

Research Result

No.: SCTA-A20170418-006N

Page 1 of 4

Research Information

Research Client Xinxiang Huayin Renewable Energy Equipment Co., Ltd

Sample Information Syngas, four packages, gas

Research Content Analysis of Component analysis

Edit Date 2017.05.02

Remark The information above is provided and conformed by the research client

1. Research Result

No.	Compound Name	Content	CAS#	Remark
1	Carbondioxide, %	11.61	124-38-9	/
2	Oxygen, %	1.31	7782-44-7	/
3	Nitrogen, %	2.44	7727-37-9	/
4	Carbon Monoxide, %	1.08	630-08-0	/
5	Hydrogen, %	26.86	1333-74-0	/
6	Methane, %	26.45	74-82-8	/
7	Ethane, %	14.42	74-84-0	/
8	Ethylene, %	5.38	74-85-1	/
9	Ethyne, %	1.02	74-86-2	/
10	Propane, %	1.64	74-98-6	/
11	Propylene, %	2.24	115-07-1	/
12	Propyne, %	0.13	74-99-7	/

Annexe 1.1

Research Result

No.: SCTA-A20170418-006N

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No.	Compound Name	Content	CAS#	Remark
13	Butane, %	1.56	/	Contain isomer
14	Butylene, %	0.04	/	Contain isomer
15	1,3-Butadiene, %	3.54	106-99-0	/
16	Pentane, %	0.08	109-66-0	/
17	2-Methyl-1,3-Butadiene, %	0.06	78-79-5	/
18	Benzol, %	0.03	71-43-2	/
19	Styrene, %	0.01	100-42-5	/
20	Hydrogen Sulfide, %	0.02	7783-06-4	/
21	Nitrogen Oxide, %	0.01	/	/
22	Vapor, %	0.06	/	/
23	Dust, %	0.01	/	/
Remark	1.The above analysis results expressed in volume fraction. 2.The above analysis results can not be used directly as a production formula.			
The End				

Research Result

No.: SCTA-A20170418-006N

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2.Spectrogram Analysis:

