

Emissions Monitoring Group Templeborough House Mill Close Rotherham S60 1BZ Tel: 01709 841013 Fax: 01709 841079

Trelleborg Ltd
Holbrook Lane
Coventry
West Midlands
CV6 4QX

FAO: John Davenport

Dear John,

18th November 2004

Isocyanates & VOCs measurements at Trelleborg, Reports R/04-194, 195, 196

Please find enclosed the amended page 5 - 2 copies (1 for EHO) for insertion in above reports.

.This now includes detail about the method procedure (including blanks & calibration)

With reference to flows, as you indicated, the flow velocity for Billet Ralph machine was 7.2 m/sec (versus 11.2 m/sec in 2003), Desma 1/2 4.1 m/sec (versus 5.4 m/sec) and Desma 3 8.3 (versus 7.7)

We have checked measurements and calibrations of the pitot values for 'Flow Velocity, m/sec' 'Volumetric Flow, in m3/sec' –and they confirm.

If you require any more information do not hesitate to contact me.

Yours sincerely,

.. ~

Mark Craig Emissions Monitoring Manager





ALcontrol Laboratories

1. **Isocyanates** were sampled according to MDHS method 49 whereby a measured volume of flue gas is drawn through a glass impinger containing dimethylformamide and dilute hydrochloric acid. The amount of isocyanate in the sample is determined by spectrophotometric methods.

2. Volatile Organic Compound Emissions

Extractive sampling is performed following TPM/2.71.. utilising a heated probe and transfer line. Detection and analysis is by Flame Ionisation Detector (FID) calibrated against certified propane span gas (Method based on US EPA Method 25A).

3. Flue Gas Velocity

The flue gas velocity is determined by measurement of the differential pressure and temperature within the stack according to BS3405 (ALcontrol Laboratories, Method Number NAM/8.3/2.1.1).

ALcontrol Laboratories, TPM/00, Testing Procedures Manual Copy No 6

Received March '05 regarding Monitering in June 2004.



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EXECUTIVE SUMMARY

1.0	S	co	PE	OF	WO	PRK

- 2.0 SAMPLING METHODS
- 3.0 ANALYTICAL METHODS
- 4.0 QUALITY STATEMENT
- 5.0 COST SCHEDULES

1.0 SCOPE OF WORK

This quotation covers the annual stack emissions monitoring programme at the Coventry site of Trelleborg together with personnel exposure monitoring

Stack Monitoring Requirements

Sample Location	Determinant	Number of Tests	Sample Period	
3 Stacks	VOCs as methane	Continuous	30 mins	
	Di-isocyanates (MDI)	2	30 mins	

Personnel Monitoring Requirements

- 3 staff for isocyanates at the same time as the VOC monitoring.
- 4 Staff for Rubber fumes
- I staff member for paint fumes in conjunction with the data sheets provided by Trelleborg.

2.0 SAMPLING METHODS

Listed below is some basic information outlining the methods to be used, the standard methods they follow and if the monitoring is UKAS accredited.

Stack Monitoring

Determinant	Reference Method	Description	UKAS Status
Volatile Organic Carbons	BS EN 12619	A sample is passed via a heated line to an analyser for direct measurement utilising flame ionisation detection	Y
Di- isocyanates	MDHS 25/3	A sample is extracted and transferred via to a set of midget impingers containing a fixing reagent where the MDI is collected	Ν

Detailed method statements can be supplied if more technical information is required.

Personnel Monitoring

Rubber Fume

Sampling will be carried out following HSE method MDHS 47/2.

Paint Fumes

The active ingredients in the paint fumes are xylene, ethyl benzene, perchlorethylene, phenol and methyl isobutyl ketone.

All these components are sampled using MDHS 72. The gases are passed over a set of tubes containing the relevant adsorption materials.

Isocyanates

Sampling will be carried out following HSE method MDHS 25/3.

3.0 ANALYTICAL METHODS

The following table shows the analytical techniques to be used throughout the contract.

Determinant	Description	UKAS Status
MDI	Samples are extracted and analysed by HPLC	Y
Paint Fumes	All analysis will be carried out by desorption followed	Y
Rubber Fumes	by gas chromatography mass spectrometry.	

Some of the analysis will be sub-contracted only to a UKAS accredited laboratory.

ALCONTROL LABORATORIES

4.0 QUALITY STATEMENT

UKAS

Alcontrol Laboratories has an extensive UKAS accreditation schedule covering all the major pollutants routinely measured by industry. If you wish to see the full UKAS schedule it can be provided or it can be accessed via the UKAS website on www.ukas.org.

MCERTS

The new MCERTS scheme for stack monitoring requires that both companies and personnel are accredited to the MCERTS standards. All Alcontrols offices operating in the emissions industry have been awarded MCERTS accreditation. We currently have nine MCERTS level 2 accredited team leaders, 5 Level 1 accredited technicians and 4 technicians going through the training process.

5.0 COST SCHEDULES

The price is based on the scope of works listed above.

Stack Emissions Monitoring

Total Costs

£1745.00

The price covers the costs for preparation, mobilistaion, sampling, equipment costs, analytical costs, subsistence costs if any and report production.

Occupational Exposure Monitoring

Total Costs

£1420.00

These have been quoted as two separate visits as requested.

The costs have increased since last year with the majority of increase due to monitoring the paint fumes as this will need to be carried out over two days to capture the different components required.

ALCONTROL LABORATORIES

Site requirements

In general we will need the following to allow the sampling to be carried out:-

- All stacks should be fitted with two 4" BSP sockets that comply with M1.
- A safe working platform at the sampling plane (again that complies with guidance given in M1).
- A power supply, preferably 110V sockets.

Delays

Any delays caused by reasons outside of Alcontrol's control will be charged at a rate of £75.00 per hour per team.

Cancellation/Postponement

After receipt of order number, site work will be scheduled for completion. Any delays, or cancellation of order after this time will incur charges of up to 50% of quotation value.

