

# Emission Compliance Testing Report - 2021

Jamestrong Packaging - Australia

2 Hallstrom Avenue, Taree NSW

15 November 2021



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MJM Environmental Pty Ltd  
 ABN 21 089 600 019  
 Office 1, Level 2  
 355 Wharf Road  
 Newcastle, NSW, 2300  
 Telephone: 02 4926 4222  
 Facsimile: 02 4929 4944  
 E-mail: [enquiries@mjmenvironmental.com.au](mailto:enquiries@mjmenvironmental.com.au)



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164 2242	0	H Riddell	M Majerowski	QA/QC Manager	<i>Monica Majerowski</i>	15/11/2021
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Name			Position	Signature	Date	
M Majerowski			Technical Director Environment	<i>Monica Majerowski</i>	15/11/2021	

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## 1 Introduction

MJM Environmental was commissioned by Jamestrong Packaging - Australia to conduct stationary air monitoring on the 29<sup>th</sup> of October 2021. Jamestrong Packaging - Australia is licensed with the NSW Environment Protection Authority (EPA) under Environment Protection Licence (EPL) number 11714.

The monitoring was performed at the following locations for the pollutants presented in Table 1-1.

**Table 1-1: Monitoring performed at Jamestrong Packaging - Australia**

EPL Point ID	Point Description	Pollutant	Emission Concentration Limit <sup>1</sup>
1	Megtech Catalytic Converter Stack No. 1 (north)	Odour	N/A
		Volatile Organic Compounds	<sup>2</sup> 20 mg/m <sup>3</sup>
2	Megtech Catalytic Converter Stack No. 2 (south)	Odour	N/A
		Volatile Organic Compounds	<sup>2</sup> 20 mg/m <sup>3</sup>
3	Wet Separator Stack	Odour	N/A
		Volatile Organic Compounds	<sup>2</sup> 20 mg/m <sup>3</sup>
4	Decorator Oven Stack	Odour	N/A
		Volatile Organic Compounds	<sup>2</sup> 20 mg/m <sup>3</sup>

<sup>1</sup> In accordance with the *Protection of the Environment Operations (Clean Air) Regulation 2010* (POEO Regulation)

<sup>2</sup> EPL Points 1 and 3 were installed or significantly modified after September 2005 therefore are Group 6 operations according to the POEO Regulation. Group 6 operation emission limits have been applied for VOCs as n-Propane.

<sup>3</sup> EPL Point 2 was installed prior to September 2005 therefore are not a Group 6 operation according to the POEO Regulation. Groups 1 to 5 operations do not have emission limits applied for VOCs as n-propane.

## 2 Methodology

Table 2-1 summarises the test methods performed at Jamestrong Packaging - Australia.

**Table 2-1: Test methods**

Parameter	Sampling Method	Reference Method	Unit	Uncertainty <sup>1</sup>	Uncertainty %
Volatile Organic Compounds (VOC)	TM-34	USEPA Method 18	mg/m <sup>3</sup>	0.035	2
Volumetric Flow Rate (2D Pitot)	TM-2	USEPA Method 2	m/s	0.40	2
Moisture	TM-22	USEPA Method 4	%vol	0.012	1
Odour	OM-7	AS/NZS 4323.3:2001	OU	N/A	N/A

<sup>1</sup> Measurement of Uncertainty (MU) values cited in this table are calculated at the 95% confidence level (coverage factor = 2) including both sampling and laboratory analytical factors.

## 3 Quality Assurance / Quality Control Information

MJM Environmental performed stack emission testing in accordance with the *Protection of the Environment Operations (Clean Air) Regulation 2010*, and the EPA's *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales (2007)*.

Volatile Organic Compound samples for analysis were submitted to Australian Laboratory Services (ALS), a NATA accredited laboratory with accreditation No. 825 located at Mayfield West, 2304. Odour samples were submitted to Odour Research Laboratories Australia, a NATA accredited laboratory with accreditation No. 15043 located at Auburn NSW, 2144.

## 4 Results

A summary of the results obtained for Jamestrong Packaging - Australia are provided in the following sections of the report. Emission concentrations and emission rates are converted to standard conditions (STP) of 0°C, dry gas and 1 atmosphere pressure for comparison with appropriate guideline levels.

### 4.1 EPL Point 1

Figure 4-1 shows EPL Point 1 – Megtech Catalytic Converter Stack 1 (North).