1.GC Analysis

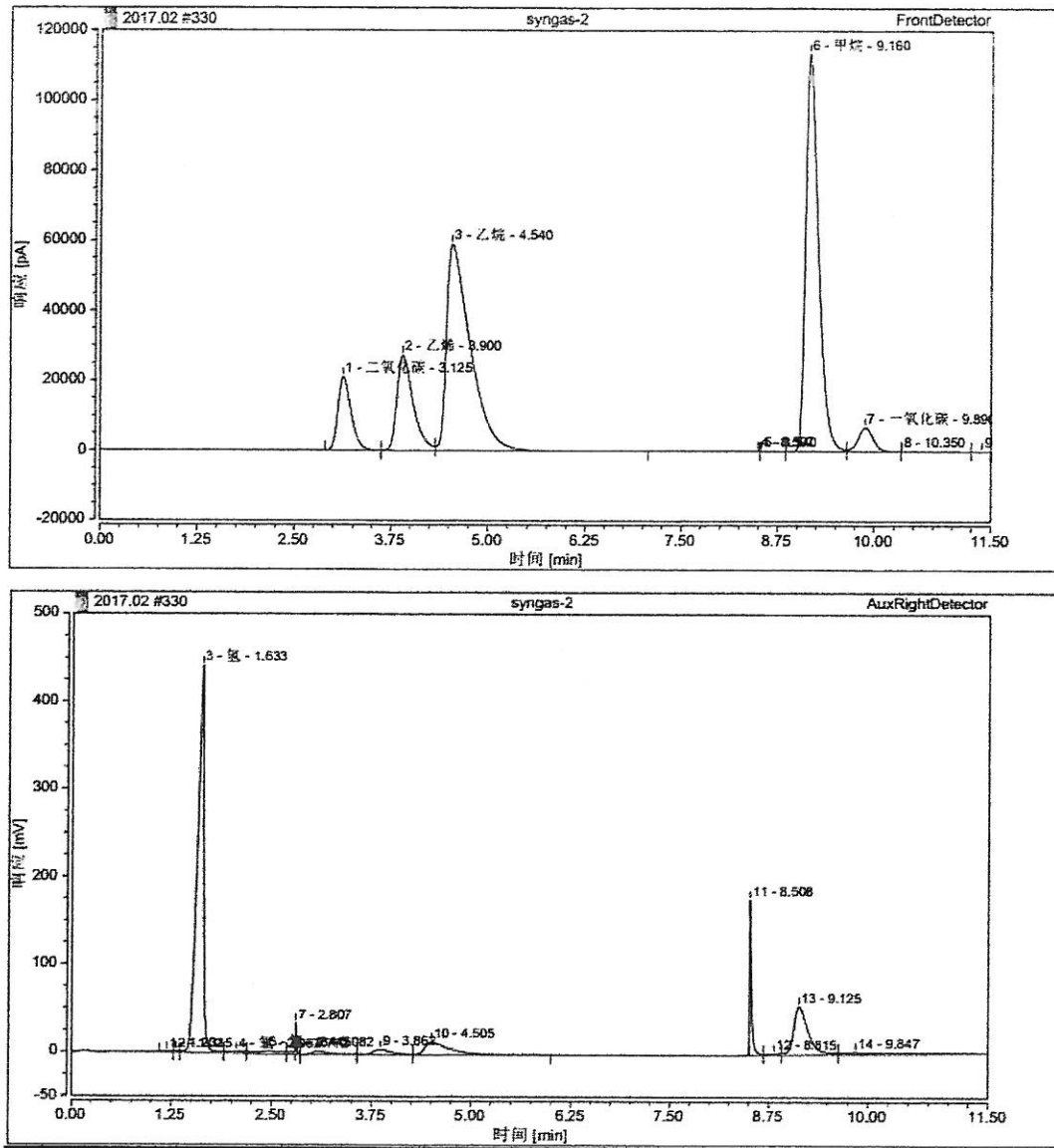


Fig.1 The GC spectra of sample

Analysis: From the analysis of the GC spectra of sample, the sample contains hydrogen, oxygen, nitrogen, methane, carbon monoxide, carbon dioxide and so on.

Research Result

No.: SCTA-A20170418-006N

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2.The picture of the sample



Fig.2 The picture of the sample

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5. If the research result is required in the process of trial or arbitration, the applicant shall inform the Center before signing the agreement. Otherwise, the Center will not be liable for any loss and dispute and have the right to claim for proper additional compensation.

*****The End*****

TEST REPORT

CLIENT DETAILS

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 Province
 453000, CHINA
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 Facsimile +86- 0371-55917067
 Email info@huayinenergy.com
 Order Number -
 Samples Exhaust Gas(1)
 Project Default Project

LABORATORY DETAILS

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 Laboratory Shanghai Environmental Services
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 SHANGHAI, CHINA
 Telephone +86 (21) 6140 2666-2002
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 Report Number SHE14-03790 R0
 SGS Reference 0000021829
 Date Reported 2014/12/29

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 SENIOR CHEMIST

JUNE CAI
 Authorized Signatory



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Lab ID	14-03790-001
Sampling ID	Remark 3)
Sample Matrix	Exhaust Gas
Sample Description	
Sample Date	2014/12/13

Item	Units	
Sampling site information		
Sampling Address: Kangcun Industrial Zone, Xinxiang City, Henan		
Sampling Date	-	2014-12-13
Sampling location	-	waste tire/ plastic pyrolysis machine
Sampling Time(Others)	-	10:15-11:00
Sampling Time(HF HCl)	-	10:15-10:35
Sampling Time(HCHO)	-	10:40-10:55
Sampling Time(HM)	-	11:25-12:10
Sampling Time(BTEX)	-	13:40-14:00
Sampling Time(Cl ₂)	-	13:35-14:35
Sampling Time(Hg H-S)	-	11:30-11:50
Sampling Time(NMHC)	-	13:40-13:45
Gas Temp	°C	39-44
Stack gas velocity	m/s	5.9-6.2
Sec.ar.	m ²	0.0572
Oxygen	%	7.43-7.49
Humidity	%	3.4-3.5
Dry Standard Flowrate	m ³ /h	1034-1078
Exhaust Height	m	10