Value Added Tax:

All Costs are Excluding VAT, which is Chargeable at the Standard Rate.

This quotation is subject to the terms and conditions on the reverse of the title page and is valid for sixty days from the date of this document.

Acceptance

If the work is accepted, an order number or written confirmation will be required before site work can commence.

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of 3

Further into requested Nov'04 Need this to chech reports are one.

EMISSION TEST RESULTS

Client Trelleborg Ltd.
Site Coventry
Plant Billet Ralph no.5
Date 28th 8 29th June 2004

Holbrook Lane Coventry West Midlands CV6 4QX

ALcontrol Laboratories

Emission Monitoring Group Templeborough House Mill Close Rotherham S60 1BZ

Tel: 01709 841103 Fax: 01709 841024

Page 2 of 13

EXECUTIVE SUMMARY

ALcontrol Laboratories were recently commissioned to undertake an emissions monitoring survey as follows:

Company

Trelleborg Ltd.

Site

Coventry

Plant

Billet Ralph no.5

The report presents the atmospheric emissions from the tests undertaken on : 28th & 29th June 2004

The results were measured from the sample positions downstream of the arrestment plant.

The plant was operating normally during the test day with the arrestment plant on-line.

SUMMARY OF RESULTS

Emission	mg/Nm	Uncertainty +/- mg/Nm ²	Detection limits for ND values mg/Nm³	Mass emission
Isocyanates (Test 1)	ND	-	0.00003 0.00004	ND ND
Isocyanates (Test 2)	ND	-	0.00004	305
TOC (Test 1)	13.1	0.66 0.57	.	248
TOC (Test 2)	10.7			

* at Ref.	0	°C	as found	%Moisture
Conditions	101.3	kPa	as found	%Oxygen

Where applicable

Oxides of nitrogen results are expressed as nitrogen dioxide

VOC results are expressed as total carbon

Dioxins/lurans expressed as upper limit values (TEQ)

Throughout Report:

Reference conditions (see above)

Nm³ 273 K, 101.3 kPa

Analysis not required

- UKAS accredited only

ND

••

Non detectable

- Not Accredited

s - Subcontracted laboratory analysis, see page 4

V/A Not applicable



All tests included in this report are accredited under UKAS and MCERTS accreditation schemes unless otherwise stated. Opinions and interpretations expressed herein are outside the scope of MCERTS and UKAS accreditation.



CERTIFICATE

This is to certify that, to the best of our knowledge and belief, the results contained within this Report are a true and fair reflection of the plant operation during the time of the tests.

Job Number:

051a01

Report Number:

R/04-194

Plant Designations:

Billet Ralph no.5

Test Personnel

Sunil Salpekar (MCERTS Level 1 MM02 119)

Date of tests:

28th & 29th June 2004

Site Address:

Holbrook Lane Coventry West Midlands CV6 4QX

Prepared by:

Ben Tranmer (MCERTS Level 2 MM02 113)

Checked by:

Sign

Position Technical Administrator

Authorised by:

Sign ...

.. Position Project Manager

Date: 16 August 2004

Page 4 of 13

SUB-CONTRACTED LABORATORY ANALYSIS

ALcontrol Laboratories has, with your approval, used the following sub-contracted laboratories for the laboratory analyses referenced below:

Laboratory:

RPS Laboratories

Table Numbers:

3&4

Accreditation:

UKAS accredited testing laboratory Number 0605

Page 5 of 13

Emission monitoring procedures and instrumentation

The test instrumentation and procedures met or exceeded the requirements of the EPA 1990 and HMIP Technical Guidance Notes M1 and M2. The CEN, BS, ISO or US EPA Method, and other appropriate method reference numbers, are given as applicable.

Volatile organic compounds

To documented in-house Standard Operating Procedure TPM/13 based on BS EN 12619: 1999 and BS EN 13526: 2002. Continuous analysis using probe, sample line and multi range Flame Ionisation Detector (FID) analyser. The analytical equipment detailed above is calibrated before and during the tests using certified gas mixtures (nitrogen (0 vppm) and propane (nominal 12 vppm)).

Isocyanates

To a non accredited method based on IOSH 5521 using sampling equipment as in US EPA Method 26a. Metered volume of gas extracted through a multi mini-impinger train containing 1-(2-methoxyphenyl1)-piperazine in tolune solution and subsequent analysis by high performance liquid chromatography (HPLC)

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Monitoring Objectives

The monitoring was undertaken to check compliance with authorised emission limits.

All monitoring procedures were carried out to the MCERTS requirements under the ALcontrol Laboratories quality system to ISO 17025: 2000.

Monitoring was undertaken for the listed emissions from the following sampling positions:

Emission

Isocyanates
Volatile organic compounds

Sampling Location

Billet Ralph no.5 Billet Ralph no.5

Comments on monitoring procedures

All monitoring procedures performed correctly with no problems.

The velocity and temperature profile at the sampling location met the requirements of BS EN 13284-1: 2001.

Plant operating conditions

The plant was operating normally during the tests.

Monitoring Timetable

Emission	Start Time	Finish Time	Date .
Isocyanate (Test 1)	10:05	10:35	29/06/2004
Isocyanate (Test 2)	10:37	11:07	29/06/2004
Volatile organic compounds (Test 1)	10:05	10:35	28/06/2004
Volatile organic compounds (Test 2)	10:35	11:05	28/06/2004

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RESULTS DISCUSSION

All results are as presented in Tables 1-4.

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Test Measurements and Derived Data

1 1	Page
Table 1. VOC's - Continuous analysis data.	10
Table 2. Isocyanate/VOC's:- Preliminary data.	11
Table 3. Isocyanate emissions, Test 1.	12
Table 4. Isocyanate emissions. Test 2.	13

						Page	10 of	13
Date	28/06/2004			, 				
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Volatile organ	nic compounds			ppm 🐠		. mg/m³*	0.2	
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Table 1. VOC's - Continuous analysis data.

