



September 21, 2020

Email: justin@quickminerals.com

Mr. Justin Fried
President
Quick Minerals Group, LLC
311 East 72nd Street, Suite 7E
New York, NY 10021
888-292-7768

**SUBJECT: Results of SSPC-AB 1 Testing of Abrasive Material;
KTA-Tator, Inc. Project No. 390473**

Dear Mr. Fried:

In accordance with KTA-Tator, Inc. (KTA) Proposal Number PN1910019, and email authorization received on August 27, 2020, KTA has performed testing on one abrasive material (20-40 Mesh) in accordance with qualification sections of SSPC-AB 1, "Mineral and Slag Abrasives" (January 12, 2015 with Editorial Revision May 6, 2019). This report describes the testing procedures employed and contains the results of the testing.

SAMPLES

The abrasive material listed in Table 1, "Sample" was received from Quick Minerals Group, LLC on September 20, 2020. It should be noted that at no time did KTA personnel witness the manufacturing or packaging of the abrasive media.

Table 1 – Sample

KTA ID	Sample ID	Description
390473-1	20/40	One (1) 50lb. bag of abrasive blasting media

LABORATORY INVESTIGATION

The laboratory investigation consisted of testing one abrasive for specific gravity, hardness, weight change on ignition, conductivity (water soluble contaminants), moisture content, oil content, crystalline silica content, surface profile, particle size distribution, and leachate test (TCLP) in accordance with the qualification test requirements of SSPC-AB 1 Section 4.1 (January 12, 2015 with Editorial Revision May 6, 2019).



Specific Gravity

Specific gravity was determined in accordance with Section 4.1.1 of SSPC-AB 1 and ASTM C128-15, "Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate." Briefly, a pycnometer was used to determine the volume of abrasive and displaced water via the Gravimetric Procedure.

SSPC-AB 1 Requirement: *Specific gravity of 2.5 for mineral or slag abrasives, minimum*

Sample Performance: 390473-1: *Specific gravity of 3.8; Sample met the requirement*

Hardness

Hardness testing was performed in accordance with Section 4.1.2 of SSPC-AB 1. Briefly, to obtain a representative test sample, five grams the submitted abrasive was examined using a microscope at 10X magnification. A few grains representing each color and shape were chosen and placed on a glass slide. A second glass slide was then placed on top of the selected abrasive. Moderate pressure was used to push and move the second slide over the abrasive for 10 seconds. The glass slides were then examined for scratches. If at least 75% of the grains are found to scratch the glass slides, then the abrasive is rated as having a minimum hardness of 6 on the Mohs scale.

SSPC-AB 1 Requirement: *75% of grains scratch glass*

Sample Performance: 390473-1: *100% of grains scratched; Sample met the requirement*

Weight Change on Ignition

Weight change on ignition testing was performed in accordance with Section 4.1.3 of SSPC-AB 1. A representative sample of each abrasive was dried in an oven for one hour at $105 \pm 5^\circ\text{C}$. One gram of the dried abrasive was placed into a crucible. The crucible containing the abrasive sample was placed into a muffle furnace at $750 \pm 50^\circ\text{C}$ for approximately 30 minutes, allowed to cool to room temperature and then reweighed. The percent weight change was then calculated.

SSPC-AB 1 Requirement: *1.0% loss, maximum, 5.0% gain, maximum*

Sample Performance: 390473-1: *0.47% loss; Sample met the requirement*



Conductivity (Water Soluble Contaminants)

Conductivity testing was performed in accordance with Section 4.1.4 of SSPC-AB 1, and a modified version of ASTM D4940-15e1, "Standard Test Method for Conductimetric Analysis of Water-Soluble Ionic Contamination of Blasting Abrasives." A slurry of the sample was prepared with 300 mL of distilled water and 300 mL of sample material, which was then stirred for one minute. The slurry was allowed to settle for eight minutes and was stirred again, then filtered. The supernatant liquid removed from the slurry was then tested using an Oakton® COND 6+ conductivity meter.

