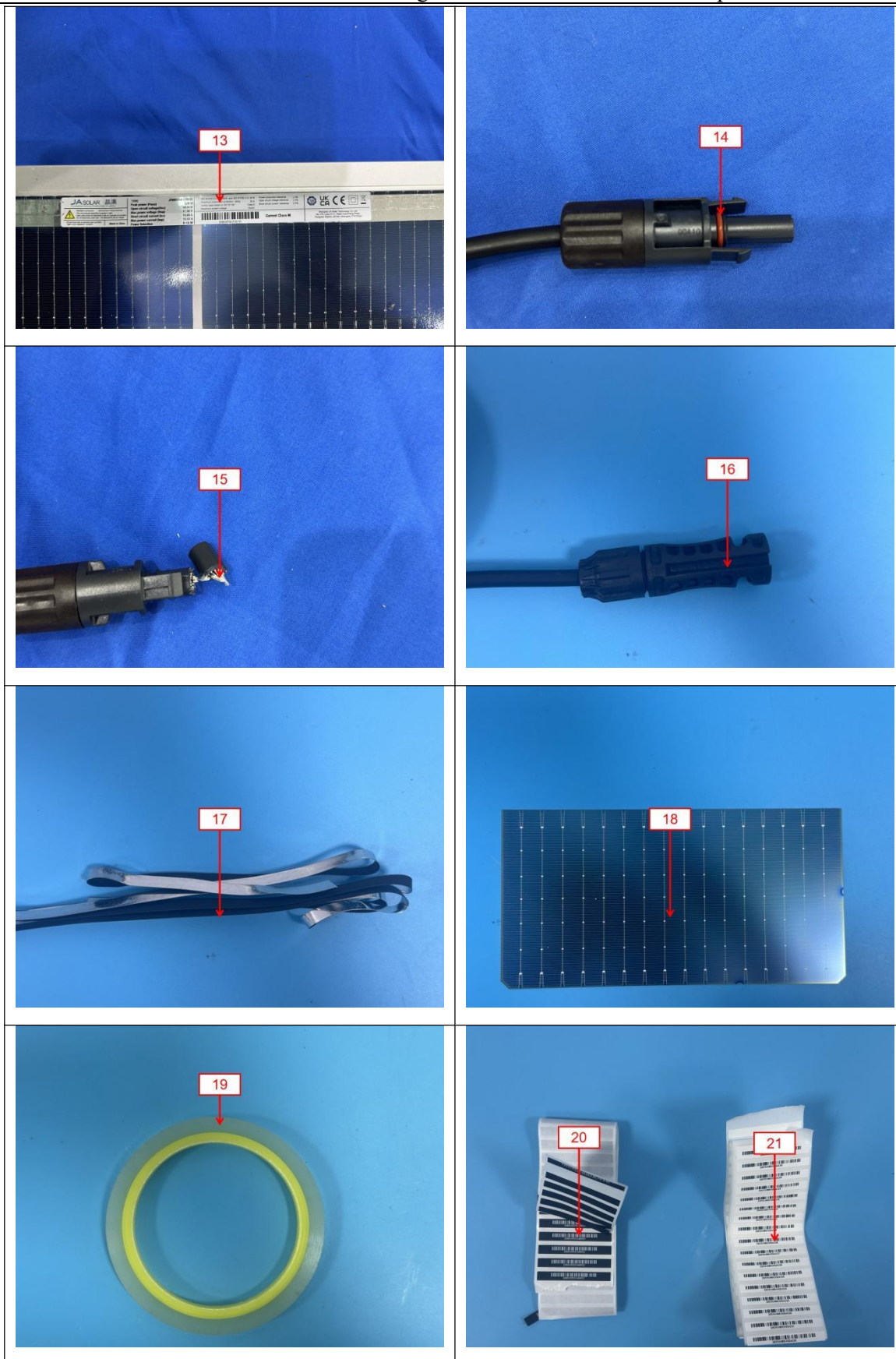
## 5. Phthalates(DBP, BBP, DEHP &amp; DIBP) : IEC 62321-8:2017

