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TECHNICAL REPORT

To: **David Crouse**

Analytical Project No: **A03613**
Date: **23-Jul-04**

From: **J. W. Pier**
Analytical and Technical Support

Copy: **J. Poston**

Subject: **TEM ASBESTOS ANALYSIS OF OCTOBER 2003 GUANGXI**
SHIPMENTS TO HOUSTON

Results:

Asbestos was not detected in either the [REDACTED] or Guangxi #2A sample.

Results for the October 2003 Guangxi #2A composite (included in attached table) were reported earlier to [REDACTED] (refer to Analytical Report No. A04042).

The following results (attached) were obtained using the current ASTM draft method "Standard Test Method for Indirect Analysis of Talc by Transmission Electron Microscopy for Asbestos Mass Concentration."

The analytical sensitivity is defined for each sample based on the smallest detectable fiber given the analysis parameters for that sample. "ND" (not detected) is reported when no fibers are detected.

A program of laboratory "blank" analysis is in place and has been used to determine the level of significance for this analysis according to ASTM method D 6620-00, "Standard practice for asbestos detection limit based on counts." Based on the analysis of 100 laboratory blanks, the detection of one fiber on a given sample preparation has been determined to be insignificant. "NS" (not significant) is reported when only one fiber (structure) was detected.



TEM ASBESTOS ANALYSIS OF OCTOBER 2003 GUANGXI SHIPMENTS TO HOUSTON

Project No. A03613

23-Jul-04

Table 1. Summary of results.

Sample Description.	Sample No.	Amphibole Structures		Amphibole Content	Chrysotile Structures		Chrysotile Content
		>5 μm	<5 μm	(ppm)	>5 μm	<5 μm	(ppm)
							
Guangxi #2A Composite October 2003	A03613-2 (A04042-1)	0	0	ND	0	0	ND

ND = Not detected (see report text).

NS = Not significant (see report text).

Table 2. Summary of analysis parameters.

Sample Description.	Sample No.	Starting Weight	Aliquot Filtered	Grid Spaces Analyzed	Sample Analyzed	TEM Amphibole Sensitivity*	TEM Chrysotile Sensitivity*
		(g)	(mL)	(#)	(ng)	ppm	ppm
							
Guangxi #2A Composite October 2003	A03613-2 (A04042-1)	0.0373	0.1	10	36	0.02	0.03

*The analytical sensitivity for this method is defined as 1 fiber (ASTM D 5756-00).



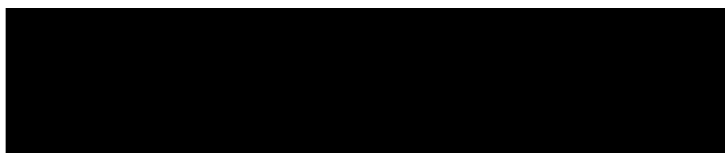
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ORE CERTIFICATION REPORT

Date: January 30, 2004

Attention:



Reported by: J. W. Pier, H. A. Rothschoepf

Copy: F. Fimbres, J. M. Godla, Joyce Payeur, J. Poston, M. J. Lorang, R. J. Zazenski

Results:

The following composite ore sample, representing the October, 2003 Gaungxi #2 shipment to Houston, was analyzed by X-ray diffraction (XRD) for the presence of amphibole minerals and quartz. The sample was also analyzed by transmission electron microscopy (TEM) for the presence of asbestiform minerals. The requested tests are in partial fulfillment of specifications required by [REDACTED].

Analytical Lab Code:		Guangxi #2A Composite October 2003 Shipment (Tian Song Feng MV) Ore Shipment ID No.: A03491 A03613-2, A04042-1
[REDACTED]	Specification:	
Initial Ore Results – After Grinding (1B)		
3.14 Percent Fibrous Amphibole (CTFA J4-1)		
Part A (X-ray Diffraction):		None detected
Part B (Optical Microscopy):		Not required
3.15 Percent Free Crystalline Silica Quartz (CTFA Method J6-1) (X-Ray Diffraction)		None detected (less than 2%)
TEM Results – After Grinding (1C)		
3.16 Asbestos by Transmission Electron Microscope (TM 7024)		None detected



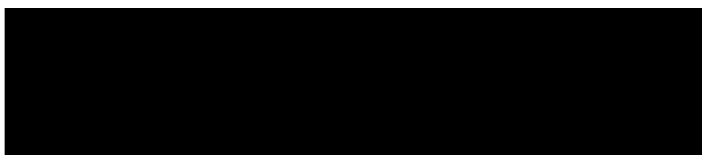
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ORE CERTIFICATION REPORT

Date: March 23, 2004

Attention:



Reported by: J. W. Pier, H. A. Rothschoepf

Analytical Reference: A04111/A04110

Copy: J. Stokke, J. M. Godla, Joyce Payeur, J. Poston, M. J. Lorang, R. J. Zazenski

Results:

The following composite ore sample, representing the February, 2004 Gaungxi #2 shipment to Houston, was analyzed by X-ray diffraction (XRD) for the presence of amphibole minerals and quartz. The requested tests are in partial fulfillment of specifications required by [REDACTED].

