

MICRO ANALYTICAL LABORATORIES, INC.

TEM AIRBORNE ASBESTOS ANALYSIS



1023
 Terracon Consultants, Inc.
 1466 66th Street
 Emeryville, CA 94608

PROJECT:
JOB NO. R1147447
DEMO / ABATEMENT DVC
PLEASANT HILL, CA
LIBRARY BUILDING

Micro Log In **203241**
 Total Samples 5
 Date Sampled 03/06/2015
 Date Received 03/06/2015
 Date Analyzed 03/06/2015

SAMPLE INFORMATION	ASBESTOS STRUCTURE COUNT	CALCULATED ASBESTOS STRUCTURE CONCENTRATION			
CLIENT ID	ASBESTOS TYPE	Str. per mm ²	Str. per cc		
R1147447-050615-P1	CHRYSTOLE 2	49	0.0097		
MICRO ID 203241-01	GRUNERITE (AMOSITE) 0				
Time 450	RIEBECKITE (CROCIDOLITE) 0				
LPM 4.30	TREMOLITE 0				
Liters 1935.0	ACTINOLITE 0				
DESCRIPTION	ANTHOPHYLLITE 0	Asbestos Structures Subdivided By Length			
LIBRARY ENTRANCE	TOTAL ASBESTOS 2	Length	No.	S/mm²	S/cc
LOBBY - CB		0.5 - 5 μm	2	49.0	0.0097
DEMO & ABATEMENT		≥ 5 μm	0	< 24.0	< 0.0048
(REANALYSIS OF PCM 203239-01)					
COMMENTS					
ASBESTOS IDENTIFIED AS CHRYSTOLE					
Total Asbestos	Grid Squares	Field Filter Data		Analytical Sensitivity	
2	4	Type	MCE	0.0048	Str. per cc
Grid Square Area	0.0103 mm ²	Diameter	25 mm	Quantitation Limit	
Area Analyzed	0.0412 mm ²	Collection Area	385 mm ²	0.0178	Str. per cc
Operating Parameters					
TEM Magnification 15,000-20,000					
SAED Photo No. / ID					

Technical Supervisor: 3/6/2015 Analyst: FPR
 Frank Raviola, M.S. Date Reported

Micro Analytical Laboratories, Inc. is accredited for airborne asbestos analysis under NVLAP Lab Code 101872-0. NVLAP accreditation is limited to laboratory analyses. Analyses follow the analytical procedures of the U.S. EPA's "Interim Transmission Electron Microscopy Method" (1987), 40 CFR Part 763, Appendix A to Subpart E. Sampling parameters may differ from the AHERA method. Micro Analytical Laboratories, Inc. is not responsible for data collected by non-laboratory personnel. Results reported in both "Structures per cc" and "Structures per mm²" depend on the volume of air samples as measured by non-laboratory personnel, and are not covered by our NVLAP accreditation. Concentrations and limits expressed in "Structures per mm²" are applicable only to samples with volumes of 1199 or more liters (AHERA Method, 1987). Variability due to different airborne fiber distributions, whether on different portions of the same filter or from different filters from the same sampled area, may be significant. Analytical sensitivity is the airborne concentration represented by each asbestos structure counted in the area analyzed; it is not the same as the detection limit. Specific characterization of non-asbestos particles is not applicable to this analysis. This report must not be used to claim product endorsement by NIST or any other U.S. Government agency. Unless otherwise indicated on this report, all required Quality Control samples have been determined to be in control prior to releasing these analytical results. Duplicate QC samples have lower analytical sensitivities. Unless otherwise stated in this report, all samples were received in acceptable condition for analysis. Note: due to software limitations, the number of reported significant figures does not necessarily reflect the uncertainty of the analysis. This report shall not be reproduced except in full without the approval of Micro Analytical Laboratories, Inc., and pertains only to the samples analyzed.