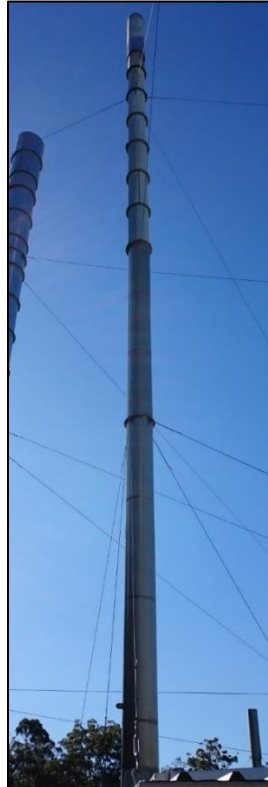


Figure 4-1: EPL Point 1 (Megtech Catalytic Converter Stack No. 1 – north)

Table 4-1 shows the testing information for the sampling plane.

Table 4-1: Sampling plane information EPL Point 1

Parameter	Unit	Information	Comments
Date	-	29/10/2021	
Number of sampling runs performed	-	2	1x run odour 1x run VOC
Sampling duration	min		
Odour		17	
VOC		15	
Process conditions at time of sampling	-	Steady state	
Sample plane diameter	mm	455	
Sample plane area	m <sup>2</sup>	0.16	
Sample port diameter and depth	mm	50, 55	
Number of sample ports	-	2	
Duct orientation and shape	-	Vertical, circular	
Number of traverse points sampled	-	10	
Sample port compliant with AS4323.1	-	No	Does not satisfy the requirements of AS 4323.1-1995 with regard to the upstream and downstream distances from disturbances.

Table 4-2 shows the volumetric and continuous gaseous parameters measured during testing.

**Table 4-2: Results for EPL Point 1**

Parameter	Unit	Result	EPL Limit	Compliant with EPL
Temperature	°C	250.6	N/A	N/A
Carbon dioxide	%	0.0	N/A	N/A
Oxygen	%	20.8	N/A	N/A
Moisture content	%	1.4	N/A	N/A
Molecular weight dry	g/gmol	29	N/A	N/A
Velocity at sampling plane	m/s	15	N/A	N/A
Volumetric flow rate (wet, actual)	m <sup>3</sup> /s	2.4	N/A	N/A
Volumetric flow rate (dry, STP)	m <sup>3</sup> /s	1.3	N/A	N/A

Table 4-3 shows the concentration and emission rate results of testing.

**Table 4-3: Results for EPL Point 1**

Pollutant	Isokinetic rate (%)	Concentration	Emission rate	Concentration Limit	Compliant with Limit
Total VOCs as n-Propane	N/A	6.9 mg/m <sup>3</sup>	0.009 g/s	20 mg/m <sup>3</sup>	✓
Odour	N/A	166 OU	213 OU.m <sup>3</sup> /s	N/A	N/A

## 4.2 EPL Point 2

Figure 4-2 shows EPL Point 2 – Megtech Catalytic Converter Stack 2 (South).



Figure 4-2: EPL Point 2 (Megtech Catalytic Converter Stack No. 2 – south)

Table 4-4 shows the testing information for the sampling plane.

Table 4-4: Sampling plane information EPL Point 2

Parameter	Unit	Information	Comments
Date	-	29/10/2021	
Number of sampling runs performed	-	2	1x run odour 1x run VOC
Sampling duration	min		
Odour		16	
VOC		15	
Process conditions at time of sampling	-	Steady state	
Sample plane diameter	mm	375	
Sample plane area	m <sup>2</sup>	0.11	
Sample port diameter and depth	mm	50, 55	
Number of sample ports	-	2	
Duct orientation and shape	-	Vertical, circular	
Number of traverse points sampled	-	10	
Sample port compliant with AS4323.1	-	No	Does not satisfy the requirements of AS 4323.1-1995 with regard to the upstream and downstream distances from disturbances.

Table 4-5 shows the volumetric and continuous gaseous parameters measured during testing.

**Table 4-5: Results for EPL Point 2**

Parameter	Unit	Result	EPL Limit	Compliant with EPL
Temperature	°C	215	N/A	N/A
Carbon dioxide	%	0.0	N/A	N/A
Oxygen	%	20.9	N/A	N/A
Moisture content	%	0.30	N/A	N/A
Molecular weight dry	g/gmol	29	N/A	N/A
Velocity at sampling plane	m/s	16	N/A	N/A
Volumetric flow rate (wet, actual)	m <sup>3</sup> /s	1.7	N/A	N/A
Volumetric flow rate (dry, STP)	m <sup>3</sup> /s	1.0	N/A	N/A

Table 4-6 shows the concentration and emission rate results of testing.

**Table 4-6: Results for EPL Point 2**

Pollutant	Isokinetic rate (%)	Concentration	Emission rate	Concentration Limit	Compliant with Limit
Total VOCs as n-Propane	N/A	3.1 mg/m <sup>3</sup>	0.003 g/s	20 mg/m <sup>3</sup>	N/A
Odour	N/A	235 OU	228 OU.m <sup>3</sup> /s	N/A	N/A



### 4.3 EPL Point 3

Figure 4-3 shows EPL Point 3 – Wet Separator Stack outlet.