Analytical Lab Code:		Guangxi #2A Composite February 2004 Shipment (MV Tequi) A04111-1, A04110-1	
[REDACTED]	Specification:		
<i>Initial Ore Results – After Grinding (1B)</i>			
3.14 Percent Fibrous Amphibole (CTFA J4-1)			
Part A (X-ray Diffraction):		None detected	
Part B (Optical Microscopy):		Not required	
3.15 Percent Free Crystalline Silica Quartz (CTFA Method J6-1) (X-Ray Diffraction)		None detected (less than 2%)	
<i>TEM Results – After Grinding (1C)</i>			
3.16 Asbestos by Transmission Electron Microscope (TM 7024)		None detected	



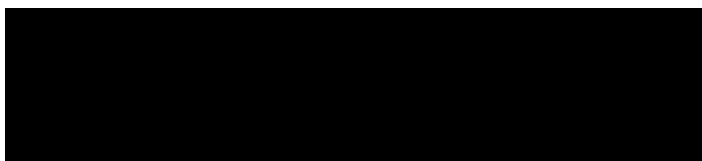
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ORE CERTIFICATION REPORT

Date: June 16, 2004

Attention:



Reported by: J. W. Pier, H. A. Rothschoepf

Analytical Reference: A04317

Copy: G. E. Gauntt, M. J. Lorang, Joyce Payeur, J. Poston, J. Stokke, R. J. Zazenski

Results:

The following composite ore sample, representing the May, 2004 Gaungxi #2 shipment to Houston, was analyzed by X-ray diffraction (XRD) for the presence of amphibole minerals and quartz, and by transmission electron microscopy (TEM) for the presence of asbestos. The requested tests are in partial fulfillment of specifications required by [REDACTED].

Analytical Lab Code:		Guangxi #2A Composite May 2004 Shipment (MV Great Bright) A04317-1
[REDACTED]	Specification:	
<i>Initial Ore Results – After Grinding (1B)</i>		
3.14 Percent Fibrous Amphibole (CTFA J4-1)		
Part A (X-ray Diffraction):		None detected
Part B (Optical Microscopy):		Not required
3.15 Percent Free Crystalline Silica Quartz (CTFA Method J6-1) (X-Ray Diffraction)		None detected
<i>TEM Results – After Grinding (1C)</i>		
3.16 Asbestos by Transmission Electron Microscope (TM 7024)		None detected



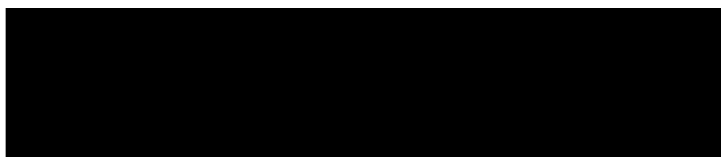
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ORE CERTIFICATION REPORT

Date: 13-Aug-04

Attention:



Reported by: Julie Pier

Analyst(s): J. Pier, H. Rothschof

Copy: Joyce Payeur, J. Poston

Results:

The following composite ore sample, representing the June 2004 Gaungxi #2 shipment to Houston, was analyzed by X-ray diffraction (XRD) for the presence of amphibole minerals and quartz. The sample was also analyzed by transmission electron microscopy (TEM) for the presence of asbestiform minerals. The requested tests are in partial fulfillment of specifications required by [REDACTED].

	Guangxi #2A Composite (ACM Grind) June 2004 Shipment (Navios Galaxy) A04410-1
Analytical Lab Code:	
Specification:	
<i>Initial Ore Results – After Grinding (1B)</i>	
3.14 Percent Fibrous Amphibole (CTFA J4-1)	
Part A (X-ray Diffraction):	None detected
Part B (Optical Microscopy):	Not required
3.15 Percent Free Crystalline Silica Quartz (CTFA Method J6-1) (X-Ray Diffraction)	None detected
<i>TEM Results – After Grinding (1C)</i>	
3.16 Asbestos by Transmission Electron Microscope (TM 7024)	None detected
- Total talc weight examined (ng)	49.7
- Calculated detection limit (weight %)	0.0012
- Date of analysis	23-Jul-04



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ORE CERTIFICATION REPORT

Date: October 27, 2004

To: John Poston

Reported by: J. W. Pier

Copy: D. Crouse, S. Wulf, R. J. Zazenski

Results:

The following composite ore sample, representing the September 2004 Gaungxi #2 shipment to Houston, was analyzed by X-ray diffraction (XRD) for the presence of amphibole minerals and quartz. The sample was also analyzed by transmission electron microscopy (TEM) for the presence of asbestiform minerals. The requested tests are in partial fulfillment of specifications required by [REDACTED].

