



OHS and Environmental  
Risk Management

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**Report to:**

**Jaco Du Toit**

**Tooltechnic Systems (AUST) Pty Ltd**

**21-27 Evolution Drive, Dandenong South  
Victoria, 3175**

**CONCERNING THE ASSESSMENT OF:**

**RESPIRABLE CRYSTALLINE SILICA and  
TOTAL RESPIRABLE DUST EXPOSURES  
DURING THE USE OF DRY CUTTING  
TECHNIQUES**

**June 2019**

Distribution	1	Jaco Du Toit – Tooltechnic Systems (AUST) Pty Ltd
	2	Eva and Associates Pty Ltd

Reference	M3288(r1)
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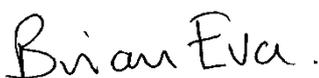
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Document reference: M3288(r1) - ToolTechnic Systems Australia Pty Ltd (Festool) RCS Monitoring

Author: **Michael Eva** Date: 12<sup>th</sup> June 2019  
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**Reviewed:**

Reviewed:  Date: 12<sup>th</sup> June 2019  
  
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**Certified Occupational Hygienist**  
**EVA AND ASSOCIATES PTY LTD**

Issue date: Date: 12<sup>th</sup> June 2019  
Issue Number: **Final**

## 1. Introduction

This report presents the findings of a controlled monitoring program for respirable crystalline silica, conducted at the ToolTechnic Systems Australia site, 21-27 Evolution Drive, Dandenong South, Victoria.

The aim of the monitoring was to assess potential respirable crystalline silica (RCS) and total respirable dust personal exposure to the operator of various *Festool* power tools whilst cutting silica containing mediums utilising dry methods of cutting. Dry cutting techniques were used with local dust extraction from *Festool* dust extraction units. An M class filter was fitted to the dust extraction units.

### 1.1 Scope

The scope of the assessment included:

- **Respirable Crystalline Silica:** an assessment of the RCS personal exposures when utilising dry cutting techniques on silica containing products using a range of *Festool* power tools and dust extraction units.
- **Total Respirable Dust:** an assessment of the total respirable dust personal exposures when utilising dry cutting techniques on silica containing products using a range of *Festool* power tools and dust extraction units.

### 1.2 Limitations

This assessment is indicative of the days of monitoring / assessment only. The assessment was designed to be representative of daily operations for workplaces that have the potential for RCS exposures from stone cutting operations. It should be noted that the power tool, dust extraction and cutting stations were set up by ToolTechnic employees, who also provided the silica containing materials.

The individual results of the monitoring program are associated with the combination of tool, extraction and source of silica used in that specific individual test. The results from a specific monitoring setup should not be relied upon to predict results if there are changes in either the tool used, the type of extraction used or the source of silica.

It should be remembered that alterations in work practices (including controls) and materials flows, and seasonal variations (i.e. weather conditions) may greatly alter the potential exposure of employees to airborne contaminants associated with processing.

It should be noted that there was no monitoring conducted to determine the release of respirable particulate from the extraction system exhaust. This testing has previously been conducted by *Festool*.

## 2. Monitoring Methodology

Respirable Dust monitoring for RCS was conducted in accordance with Australian Standard AS2985 – 2009 – Workplace atmospheres – Method for sampling & Gravimetric determination of Respirable dust. Analysis of the filters for cristobolite and  $\alpha$ -quartz was conducted by WorkCover NSW – Laboratory Services via X-Ray Diffractometry (NATA: 3726).

Monitoring was conducted using SKC Respirable Dust Aluminium Cyclones (Cat. No. 225-01-01) at a flow rate of approximately 2.5L/min to comply with ISO 7708/CEN criteria.

During the monitoring periods, all individuals involved were wearing fitted *Sundstrom* half face respirators with appropriate P3 particle filters as well as hearing and eye protection.

### 3. Occupational / Workplace Exposure Standards

Workplace Exposure Standards (WESSs) referred to in this section of the report, are recommended by SafeWork Australia. SafeWork Australia is a federally funded body, which provides legislative and technical guidelines in many areas of health and safety.