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Lab ID	14-03790.001
Sampling ID	Remark 3)
Sample Matrix	Exhaust Gas
Sample Description	-
Sample Date	2014/12/13
Parameter	Units LOR

Analytical Method for Monitoring of Ambient Air and Exhausted Air(4th ed.,SEPA,China,2003) Method: SEPA 2003

Oxygen	mg/m ³	0.01	7.43-7.49
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Lab ID	14-03790.001
Sampling ID	Remark 3)
Sample Matrix	Exhaust Gas
Sample Description	-
Sample Date	2014/12/13
Parameter	Units LOR

Examination of particulate matter and air pollution sampling method Method: GB/T 16157-1996

Particulate matter (Emission conc.)	mg/m ³	0.1	0.4
Particulate matter (Conversion conc.)	mg/m ³	-	0.3
Particulate matter (Emission rate)	kg/h	-	3.70×10 ⁻⁴

Lab ID	14-03790.001
Sampling ID	Remark 3)
Sample Matrix	Exhaust Gas
Sample Description	-
Sample Date	2014/12/13
Parameter	Units LOR

Determination of sulphur dioxide from exhausted gas of stationary source Method: HJT 57-2000

Sulphur dioxide (Emission conc.)	mg/m ³	15	15
Sulphur dioxide (Conversion conc.)	mg/m ³	-	11
Sulphur dioxide (Emission rate)	kg/h	-	0.730

Lab ID	14-03790.001
Sampling ID	Remark 3)
Sample Matrix	Exhaust Gas
Sample Description	-
Sample Date	2014/12/13
Parameter	Units LOR

Stationary source emission-Determination of nitrogen oxides Fixed potential by electrolysis method Method: HJ693-2014

Nitrogen oxides (Emission conc.)	mg/m ³	12	618
Nitrogen oxides (Conversion conc.)	mg/m ³	-	455
Nitrogen oxides (Emission rate)	kg/h	-	0.639



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Research Result

No.: SCTA-A20170418-006N

Page 1 of 4

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Sample Information Syngas, four packages, gas
Research Content Analysis of Component analysis
Edit Date 2017.05.02
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17	2-Methyl-1,3-Butadiene, %	0.06	78-79-5	/
18	Benzol, %	0.03	71-43-2	/
19	Styrene, %	0.01	100-42-5	/
20	Hydrogen Sulfide, %	0.02	7783-06-4	/
21	Nitrogen Oxide, %	0.01	/	/
22	Vapor, %	0.06	/	/
23	Dust, %	0.01	/	/
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Page 3 of 4