	Guangxi #2 Composite - ACM September 2004 Shipment (M. V. Danae) A04550-1
Analytical Lab Code:	
[REDACTED] Specification:	
<i>Initial Ore Results – After Grinding (1B)</i>	
3.14 Percent Fibrous Amphibole (CTFA J4-1)	
Part A (X-ray Diffraction):	None detected
Part B (Optical Microscopy):	Not required
3.15 Percent Free Crystalline Silica Quartz (CTFA Method J6-1) (X-Ray Diffraction)	None detected
<i>TEM Results – After Grinding (1C)</i>	
3.16 Asbestos by Transmission Electron Microscope (TM 7024)	None detected



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ORE CERTIFICATION REPORT

Date: January 31, 2005

To: John Poston

Reported by: J. W. Pier

Copy: D. Crouse, S. Wulf, R. J. Zazenski

Results:

The following composite ore sample, representing the December 2004 Gaungxi #2 shipment to Houston, was analyzed by X-ray diffraction (XRD) for the presence of amphibole minerals and quartz. The sample was also analyzed by transmission electron microscopy (TEM) for the presence of asbestiform minerals. The requested tests are in partial fulfillment of specifications required by [REDACTED].

	Guangxi #2 Composite ACM Grind, 1-18-05 December 2004 Shipment (M. V. TaiChang, 12-14-04) A05033-1
Analytical Lab Code:	
[REDACTED] Specification:	
<i>Initial Ore Results – After Grinding (1B)</i>	
3.14 Percent Fibrous Amphibole (CTFA J4-1)	
Part A (X-ray Diffraction):	None detected
Part B (Optical Microscopy):	Not required
3.15 Percent Free Crystalline Silica Quartz (CTFA Method J6-1) (X-Ray Diffraction)	None detected
<i>TEM Results – After Grinding (1C)</i>	
3.16 Asbestos by Transmission Electron Microscope (TM 7024)	None detected

TEM ASBESTOS ANALYSIS OF GUANGXI #2A COMPOSITE, DECEMBER 2004, MV TAI CHANG

A05074
15-Sep-05

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Table 1. Result Summary			AMPHIBOLE			CHRYSTILE		
Sample Description		Sample No.	Number of Structures		Asbestos Concentration	Number of Structures		Asbestos Concentration
			>5 μm	$\leq 5 \mu\text{m}$	ppm	>5 μm	$\leq 5 \mu\text{m}$	ppm
Guangxi #2A composite	Dec-04 MV Tai Chang	A05074-1	0	0	BDL	0	0	BDL

TEM ASBESTOS ANALYSIS OF GUANGXI #2A COMPOSITE, DECEMBER 2004, MV TAI CHANG

A05074

15-Sep-05

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Table 2. Analysis parameters

Table 2. Analysis parameters							AMPHIBOLE		CHRYSTOTILE	
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 #2A composite	Dec-04 MV Tai Chang	A05074-1	0.2564	0.2	10	49.4	0.019	0.090	0.013	0.060



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REPORT of ANALYSIS

To: **John Poston**
Fax: 281-456-7816

Analytical Project No: **A05379**

Date: **17-Aug-05**

From: **Mikki Auburn**
Analytical and Technical Support

Subject: **ANALYSIS OF ORE SHIPMENT**
INTO HOUSTON

Lab Code:	A05379-1	Date Sampled:	Jan-05
Sample Description:	Ore type Guangxi 2A	Date Received:	27-Jul-05
Ship Name:	M.V. Tai Cheng	Date Analyzed:	09-Aug-05

