Scientific Analysis Laboratories

Report Number:	34716
Date of Report:	04-Apr-2003
Client :	Alcontrol Laboratories Ltd Templeborough House Mill Close Rotherham S60 1BZ
Client Contact:	Sunil Salpekar
Client Job Reference:	ALC 47215
Date Job Received at SAL:	25-Mar-2003
Date Analysis Started:	31-Mar-2003

The results reported relate to samples received at the laboratory
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Key to symbols used in this report:
W: Analysis was performed within the SAL group of laboratories
S: Analysis was subcontracted to a laboratory that holds UKAS accreditation
C: Analysis was subcontracted
N: Analysis is not UKAS accredited
U: Analysis is UKAS accredited

Report written by: [redacted] N Summers
Project Manager

Report checked and authorised by: [redacted] Knott
oject Manager

Report Number: 34716
Client Job Reference: ALC 47215
Total Isocyanates MDHS 49

1 2 BLANK.

SAL Ref.	34716-001	34716-002	34716-003
Client Ref.	26573	36574	36575
Type	Impinger	Impinger	Impinger

Determinand	Method	Units	LOD	Symbol			
Total Isocyanates	Colorimetry	Total µg	0.5		8.4	7.7	7.3

DRESCHEL TRAIN SAMPLING DATA SHEET

Date : 11.3.03 **Site Name:** TRELLEBORG **Static Sample Point Ref :** BILLET RALPH MACH 5
Operator : SS **Contaminant :** ISOCYANATES
RUN 1

Operative Name/Job Function: N/A

PPE: N/A

Barometric Pressure : 1005 **Ambient Temperature :** 20°C

Start Time	11:39
Finish Time	12:09
Total Time	30 mins

Meter Reading (Start)	N/A
Meter Reading (Finish)	N/A
Volume Sampled	30 Litres.
Flow Rate (l/min)	1.08
Meter Inlet Temp (Start)	20°C
Meter Inlet Temp (Finish)	
Meter Outlet Temp (Start)	20°C
Meter Outlet Temp (Finish)	
Silica Gel Weight (Initial)	150g
Silica Gel Weight (Final)	151g
Silica Gel Weight Gain	1g
Volume Impinger 1 (Initial)	5ml
Volume Impinger 1 (Final)	5
Impinger 1 Volume Gain	0
Volume Impinger 2 (Initial)	5ml
Volume Impinger 2 (Final)	5
Impinger 2 Volume Gain	0
Washings Volume (Impingers)	2

Sampling Pump I.D	505921
Rotameter I.D	DC01
Thermocouple I.D. (inlet)	TS134
Thermocouple I.D. (Outlet)	TS134
Temperature Indicator I.D.	T1444
Timer I.D.	ST4
Barometer I.D.	
Balance I.D	
Trapping Solution Matrix and Reference Number	—
Silica Gel Reference	—

Notes:

DRESCHEL TRAIN SAMPLING DATA SHEET

Date : 11/3/03 **Site Name:** TRELLEBORG **Static Sample Point Ref :**
Operator : SS **Contaminant :** ISOCYANATE RUN 1

Operative Name/Job Function: N/A

PPE: N/A

Barometric Pressure : 1005 **Ambient Temperature :** 20

Start Time	13.17
Finish Time	13.47
Total Time	

Meter Reading (Start)	N/A
Meter Reading (Finish)	N/A.
Volume Sampled	
Flow Rate (l/min)	1
Meter Inlet Temp (Start)	20
Meter Inlet Temp (Finish)	
Meter Outlet Temp (Start)	20
Meter Outlet Temp (Finish)	
Silica Gel Weight (Initial)	150
Silica Gel Weight (Final)	150
Silica Gel Weight Gain	0
Volume Impinger 1 (Initial)	5
Volume Impinger 1 (Final)	
Impinger 1 Volume Gain	
Volume Impinger 2 (Initial)	5
Volume Impinger 2 (Final)	
Impinger 2 Volume Gain	
Washings Volume (Impingers)	

Sampling Pump I.D	508921
Rotameter I.D	DOM
Thermocouple I.D. (inlet)	TS134
Thermocouple I.D. (Outlet)	TS134
Temperature Indicator I.D.	T1444
Timer I.D.	ST4
Barometer I.D.	PT11
Balance I.D	
Trapping Solution Matrix and Reference Number	–
Silica Gel Reference	

Notes:

ITEM 4

A REPORT ON ISOCYANATE AND VOLATILE ORGANIC COMPOUND EMISSIONS MONITORING AT TRELLEBORG LIMITED, COVENTRY

Prepared for

TRELLEBORG LIMITED

by

ALcontrol Laboratories

Sampling Dates: 11th / 12th March 2003
Report Date: 20th May 2003
Issue Number: 1

