

# Test Report

REPORT No.: SHE19-52585/1

CUSTOMER: Shandong Pengbai Environmental Protection Equipment Co., Ltd.      SAMPLE (S): Flue Gas(3)

ADDRESS: Dawang Town, Guangrao County, Dongying City, Shandong Province      DATE REPORTED: 2019/10/30

PROJECT: -

## REMARKS

- 1.The results apply to the sample(s) as sampled.
- 2.The report is translated from SHE19-52585.

Edited by: 赵亚雄  
赵亚雄

Reviewed by: 任代卫  
任代卫

Approved by: 沈咏洁  
沈咏洁

CNAS&CMA Authorized Signatory



## 声明 Statement

1. 检测报告无本实验室检验检测专用章无效。

The test report is invalid without the official seal of the laboratory.

2. 未经本公司书面许可，不得复制（全文复制除外）检测报告。

This test report cannot be reproduced in any way, except in full content, without prior approval in writing by the laboratory.

3. 检测报告无编制、审核、批准人签字无效。

The test report is invalid without the signature of the compiler, the checker and the approver

4. 检测报告涂改无效。

The test report is invalid if altered.

5. 本检测报告以中文为准，英文文本（如有）仅为译文，两者发生冲突时，应以中文文本为准。

The test report has been drafted in Chinese and translated into English (if applicable) for convenience only. In the event of discrepancy, the Chinese version shall prevail.

### 符号表/Legend

NA 样品未测试该参数/The sample was not analysed for this analyte

↑ 提高检出限/Detection limit raised

↓ 降低检出限/Detection limit lowered

ND 未检出/Not Detected



## List of test method

Sample No.	Martrix	Parameter	Method
SHE19-52585-01~03	Flue Gas	the flue gas parameters	GB/T 16157-1996
SHE19-52585-01~03	Flue Gas	Dioxins	Refer to HJ 77.2-2008

## List of test equipment

No.	Equipment	Factory number	Equipment model
1	Flue Gas Analyzer	17041013	SX751
2	Flue Gas Sampling Pump	X1A005B6	AutoISOKINET I CAMPLER-APIS
3	HRGC/HRMS	P882	AutoSpec Premier



## Sampling procedure for dioxins Refer to HJ 77.2-2008(FLUS GAS)

Sampling procedure for dioxins HJ 77.2-2008 (flue gas)

Item	Step	Content
1	Prepare equipment	Prepare equipment, filters and sorbent resin.
2	Pre-sampling	Select the sampling site and the minimum number of sampling points according to GB/T 16157 Determine the stack pressure, temperature, the range of velocity heads and moisture content Select a nozzle sized based on the range of velocity heads Select a suitable probe liner
3	Sampling Train preparation	Clean and set up the train
4	Sampling and leak Check Procedure	Spike Pretest Leak-Check Add the sampling Isotope standard During the sampling run, maintain an isokinetic sampling rate and a temperature around the probe and the filter of 105~125℃
5	Sample Recovery	Seal the nozzle end of the sampling probe with Teflon tape or aluminum foil Carefully remove the filter from the filter holder and transfer to the container any particulate matter and filter fibers which adhere to the filter holder gasket, seal the container Remove the adsorbent module from the train, tightly cap both ends, label it, and cover with aluminum foil Quantitatively recover material deposited in the nozzle, probe transfer lines, and the front half of the filter holder, by brushing while rinsing 3 times with acetone-toluene-acetone then collect all the rinses in container Note the color of the indicating silica gel and make a notation of its condition
6	Analysis	Sending to SGS SH Lab for analysis.





## Test procedure for dioxins Refer to HJ 77.2-2008(FIUE GAS)

Test procedure for dioxins HJ 77.2-2008 (flue gas)

Item	Step	Content
1	Take sample	Add the extraction Isotope standard
2	Extraction	Dry XAD-2 resin Filter the lotion, dry the filter Acidate, clean and dry the filter Combine the lotion and condensate, then extract it by liquid-liquid extraction mode Extract filter, XAD-2 resin and QFF by soxhlet extraction Combine all extractant, then convert the solvent
3	Cleanup	Add the cleanup Isotope standard Clean up with sulfuric acid Clean up with composite adsorption column Collect purified sample
4	HRGC-HRMS analysis	Concentrate sample Add the injection Isotope standard Analysis by HRGC-HRMS
5	Report	Mass spectrogram analysis Data analysis Issue report



