

TECHNICAL REPORT

Project No. **A02328**

Title: **TEM ANALYSIS OF GUANGXI ORE SHIPMENT**

Results: The attached TEM results were obtained using the current ASTM draft method “Standard test method for indirect analysis of talc by transmission electron microscopy for asbestos mass concentration.” This method is currently being developed by ASTM committee D22.07 (Sampling and Analysis of Asbestos) and is a modification of ASTM method D 5756 “Standard test method for microvacuum sampling and indirect analysis of dust by transmission electron microscopy for asbestos mass surface loading.” The modification is to adapt existing methodology to the specific analysis of talc products and/or ore samples.

A program of laboratory “blank” analysis is in place and has been used to determine the detection limit for this analysis according to ASTM method D 6620, “Standard practice for asbestos detection limit based on counts.”

A02328 TEM Analysis Results

Table 1. Result Summary			AMPHIBOLE			CHRYSTILE		
Sample Description		Sample No.	Number of Structures		Asbestos Concentration	Number of Structures		Asbestos Concentration
			≥5 μm	<5 μm	ppm	≥5 μm	<5 μm	ppm
Guangxi #2 composite	May 2002	A02328-1	0	0	BDL	0	0	BDL

BDL = Below detection limit, as defined by ASTM D 6620

A02328 TEM Analysis Parameters

Table 2. Analysis parameters							AMPHIBOLE		CHRYBOTILE	
Sample Description		Sample No.	Starting Weight	Aliquot Filtered	Grid Spaces Analyzed	Total Sample Analyzed	Analytical Sensitivity*	Detection Limit	Analytical Sensitivity*	Detection Limit
			g	mL	#	ng	ppm	ppm	ppm	ppm
Guangxi #2 composite	May 2002	A02328-1	0.0296	1	10	28.5	0.033	0.156	0.022	0.104

*Analytical Sensitivity is defined by ASTM D 5756 as the detection of one structure with minimum dimensions.



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TECHNICAL REPORT

Project No. **A03026**

Title: **TEM ANALYSIS OF GUANGXI ORE SHIPMENT**

Results: The attached TEM results were obtained using the current ASTM draft method "Standard test method for indirect analysis of talc by transmission electron microscopy for asbestos mass concentration." This method is currently being developed by ASTM committee D22.07 (Sampling and Analysis of Asbestos) and is a modification of ASTM method D 5756 "Standard test method for microvacuum sampling and indirect analysis of dust by transmission electron microscopy for asbestos mass surface loading." The modification is to adapt existing methodology to the specific analysis of talc products and/or ore samples.

A program of laboratory "blank" analysis is in place and has been used to determine the detection limit for this analysis according to ASTM method D 6620, "Standard practice for asbestos detection limit based on counts."

A03026 TEM Analysis Results

Table 1. Result Summary

			AMPHIBOLE			CHRYSTILE		
Sample Description		Sample No.	Number of Structures		Fiber Concentration	Number of Structures		Asbestos Concentration
			≥5 μm	<5 μm	ppm	≥5 μm	<5 μm	ppm
Guangxi #2 composite	December 2002 (Houston)	A03026-1	0	0	BDL	0	0	BDL

BDL = Below detection limit, as defined by ASTM D 6620

A03026 TEM Analysis Parameters

Table 2. Analysis parameters

Table 2. Analysis parameters							AMPHIBOLE		CHRYSTILE	
Sample Description		Sample No.	Starting Weight	Aliquot Filtered	Grid Spaces Analyzed	Total Sample Analyzed	Analytical Sensitivity*	Detection Limit	Analytical Sensitivity*	Detection Limit
			g	mL	#	ng	ppm	ppm	ppm	ppm
Guangxi #2 composite	December 2002 (Houston)	A03026-1	0.0276	1	10	26.6	0.035	0.167	0.024	0.112

*Analytical Sensitivity is defined by ASTM D 5756 as the detection of one structure with minimum dimensions.



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TECHNICAL REPORT

Project No. **A03199**

Title: **TEM ANALYSIS OF GUANGXI ORE SHIPMENT**

Results: The attached TEM results were obtained using the current ASTM draft method "Standard test method for indirect analysis of talc by transmission electron microscopy for asbestos mass concentration." This method is currently being developed by ASTM committee D22.07 (Sampling and Analysis of Asbestos) and is a modification of ASTM method D 5756 "Standard test method for microvacuum sampling and indirect analysis of dust by transmission electron microscopy for asbestos mass surface loading." The modification is to adapt existing methodology to the specific analysis of talc products and/or ore samples.

A program of laboratory "blank" analysis is in place and has been used to determine the detection limit for this analysis according to ASTM method D 6620, "Standard practice for asbestos detection limit based on counts."

A03199 TEM Analysis Results

Table 1. Result Summary

Sample Description			AMPHIBOLE			CHRYSTILE		
			Number of Structures		Fiber Concentration	Number of Structures		Asbestos Concentration
			≥5 μm	<5 μm	ppm	≥5 μm	<5 μm	ppm
Guangxi #2 composite	January 2003 (Houston)	A03199-1	0	0	BDL	0	0	BDL
██████████ ██████████	██████████ ██████████	██████████	■	■	██████████	■	■	██████████

BDL = Below detection limit, as defined by ASTM D 6620

Table 2. Analysis parameters

							AMPHIBOLE		CHRYSTILE	
Sample Description		Sample No.	Starting Weight	Aliquot Filtered	Grid Spaces Analyzed	Total Sample Analyzed	Analytical Sensitivity*	Detection Limit	Analytical Sensitivity*	Detection Limit
			g	mL	#	ng	ppm	ppm	ppm	ppm
Guangxi #2 composite	January 2003 (Houston)	A03199-1	0.0205	1	10	19.7	0.047	0.225	0.032	0.150
██████████	██████████	██████████	██████████	█	█	██████	██████	██████	██████	██████

*Analytical Sensitivity is defined by ASTM D 5756 as the detection of one structure with minimum dimensions.

A03369 TEM Analysis Results

Table 1. Result Summary

			AMPHIBOLE			CHRYSTILE		
Sample Description		Sample No.	Number of Structures		Fiber Concentration	Number of Structures		Asbestos Concentration
			≥5 μm	<5 μm	ppm	≥5 μm	<5 μm	ppm
Guangxi #2 composite	June 2003 (Houston)	A03369-1	0	0	BDL	0	0	BDL

BDL = Below detection limit, as defined by ASTM D 6620

A03369 TEM Analysis Parameters

Table 2. Analysis parameters

Table 2. Analysis parameters							AMPHIBOLE		CHRYSTILE	
Sample Description		Sample No.	Starting Weight	Aliquot Filtered	Grid Spaces Analyzed	Total Sample Analyzed	Analytical Sensitivity*	Detection Limit	Analytical Sensitivity*	Detection Limit
			g	mL	#	ng	ppm	ppm	ppm	ppm
Guangxi #2 composite	June 2003 (Houston)	A03369-1	0.0237	1	10	22.8	0.041	0.195	0.027	0.130

*Analytical Sensitivity is defined by ASTM D 5756 as the detection of one structure with minimum dimensions.