SSPC-AB 1 Requirement: *1000 μ S/cm, maximum*

Sample Performance: *390473-1: 88.1 μ S/cm; Abrasive sample met the requirement*

Moisture Content

The moisture content was determined in accordance with Section 4.1.5 of SSPC-AB 1 and ASTM C566-19, "Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying." Approximately 500 grams of the abrasive was weighed and dried in an oven set at 105 \pm 5°C until a constant weight was achieved. The percent moisture content was then calculated.

SSPC-AB 1 Requirement: *0.5%, maximum*

Sample Performance: *390473-1: 0.129%; Abrasive sample met the requirement*

Oil Content

Oil content testing was conducted in accordance with SSPC-AB 1, Section 4.1.6 and ASTM D7393-16, "Standard Practice for Indicating Oil in Abrasives." For this testing, a slurry composed of 100 ml of abrasive material and the required amount of deionized water was prepared using a 250-ml sealed flask and shaken vigorously for one minute. The slurry was allowed to settle for five minutes and then examined for oil sheen, oil droplets, and oil as an emulsion.

SSPC-AB 1 Requirement: *Slurry surface will show no oil on the surface of the water or as an emulsion*

Sample Performance: *No oil sheen, oil droplets or oil as an emulsion observed;
All abrasive samples met the requirement*



Crystalline Silica Content

The crystalline silica content was subcontracted to Clark Testing of Jefferson Hills, Pennsylvania for determination of crystalline silica content according to NIOSH Method 7500. The Clark Testing report containing the results of testing is provided in Appendix 1.

SSPC-AB 1 Requirement: *Class A (Less than 1.0% crystalline silica), Class B (Less than 5.0% crystalline silica), Class C - Unrestricted crystalline silica*

Sample Performance: 390473-1: *<0.1% Cristobalite, 0.5% Quartz; <0.1% Tridymite; Designated as Class A (see Appendix 1)*

Surface Profile

The surface profile was determined in accordance with SSPC-AB 1, Section 4.1.8. A 2' x 2' x 1/4" steel plate (with intact mill scale) with an average Rockwell hardness of 74 HRBW was blasted at 95 ± 5 psi with a #4 Venturi nozzle. The surface profile depth was measured in three areas in accordance with ASTM D4417-20, "Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel," Method C (replica tape). Surface profile measurements were obtained using Testex™ X-Coarse (1.5 – 4.5 mils), replica tape. Each area was measured in duplicate. The average surface profile is listed below.

SSPC-AB 1 Requirement: *None*

Classifications: *Grade 1 (0.5 – 1.5 mils), Grade 2 (1.0 – 2.5 mils), Grade 3 (2.0 – 3.5 mils), Grade 4 (3.0 – 5.0 mils), Grade 5 (4.0 – 6.0 mils)*

Sample Performance: 390473-1: *Average of 2.9 mils; Grade 3*

Particle Size Determination (Sieve Analysis)

A sieve analysis was performed in accordance with SSPC-AB 1, Section 4.1.9.1 and ASTM C136-19, "Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates." A 150-gram sample of the abrasive was collected and was tamped through a series of sieves (screen numbers 6, 10, 16, 20, 30, 40, 50, 60, 70, 80, 100, 140, 200, and a pan at the bottom) for seven minutes using an automated tamper. The abrasive collected on each screen was emptied into numbered and tarred sample cups. The underside of each screen was cleaned with a brass brush to loosen any trapped particles, which were also collected into the appropriate sample cups. The contents of each sample cup were weighed and documented. The test was performed in duplicate. The raw data for the sieve analysis is provided in Appendix 2, "KTA Sieve Analysis Data Forms."



SSPC-AB 1 Requirement: None

Sample Performance: 390473-1: *0.48 mm Average Particle Size*

Leachate Test (TCLP)

The leachate test (TCLP) was subcontracted to Schneider Laboratories Global, Inc. of Richmond, Virginia, for metals analysis. The Schneider Laboratories Global, Inc. report containing the results of testing is provided in Appendix 3, "Schneider Laboratory Global, Inc. Report."

