

SUMMARY REPORT

Client: **Tarkett AB**

Site: **Ronnebyhamn
372 81 Ronneby
Sweden**

Area/Equipment: **Flooring Sample - iQ Optima**

Date(s) of Test: **7 January 2014**

Report Issue Date: **15 January 2014**

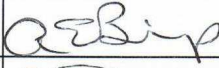
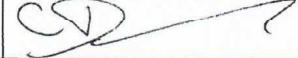
Diamond Scientific Ref: **DSJ-196-14021**

Client Order Reference: **4200073878**

Tests Performed By: **Ian McGee**

Report Issued to: **Joacim Karlsson**

Diamond Scientific Document Review & Approval

Name	Position	Signature	Date
Andrea Bishop	General Manager		15 Jan 2014
Chris Davidson	Technical Manager		15 JAN 14

Client Review & Approval

Name	Position	Signature	Date



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1. DOCUMENT CONTROL

Revision Number	Date	Comment
Rev 1	15 January 2014	Issued for client approval

2. EXECUTIVE SUMMARY

2.1 Introduction

Performance verification testing has been carried out on the contamination control facilities and/or equipment detailed on the front cover page of this report. The work was executed, as requested by the client, under the purchase order reference detailed on the cover page.

This report has then been compiled using the raw data and test results produced during the visit. The scope and methods used for the works are referenced or detailed within the relevant sections of this report, along with test instrument details, acceptance criteria and result data (where applicable).

The information given within this report gives an accurate interpretation of the test results achieved, with consideration given to the requirements of any test standards, procedures, design requirements or guidelines applicable.

Conclusions on the performance, and final decisions on acceptance of compliance, should only be made after a full study of all the results and raw data achieved, which are supplied and recorded in this report.

Any relevant raw data has been included, along with current calibration certificates for all the test instruments used.

The production of this report and the scope of works under the contract have all been executed in accordance with, and are controlled by, the Diamond Scientific BS EN ISO 9001:2008 quality management system.

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2.2 Uncertainties of Measurement

There are uncertainties of measurement for most of the measurements in this report. The reported expanded uncertainty is based on a standard uncertainty multiplied by coverage factor $k = 2$, providing a confidence level of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Uncertainties of measurement are only reported where they may have an effect on the acceptability of the result.

Note: The results of tests where client supplied equipment have been used do not have uncertainties of measurement associated with them and are not covered by our UKAS accreditation.

2.3 Visit Summary

From the test result data included within this summary report, the compliance status is documented in the summary result table below.

Description	Result	Comment
A.S.T.M F24-09 A standard test method for measuring and counting particulate contamination on surfaces	n/a	Results are for reference only.
A.S.T.M. F51-00 A standard method for sizing and counting particulate contaminant in and on cleanroom clothing – adapted to a non porous surface	n/a	Results are for reference only.

Note A: The individual notes indicated by a * at the end of each relevant report section should be considered before accepting the compliance result documented in the table above.

2.4 Comments & Recommendations

Comments and recommendations detailed in this report are given in good faith to assist the client and, as "opinions", they are not covered by our UKAS accreditation.

3. SURFACE CLEANLINESS TESTING TO ASTM F24

3.1 Method Statement

The cleaned specimen was first mounted on a microscope slide and examined under incident light using the method for planar surfaces described in A.S.T.M: F24-09 "A Standard Method for Measuring and Counting Particulate Contamination on Surfaces".

In essence, the cleaned surface is viewed at up to 100x magnification and the number of particles noted in the size ranges 5-25, 25-100 and greater than 100 microns.

3.2 Test Instruments

Measurements were taken using the following test instrument(s):

Use	Description	Model	Serial Number
Airflow Gauge	Platon Airflow Gauge	FM6868	23

Copies of test instrument calibration certificates are detailed within the 'Attachments' section of this report.

3.3 Acceptance Criteria

The acceptance criterion is detailed on the results table below.

3.4 Results

Count per square cm of component surface.