Prepared by: Sunil Salpekar

Authorised by: Mick Robinson

CLIENT	:	Trelleborg Limited Holbrook Lane Coventry West Midlands CV6 4QX
CONTACT	:	**Mr John Davenport**
REPORT SUBJECT	:	Emissions Monitoring for Isocyanates, VOC's
REPORT NUMBER	:	ALR/1034b/TRE/03
SAMPLE DATES	:	11th /12th March 2003
REPORT DATE	:	20th May 2003
PROJECT CONTACT	:	Sunil Salpekar ALcontrol Laboratories Templeborough House Mill Close Rotherham S60 1BZ Tel: 01709 841054 Fax: 01709 841024

CONTENTS

1. INTRODUCTION

ALcontrol Laboratories were contracted to undertake an emissions investigation at Trelleborg Ltd. The monitoring was undertaken to assess compliance with the limits set for Diphenyl methane di-isocyanates within the site's Authorisation. The monitoring was undertaken from : 'Billet Ralph machine' No.5 for Isocyanates, AND 'Desma machines Nos 1 & 2, 3' for Volatile Organic Compounds, from local ventilation systems that release emissions to atmosphere

The test work was performed on 11th / 12th April 2003.

2. SAMPLING METHODS

2.1. 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.

2.2. Volatile Organic Compound Emissions

Extractive sampling is performed following NAM/8.3/2.7. 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).

2.3. 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).

3. RESULTS

- The results for all the determinands are given in the Tables 1-4.
- All results are averaged and expressed on a wet basis, to STP (273 K, 101.3kPa) without correction for oxygen.
- Atmospheric pressure values are obtained from digital barometer.

3.1. Plant Conditions

BILLET RALPH Machine No. 5

The production unit served by the extraction system was operating under typical conditions on the day of monitoring.

3.1. Plant Conditions continued

DESMA M/C No.3

The production unit served by the extraction system was operating under typical conditions on the day of monitoring.

DESMA M/C No.1/2

Both production units served by the extraction system were operating under typical conditions on the day of monitoring.

3.2 Isocyanates, as total -NCO (Diphenyl methane di-isocyanate)

Table 1

BILLET RALPH Machine No. 5

Run Number	Run 1	Run 2	Blank
Date	11.03.03	11.03.03	-
Start Time	11:39	13:17	-
Stop Time	12:09	13:47	-
Stack Temperature, °C	25	25	-
Sample Rate, l/min	1.1	1.1	-
Sample Volume, m^3	0.033	0.033	-
Stack Velocity, m/s	11.172	11.172	-
Stack Flow Rate, m^3/s	0.875	0.875	-
Mass of Isocyanates (as total -NCO), µg	8.4	7.7	7.3
Mass of Isocyanates blank corrected (as total -NCO), µg	1.1	0.4	0
Isocyanates (as total -NCO), mg/m^3	**0.03**	**0.01**	-
Isocyanates (as total -NCO), Kg/hr	<0.001	<0.001	-

3.3 Volatile Organic Compounds

Table 2

BILLET RALPH Machine No. 5

Test		1. 11/03/03
Start Time		11:45
Stop Time		13:41
VOC Concentration	mg/m^3	**15.0**
Discharge Rate	kg/hr	1.21

Plant Authorisation limit = 100 mg/m^3

3.3 Volatile Organic Compounds continued

Table 3

DESMA M/C 3

Test		1. 12/03/03
Start Time		10:45
Stop Time		11:45
VOC Concentration	mg/m^3	**9.5**
Discharge Rate	kg/hr	1.21

Table 4

DESMA M/C 1 & 2

Test		1. 12/03/03
Start Time		13:27
Stop Time		14:27
VOC Concentration	mg/m^3	**13.9**
Discharge Rate	kg/hr	1.78

Plant Authorisation limit = 100 mg/m^3

4. QUALITY CONTROL

4.1. Equipment used

UNIT	ID Number
Airflow PVM Micromanometer	PI03
Pitot Tube	PT45
Temperature Indicator	TI444
Stack Thermocouple No.	TP144
Barometer	PI08
Timer No.	400634

5. SAMPLING PERSONNEL

Sampling Team: Sunil Salpekar

6. RESULTS SUMMARY

Comparison with Authorisation Limits, mg/m^3, STP, without correction for moisture and oxygen.

Parameter	Test	Result	Mean	Limit
Diphenyl methane di-isocyanate (MDI) as total -NCO MACHINE No.5	1.	0.03		
	2.	0.01	**0.02**	
VOCs BILLET RALPH MACHINE No.5	1.	**9.5**		100
VOCs DESMA M/C 3	1.	**15.0**		100
VOCs DESMA M/C 1 & 2	1.	**13.9**		100