If you have any questions concerning the testing or this report, please contact me by telephone at 412.788.1300 extension 299 or by email me at cquatman@kta.com.

Sincerely,

KTA-TATOR, INC.

A handwritten signature in blue ink, reading "Chad S. Quatman". The signature is fluid and cursive, with the first name "Chad" and last name "Quatman" clearly distinguishable.

Chad S. Quatman
Project Manager/Coatings Application Specialist

Appendices:

- 1 – Clark Testing Report
- 2 – KTA Sieve Analysis Data Forms
- 3 – Schneider Laboratory Global, Inc. Report

CSQ/SM:edg

NOTICE: This report represents the opinion of KTA-TATOR, INC. This report is issued in conformance with generally accepted industry practices. While customary precautions were taken to verify the information gathered and presented is accurate, complete and technically correct, this report is based on the information, data, time, materials, and/or samples afforded. This report should not be reproduced except in full.

Appendix 1

KTA - CHEM

Contact:

Address:

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Ph: Fax:

Email: CQuatman@kta.com

FINAL REPORT

This report and the data within has completed QA/QC review

**CLARK**
TESTINGFuels & Lubrication Lab
1801 Route 51 South
Building 9
Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028**KTA - CHEM**

Chad Quatman

Abrasive Blasting Media 390473

390473-1

KTA - CHEM

Chad Quatman

2020

2020

Client Sample# 390473-1

Lube Supplier

Default

Lube Type

Default

PO# 20PO-394

Level 3

Make: UNKNOWN

Model: UNKNOWN

Level 4

Make: UNKNOWN

Model: UNKNOWN

Serial No: UNKNOWN

Sample Prep-Raw Materials

Test Code: P1110 / Method:

Result Date	09/03/2020
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Crystalline, Silica, XRD

Test Code: N3905 / Method: NIOSH 7500

Result Date	09/03/2020
Cristobalite	<0.1 wt. %
Quartz	0.5 wt. %
Tridymite	<0.1 wt. %

Tracking #	413782-1
Client Sample #	390473-1
Sample Date	09/01/2020
Received Date	09/01/2020
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

Authorized SignatureAnalyst: *Cindy Williams* Date: 09/04/2020
Cindy Williams

Results relate only to items tested.

Appendix 2

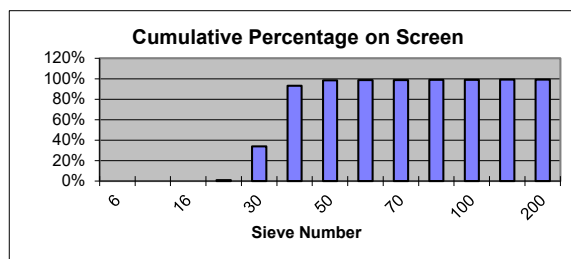
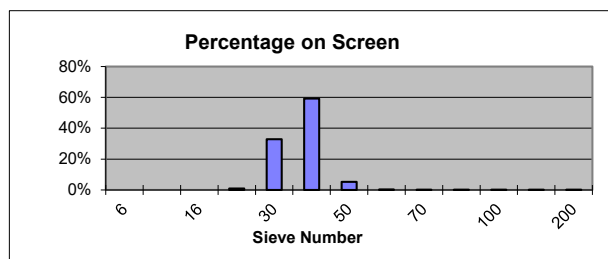


KTA-Tator, Inc. Sieve Analysis Data Form

Sample ID No.:	390473-1	Initial	Date:	9/11/2020
Sample Description:	Quick Minerals	Run 1A	Technician:	JDH
Initial Sample Mass (g):	150.23	20/40		