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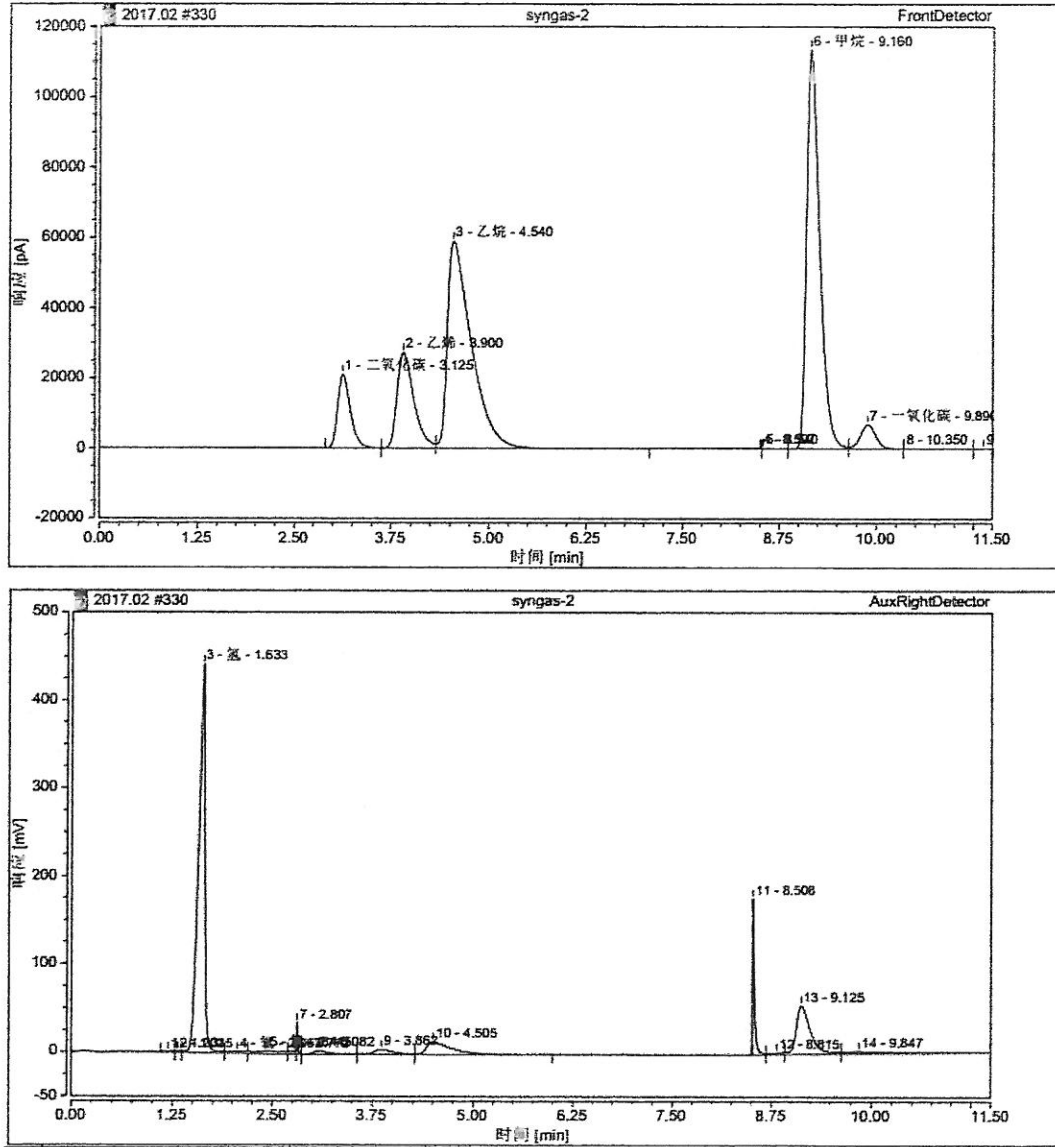


Fig.1 The GC spectra of sample

Analysis: From the analysis of the GC spectra of sample, the sample contains hydrogen, oxygen, nitrogen, methane, carbon monoxide, carbondioxide and so on.

Research Result

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Page 4 of 4

2.The picture of the sample



Fig.2 The picture of the sample

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TEST REPORT

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 Facsimile +86- 0371-55917067
 Email info@huayinenergy.com
 Order Number -
 Samples Exhaust Gas(1)
 Project Default Project

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 Laboratory Shanghai Environmental Services
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 Date Reported 2014/12/29

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 SENIOR CHEMIST

Hai Yan Zhou

JUNE CAI
 Authorized Signatory

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Lab ID	14-03790-001
Sampling ID	Remark 3)
Sample Matrix	Exhaust Gas
Sample Description	
Sample Date	2014/12/13
Item	Units