Workplace Exposure standards represent airborne concentrations of individual chemical substances, which according to current knowledge, should neither impair the health of nor cause undue discomfort to nearly all workers.

**It must be remembered that exposure standards are not fine lines between safe and unsafe conditions. As a general hygiene principle, where measured exposures are 0.5 of the exposure standard, action should be taken to reduce exposures as low as reasonably practicable.**

A great number of the adopted exposure standards have been obtained from the 'American Conference of Governmental Industrial Hygienists' list of threshold limit values (TLV<sup>®</sup>s). These values have been considered by SafeWork Australia and those found to be acceptable have been adopted. A smaller number of substances have been reviewed in detail by the SafeWork Australia Exposure Standards Working Group and appropriate values assigned.

#### 3.1 Exposure Standard Types (Respirable Dust)

There are three types of exposure standards based on exposure duration, viz.

- 8 hour TWA
- short term exposure limit (STEL)
- peak limitation

Except for short-term exposure limits or where a peak value has been assigned, the exposure standards for airborne contaminants are expressed as a time-weighted average (TWA) concentration of that substance over an eight-hour working day, for a five-day working week.

During periods of continuous daily exposure to an airborne contaminant, these TWA exposures permit excursions above the exposure standard provided they are compensated by equivalent excursions below the standard during the working day.

#### 3.2 Excursions

In practice, the actual concentration of an airborne contaminant arising from a particular industrial process may fluctuate widely with time, with some of the major excursions giving rise to a significant proportion of the overall exposure. Even where the TWA exposure standard is not exceeded, there should be some control of concentration excursions.

#### WORKPLACE EXPOSURE STANDARDS FOR CONTAMINANTS (PARTICULATE / DUST) MEASURED IN THIS ASSESSMENT

	8hr-TWA		15min STEL		peak limitation	
	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>	ppm
Respirable Crystalline Silica <sup>1</sup>	0.1	-	-	-	-	-
Respirable Dust <sup>2</sup>	3	-	-	-	-	-

<sup>1</sup><http://hsis.safeworkaustralia.gov.au/>

<sup>2</sup>American Conference of Governmental Industrial Hygienists (ACGIH)

## 4. Monitoring Details

### 4.1 Monitoring data

The monitoring program took place on three separate occasions where the a variety of *Festool* power tools and silica containing materials were used. Eva and Associates employees were responsible for the cutting and grinding of silica containing materials, with instruction on the operation of the power tools and dust extraction units provided by *Tooltechnic Systems Australia* representatives. Monitoring was conducted with all appropriate PPE used. Specifics of the monitoring program are detailed below:

Date	Sample Number	Location	Tool	Dust Extraction Unit	Material
26.4.19	M3288/1	Internal, training room	<i>Festool</i> TS 55 Plunge Cut Saw with dust guard. Guide rail in use	CTM 36 E AutoClean Dust Extractor (M class filter) with attached pre-separator unit	7mm engineered stone
	M3288/2	External, carpark	<i>Festool</i> HK 85 EB Circular Saw (250mm) – Hand held	CTM 36 E AutoClean Dust Extractor (M class filter) with attached pre-separator unit	Reinforced Hebel
10.5.19	M3288/3	External, carpark	<i>Festool</i> DSC-AG 125 Diamond Cutting System Plus Guide rail in use	CTM 36 E AutoClean Dust Extractor (M class filter) (no -preseparator unit)	7mm engineered stone
	M3288/4	External, carpark	<i>Festool</i> DSC 125 Freehand Diamond Cutting System Plus – Hand held	CTM 36 E AutoClean Dust Extractor (M class filter) (no pre-separator unit)	20mm engineered stone
15.5.19	M3288/5	External, carpark	<i>Festool</i> RG 150 E Grinder	CTM 36 E AutoClean Dust Extractor (M class filter) with attached pre-separator unit	Concrete block
	M3288/6	External, carpark	<i>Festool</i> TS 55 Plunge Cut Saw with dust guard. Guide rail in use	CTM 36 E AutoClean Dust Extractor (M class filter) with attached pre-separator unit	7mm engineered stone