US Standard Sieve No.	Retained Sample (g)	% of Total	Cumulative % of Total	Nominal Sieve Opening Size (mm)	Retained Sample (g) * Opening (mm)
6	0.000	0.000%	0.000%	3.350	0.000
10	0.000	0.000%	0.000%	2.000	0.000
16	0.000	0.000%	0.000%	1.180	0.000
20	1.470	0.978%	0.978%	0.850	1.250
30	49.48	32.94%	33.91%	0.600	29.69
40	88.93	59.20%	93.11%	0.425	37.80
50	7.940	5.285%	98.40%	0.300	2.382
60	0.410	0.273%	98.67%	0.250	0.103
70	0.200	0.133%	98.80%	0.212	0.042
80	0.090	0.060%	98.86%	0.180	0.016
100	0.190	0.126%	98.99%	0.150	0.029
140	0.320	0.213%	99.20%	0.106	0.034
200	0.070	0.047%	99.25%	0.075	0.005
Pan*	0.560	0.373%	99.62%	0.038	0.021
Total	149.7		Sum =		71.36

Average particle size (mm) = 0.48



* Assumes pan particle size is equal to 0.038 mm

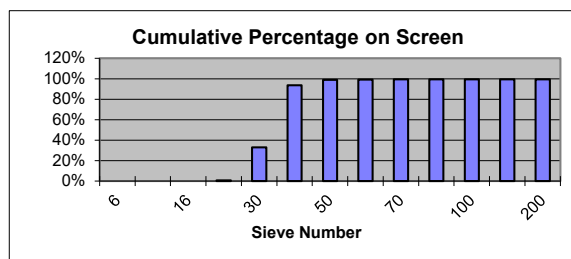
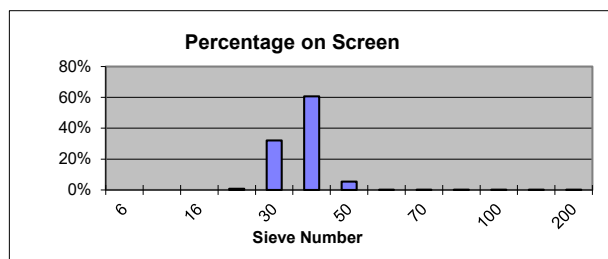


KTA-Tator, Inc. Sieve Analysis Data Form

Sample ID No.: 390473-1 Initial Date: 9/11/2020
Sample Description: Quick Minerals Run 1B Technician: JDH
Initial Sample Mass (g): 150.26 20/40

US Standard Sieve No.	Retained Sample (g)	% of Total	Cumulative % of Total	Nominal Sieve Opening Size (mm)	Retained Sample (g) * Opening (mm)
6	0.000	0.000%	0.000%	3.350	0.000
10	0.000	0.000%	0.000%	2.000	0.000
16	0.000	0.000%	0.000%	1.180	0.000
20	1.140	0.759%	0.759%	0.850	0.969
30	48.26	32.12%	32.88%	0.600	28.96
40	91.24	60.72%	93.60%	0.425	38.78
50	8.070	5.371%	98.97%	0.300	2.421
60	0.340	0.226%	99.19%	0.250	0.085
70	0.210	0.140%	99.33%	0.212	0.045
80	0.120	0.080%	99.41%	0.180	0.022
100	0.040	0.027%	99.44%	0.150	0.006
140	0.060	0.040%	99.48%	0.106	0.006
200	0.090	0.060%	99.54%	0.075	0.007
Pan*	0.170	0.113%	99.65%	0.038	0.006
Total	149.7		Sum =		71.30

Average particle size (mm) = 0.48



* Assumes pan particle size is equal to 0.038 mm

Appendix 3



Analysis Report

Schneider Laboratories Global, Inc

2512 W. Cary Street • Richmond, Virginia • 23220-5117
804-353-6778 • 800-785-LABS (5227) • Fax 804-359-1475

Customer: KTA-Tator, Inc. (1861)
Address: 115 Technology Drive
Pittsburgh, PA 15275