Preliminary readings taken before sampling

Page

13

Line a (t/, 🏥	A Land		B :. 4 4.	Januar 12	C 1/2 20 5 4		D .
Traverse Data (D)	Temperature	h mm w.g.			Temperature (°C)	் h mmi w.g	Temperature h:
1	21	3.16	21	2.96			<u> </u>
2	21	3.16	21	2!96			
3	21	2.86	21	2.86			
4	21	2.96	21	2.55	<u> </u>		
5	21	3.77	21	3.98			
6	21	3.57	21	3.37	<u> </u>		
7	21	5.61	21	5.2			
8	21	1.73	21	1.84			<u> </u>
9	21	2.04	21	1.94	<u> </u>		
10	21	3.37	21	3.26	<u></u>		<u> </u>
11	21	3.98	21	3.57	ļ		
12	21	3.98	21	3.57	<u> </u>	ļ	
Total Ta = ,	252	Total Tb =	252	Total Tc =		Total Td =	

- 294 K Tp = (Ta + Tb + Tc + Td)/(Number of traverse points) + 273 =
- Permitted range = 0.95Tp 273 to 1.05Tp 273 | 6
- B:Yes Axial flow of gases along traverse A:Yes

- a) Highest pitot static reading =
- 4. b) Lowest pitot static reading =
- Ratio a/b = 3.2

Highest permitted ratio = 9/1

Satisfactory leak check

Angle of maximum flow established

Yes

Νo Any local negative flows

0.35 m Duct dimensions

- Is minimum pitot reading >5Pa °C Average Stack temp =
- Average Pitot Reading =

mm w.g

Calibration Constant (Cp) =

Yes

3.21

Duct Static Gas Pressure kPa	-1.622
Barometric Pressure	99

		<u> </u>
Average velocity	7.248	m/s:小子
Average flow rate	2.537	m³/s
Average flow rate.	6.469	Nm³/s

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Date	29/06/2004
Start time	10:05
Finish time ### * * * * * * * * * * * * * * * * *	10:35

				4	Confidence on the confidence of the confidence o
	UNITS	Impinger	Impinger 2	Impinger 3 (Drop Out)	Impinger 4 (Silica Gel)
Start volume	新华克加州	100	100	00	150
Start meler reading	m³	65.9480			
Meter temperature		21.0			
Finish meter reading	inn ³ dia	66.0190			
Finish volume	。 是表面是整整	96	90	0	160
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ACID GAS	UNITS	Sample Impinger conc.	Sample Wash conc.	Blank Impinger conc.	Blank Wash conc
Isocyanate 5	mg/l	0.0002	0.0002	0.0002	0.0002
	34 多有污渍器	. !			
· Salanda ale -	多数是是在	! !			

Wash vol.

200 ml

化分配性产品企业	三 的	Emission	Detection limit
Isocyanate		: 0	0.00003
LATING IN			

Date of analysis	09/07/2004
Podro of dilitary significant	

Numbers in bold indicate detection limits

Table 3. Isocyanate emissions, Test 1.

Page 13 of 13

Date ***	29/06/2004
Start time	10:37
Finish time	11:07

					y 1, 2 (3 m) + 1 (5)
		Impinger	Impinger	Impinger 3	Impinger .
	UNITS	Impinger		(Drop Out):	(Silica Gel)
Start volume	* w ml 學療。	100	100	0	150
Start meter reading	្តីទីវិល ៣ ៦១៩ គឺ	66.0190			
Meter temperature	ိုင်	21.0			
Finish meter reading	ma e	66.0830	·		
Finish volume	્રે જુલા જાતા છે. જાતા ક	100	100	0	159
			lands to the	To the second	Totale La Rain
ACID GAS	UNITS	Sample impinger conc	Sample Wash conc	Blank Impinger conc:	Blank Wash conc
Isocyanale	i mg/l	0.0002	0.0002	0.0002	0.0002
拉手持定型					
	发展显示。			·	<u> </u>

Wash vol. 200 mi

2000年100日,100日,100日,100日,100日,100日,100日,1	حدث والمائم	Detection limit
Isocyanate is with a mg/Nm in	, 0	0.00004

Date of analysis	•	09/07/2004

Numbers in bold indicate detection limits

BUNDLE A'

R/04-194

Page 1 of 13

EMISSION TEST RESULTS

Date

Client Trelleborg Ltd.
Site Coventry Plant Billet Ralph no.5 28th & 29th June 2004 amended

Holbrook Lane Coventry West Midlands CV6 4QX

ALcontrol Laboratories

Emission Monitoring Group Templeborough House Mill Close Rotherham \$60 1BZ

Tel: 01709 841103 Fax: 01709 841024



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EXECUTIVE SUMMARY

ALcontrol Laboratories were recently commissioned to undertake an emissions monitoring survey as follows:

Company

Trelleborg Ltd.

Site

Coventry

Plant

Billet Ralph no.5

The report presents the atmospheric emissions from the tests undertaken on : 28th & 29th June 2004

The results were measured from the sample positions downstream of the arrestment plant.

The plant was operating normally during the test day with the arrestment plant on-line.

SUMMARY OF RESULTS

Emission	mg/Nm³	Uncertainty +/	Detection limits for ND values	Mass emission
Isocyanates (Test 1)	ND		0.00003	ND
Isocyanates (Test 2)	ND	•	0.00004	ND
TOC (Test 1)	13.1	0.66	-	107
TOC (Test 2)	10.7	0.57	-	87

at Ref	, о	° C	as found	%Moisture
Conditions	101.3	kPa	as found	%Oxygen

Where applicable

Oxides of nitrogen results are expressed as nitrogen dioxide

VOC results are expressed as total carbon

Dioxins/lurans expressed as upper limit values (TEQ)

Throughout Report:

Reference conditions (see above)

Nm3 273 K, 101.3 kPa

Analysis not required

- UKAS accredited only

ND Non detectable

- Not Accredited

- Subcontracted laboratory analysis, see page 4

N/A Not applicable



All tests included in this report are accredited under UKAS and MCERTS accreditation schemes unless otherwise stated. Opinions and interpretations expressed herein are outside the scope of MCERTS and UKAS accreditation.