Method	Test	Specification	Result	Conclusion
FCC V	Identification A (by XRD)	Intense reflections are exhibited at 9.34 Å, 4.66 Å, and 3.12 Å	Conforms to the specification	Pass
FCC V	Identification B (by FT-IR)	Major peaks are exhibited at approximately 1015 and 450 cm ⁻¹	Conforms to the specification	Pass
USP 28 S/2	Identification A (by FT-IR)	The spectrum shows absorption bands at 3677 ±2 cm ⁻¹ , at 1018 ±2 cm ⁻¹ , and at 669 ±2 cm ⁻¹	Conforms to the specification	Pass
USP 28 S/2	Test B (by XRD)	Amphibole peaks at 10.5 ±0.1° 2θ; Serpentine peaks at 24.3 ±0.1° 2θ to 12.1 ±0.1° 2θ.	Peaks are not present	Absence of Asbestos determined by method B
EP 5.1	Identification A (by FT-IR)	The spectrum shows absorption bands at 3677 ±2 cm ⁻¹ , at 1018 ±2 cm ⁻¹ , and at 669 ±2 cm ⁻¹	Conforms to the specification	Pass
EP 5.1	Production B (by XRD)	Amphibole peaks at 10.5 ±0.1° 2θ; Serpentine peaks at 24.3 ±0.1° 2θ to 12.1 ±0.1° 2θ.	Peaks are not present	Absence of Asbestos determined by method B

ATTACHED SHEETS: FT-IR spectra – 1 pg
XRD diffractogram – 1 pg

APPROVED BY: _____
Luzenac America Technical Center, Analytical Dept.

DATE: _____

This report has been reviewed for accuracy, completeness, and comparison against specifications where available. The reported results are only representative of the samples submitted for testing and internal standards.

ITA-Ratcliff-000219

TEM ASBESTOS ANALYSIS OF GUANGXI #2 COMPOSITE, SEPTEMBER 2005, MV PACIFIC ACADIAN

A05507

11-Oct-05

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Table 1. Result Summary			AMPHIBOLE			CHRYSTILE		
Sample Description		Sample No.	Number of Structures		Asbestos Concentration	Number of Structures		Asbestos Concentration
			>5 μm	$\leq 5 \mu\text{m}$	ppm	>5 μm	$\leq 5 \mu\text{m}$	ppm
Guangxi #2 composite	Sep-05 MV Pacific Acadian	A05507-1	0	0	BDL	0	0	BDL

TEM ASBESTOS ANALYSIS OF GUANGXI #2 COMPOSITE, SEPTEMBER 2005, MV PACIFIC ACADIAN

A05507

11-Oct-05

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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	Sep-05 MV Pacific Acadian	A05507-1	0.2502	0.2	10	48.2	0.019	0.092	0.013	0.062



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ORE CERTIFICATION REPORT

Date: 3-Nov-05

To: John Poston

Reported by: J. Pier, H. Rothschofp

Copy: D. Crouse, E. Ronald, S. Wulf, R. J. Zazenski

Results:

The following composite ore sample, representing the September 2005 Gaungxi 2A shipment to Houston, was analyzed by X-ray diffraction (XRD) for the presence of amphibole minerals and quartz. The sample was also analyzed by transmission electron microscopy (TEM) for the presence of asbestiform minerals. The requested tests are in partial fulfillment of specifications required by [REDACTED].

	Guangxi 2A Composite - ACM September 2005 Shipment (MV Pacific Acadian) A05508-1
Analytical Lab Code:	
Specification:	
<i>Initial Ore Results – After Grinding (1B)</i>	
3.14 Percent Fibrous Amphibole (CTFA J4-1)	
Part A (X-ray Diffraction):	None detected
Part B (Optical Microscopy):	Not required
3.15 Percent Free Crystalline Silica Quartz (CTFA Method J6-1) (X-Ray Diffraction)	None detected
<i>TEM Results – After Grinding (1C)</i>	
3.16 Asbestos by Transmission Electron Microscope (TM 7024)	None detected



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ORE CERTIFICATION REPORT

Date: April 19, 2006

To: John Poston

Reported by: J. W. Pier, H. A. Rothschoepf

Copy: D. Crouse, E. Ronald, S. Wulf, R. J. Zazenski

Results:

The following composite ore sample, representing the February 2006 Gaungxi #2 shipment to Houston, was analyzed by X-ray diffraction (XRD) for the presence of amphibole minerals and quartz. The sample was also analyzed by transmission electron microscopy (TEM) for the presence of asbestiform minerals. The requested tests are in partial fulfillment of specifications required by [REDACTED].

	Guangxi #2A Composite February 2006 Shipment (MV Pos Eternity) A06125-1
Analytical Lab Code:	
Specification:	
<i>Initial Ore Results – After Grinding (1B)</i>	
3.14 Percent Fibrous Amphibole (CTFA J4-1)	
Part A (X-ray Diffraction):	None detected
Part B (Optical Microscopy):	Not required
3.15 Percent Free Crystalline Silica Quartz (CTFA Method J6-1) (X-Ray Diffraction)	None detected
<i>TEM Results – After Grinding (1C)</i>	
3.16 Asbestos by Transmission Electron Microscope (TM 7024)	None detected