Figure 4-3: EPL Point 3 (Wet Separator Stack)

Table 4-7 shows the testing information for the sampling plane.

Table 4-7: Sampling plane information EPL Point 3

Parameter	Unit	Information	Comments
Date	-	29/10/2021	
Number of sampling runs performed	-	2	1x run odour 1x run VOC
Sampling duration	min		
Odour		15	
VOC		15	
Process conditions at time of sampling	-	Steady state	
Sample plane diameter	mm	900	
Sample plane area	m <sup>2</sup>	0.64	
Sample port diameter and depth	mm	110, 85	
Number of sample ports	-	2	
Duct orientation and shape	-	Vertical, circular	
Number of traverse points sampled	-	12	
Sample port compliant with AS4323.1	-	No	Does not satisfy the requirements of AS 4323.1-1995 with regard to upstream and downstream distances from disturbances.

Table 4-8 shows the volumetric and continuous gaseous parameters measured during testing.

Table 4-8: Results for EPL Point 3

Parameter	Unit	Result	EPL Limit	Compliant with EPL
Temperature	°C	32.6	N/A	N/A
Carbon dioxide	%	0.0	N/A	N/A
Oxygen	%	21	N/A	N/A
Moisture content	%	0.38	N/A	N/A
Molecular weight dry	g/gmol	28	N/A	N/A
Velocity at sampling plane	m/s	16	N/A	N/A
Volumetric flow rate (wet, actual)	m <sup>3</sup> /s	10	N/A	N/A
Volumetric flow rate (dry, STP)	m <sup>3</sup> /s	9	N/A	N/A

Table 4-6 shows the concentration and emission rate results of testing.

Table 4-9: Results for EPL Point 3

Pollutant	Isokinetic rate (%)	Concentration	Emission rate	Concentration Limit	Compliant with Limit
Total VOCs as n-Propane	N/A	0.94 mg/m <sup>3</sup>	0.01 g/s	20 mg/m <sup>3</sup>	✓
Odour	N/A	83 OU	747 OU.m <sup>3</sup> /s	N/A	N/A

#### 4.4 EPL Point 4

Figure 4-4 shows EPL Point 4 – Decorator Oven Stack outlet.



Figure 4-4: EPL Point 4 (DC Stack)

10 shows the testing information for the sampling plane.

**Table 4-10: Sampling plane information EPL Point 4**

Parameter	Unit	Information	Comments
Date	-	29/10/2021	
Number of sampling runs performed	-	2	1x run odour 1x run VOC
Sampling duration	min		
Odour		5	
VOC		20	
Process conditions at time of sampling	-	Steady state	
Sample plane diameter	mm	435	
Sample plane area	m <sup>2</sup>	0.15	
Sample port diameter and depth	mm	110, 95	
Number of sample ports	-	2	
Duct orientation and shape	-	Vertical, circular	
Number of traverse points sampled	-	1	
Sample port compliant with AS4323.1	-	No	The stack does not have the required number of access ports.

Table 4-11 shows the volumetric and continuous gaseous parameters measured during testing.

**Table 4-11: Results for EPL Point 4**

Parameter	Unit	Result	EPL Limit	Compliant with EPL
Temperature	°C	44	N/A	N/A
Carbon dioxide	%	0.0	N/A	N/A
Oxygen	%	20.9	N/A	N/A
Moisture content	%	1.7	N/A	N/A
Molecular weight dry	g/gmol	29	N/A	N/A
Velocity at sampling plane	m/s	14	N/A	N/A
Volumetric flow rate (wet, actual)	m <sup>3</sup> /s	2.1	N/A	N/A
Volumetric flow rate (dry, STP)	m <sup>3</sup> /s	1.8	N/A	N/A

Table 4-12 shows the concentration and emission rate results of testing.

**Table 4-12: Results for EPL Point 4**

Pollutant	Isokinetic rate (%)	Concentration	Emission rate	Concentration Limit	Compliant with Limit
Total VOCs as n-Propane	N/A	8 mg/m <sup>3</sup>	0.01 g/s	20 mg/m <sup>3</sup>	✓
Odour	N/A	118 OU	212 OU.m <sup>3</sup> /s	N/A	N/A

## 5 Discussion

Testing for emission compliance was executed over one day. During sampling, the facility was operating under normal plant operating conditions.

USEPA Method 18 (TM-34) was used to perform testing for Volatile Organic Compounds. AS/NZS 4323.3:2001 (OM-7) was used for testing of Odour at EPL Point 1, 2, 3 and 4 in accordance with EPL requirements.

One sample for each analyte was taken from EPL Points 1, 2, 3 and 4.

## 6 Conclusion

Testing for emission compliance was completed on the 29<sup>th</sup> of October 2021 for EPL Points 1, 2, 3 and 4.

The concentration of all analytes were compliant with the prescribed emission concentration limits.