Emission monitoring procedures and instrumentation

The test instrumentation and procedures met or exceeded the requirements of the EPA 1990 and HMIP Technical Guidance Notes M1 and M2. The CEN, BS, ISO or US EPA Method, and other appropriate method reference numbers, are given as applicable.

Volatile organic compounds

To documented in-house Standard Operating Procedure TPM/13 based on BS EN 12619: 1999 and BS EN 13526: 2002. Continuous analysis using probe, sample line and multi range Flame Ionisation Detector (FID) analyser. The analytical equipment detailed above is calibrated before and during the tests using certified gas mixtures (nitrogen (0 vppm) and propane (nominal 12 vppm)).

Isocyanates

٠.

To a non-accredited method based on MDHS 25/3,1999 "Organic Isocyanates in Air" (HSE) & NIOSH 5521, using equipment as in US EPA Method 26a. A metered volume of air is extracted through a min-impinger sampling train containing 1-(2-methoxyphenyl 1)-piperazine in toluene at 1l/min. (to ensure full absorption of isocyanates. The resultant solution is concentrated and analysed by high performance liquid chromatography (HPLC) with ulta-violet detection. A blank sample is also prepared, subject to the same handling procedure, and submitted for analysis, analysis was performed by RPS Laboratories, Manchester M5 3EZ - see Page 4. Results were then blank corrected, and emission concentrations calculated as in MDHS 25/3 above.

13

						Page	10	of
Date	28/06/0	1	!					
From	10:05	to	1	10:20				
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	ic compounds	is Asimil	1	vppm -	7.2	\$ 100 m²	11,	7
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		1	1					
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Volatile organi			1. 38	vppm	16.5	P2851ZD	396068	
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Table 1. VOC's - Continuous analysis data.

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3

EMISSION TEST RESULTS

Client Trelleborg Ltd.

Site Coventry

Plant Desma M/C No. 3

Date 29th June 2004

Holbrook Lane Coventry West Midlands CV6 4QX⁷

ALcontrol Laboratories

Emission Monitoring Group Templeborough House Mill Close Rotherham S60 1BZ

Tel: 01709 841103 Fax: 01709 841024

Page 2 of 13

EXECUTIVE SUMMARY

ALcontrol Laboratories were recently commissioned to undertake an emissions monitoring survey as follows:

Company Trelleborg Ltd.

Site

Coventry

Plant

Desma M/C No. 3

The report presents the atmospheric emissions from the tests undertaken on :

29th June 2004

The results were measured from the sample positions downstream of the arrestment plant.

The plant was operating normally during the test day with the arrestment plant on-line.

SUMMARY OF RESULTS

Isocyanates (Test 1)	Mg/Nm² ND ND	Uncertainty mg/Nm3	for ND values mg/Nm³ 0.00002 0.00003	g/h ND ND ND 604
TOC (Test 1) TOC (Test 2)	22.5 22.2	1.06 1.05	-	598
	 - -			
				·

*at Ref 🔄 🔭	0	°C	as found	%Molsture
at Ref	101.3	kPa	as found	%Oxygen

Where applicable

Oxides of nitrogen results are expressed as nitrogen dioxide

VOC results are expressed as total carbon

Dioxins/jurans expressed as upper limit values (TEQ)

Throughout Report:

Reference conditions (see above)

Nm3 273 K, 101.3 kPa

Analysis not required

- UKAS accredited only

ND |Non detectable

- Not Accredited

s - Subcontracted laboratory analysis, see page 4

N/A Not applicable



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CERTIFICATE

This is to certify that, to the best of our knowledge and belief, the results contained within this Report are a true and fair reflection of the plant operation during the time of the tests.

Job Number:

051a01

Report Number:

R/04-196

Plant Designations:

Desma M/C No. 3

Test Personnel

Sunil Salpekar (MCERTS Level 1 MM02 119)

Date of tests:

29th June 2004

Site Address:

Holbrook Lane Coventry West Midlands CV6 4QX

Prepared by:

Ben Tranmer (MCERTS Level 2 MM02 113)

Checked by:

Sign

Position Technical Administrator

Authorised by:

Position Project Manager

Date: 16 August 2004

Page 4 of 13

SUB-CONTRACTED LABORATORY ANALYSIS

ALcontrol Laboratories has, with your approval, used the following sub-contracted laboratories for the laboratory analyses referenced below:

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RPS Laboratories

Table Numbers:

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Isocyanates

To a non accredited method based on IOSH 5521 using sampling equipment as in US EPA Method 26a. Metered volume of gas extracted through a multi mini-impinger train containing 1-(2-methoxyphenyl1)-piperazine in tolune solution and subsequent analysis by high performance liquid chromatography (HPLC)

Monitoring Objectives

The monitoring was undertaken to check compliance with authorised emission limits.

All monitoring procedures were carried out to the MCERTS requirements under the ALcontrol Laboratories quality system to ISO 17025: 2000.

Monitoring was undertaken for the listed emissions from the following sampling positions:

Emission

Isocyanates
Volatile organic compounds

Sampling Location

Desma M/C No. 3 Desma M/C No. 3

Comments on monitoring procedures

All monitoring procedures performed correctly with no problems.

The velocity and temperature profile at the sampling location met the requirements of BS EN 13284-1: 2001.

Page 7 of 13

Plant operating conditions

The plant was operating normally during the tests.

Monitoring Timetable

Emission	Start Time	Finish Time	Date .
Isocyanate (Test 1)	14:58	15:28	29/06/2004
Isocyanate (Test 2)	15:30	16:00	29/06/2004
Volatile organic compounds (Test 1)	14:58	15:28	29/06/2004
Volatile organic compounds (Test 2)	1 1	15:58	29/06/2004

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RESULTS DISCUSSION

All results are as presented in Tables 1-4.