DIOXIN ANALYSIS(FLUE GAS)				
Sample No.		SHE19-52585-01	SHE19-52585-02	SHE19-52585-03
Sampling Date		2019/10/18	2019/10/18	2019/10/18
Sampling Time		12:39-14:39	15:18-17:18	17:33-19:33
Address		Duzhuang Industrial Park, Mengyin County, Linyi City		
Sampling point		The Detector of flue gas purification equipment	The Detector of flue gas purification equipment	The Detector of flue gas purification equipment
Test Date		2019/10/29	2019/10/29	2019/10/29
ITEM	UNIT	FLUE GAS	FLUE GAS	FLUE GAS
Actual Pressure	kPa	100.7	100.7	100.8
Gas meter Temp.	°C	24.1	24.1	20.2
Stack gas velocity	m/s	7.4	8.9	8.8
Moist Actual Flow Rate	×10 <sup>3</sup> m <sup>3</sup> /h	5.24	6.25	6.22
Dry Standard Flow Rate	×10 <sup>3</sup> Nm <sup>3</sup> /h	5.14	6.14	6.12
Humidity	%	1.9	1.7	1.7
Sec.ar.	m <sup>2</sup>	0.20	0.20	0.20
Exhaust Height	m	15	15	15
Dry Std cond.volume	Nm <sup>3</sup>	1.5	1.8	1.7
Dioxin	ng I-TEQ	0.029	0.0023	0.0027
Dioxin (Actual conc.)	ng I-TEQ /Nm <sup>3</sup>	<b>0.020</b>	<b>0.0013</b>	<b>0.0016</b>



DIOXIN ANALYSIS(FLUE GAS)								
Sample No.	SHE19-52585-01				SHE19-52585-02			
Sampling Date	2019/10/18				2019/10/18			
Sampling Time	12:39-14:39				15:18-17:18			
Sampling point	The Detector of flue gas purification equipment				The Detector of flue gas purification equipment			
Test Date	2019/10/29				2019/10/29			
ITEM	MDL (ng)	Concentration (ng)	I-TEF <sup>1)</sup>	I-TEQ <sup>2)</sup> (ng)	MDL (ng)	Concentration (ng)	I-TEF <sup>1)</sup>	I-TEQ <sup>2)</sup> (ng)
<b>PCDDs &amp; PCDFs</b>								
2,3,7,8-TCDF	0.003	<b>0.0049</b>	0.1	0.00049	0.002	< 0.0020	0.1	0.00010
1,2,3,7,8-PeCDF	0.003	<b>0.012</b>	0.05	0.00060	0.001	< 0.0014	0.05	0.000035
2,3,4,7,8-PeCDF	0.003	<b>0.015</b>	0.5	0.0073	0.001	< 0.0014	0.5	0.00034
1,2,3,4,7,8-HxCDF	0.001	<b>0.022</b>	0.1	0.0022	0.001	< 0.0014	0.1	0.000070
1,2,3,6,7,8-HxCDF	0.001	<b>0.025</b>	0.1	0.0025	0.001	<b>0.0017</b>	0.1	0.00017
2,3,4,6,7,8-HxCDF	0.001	<b>0.016</b>	0.1	0.0016	0.001	< 0.0014	0.1	0.000071
1,2,3,7,8,9-HxCDF	0.002	< 0.0016	0.1	0.000079	0.002	< 0.0016	0.1	0.000080
1,2,3,4,6,7,8-HpCDF	0.0009	<b>0.075</b>	0.01	0.00075	0.0006	<b>0.0032</b>	0.01	0.000032
1,2,3,4,7,8,9-HpCDF	0.001	<b>0.010</b>	0.01	0.00010	0.0007	< 0.00069	0.01	0.0000035
OCDF	0.002	<b>0.029</b>	0.001	0.000029	0.001	<b>0.0093</b>	0.001	0.0000090
2,3,7,8-TCDD	0.002	<b>0.0044</b>	1	0.0044	0.002	< 0.0016	1	0.00082
1,2,3,7,8-PeCDD	0.002	<b>0.012</b>	0.5	0.0059	0.001	< 0.0014	0.5	0.00035
1,2,3,4,7,8-HxCDD	0.001	<b>0.0080</b>	0.1	0.00080	0.001	< 0.0012	0.1	0.000059
1,2,3,6,7,8-HxCDD	0.001	<b>0.0093</b>	0.1	0.00093	0.001	< 0.0012	0.1	0.000059
1,2,3,7,8,9-HxCDD	0.001	<b>0.011</b>	0.1	0.0011	0.001	< 0.0012	0.1	0.000059
1,2,3,4,6,7,8-HpCDD	0.002	<b>0.055</b>	0.01	0.00055	0.001	<b>0.0042</b>	0.01	0.000042
OCDD	0.002	<b>0.093</b>	0.001	0.000093	0.001	<b>0.031</b>	0.001	0.000031
<b>Total</b>				<b>0.029</b>				<b>0.0023</b>

Remark

- 1):I-TEF: Toxic Equivalency Factor
- 2):I-TEQ: the product of measured value and I-TEF of the compound

Toxic Equivalency Concentration I-TEQ:In case the measured value is lower than DL(the limit of detection), 1/2 DL value should be used to calculate I-TEQ.