### 4.2 Building materials

The building materials used during the assessment were provided by *ToolTechnic Systems (AUST)*. Both the 7mm and 20mm stone were sourced from *Granite Transformations Pty Ltd*. The Safety Data Sheet (SDS) for the supplied stone is attached in the appendices of this report. Listed as ‘engineered stone’ within the SDS, the table below extracted from the SDS lists the components and concentrations of the engineered stone;

Component	CAS	Proportion
Crystalline Silica	14808-60-7	>90%
Resins & Trace Minerals including Al <sub>2</sub> O <sub>3</sub> , Fe <sub>2</sub> O <sub>3</sub> , TiO <sub>2</sub> , CaO, MgO, Na <sub>2</sub> O, K <sub>2</sub> PtO <sub>5</sub>	N/A	Balance

SDS’s for the Hebel and concrete block were not available, however it is assumed they have a crystalline silica content significantly lower than that of the engineered stone.

## 5.0 Monitoring Results

### 5.1 RESPIRABLE CRYSTALLINE SILICA RESULTS

Date	Sample ref	Sample Description	Sample Medium	Sample location	Total silica present on filter mg	FR av ml/min	Time on	Time off	Elapsed time (mins) (Excluding Breaks)	Sample Vol m <sup>3</sup>	Total Respirable Crystalline Silica (mg/m <sup>3</sup> )	Exp. Standard Total Respirable Crystalline Silica SWA (mg/m <sup>3</sup> )
26.04.19	M3288 / 1	TS 55 Plunge Cut – Plunge Saw CTM 36 E AutoClean Dust Extractor with pre-separator	7mm engineered stone	Internal, training room	ND (<0.01)	2493	10:20	14:15	190	0.474	<0.02	0.1
26.04.19	M3288 / 2	HK 85 EB Circular Saw CTM 36 E AutoClean Dust Extractor with pre-separator	Reinforced Hebel	External, carpark	0.013	2497	11:00	14:15	150	0.375	0.03	0.1
10.05.19	M3288 / 3	<i>Festool</i> DSC-AG 125 – Angle Grinder (Rail) CTM 36 E AutoClean Dust No pre-separator unit used	7mm engineered stone	External, carpark	ND (<0.01)	2514	09:36	14:08	237	0.596	<0.02	0.1
10.05.19	M3288 / 4	<i>Festool</i> DSC 125 – Angle Grinder CTM 36 E AutoClean Dust No pre-separator unit used	20mm engineered stone	External, carpark	ND (<0.01)	2509	09:36	14:08	237	0.595	<0.02	0.1
15.05.19	M3288 / 5	<i>Festool</i> RG 150 E - Grinder CTM 36 E AutoClean Dust Extractor with pre-separator	Concrete block	External, carpark	ND (<0.01)	2508	09:30	14:00	240	0.602	<0.02	0.1
15.05.19	M3288 / 6	TS 55 Plunge Cut – Plunge Saw CTM 36 E AutoClean Dust Extractor with pre-separator	7mm engineered stone	External, carpark	ND (<0.01)	2508	09:30	14:00	240	0.602	<0.02	0.1