Sampling site information

Sampling Address: Kangcun Industrial Zone, Xinxiang City, Henan

Sampling Date	-	2014-12-13
Sampling location	-	waste tire/ plastic pyrolysis machine
Sampling Time(Others)	-	10:15-11:00
Sampling Time(HF HCl)	-	10:15-10:35
Sampling Time(HCHO)	-	10:40-10:55
Sampling Time(HM)	-	11:25-12:10
Sampling Time(BTEX)	-	13:40-14:00
Sampling Time(Cl ₂)	-	13:35-14:35
Sampling Time(Hg H ₂ S)	-	11:30-11:50
Sampling Time(NMHC)	-	13:40-13:45
Gas Temp	°C	39-44
Stack gas velocity	m/s	5.9-6.2
Sec. ar.	m ²	0.0572
Oxygen	%	7.43-7.49
Humidity	%	3.4-3.5
Dry Standard Flowrate	m ³ /h	1034-1078
Exhaust Height	m	10

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Lab ID	14-03790.001
Sampling ID	Remark 3)
Sample Matrix	Exhaust Gas
Sample Description	-
Sample Date	2014/12/13
Parameter	Units LOR

Analytical Method for Monitoring of Ambient Air and Exhausted Air(4th ed.,SEPA,China,2003) Method: SEPA 2003

Oxygen	mg/m ³	0.01	7.43-7.49
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Lab ID	14-03790.001
Sampling ID	Remark 3)
Sample Matrix	Exhaust Gas
Sample Description	-
Sample Date	2014/12/13
Parameter	Units LOR

Examination of particulate matter and air pollution sampling method Method: GB/T 16157-1996

Particulate matter (Emission conc.)	mg/m ³	0.1	0.4
Particulate matter (Conversion conc.)	mg/m ³	-	0.3
Particulate matter (Emission rate)	kg/h	-	3.70×10 ⁻⁴

Lab ID	14-03790.001
Sampling ID	Remark 3)
Sample Matrix	Exhaust Gas
Sample Description	-
Sample Date	2014/12/13
Parameter	Units LOR

Determination of sulphur dioxide from exhausted gas of stationary source Method: HJ/T 57-2000

Sulphur dioxide (Emission conc.)	mg/m ³	15	15
Sulphur dioxide (Conversion conc.)	mg/m ³	-	11
Sulphur dioxide (Emission rate)	kg/h	-	0.730

Lab ID	14-03790.001
Sampling ID	Remark 3)
Sample Matrix	Exhaust Gas
Sample Description	-
Sample Date	2014/12/13
Parameter	Units LOR

Stationary source emission-Determination of nitrogen oxides Fixed potential by electrolysis method Method: HJ693-2014

Nitrogen oxides (Emission conc.)	mg/m ³	12	618
Nitrogen oxides (Conversion conc.)	mg/m ³	-	455
Nitrogen oxides (Emission rate)	kg/h	-	0.639



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Lab ID	14-03790.001
Sampling ID	Remark 3)
Sample Matrix	Exhaust Gas
Sample Description	-
Sample Date	2014/12/13
Parameter	Units LOR

Analytical Method for Monitoring of Ambient Air and Exhausted Air(4th ed.,SEPA,China,2003) Method: SEPA 2003

Carbon monoxide (Emission conc.)	mg/m ³	1	25
Carbon monoxide (Conversion conc.)	mg/m ³	-	18
Carbon monoxide (Emission rate)	kg/h	-	0.0258

Lab ID	14-03790.001
Sampling ID	Remark 3)
Sample Matrix	Exhaust Gas
Sample Description	-
Sample Date	2014/12/13
Parameter	Units LOR

Stationary source emission. Determination of fluoride. Ion selective electrode method Method: HJT 87-2001

Total fluoride (Emission conc.)	mg/m ³	0.7	<0.7
Total fluoride (Conversion conc.)	mg/m ³	-	<0.5
Total fluoride (Emission rate)	kg/h	-	<7.24×10 ⁻⁴