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SAMPLE INFORMATION	ASBESTOS STRUCTURE COUNT	CALCULATED ASBESTOS STRUCTURE CONCENTRATION															
CLIENT ID <div style="border: 1px solid black; padding: 2px; display: inline-block;">R1147447-050615-P2</div> MICRO ID 203241-02 Time 466 LPM 5.40 Liters 2516.4 DESCRIPTION MEDIA SUCS - CB DEMO & ABATEMENT (REANALYSIS OF PCM 203239-02)	ASBESTOS TYPE CHRYSOTILE 4 GRUNERITE (AMOSITE) 0 RIEBECKITE (CROCIDOLITE) 0 TREMOLITE 0 ACTINOLITE 0 ANTHOPHYLLITE 0 TOTAL ASBESTOS 4	Str. per mm² Str. per cc <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; border-radius: 10px;">97</div> <div style="border: 1px solid black; padding: 5px; border-radius: 10px;">0.015</div> </div>															
		Asbestos Structures Subdivided By Length <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Length</th> <th>No.</th> <th>S/mm²</th> <th>S/cc</th> </tr> </thead> <tbody> <tr> <td>0.5 - 5 μm</td> <td style="text-align: center;">4</td> <td style="text-align: center;">97.0</td> <td style="text-align: center;">0.0150</td> </tr> <tr> <td>≥ 5 μm</td> <td style="text-align: center;">0</td> <td style="text-align: center;">< 24.0</td> <td style="text-align: center;">< 0.0037</td> </tr> </tbody> </table>				Length	No.	S/mm ²	S/cc	0.5 - 5 μm	4	97.0	0.0150	≥ 5 μm	0	< 24.0	< 0.0037
Length	No.	S/mm ²	S/cc														
0.5 - 5 μm	4	97.0	0.0150														
≥ 5 μm	0	< 24.0	< 0.0037														
COMMENTS ASBESTOS IDENTIFIED AS CHRYSOTILE - The reported asbestos concentration should be regarded as a minimum value, due to heavy particulate loading.																	
Total Asbestos 4 Grid Squares 4 Grid Square Area 0.0103 mm ² Area Analyzed 0.0412 mm ²	Field Filter Data Type MCE Diameter 25 mm Collection Area 385 mm ²	Analytical Sensitivity 0.0037 Str. per cc Quantitation Limit 0.0137 Str. per cc	Operating Parameters TEM Magnification 15,000-20,000 SAED Photo No. / ID														

Technical Supervisor: Frank Raviola, M.S.

 3/6/2015
Date Reported

Analyst: FPR

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 Emeryville, CA 94608

PROJECT:
JOB NO. R1147447
DEMO / ABATEMENT DVC
PLEASANT HILL, CA
LIBRARY BUILDING

Micro Log In **203241**
 Total Samples 5
 Date Sampled 03/06/2015
 Date Received 03/06/2015
 Date Analyzed 03/06/2015

SAMPLE INFORMATION	ASBESTOS STRUCTURE COUNT	CALCULATED ASBESTOS STRUCTURE CONCENTRATION													
CLIENT ID <div style="border: 1px solid black; padding: 2px; margin: 5px 0;">R1147447-050615-P5</div> MICRO ID 203241-05 Time 420 LPM 4.30 Liters 1806.0 DESCRIPTION EXTERIOR AT LIBRARY ENTRANCE DEMO & ABATEMENT (REANALYSIS OF PCM 203239-05)	ASBESTOS TYPE CHRYSOTILE <input type="text" value="0"/> GRUNERITE (AMOSITE) <input type="text" value="0"/> RIEBECKITE (CROCIDOLITE) <input type="text" value="0"/> TREMOLITE <input type="text" value="0"/> ACTINOLITE <input type="text" value="0"/> ANTHOPHYLLITE <input type="text" value="0"/> TOTAL ASBESTOS <input type="text" value="0"/>	Str. per mm² <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 5px 0;">< 19</div>	Str. per cc <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 5px 0;">< 0.0041</div>												
		Asbestos Structures Subdivided By Length													
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">Length</th> <th style="width: 10%;">No.</th> <th style="width: 10%;">S/mm²</th> <th style="width: 10%;">S/cc</th> </tr> </thead> <tbody> <tr> <td>0.5 - 5 µm</td> <td style="text-align: center;">0</td> <td style="text-align: center;">< 19.0</td> <td style="text-align: center;">< 0.0041</td> </tr> <tr> <td>≥ 5 µm</td> <td style="text-align: center;">0</td> <td style="text-align: center;">< 19.0</td> <td style="text-align: center;">< 0.0041</td> </tr> </tbody> </table>	Length	No.	S/mm ²	S/cc	0.5 - 5 µm	0	< 19.0	< 0.0041	≥ 5 µm	0	< 19.0	< 0.0041	
Length	No.	S/mm ²	S/cc												
0.5 - 5 µm	0	< 19.0	< 0.0041												
≥ 5 µm	0	< 19.0	< 0.0041												

COMMENTS
 NO ASBESTOS DETECTED

Total Asbestos	Grid Squares	Field Filter Data	Analytical Sensitivity	Operating Parameters
0	5	Type MCE	0.0041 Str. per cc	TEM Magnification 15,000-20,000
Grid Square Area 0.0103 mm ²		Diameter 25 mm	Quantitation Limit	SAED Photo No. / ID
Area Analyzed 0.0515 mm ²		Collection Area 385 mm ²	0.0153 Str. per cc	

Technical Supervisor:
 Frank Raviola, M.S.

