

RJ LeeGroup, Inc.

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The Materials Characterization Specialists

Mr. Anthony Aldykiewicz
WR Grace Products
62 Whittemore Avenue
Cambridge, MA 02140

October 24, 2001

RE: Vermiculite Free Product samples
RJ Lee Group Project LSH110691

Dear Mr. Aldykiewicz:

RJ Lee Group has completed the analyses of the four (4) vermiculite free product samples for fibrous asbestos (asbestiform) content using Polarized Light Microscopy (PLM). The bulk samples were received at RJ Lee Group on October 05, 2001. Each sample was assigned our sample numbers as indicated in the tables.

PLM Analyses

A portion of the sample was gravimetrically reduced by ashing at 800 °F and acid (HCl) washing the material. Examination of the residue was performed using polarized light microscopy (PLM) following the point count method outlined in EPA/600/R-93/116, Method for the Determination of Asbestos in Bulk Building Materials. The results are presented in the attached Table 1.

TEM Analyses

A composite of the sample was prepared and analyzed using polarized light microscopy (PLM) and transmission electron microscopy (TEM) following the Chatfield Protocol. The results of the analyses are presented in the attached Table II, III and IV.

RJ Lee Group is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP, #101208-00) for selected test methods for airborne asbestos fiber analysis (TEM), asbestos fiber analysis (PLM), New York State Department of Health Environmental Laboratory Approval Program (ELAP), and by the American Industrial Hygiene Association (AIHA). This test report only relates to the items tested. NVLAP accreditation does not imply endorsement by NVLAP or any agency of the U.S. Government. This report may be reproduced in full.

These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing to return the sample covered by this report, RJ Lee Group will store the sample for a period of ninety (90) days before discarding. A shipping and handling fee will be assessed for the return of any sample.

If you have any questions on this report or if we can be of further assistance, please feel free to call me.

Sincerely,



Drew R. Van Orden, PE
Senior Scientist

**Table I. Polarized Light Microscopy (PLM) Results, EPA/600/R-93/116 Method
RJ Lee Group Project No. LSH110691**

Analyst: WHP

Analysis Report for WRG – Vermiculite Free Product Samples

Sample ID	RJ Lee Group Sample ID	Non-Asbestos Components		Asbestos Content	Comments
2-106-HY Santa Ana (Batch 40)	3029081	Matrix & minerals	100 %	None Detected	Gray Fibrous Material
MK-6-HY Ajax (Batch 69) (F-2709-01-K) Bag # 2306	3029082	Matrix & minerals	100 %	None Detected	Off-White Fibrous Material
MK-6-HY Santa Ana (Batch 40)	3029083	Matrix & minerals	100 %	None Detected	Off-White Fibrous Material
MK-6-S Ajax (Batch 90) (F-1709-03-K)	3029084	Matrix & minerals	100 %	None Detected	Gray Fibrous Material

Authorized Signature: Drew Van Orden

Table II

Transmission Electron Microscopy (TEM) Results

Asbestos Structures $\geq 0.5 \mu\text{m}$ - $< 5 \mu\text{m}$ in Length

5:1 Aspect Ratio

20,000X Magnification

RJ Lee Group, Inc. Job No. LSH110691

RJ Lee Group Sample #	Client Sample #	-----Asbestos Count-----		Area Analyzed mm ²	Dilution Factor	Effective Filter Area mm ²
		Chrysotile	Amphibole			
0123502HTP1	2-106 HY	0	0	0.09043	0.01	385
0123503HTP1	MK-6-HY (F-2709-01-K)	0	0	0.09043	0.001	385
0123504HTP2	MK-6-HY	0	0	0.09043	0.01	385
0123505HTP1	MK-6-S (F-1709-03-K)	0	0	0.09043	0.001	385

Table III

Transmission Electron Microscopy (TEM) Results

**Asbestos Structures $\geq 5 \mu\text{m}$ in Length
5:1 Aspect Ratio
20,000X and 5,000X Magnification
RJ Lee Group, Inc. Job No. LSH110691**

RJ Lee Group Sample #	Client Sample #	-----Asbestos Count-----		Area Analyzed mm ²	Dilution Factor	Effective Filter Area mm ²
		Chrysotile	Amphibole			
0123502HTP1/L	2-106 HY	0	0	0.31651	0.01	385
0123503HTP1/L	MK-6-HY (F-2709-01-K)	0	0	0.31651	0.001	385
0123504HTP2/L	MK-6-HY	0	0	0.31651	0.01	385
0123505HTP1/L	MK-6-S (F-1709-03-K)	0	0	0.31651	0.001	385

Table IV

Transmission Electron Microscopy (TEM) Results
RJ Lee Group, Inc. Job No. LSH110691

RJ Lee Group Sample #	Client Sample #	Sample Type	Material Used g	Analytical Sensitivity Weight %	Asbestos Concentration Weight %
0123502HTP1/L	2-106 HY	Bulk	0.2045	$2.05 * 10^{-6}$	$<2.05 * 10^{-6}\dagger$
0123503HTP1/L	MK-6-HY (F-2709-01-K)	Bulk	0.2005	$2.09 * 10^{-5}$	$<2.09 * 10^{-5}\dagger$
0123504HTP2/L	MK-6-HY	Bulk	0.2003	$2.09 * 10^{-6}$	$<2.09 * 10^{-6}\dagger$
0123505HTP1/L	MK-6-S (F-1709-03-K)	Bulk	0.1996	$2.10 * 10^{-5}$	$<2.09 * 10^{-5}\dagger$

†Less Than Analytical Sensitivity.

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Headquarters

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