Particle Size µm	Sample	Thickness	Batch ID	Density	Weight
	Iq Optima	n/a	n/a	n/a	n/a
5-25	1				
25-100	4				
>100	0				
Result	5 particle per cm ²				

3.5 Conclusion

No acceptance criterion was provided and therefore results are for reference only.

3.6 Notes

The testing of PVC surfaces is not included in our UKAS accreditation.

4. SURFACE SHEDDING TESTING TO ASTM F51-00

4.1 Method Statement

The potential particle shedding capacity of the PVC sample was monitored by repeatedly applying vacuum to the specimen in a method based on A.S.T.M. F51/00 "A Standard Method for Sizing and Counting Particulate Contaminant In and On Clean Room Clothing". It should be noted that this method is really designed to evaluate porous surfaces.

Using a 47mm 0.8µm test filter the specimen was vacuumed so that the entire surface was scanned over a minute period, the flow was regulated to 20L/min and care was taken to ensure the probe remained in full contact with the sample throughout the test.

The sample was then analysed with a microscope set at 100x magnification and all particles >5 microns and fibres >100 microns in length were noted.

4.2 Test Instruments

Measurements were taken using the following test instrument(s):

Use	Description	Model	Serial Number
Airflow Gauge	Platon Airflow Gauge	FM6868	23

Copies of test instrument calibration certificates are detailed within the 'Attachments' section of this report.

4.3 Acceptance Criteria

The acceptance criterion is detailed on the results table below.

4.4 Results

ASTM F51-00 Class	Contaminant Level per sq/ft of Surface	
	No. of Particles >5 µm	No. of Fibres >100µm long
A	<1,000	<10
B	<5,000	<25
C	<10,000	<50
D	<15,000	<125
E	<25,000	<175
Unclassified	>25,000	>175
Result	20	4

Classification Achieved	Surface Type and Source
A	Vinyl Floor Covering Iq Optima

4.5 Conclusion

No acceptance criterion was provided and therefore results are for reference only.

4.6 Notes

The testing of PVC surfaces is not included in our UKAS accreditation.

5. LIST OF ATTACHMENTS

Attachment Description	Attachment Number
TEST INSTRUMENT CALIBRATION CERTIFICATES.....	1

TEST INSTRUMENT CALIBRATION CERTIFICATES

Attached are copies of test instrument calibration certificates for all the test instruments used. All instruments are calibrated on at least an annual basis.

Number of pages attached: **1**



Instrument House
Morgan Drive
Guisborough
Cleveland
TS14 7DG

TEL (01287) 204020
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Certificate of Calibration

INSTRUMENT : VAF **CUSTOMER** : Diamond Scientific.
LOCATION : Service Department **ORDER No.** : DS-2374
PRODUCT : Air **METHOD No.** : 030
MAKE : Platon **TAG No.** : FM 7464
METER TYPE : 10 – 100 l/min. **CALIBRATED BY** : G Greenfield
SERIAL No. : INSTRUMENT No.23

RESULTS (l/min)

SAMPLE POINT	TRUE READING AIR	IND. FLOW RATE AIR	CORRECTED READING AIR @ CAL CONDITIONS	CORRECTION PLUS % ERROR FULL SCALE
1	13.917	10	9.874	4.043 4.043%
2	22.920	20	19.744	3.176 3.176%
3	31.566	30	29.616	1.950 1.950%
4	40.859	40	39.488	1.371 1.371%
5	51.745	50	49.361	2.384 2.384%
6	60.316	60	59.233	1.083 1.083%
7	71.011	70	69.093	1.918 1.918%
8	82.613	80	78.950	3.663 3.663%
9	92.240	90	88.804	3.436 3.436%
10	102.260	100	98.654	3.606 3.606%

Results taken by data logger to the FCO510 over an average of 20 readings per sample point.

Tested against Furness Controls Micromanometer FCO510, serial no. 9411124 traceable to cert no. 08740 with Laminar Flow Element No. 5, serial no 0910119 traceable to cert no. 08728.

Corrected to 20.0° C and 1013 mbar.

We hereby certify that the test figures were correct as stated at the time of dispatch.

SIGNED BY

CALIBRATION DATE 13/05/2013
CALIBRATION DUE 12/05/2014