3/6/2015 Date Reported Analyst: FPR

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5 TEM Rush Reanalysed Reg. by S. Steiner 3/6/15

TEM AHEAD 203239 PCM AIR SAMPLE DATA SHEET

PCM Analysis NIOSH 7400A 203241 PAGE 1 OF 2

SAMPLE ID CODE Job Code - mmddyy - Sample Type - Sample # (11422-022405-P-1) Job Code: Numeric Code from RGA Project # mmddyy: month day year (022405) Sample Type: A-Area, P-Perimeter, B-Baseline, C-Clearance, BL-Blank Sample #: 1, 2, 3, ...

Project Name/Address/Building No.: Demol/abatement, WUC, Pleasant Hill - Library Bldg

RGA Project #: R1147447 Sampled By: N. Ascott Sampling Date: 3/6/15

Sample(s) Sent To: RGA EMSL Other: MAC TAT: Rush 24Hrs 3-5 Days

ANALYZED BY RGA (NAME): DATE:

FAX OR E-MAIL REPORT TO: SEE ABOVE PROJECT MANAGER (PM)

ADDITIONAL REPORT RECIPIENT(S):

1	SAMPLE ID: R1147447-030615-P1	TIME ON: 0700	TIME OFF: 1030
	SAMPLE LOCATION: Library entrance lobby - CB	FLOW RATES: 6.3 (LPM)	TOTAL MINUTES: 650 VOLUME: 1,935 (L)
	WORK ACTIVITY: demo/abatement	Number of Fibers	Number of Fields
		AIRBORNE FIBER CONC. = fibers/cc	
2	SAMPLE ID: R1147447-030615-P2	TIME ON: 0705	TIME OFF: 1031
	SAMPLE LOCATION: Media Svc - CB	FLOW RATES: 5.4 (LPM)	TOTAL MINUTES: 346 VOLUME: 1,868.4 (L)
	WORK ACTIVITY: demo/abatement	Number of Fibers	Number of Fields
		AIRBORNE FIBER CONC. = fibers/cc	
3	SAMPLE ID: R1147447-030615-P3	TIME ON: 0702	TIME OFF: 1415
	SAMPLE LOCATION: Room 1141 - CB	FLOW RATES: 6.3 (LPM)	TOTAL MINUTES: 433 VOLUME: 1,861.9 (L)
	WORK ACTIVITY: demo/abatement	Number of Fibers	Number of Fields
		AIRBORNE FIBER CONC. = fibers/cc	
4	SAMPLE ID: R1147447-030615-P4	TIME ON: 0703	TIME OFF: 1416
	SAMPLE LOCATION: Room 1142 - CB	FLOW RATES: 6.3 (LPM)	TOTAL MINUTES: 433 VOLUME: 1,861.9 (L)
	WORK ACTIVITY: demo/abatement	Number of Fibers	Number of Fields
		AIRBORNE FIBER CONC. = fibers/cc	
5	SAMPLE ID: R1147447-030615-P5	TIME ON: 0720	TIME OFF: 1420
	SAMPLE LOCATION: Ext. @ Library entrance	FLOW RATES: 6.3 (LPM)	TOTAL MINUTES: 420 VOLUME: 1,806 (L)
	WORK ACTIVITY: demo/abatement	Number of Fibers	Number of Fields
		AIRBORNE FIBER CONC. = fibers/cc	

Relinquished By: N. Ascott Signature: [Signature] Date/Time: 3/6/15

Received By: FRANCISED Signature: [Signature] Date/Time: 3/6/15

Relinquished By: Signature: Date/Time:

Received By: Signature: Date/Time:

MICRO ANALYTICAL LABORATORIES, INC.