Order #: 384125

Matrix Bulk
Received 09/02/20
Reported 09/03/20

Attn:

Project: Quick Minerals
Location: Pittsburgh
Number: 390473

PO Number: 20PO-395

Sample ID	Cust. Sample ID	Location	Result	RL*	Units	Analysis Date	Analyst
Parameter		Method					
384125-001	390473-1	Abrasive Blasting Media					
Metals Analysis							
Mercury		EPA 7470A / 1311	<0.0005	0.0005	mg/L	09/03/20	ST
Arsenic		EPA 6010D / 1311	<0.0800	0.0800	mg/L	09/03/20	KM
Barium		EPA 6010D / 1311	0.206	0.0800	mg/L	09/03/20	KM
Cadmium		EPA 6010D / 1311	<0.0800	0.0800	mg/L	09/03/20	KM
Chromium		EPA 6010D / 1311	<0.200	0.200	mg/L	09/03/20	KM
Lead		EPA 6010D / 1311	<0.0800	0.0800	mg/L	09/03/20	KM
Selenium		EPA 6010D / 1311	<0.0800	0.0800	mg/L	09/03/20	KM
Silver		EPA 6010D / 1311	<0.0800	0.0800	mg/L	09/03/20	KM

384125-09/03/20 05:21 PM

Reviewed By: **Jennifer Lee**
Manager

EPA TCLP Regulatory Limits

Parameter	Reg. Limit	Unit
Arsenic	5.00	mg/L
Barium	100	mg/L
Cadmium	1.00	mg/L
Chromium	5.00	mg/L
Lead	5.00	mg/L
Mercury	0.200	mg/L
Selenium	1.00	mg/L
Silver	5.00	mg/L

All internal QC parameters were met. Unusual sample conditions, if any, are described. Surrogate Spike results designated with "D" indicate that the analyte was diluted out. "MI" indicates matrix interference. Concentration and *Reporting Limit (RL) based on areas provided by client. Values are reported to three significant figures. Solid PPM = mg/kg | PPB = µg/kg and Water PPM = mg/L | PPB = µg/L. The test results reported relate only to the samples submitted.



Analysis Report

Schneider Laboratories Global, Inc

2512 W. Cary Street • Richmond, Virginia • 23220-5117
804-353-6778 • 800-785-LABS (5227) • Fax 804-359-1475

Customer: KTA-Tator, Inc. (1861)
Address: 115 Technology Drive
Pittsburgh, PA 15275

Attn:

Project: Quick Minerals
Location: Pittsburgh
Number: 390473

Order #: 384125

Matrix Bulk
Received 09/02/20
Reported 09/03/20

PO Number: 20PO-395

Sample ID	Cust. Sample ID	Location	Result	RL*	Units	Analysis Date	Analyst
Parameter		Method					

State Certifications

Method	Parameter	Pennsylvania	Virginia
EPA 6010D	Arsenic	ELAP Certified	VELAP Certified
EPA 6010D	Barium	ELAP Certified	VELAP Certified
EPA 6010D	Cadmium	ELAP Certified	VELAP Certified
EPA 6010D	Chromium	ELAP Certified	VELAP Certified
EPA 6010D	Lead	ELAP Certified	VELAP Certified
EPA 6010D	Selenium	ELAP Certified	VELAP Certified
EPA 6010D	Silver	ELAP Certified	VELAP Certified
EPA 7470A	Mercury	ELAP Certified	VELAP Certified

State	Certificate Number
Pennsylvania	ELAP 014
Virginia	VELAP 10779

All internal QC parameters were met. Unusual sample conditions, if any, are described. Surrogate Spike results designated with "D" indicate that the analyte was diluted out. "MI" indicates matrix interference. Concentration and *Reporting Limit (RL) based on areas provided by client. Values are reported to three significant figures. Solid PPM = mg/kg | PPB = µg/kg and Water PPM = mg/L | PPB = µg/L. The test results reported relate only to the samples submitted.