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Test Measurements and Derived Data

		9
Table 1. VOC's - Continuous analysis data.		10
Table 2. Isocyanate/VOC's:- Preliminary data.	,	11
Table 3. Isocyanate emissions, Test 1.		12
Toble 4 Isocranate emissions Test 2		13

				 		Page	10 of	13
Date	29/06/2004		:	i 				
From	14:58	to	15:13					
			1	<u> </u>	Hourly Mean	14. 卷 畫 14		٦
துவர் இதிய இந்தி			f- 1		40.4	mg/m³*	21.3	┨
Volatile organic c			₹ vppm		13.1	a. o mg/mg/ kee.	27.0	_
经 以外身形。""到		<u> </u>	克… <u>.</u>			J		
From	15:13	to	15:28	3	Hourly Mean			_
第75 5 00 m 和			40F. J.	5 5				_
Volatile organic o		10	∺ ≱ vppm	1	14.6	€ mg/m³•	23.7	
では では では では に に に に に に に に に に に に に		5.5				5		
From	15:28	to	15:43	3				
			<u> </u>		Hourly Mean	C. Water Street, Science		7
新 (4. 17			447	Img/m³*	23.8	-
Volatile organic o		系 ** ** ** ** ** ** ** ** ** ** ** ** **			14.7	· practing/tip*	20.0	
From	15:43	to	15:5	F vi	Hourly Mean	i mg/m².	20.7]
Volatile organic	compounds	11章章		Të A	12.0		\ <u></u>	_
Sampling Detec	tion limits		 					
15:30 x 49352	e di si si si	4 35 05		C THE		1至/福加斯湖		
Vólatile organic	compounds	W. S. Carrie		m 🎉.	0.1	mg/m³*,	0.2	
Zero and Span			1				alower and Youve	
Species ***	字句"如"红"的"A"作	y L.Zan		ts 🗐	/超 / válue / 二十	(A) Cylinde	r reference	w.
中编设计划	非监狱。第 1000年						70000000	\dashv
	compounds 🛌 🗴		, vpp	m 🎠	16.5	P2851	ZD396068	
			į					

Table 1. VOC's - Continuous analysis data.

Line × 4	A 4		B≀sa š	. "				Ay Sure	D [<u> </u>
Traverse (D)		h j	Temperature	mm	h Iw.g:	6.7	Temperature (°C)	h mm w.g	Temperature (°C)	mm w.g
1			<u> </u>		<u>: </u>				 	
2	22	2.75	22	2.8					 	
3	22	3.16	22	3.3		_				
4	22	3.67	22	3.2	26				ļ	
5	22	3.98	22	3,6					ļ	ļ <u> </u>
6	22	4.39	22	4.	18				<u> </u>	ļ
7	22	4.69	22	4.	49				_	
8	22	4.69	22	4.	59			<u> </u>		
9	22	4.28	22	4.1	08				ļ	
10	22	3.98	22	3	98					<u> </u>
11	22	3.37	22	3!	06				ļ	<u> </u>
12								ļ	<u></u>	
Total Ta =	220	Total Tb =	220	To	tal Tc	=		Total Td =		

- Tp = (Ta + Tb + Tc + Td)/(Number of traverse points) + 273 = 295 K 1.
- 37 °C Permitted range = 0.95Tp - 273 to 1.05Tp - 273 7 2.
- B:Yes A :Yes Axial flow of gases along traverse 3.
- 4. b) Lowest pitot static reading = a) Highest pitot static reading =
- Ratio a/b =
 - Angle of maximum flow established Satisfactory leak check

Highest permitted ratio = 9/1

No Any local negative flows

Duct dimensions 0.64 m Yes Is minimum pitot reading >5Pa

- °C Average Stack temp =
- Average Pitot Reading = mm w.g
- 1.00 Calibration Constant (Cp) =

Duct Static Gas Pressure 👵 🎄 kPa	-0.131
Barometric Pressure	99

Average velocity 👪 🤏 🎉	8.266	m/satisti ille 🖫
Average flow rate	5.290	m³/s de la
Average flow rate	7.466	Nm³/s 🎉 🚑 🗀

Page 12 of 13

Date 🌵 🔻 🗒 🔭 😘 😞	29/06/2004
Start time	14:58
Finish time	15:28

		i Impinger	Impinger	<u>lmpinger</u>	Impinger
	UNITS	Impinger	2	3	4
· · · · · · · · · · · · · · · · · · ·				(Drop Out)	(Silica:Gel) 🞉
Start volume	Mills William	100	100	0	150
Start meter reading	m ³ Fig.	66.0830			
Meter temperature	*frid .*c * T 'i	22.0		*	
Finish meter reading	i em ⁵ s.	66.2040			
Finish volume	min in the second	95	85	0	163
据,但由中国的主动	语言的"病。"	;			
		Sample	Sample	Blank	Blank
ACID GAS	UNITS	Impinger conc.	Wash conc.	Impinger conc.	Wash conc.
	UNITS				
isocyanate 表 治療		0.0002	0.0002	0.0002	0.0002
M. M. L. L. C. C.		1			
海神學師 1955年	· 15年10年1月1日				

Wash vol. 200 ml

		Emission	Detection limit
Isocyanate	mg/Nm 🔊	þ	0.00002
THE PROPERTY OF A	和基件,扩展 。	i	

THE STATE OF THE PART AND THE WEST TREE SERVICES		ı
Date of analysis	I 09/07/2004	. 1
Digita OF allarysis 2	03/01/2004	

Numbers in bold indicate detection limits

Page 13 of 13

Date Taring	29/06/2004
Start time	15:30
Finish time	16:00

	UNITS	Impinger	Impinger 2	Impinger 3	Impinger 4
		₹數 吳本川	, par de la	(Drop Out)	(Silica Gel)
Start volume	* ml	100	100	0	150
Start meter reading	mº 50°	66.2040			
Meter temperature	是 記載表。c 包括。1	22.0			
Finish meter reading	m ³	66.3000			
Finish volume	种 ml事为	96	88	0	161
thou, believe,	在國際意義:				
ACID GAS	LUNITS	Sample Impingerconc.	Sample Wash conc.	Blank Impinger conc.	Blank Wash conc:
Isocyanate	∰ mg/l= i r	0.0002	0.0002	0.0002	0.0002
中央主要的全面量	TERRUNA				
	SETTE THE T]			

Wash vol.