PHASE CONTRAST MICROSCOPY



203241

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Emeryville, CA 94608

PROJECT:

JOB NO. R1147447
DEMO / ABATEMENT DVC
PLEASANT HILL, CA
LIBRARY BUILDING

Micro Log In ~~203239~~
Total Samples 7
Date Sampled 03/06/2015
Date Received 03/06/2015
Date Analyzed 03/06/2015

Sample ID	Field Data	Lab Data	Fibers / cc	Limits	
Client: R1147447-050615-P1 Micro: 203239-01 LIBRARY ENTRANCE LOBBY - CB DEMO & ABATEMENT	Time 450 Rate 4.3 Liters 1935.0	Fibers 100 Fields 88 F/mm ² 144.8	0.029	LCL 0.019 UCL 0.038 LOD 0.001 LOQ 0.020 CV 0.17	
Client: R1147447-050615-P2 Micro: 203239-02 MEDIA SUCS - CB DEMO & ABATEMENT	Time 466 Rate 5.4 Liters 2516.4	Fibers 100 Fields 54 F/mm ² 235.9	0.036	LCL 0.024 UCL 0.048 LOD 0.001 LOQ 0.015 CV 0.17	
Client: R1147447-050615-P3 Micro: 203239-03 ROOM L141 - CB DEMO & ABATEMENT	Time 433 Rate 4.3 Liters 1861.9	Fibers 63.5 Fields 100 F/mm ² 80.9	0.017	LCL 0.012 UCL 0.022 LOD 0.001 LOQ 0.021 CV 0.25	
Client: R1147447-050615-P4 Micro: 203239-04 ROOM C142 - CB DEMO & ABATEMENT	Time 433 Rate 4.3 Liters 1861.9	Fibers 42.5 Fields 100 F/mm ² 54.1	0.011	LCL 0.006 UCL 0.016 LOD 0.001 LOQ 0.021 CV 0.34	
Client: R1147447-050615-P5 Micro: 203239-05 EXTERIOR AT LIBRARY ENTRANCE DEMO & ABATEMENT	Time 420 Rate 4.3 Liters 1806.0	Fibers 8.5 Fields 100 F/mm ² 10.8	0.002	LCL 0.001 UCL 0.003 LOD 0.001 LOQ 0.021 CV 0.25	

Technical Supervisor

Frank Raviola, M.S.

3/6/2015

Date Reported

Analyst:

LM

AIHA IHLAP LABORATORY Accreditation / PAT ID No. 101768. SOP PCM1. Samples are analyzed using the NIOSH 7400 Method (NIOSH Manual of Analytical Methods, 4th Ed., Issue 2 of Rev. 3, 8/15/1994). The "A" Rules are used, unless otherwise noted. The limit of detection (LOD) is 7 fibers/mm². Limits of quantification for optimal precision and accuracy are 100 (LOQ) and 1300 fibers/mm². The 95% UCL and LCL (Upper and Lower Confidence Limits of the Two-sided 95% Confidence Interval) represent the highest and lowest expected concentrations (in fibers/cc) for a given fiber count, based on the reported concentration and overall lab statistics. Intralaboratory analyst coefficients of variation (CV) for various fiber loadings are reported. Limits for compliance testing may be calculated by the client, using the CV and an appropriate regulatory standard, e.g. UCL = (Concentration + [1.645 x CV x Standard]). If a CV is not recorded on this report, there are not yet enough data for the analyst. Concentrations are field blank-corrected. Time is in minutes, flow rate is in liters per minute. 8 Hour TWA: calculated time weighted average concentration (in fibers/cc) based on 8 hours. Note: the 8 hour TWA may not be statistically accurate for actual total times less than 360 minutes. Zero concentration is assumed for remaining time if no information is given. Micro Analytical Laboratories, Inc. assumes no responsibility for clients' interpretation of any requested TWA data or calculations in this report. Unless otherwise indicated on this report, all required Quality Control samples have been determined to be in control prior to releasing these results. This report shall not be reproduced except in full, without the approval of Micro Analytical Laboratories, Inc., and pertains only to the samples analyzed. Unless otherwise stated in this report, all samples were received in acceptable condition for analysis. Note: due to software limitations, the number of reported significant figures does not necessarily reflect the uncertainty of the analysis. Micro Analytical Laboratories, Inc. shall not be responsible for clients' deviations from any prescribed sampling parameters. Air volumes are based on client data. The laboratory's verifiability of results is limited to fibers per mm². This analysis counts total fibers and cannot distinguish asbestos from non-asbestos fibers. For asbestos identification and counts, TEM reanalysis of the same filter is recommended. N/A = not applicable.