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TECHNICAL REPORT

Project No. **A11508**
Date: **23-Mar-12**



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Title: **TEM ASBESTOS ANALYSIS OF HOUSTON PRODUCT SAMPLES**
OCTOBER 2011

Request: Three samples, representing products of Chinese and Australian ore milled at Houston, were submitted to the Technical Center for asbestos analysis by transmission electron microscopy (TEM). This analysis is in partial fulfillment of Imerys' Fiber Management Framework Program.

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."

A11508 TEM Analysis Results

Table 1. Result Summary

Sample Description			AMPHIBOLE			CHRYBOTILE		
			Number of Structures		Fiber Concentration	Number of Structures		Asbestos Concentration
			≥5 μm	<5 μm	ppm	≥5 μm	<5 μm	ppm
██████████	██████████	██████████	■	■	██████████	■	■	██████████
Grade 25 USP	October 2011	A11508-2	0	0	BDL	0	0	BDL
██████████	██████████	██████████	■	■	██████████	■	■	██████████

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

A11508 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
██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████
Grade 25 USP	October 2011	A11508-2	0.2529	0.4	10	97.4	0.010	0.06	0.006	0.04
██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████

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

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Table 2. Analysis parameters

Sample Description	Sample No.	Starting Weight	Aliquot Filtered	Grid Spaces Analyzed	Total Sample Analyzed	AMPHIBOLE		CHRYBOTILE	
		g	mL	#	ng	Analytical Sensitivity*	Detection Limit	Analytical Sensitivity*	Detection Limit
						ppm	ppm	ppm	ppm