DIOXIN ANALYSIS(FLUE GAS)				
Sample No.	SHE19-52585-03			
Sampling Date	2019/10/18			
Sampling Time	17:33-19:33			
Sampling point	The Detector of flue gas purification equipment			
Test Date	2019/10/29			
ITEM	MDL (ng)	Concentration (ng)	I-TEF <sup>1)</sup>	I-TEQ <sup>2)</sup> (ng)
<b>PCDDs &amp; PCDFs</b>				
2,3,7,8-TCDF	0.002	< 0.0022	0.1	0.00011
1,2,3,7,8-PeCDF	0.002	< 0.0016	0.05	0.000040
2,3,4,7,8-PeCDF	0.002	< 0.0016	0.5	0.00040
1,2,3,4,7,8-HxCDF	0.001	< 0.0013	0.1	0.000063
1,2,3,6,7,8-HxCDF	0.001	<b>0.0017</b>	0.1	0.00017
2,3,4,6,7,8-HxCDF	0.001	< 0.0013	0.1	0.000064
1,2,3,7,8,9-HxCDF	0.002	< 0.0015	0.1	0.000073
1,2,3,4,6,7,8-HpCDF	0.0006	<b>0.0048</b>	0.01	0.000048
1,2,3,4,7,8,9-HpCDF	0.0007	<b>0.00072</b>	0.01	0.000072
OCDF	0.002	<b>0.0069</b>	0.001	0.000069
2,3,7,8-TCDD	0.002	< 0.0019	1	0.00094
1,2,3,7,8-PeCDD	0.002	< 0.0019	0.5	0.00047
1,2,3,4,7,8-HxCDD	0.002	< 0.0015	0.1	0.000074
1,2,3,6,7,8-HxCDD	0.002	< 0.0015	0.1	0.000074
1,2,3,7,8,9-HxCDD	0.002	< 0.0015	0.1	0.000075
1,2,3,4,6,7,8-HpCDD	0.001	<b>0.0051</b>	0.01	0.000051
OCDD	0.001	<b>0.019</b>	0.001	0.000019
<b>Total</b>				<b>0.0027</b>

Remark

1):I-TEF: Toxic Equivalency Factor

2):I-TEQ: the product of measured value and I-TEF of the compound

Toxic Equivalency Concentration I-TEQ:In case the measured value is lower than DL(the limit of detection), 1/2 DL value should be used to calculate I-TEQ.





DIOXIN ANALYSIS (FLUE GAS)				
Sample No.	SHE19-52585-01	SHE19-52585-02	SHE19-52585-03	Requirement t of recovery control(%) <sup>3)</sup>
Sampling Date	2019/10/18	2019/10/18	2019/10/18	
Sampling Time	12:39-14:39	15:18-17:18	17:33-19:33	
Sampling point	The Detector of flue gas purification equipment	The Detector of flue gas purification equipment	The Detector of flue gas purification equipment	
Test Date	2019/10/29	2019/10/29	2019/10/29	
ITEM	FLUE GAS	FLUE GAS	FLUE GAS	
<b>Sampling Standards Rec(%)</b>				
<sup>37</sup> Cl-2,3,7,8-TCDD	83	85	86	70~130
<sup>13</sup> C-2,3,4,7,8-PeCDF	109	113	116	70~130
<sup>13</sup> C-1,2,3,4,7,8-HxCDF	106	106	106	70~130
<sup>13</sup> C-1,2,3,4,7,8,9-HpCDF	93	97	99	70~130
<sup>13</sup> C-1,2,3,4,7,8-HxCDD	106	106	104	70~130
<b>Extraction Standards Rec(%)</b>				
<sup>13</sup> C-2,3,7,8-TCDF	49	50	49	24~169
<sup>13</sup> C-1,2,3,7,8-PeCDF	61	61	59	24~185
<sup>13</sup> C-1,2,3,6,7,8-HxCDF	69	68	65	28~130
<sup>13</sup> C-1,2,3,4,6,7,8-HpCDF	70	75	77	28~143
<sup>13</sup> C-2,3,7,8-TCDD	70	68	69	25~164
<sup>13</sup> C-1,2,3,7,8-PeCDD	78	81	79	25~181
<sup>13</sup> C-1,2,3,6,7,8-HxCDD	81	81	79	28~130
<sup>13</sup> C-1,2,3,4,6,7,8-HpCDD	77	82	85	23~140
<sup>13</sup> C-OCDD	72	84	85	17~157
<b>Purify Standards Rec(%)</b>				
<sup>13</sup> C-1,2,3,7,8,9-HxCDF	73	75	69	28~130

Remark

3):The recovery is required as HJ77.2-2008.

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