200 ml

A STATE OF THE STA	Emission	Detection limit
Isocyanate mg/Nm	O	0.00003
· 在《美国社会》。	ļ	

77 February 1 Heavy 1 - 14 17 17 18 20	· · · · · · · · · · · · · · · · · · ·
The same of the sa	00/07/0004
Date of analysis 🔭 🔭	09/07/2004

Numbers in bold indicate detection limits

Table 4. Isocyanate emissions, Test 2.

BUNDLE A'

R/04-196

Page 1 of 13

EMISSION TEST RESULTS

Client Trelleborg Ltd.

Site Coventry

Plant Desma M/C No. 3

Date 29th June 2004

> Holbrook Lane Coventry West Midlands CV6 4QX

ALcontrol Laboratories

Emission Monitoring Group Templeborough House Mill Close Rotherham S60 1BZ

Tel: 01709 841103 Fax: 01709 841024



Page 2 of 13

EXECUTIVE SUMMARY

ALcontrol Laboratories were recently commissioned to undertake an emissions monitoring survey as follows:

Company

Trelleborg Ltd.

Site

Coventry

Plant

Desma M/C No. 3

The report presents the atmospheric emissions from the tests undertaken on: 29th June 2004. The results were measured from the sample positions downstream of the arrestment plant. The plant was operating normally during the test day with the arrestment plant on-line.

SUMMARY OF RESULTS

Emission	mg/Nm³	Uncertainty	Detection limits	Mäss emission
		t/- mg/Nm³	for ND values mg/Nm³	ghe.
Isocyanates (Test 1)	ND		0.00002	ND
Isocyanates (Test 2)	ND	-	0.00003	ND
TOC (Test 1)	22.5	1.06	•	194
TOC (Test 2)	22.2	1.05	-	192
		i		
	ļ į			
			1	
	Į į			
			i	
	!			
	İ			
				i
	:			

at Ref	T : 01	°C	as found	%Moisture
Conditions	101.3	kPa	as found	%Oxygen

Where applicable

Oxides of nitrogen results are expressed as nitrogen dioxide

VOC results are expressed as total carbon

Dioxins/furans expressed as upper limit values (TEQ)

Throughout Report:

Reference conditions (see above)

Nm³ 273 K, 101.3 kPa

Analysis not required

- UKAS accredited only

ND Non detectable

- Not Accredited

s - Subcontracted laboratory analysis, see page 4

N/A Not applicable



All tests included in this report are accredited under UKAS and MCERTS accreditation schemes unless otherwise stated. Opinions and interpretations expressed herein are outside the scope of MCERTS and UKAS accreditation.



Emission monitoring procedures and instrumentation

The test instrumentation and procedures met or exceeded the requirements of the EPA 1990 and HMIP Technical Guidance Notes M1 and M2. The CEN, BS, ISO or US EPA Method, and other appropriate method reference numbers, are given as applicable.

Volatile organic compounds

To documented in-house Standard Operating Procedure TPM/13 based on BS EN 12619: 1999 and BS EN 13526: 2002. Continuous analysis using probe, sample line and multi range Flame Ionisation Detector (FID) analyser. The analytical equipment detailed above is calibrated before and during the tests using certified gas mixtures (nitrogen (0 vppm) and propage (nominal 12 vppm)).

Isocyanates

To a non-accredited method based on MDHS 25/3,1999 "Organic Isocyanates in Air" (HSE) & NIOSH 5521, using equipment as in US EPA Method 26a. A metered volume of air is extracted through a min-impinger sampling train containing 1-(2-methoxyphenyl 1)-piperazine in toluene at 11/min. (to ensure full absorption of isocyanates. The resultant solution is concentrated and analysed by high performance liquid chromatography (HPLC) with ulta-violet detection. A blank sample is also prepared, subject to the same handling procedure, and submitted for analysis. analysis was performed by RPS Laboratories, Manchester M5 3EZ - see Page 4. Results were then blank corrected, and emission concentrations calculated as in MDHS 25/3 above.

13

10 Page of 29/06/04 Date From 14:58 to 15:13 Hourly Mean Volatile organic compounds - ∕-/mg/m³• 21.3 13.1 vppm From 15:13 15:28 to Hourly Mean Chili piKpalifarra 11 da Volatile organic compounds 📜 👙 🔠 amg/m³* a 23.7 vppm_ 14.6 A STATE OF THE PARTY OF THE PAR From 15:28 15:43 to Hourly Mean established street mg/m²-/ 23.8 Volatile organic compounds yppm 4 14.7 From 15:43 15:58 to Hourly Mean 12.8 ் _ mg/m³ _{fal}a Volatile organic compounds vppm₌ : 20.7 Sampling Detection limits estata Elife Volatile organic compounds vppm.... 0.1 mg/m³* 0.2 Zero and Span Gas Details িট্র_{ান} Cŷlinder reference ໍ່ _units value 4...4mi Volatile organic compounds 🚌 🏥 🦏 16.5 P2851ZD396068 vppm

Table 1. VOC's - Continuous analysis data.

SUMMARY

ISOCYANATES,

DESMA Machine No 3

Run Number	Run 1	Run 2		Blank
Date	29.6.04	29.6.04		
Start Time	14:58	15:30		
Stop Time	15:28	16:00		
Stack Temperature, C	22	22		l
Sample Rate, I/min	4	4		
Sample Volume, m3	0.121	0.096		
Stack Velocity, m/s	8,3	8.3		
Stack Flow Rate, m3/s	2¦4	2.4		
Mana of languages	<0.0002	<0.0002		<0.0001
Mass of Isocyanates Mass of Isocyanates,	<0.0002 	<0.0002		<0.0001
blank corrected	<0.0002	<0.0002		
Isocyanates (as -NCO)	<0.00002	<0.00003	mg/m³	:
Isocyanates(as-NCO)	<0.00001	<0.00001	Kg/hr	
	! !			