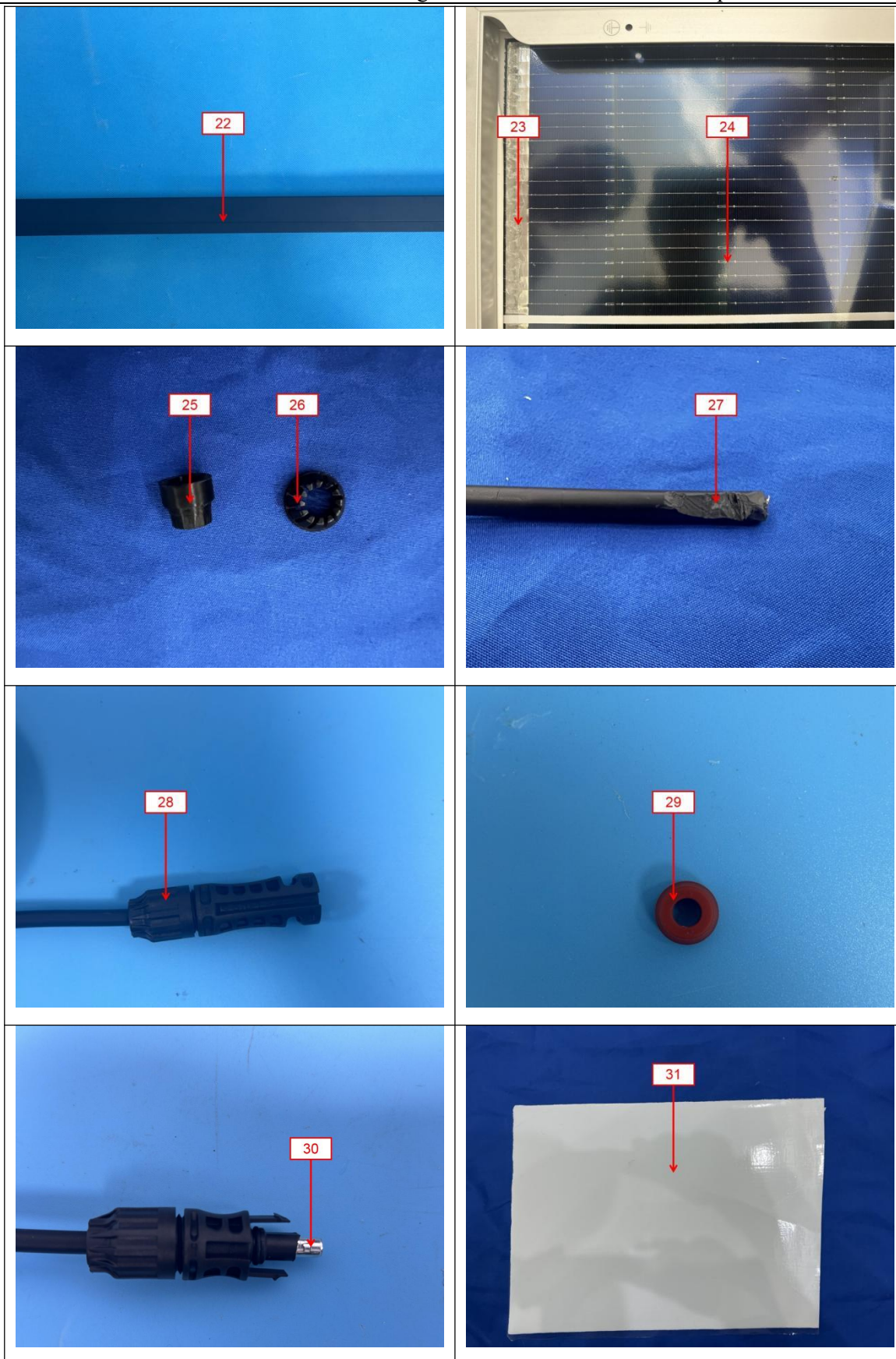


### The photo(s) of the sample











**Statement:**

1. The test report is invalid without the signature of the approver and the special seal for the company's report;
2. The company name, address and sample information shown on the report were provided by the applicant who should be responsible for the authenticity which are not verified by LCS;
3. The test results in this report are only responsible for the tested samples;
4. Without written approval of LCS, this report can't be reproduced except in full;
5. In case of any discrepancy between the corresponding Chinese and English contents in the test report, the Chinese version shall prevail.

\*\*\* End of Report \*\*\*