Lab ID	14-03790.001
Sampling ID	Remark 3)
Sample Matrix	Exhaust Gas
Sample Description	-
Sample Date	2014/12/13
Parameter	Units LOR

Ambient air and waste gas. Determination of hydrogen chloride. Ion chromatography Method: HJ 549-2009

Chlorine hydride (Emission conc.)	mg/m ³	0.3	<0.3
Chlorine hydride (Conversion conc.)	mg/m ³	-	<0.1
Chlorine hydride (Emission rate)	kg/h	-	<3.10×10 ⁻⁴

Lab ID	14-03790.001
Sampling ID	Remark 3)
Sample Matrix	Exhaust Gas
Sample Description	-
Sample Date	2014/12/13
Parameter	Units LOR

Air quality-Determination of formaldehyde-Acetylacetone spectrophotometric method Method: GB/T 15516-1995

Formaldehyde (Emission conc.)	mg/m ³	0.5	0.7
Formaldehyde (Emission rate)	kg/h	-	7.18×10 ⁻⁴

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Lab ID	14-03790.001		
Sampling ID	Remark 3)		
Sample Matrix	Exhaust Gas		
Sample Description			
Sample Date	2014/12/13		
Parameter	Units	LOR	

Analytical Method for Monitoring of Ambient Air and Exhausted Air(4th ed.,SEPA,China,2003)5.4.10(3) Method: SEPA 2003

Hydrogen Sulfide (Emission conc.)	mg/m ³	0.01	0.01
Hydrogen Sulfide (Emission rate)	kg/h	-	1.39×10 ⁻³
Hydrogen Sulfide (Conversion conc.)	mg/m ³	-	0.01

Lab ID	14-03790.001		
Sampling ID	Remark 3)		
Sample Matrix	Exhaust Gas		
Sample Description			
Sample Date	2014/12/13		
Parameter	Units	LOR	

Stationary source emission. Determination of chlorine. Methyl orange spectrophotometric method Method: HJT 30-1999

Chlorine (Emission conc.)	mg/m ³	0.20	<0.20
Chlorine (conversion conc.)	mg/m ³	-	<0.15
Chlorine (Emission rate)	kg/h	0.330	<2.14×10 ⁻¹

Lab ID	14-03790.001		
Sampling ID	Remark 3)		
Sample Matrix	Exhaust Gas		
Sample Description			
Sample Date	2014/12/13		
Parameter	Units	LOR	

Analytical Method for Monitoring of Ambient Air and Exhausted Air(4th ed.,SEPA,China,2003) Method: SEPA 2003

Benzene (Emission conc.)	mg/m ³	0.01	0.06
Benzene (Conversion conc.)	mg/m ³	-	0.04
Benzene (Emission rate)	kg/h	-	6.36×10 ⁻³
Toluene (Emission conc.)	mg/m ³	0.01	0.05
Toluene (Conversion conc.)	mg/m ³	-	0.04
Toluene (Emission rate)	kg/h	-	5.24×10 ⁻³
Ethylbenzene (Emission conc.)	mg/m ³	0.01	<0.01
Ethylbenzene (Conversion conc.)	mg/m ³	-	<0.007
Ethylbenzene (Emission rate)	kg/h	-	<1.07×10 ⁻³
Xylene (Emission conc.)	mg/m ³	0.02	<0.02
Xylene (Conversion conc.)	mg/m ³	-	<0.014
Xylene (Emission rate)	kg/h	-	<2.14×10 ⁻³

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Lab ID	14-03790.001	
Sampling ID	Remark 3)	
Sample Matrix	Exhaust Gas	
Sample Description	-	
Sample Date	2014/12/13	
Parameter	Units	LOR

Stationary source emission. Determination of nonmethane hydrocarbons. Gas chromatography Method: HJ/T 38-1999

Nonmethane hydrocarbons (Emission conc.)	mg/m ³	1.0	1.3
Nonmethane hydrocarbons (Conversion conc.)	mg/m ³	-	0.93
Nonmethane hydrocarbons (Emission rate)	kg/h	-	1.35×10 ⁻³