Client Tre leborg Ltd.
Site Coventry

Plant Desma M/C No. 3
Date 29th June 2004

QUALITY CONTROL

Equipment Used	<u>ID Number</u>
Airflow PVM Micromanometer	P104
Pitot Tube	PT59
Temperature Indicator	TK03
Stack Thermocouple No	TS157
Barometer	P108

ALcontrol Laboratories

Emission Monitoring Group Templeborough House Mill Close Rotherham S60 1BZ

Tel: 01709 841103 Fax: 01709 841024

Page 1 of 13

(2)

EMISSION TEST RESULTS

Client Trelleborg Ltd.
Site Coventry
Plant Desma M/C No. 1/2
Date 22nd July 2004

Holbrook Lane Coventry West Midlands CV6 4QX

ALcontrol Laboratories

Emission Monitoring Group Templeborough House Mill Close Rotherham S60 1BZ

Tel: 01709 841103 Fax: 01709 841024

Page 2 of 13

EXECUTIVE SUMMARY

ALcontrol Laboratories were recently commissioned to undertake an emissions monitoring survey as follows:

Compan

Trelleborg Ltd.

Site

Coventry

Plant

Desma M/C No. 1/2

The report presents the atmospheric emissions from the tests undertaken on :

22nd July 2004

The results were measured from the sample positions downstream of the arrestment plant.

The plant was operating normally during the test day with the arrestment plant on-line.

SUMMARY OF RESULTS

Emission	mg/Nm³	Uncertainty 	Detection limits for ND values mg/Nm³	Mass emission
Isocyanates (Test 1) Isocyanates (Test 2) TOC (Test 1) TOC (Test 2)	ND ND 5.3	- - 0.36 0.72	0.00004 0.00004 -	ND ND 73 214
		:		

	i			
at Ref	0	°C	as found	%Moisture
Conditions	101.3	kPa	as found	%Oxygen

Where applicable

Oxides of nitrogen results are expressed as nitrogen dioxide

VOC results are expressed as total carbon

Dioxins/furans expressed as upper limit values (TEQ)

Throughout Report:

Reference conditions (see above)

Nm³ 273 K, 101.3 kPa

Arialysis not required

- UKAS accredited only

ND Non detectable

- Not Accredited

s - Subcontracted laboratory analysis, see page 4

N/A Not applicable



All tests included in this report are accredited under UKAS and MCERTS accreditation schemes unless otherwise stated. Opinions and interpretations expressed herein are outside the scope of MCERTS and UKAS accreditation.



CERTIFICATE

This is to certify that, to the best of our knowledge and belief, the results contained within this Report are a true and fair reflection of the plant operation during the time of the tests.

Job Number:

051a01

Report Number:

R/04-195

Plant Designations:

Desma M/C No. 1/2

Test Personnel

Sunil Salpekar (MCERTS Level 1 MM02 119)

Date of tests:

22nd July 2004

Site Address:

Holbrook Lane

Coventry

West Midlands

CV6 4QX

Prepared by:

Ben Tranmer (MCERTS Level 2 MM02 113)

Checked by:

Sign ..

Position Technical Administrator

Authorised by:

Position Project Manager

Date: 216 August 2004

SUB-CONTRACTED LABORATORY ANALYSIS

ALcontrol Laboratories has, with your approval, used the following sub-contracted laboratories for the laboratory analyses referenced below:

Laboratory:

RPS Laboratories

Table Numbers:

3&4

Accreditation:

UKAS accredited testing laboratory Number 0605

Emission monitoring procedures and instrumentation

The test instrumentation and procedures met or exceeded the requirements of the EPA 1990 and HMIP Technical Guidance Notes M1 and M2. The CEN, BS, ISO or US EPA Method, and other appropriate method reference numbers, are given as applicable.

Volatile organic compounds

To documented in-house Standard Operating Procedure TPM/13 based on BS EN 12619: 1999 and BS EN 13526: 2002. Continuous analysis using probe, sample line and multi range Flame Ionisation Detector (FID) analyser. The analytical equipment detailed above is calibrated before and during the tests using certified gas mixtures (nitrogen (0 vppm) and propane (nominal 12 vppm)).

Isocyanates

To a non accredited method based on IOSH 5521 using sampling equipment as in US EPA Method 26a. Metered volume of gas extracted through a multi mini-impinger train containing 1-(2-methoxyphenyl1)-piperazine in tolune solution and subsequent analysis by high performance liquid chromatography (HPLC)

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Monitoring Objectives

The monitoring was undertaken to check compliance with authorised emission limits.

All monitoring procedures were carried out to the MCERTS requirements under the ALcontrol Laboratories quality system to ISO 17025: 2000.

Monitoring was undertaken for the listed emissions from the following sampling positions:

Emission

Isocyanates
Volatile organic compounds

Sampling Location

Desma M/C No. 1/2 Desma M/C No. 1/2

Comments on monitoring procedures

All monitoring procedures performed correctly with no problems.

The velocity and temperature profile at the sampling location met the requirements of BS EN 13284-1: 2001.

Plant operating conditions

The plant was operating normally during the tests.

Monitoring Timetable

Emission	Start Time	Finish Time	Date
Isocyanate (Test 1)	11:18	11:52	22/07/2004
Isocyanate (Test 2)	10:37	11:07	22/07/2004
Volatile organic compounds (Test 1)	10:05	10:35	22/07/2004
Volatile organic compounds (Test 2)	10:35	11:05	22/07/2004

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RESULTS DISCUSSION

All results are as presented in Tables 1-4.

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Test Measurements and Derived Data

<u>'</u>	Page
Table 1. VOC's - Continuous analysis data.	10
Table 2. Isocyanate/VOC's:- Preliminary data.	11
Table 3. Isocyanate emissions, Test 1.	12
Table 4. Isographie emissions. Test 2.	13

Page 10 of 13

Date

22/07/2004

From

10:05

to

10:20

	Hourly Mean	_
5 (4) (2) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	Mr. Out. 1997	4
Volatile organic compounds Vppm	1,9 \$\alpha_mg/m^3 \alpha_ 3.1	۲

From

10:20

Volatile organic compounds

to

10:35

Hourly Mean		
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
4.6	mg/m³°.	7.5

From

10:35

。1. "是是是一人。"在其实在是一种的一种,是是是一个

to

10:50

FIOIII	10.00				
			Hourly Mean		
		in Historial			
	The state of the s	Co. Physical Co.	8.6	i mg/m³⁺	13.9
	ganic compounds Action Annual Compounds	illu uz			

From

10:50

to

11:05

Hourly Mean

一、 江水水、红色学、油红色大龙、金色等、银针等。		
Volatile organic compounds vppm	10.7	‡mg/m³* 17.3
Company additional property of the state of		 -

Sampling Detection limits

	Mali Cine Chine (Chine)	Tata	a 100 pages a support	
to the infante was the second of the second	排門 清潔		Light Section For Charles	
Valatile organic compounds with the little of		0.1		0.2

Zero and Span Gas Details

Species 对证明 全国的	s value	Cylinder reference
	· · · · · · · · · · · · · · · · · · ·	
Volatile organic compounds vpp	π 16.5	P2851ZD396068

Line - 1	A	A * 1231	B.W 211		C á.	一個都在世		
Traverse	Temperature	h mm w.g.	Temperature (°C)	h mm w.g.	Temperature (°C)	h i mm w.g i	Temperature	nm w.g
1				<u> </u>			 	
2	20	0.71	20	0.61			 	
3	20	0.92	20	1.02				
4	20	0.82	20	0.82				
5	20	1.33	20	1.43			 	
6	20	0.71	20	0.71		<u> </u>		
7	20	0.71	20	0.61			<u> </u>	·
8	20	1.53	20	1.73			ļ	
9	20	1.22	20	1.12	<u> </u>		ļ —	<u> </u>
10	20	2.35	20	2.55			ļ <u> </u>	
11	20	3.06	20	2.86			ļ	
12				<u> </u>	<u> </u>		<u> </u>	ļ
Total Ta =	200	Total Tb =	200	Total Tc =		Total Td ≃		

- 1. Tp = (Ta + Tb + Tc + Td)/(Number of traverse points) + 273 = 293 K
- Permitted range = 0.95Tp 273 to 1.05Tp 275 5 to 35 °C
- 3. Axial flow of gases along traverse A :Yes B :Yes
- 4. a) Highest pitot static reading = 3 .4. b) Lowest pitot static reading = 1
- 5. Ratio a/b = 5.0 Highest permitted ratio = 9/1
 - Satisfactory leak check Yes Angle of maximum flow established Yes

Any local negative flows No

Is minimum pitot reading >5Pa Yes Duct dimensions 0.64 m

- Average Stack temp = 20 °C
- 7 Average Pitot Reading = 1.06 mm w/g
- 8 Calibration Constant (Cp) = 1.00

Duct Static Gas Pressure	-0.397
Barometric Pressure	99.7

Average velocity	4.161	m/s = 1 T
Average flow rate	2.663	m³/s., lange
Average flow rate	3.800	Nm³/sˈx.i.k. 🚅 🚊

Page 12 of 13

Date	: .		22/07/2004	,
Start time	:	192 3 75	11:18	3
Finish time		N TE	11:52	ű

		i I			
	UNITS	Impinger	impinger .	Impinger 3 (Drop Out),	Impinger 4 (Silica Gel)
Start volume	ml 12	100	100	0	150
Start meter reading	m³ 1	66,3000			
Meter temperature	· · · · · · · · · · · · · · · · · · ·	19.0			
Finish meter reading	m ³	66,3600			
Finish volume	mi 🎉	100	100	0	156
ACID GAS	UNITS	Sample Impinger conc	Sample Wash conc	Blank Impinger conc.	Blank Wash conc:
Isocyanate	mg/l	0.0002	0.0002	0.0002	0.0002

200 ml Wash vol.

1244417 22.5 9.44

ا المستور :			Emission	Detection limit
Isocyanate	100	mg/Nm	0	0.00004
		13. · · · · · · · · · · · · · · · · · · ·		

WE THE

要し数と 記されなる

Date of analysis	05/08/2004

Numbers in bold indicate detection limits

Page 13 of 13

Date and the second	22/07/2004
Start time	10:37
Finish time	11:07

 \hat{C}

		Impinger	lmpinger	Impinger	Impinger 4
	UNITS			(Drop Out)	(Silica Gel)
Start volume	ml	100	100	0	150
Start meter reading	上海中 _m s古里登	66.3600			
Meter temperature	6 6 90 at \$	23.0			
Finish meter reading		66.4200			
Finish volume	ml m	100	100	0	156
The Walletin			estroueuse usii ii las		S -===
(图1) 10 10 10 10 10 10 10 10 10 10 10 10 10		Sample	Sample	Blank	Blank
ACID GAS	UNITS 📲	Impinger conc.	. :: Wash conc.	Impinger conc.	Wash conc.
AN TOWN THE PROPERTY OF				建作物型 电程序设计	
Isocyanate	≟ j≟ mg/l = J	0.0005	0.0005	0.0005	0.0005
DATE NULLS					
a survision de la compansión de la compa					<u> </u>

Wash vol.

200 ml

		Emission	Detection limit
一个对待我们对他的是证据在目的的。	mg/Nm	, o	0.00004
Isocyaniate			

Date of analysis	05/08/2004
Date of analysis	03/00/2004

Numbers in bold indicate detection limits