Lab ID	14-03790.001	
Sampling ID	Remark 3)	
Sample Matrix	Exhaust Gas	
Sample Description	-	
Sample Date	2014/12/13	
Parameter	Units	LOR

Stationary source emission-Determination of tin-Graphite furnace abs method Method: HJ/T 65-2001

Stannum (Emission conc.)	mg/m ³	5.00 X 10 ⁻⁵	1.00×10 ⁻⁴
Stannum (Conversion conc.)	mg/m ³	-	1.08×10 ⁻⁷
Stannum (Emission rate)*	kg/h	-	7.42×10 ⁻⁵

Lab ID	14-03790.001	
Sampling ID	Remark 3)	
Sample Matrix	Exhaust Gas	
Sample Description	-	
Sample Date	2014/12/13	
Parameter	Units	LOR

Stationary source emission-Determination of lead-Flame atomic absorption spectrophotometric method Method: HJ 685-2014

Lead (Emission conc.)	mg/m ³	5.00 X 10 ⁻⁵	2.43×10 ⁻⁴
Lead (Conversion conc.)	mg/m ³	-	1.80×10 ⁻⁴
Lead (Emission rate)	kg/h	-	2.62×10 ⁻⁷

Lab ID	14-03790.001	
Sampling ID	Remark 3)	
Sample Matrix	Exhaust Gas	
Sample Description	-	
Sample Date	2014/12/13	
Parameter	Units	LOR

Stationary source emission. Determination of cadmium. Flame atomic absorption spectrophotometric Method: HJ/T 64.1-2001

Cd (Emission conc.)	mg/m ³	5.00 X 10 ⁻⁴	<5.00×10 ⁻⁴
Cd (Conversion conc.)	mg/m ³	-	<5.39×10 ⁻⁴
Cd (Emission rate)	kg/h	-	<3.70 ⁻⁴



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Lab ID	14-03790.001
Sampling ID	Remark 3)
Sample Matrix	Exhaust Gas
Sample Description	-
Sample Date	2014/12/13

Analytical Method for Monitoring of Ambient Air and Exhausted Air(4th ed.,SEPA,China,2003) Method: SEPA 2003

Parameter	Unit	Value	LOR
As (Emission conc.)	mg/m ³	0.000250	1.35×10 ⁻⁴
As (Conversion conc.)	mg/m ³	-	1.00×10 ⁻⁴
As(Emission rate)	kg/h	-	1.46×10 ⁻⁷
Cu (Emission conc.)	mg/m ³	5.00 X 10 ⁻³	9.78×10 ⁻⁴
Cu (Conversion conc.)	mg/m ³	-	7.24×10 ⁻⁴
Cu(Emission rate)	kg/h	-	1.05×10 ⁻⁴
Mn (Emission conc.)	mg/m ³	5.00 X 10 ⁻³	1.54×10 ⁻³
Mn (Conversion conc.)	mg/m ³	-	1.14×10 ⁻³
Mn(Emission rate)	kg/h	-	1.66×10 ⁻⁴
As+Ni (Emission conc.)	mg/m ³	0.000300	9.81×10 ⁻³
As+Ni (Conversion conc.)	mg/m ³	-	7.26×10 ⁻³
As+Ni (Emission rate)	kg/h	-	1.06×10 ⁻⁴
Cr+Sn+Sb+Cu+Mn (Emission conc.)	mg/m ³	0.000700	0.0178
Cr+Sn+Sb+Cu+Mn (Conversion conc.)	mg/m ³	-	0.0132
Cr+Sn+Sb+Cu+Mn (Emission rate)	kg/h	-	1.92×10 ⁻⁴

Remark:

- 1): Not certified by CNAS/CMA
- 2): Conversion conc. is based on GB 18484-2001 《Pollution control standard for hazardous wastes incineration》
- 3): Sampling Location:waste fire/plastic pyrolysis machine

*** End of Report ***

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