**FR av.** = Flow rate average

**ND** = Not Detected. The level of detection as stated by the laboratory is 0.01 mg.

**Note:** WorkCover NSW – Laboratory Services is attached to this report.

## 5.2 TOTAL RESPIRABLE DUST RESULTS

Date	Sample ref	Sample Description	Sample Medium	Sample location	Mass differential of respirable dust (mg)	FR av ml/min	Time on	Time off	Elapsed time (mins) (Excluding Breaks)	Sample Vol (m <sup>3</sup> )	Total Respirable Dust (mg/m <sup>3</sup> )	Exp. Standard Total Respirable Dust ACGIH (mg/m <sup>3</sup> )
26.04.19	M3288 / 1	TS 55 Plunge Cut – Plunge Saw CTM 36 E AutoClean Dust Extractor with pre-separator	7mm engineered stone	Internal, training room	0.06	2493	10:20	14:15	190	0.474	0.13	3
26.04.19	M3288 / 2	HK 85 EB Circular Saw CTM 36 E AutoClean Dust Extractor with pre-separator	Reinforced Hebel	External, carpark	0.11	2497	11:00	14:15	150	0.375	0.29	3
10.05.19	M3288 / 3	<i>Festool</i> DSC-AG 125 – Angle Grinder (Rail) CTM 36 E AutoClean Dust No pre-separator unit used	7mm engineered stone	External, carpark	0.04	2514	09:36	14:08	237	0.596	0.07	3
10.05.19	M3288 / 4	<i>Festool</i> DSC 125 – Angle Grinder CTM 36 E AutoClean Dust No pre-separator unit used	20mm engineered stone	External, carpark	0.02	2509	09:36	14:08	237	0.595	0.03	3
15.05.19	M3288 / 5	<i>Festool</i> RG 150 E - Grinder CTM 36 E AutoClean Dust Extractor with pre-separator	Concrete block	External, carpark	0.02	2508	09:30	14:00	240	0.602	0.03	3
15.05.19	M3288 / 6	TS 55 Plunge Cut – Plunge Saw CTM 36 E AutoClean Dust Extractor with pre-separator	7mm engineered stone	External, carpark	0.01	2508	09:30	14:00	240	0.602	0.02	3

**FR av.** = Flow rate average

## 6.0 Respirable Crystalline Silica Dust and Total Respirable Dust Results Discussion

For the respirable crystalline silica samples, all results are well below the Safe Work Australia workplace exposure standard of  $0.1\text{mg}/\text{m}^3$  (listed as respirable quartz). In addition, none of the samples were greater than 50% of the Safe Work Australia occupational exposure standard (OES) of  $0.1\text{mg}/\text{m}^3$ . The total respirable dust results were well below the American Conference of Governmental Hygienists (ACGIH) recommended exposure standard of  $3\text{mg}/\text{m}^3$ . It should be noted that the American standard is used as Safe Work Australia does not provide an exposure standard for total respirable dusts.

Monitoring took place in well ventilated environments which aided in the reducing the accumulation of surface and airborne RCS. However, the monitoring periods represent the time spent continuously using the power tools on the stone and concrete mediums, ensuring a significant amount of dust containing RCS was produced and thus would likely have been detected had the controls in place failed.

At the time of sampling it was noted that, with the exception of the Hebel cutting scenario, the amount of dust disseminating into the work area was at low levels provided the extraction systems were fitted and working correctly, as reflected by the total respirable dust results. Given the high silica content of the engineered stone and the below detection limit analytical results, it can be concluded that the majority of RCS was captured by the extraction system. The brittle nature of the Hebel material meant significant amounts of dust were produced during cutting, thus the detectable analytical result was not unexpected, although still well below the exposure standards for RCS and total respirable dust. Alternative controls or combinations of tool/extraction system should be investigated for the cutting of Hebel products given the ease in which significant levels of dust were created.

Varying extraction system set ups were used during the monitoring. Attached to the CTM 36 E AutoClean Dust Extractor for samples 1, 2, 5 and 6 was a *Festool* CT Extractor Cyclone Pre Separator. The separator which is mounted to the top of the dust extractor acts as a cyclone, separating larger and smaller sections of debris and dust with the aim of preserving the filter, reducing the clogging of filters and reducing the need to replace extractor filter bags as often. The separator does reduce the actual extraction power of the dust extraction unit however the reduction did not appear significant. Samples 3 and 4 were collected without the use of the separator unit with the tools connected straight to the dust extractor unit. During the collection of these samples the extraction systems failed due to the clogging of the filter for a brief period, causing a significant amount of extra dust to disseminate from the point of cutting (although not enough to produce a detectable level of RCS). In order to ensure the effectiveness of the extraction system, it is recommended that all users are thoroughly trained in how it is used and the scenarios in which the attachment of the pre-separator unit is appropriate or not. If dry cutting techniques using *Festool* systems are to be used in the field, controlling exposures will be majorly dependant on the ability of the individual to set up the extraction system correctly.

It should be noted that Safe Work Australia has released a draft exposure standard for comment with a proposed exposure standard of  $0.02\text{mg}/\text{m}^3$  for an 8 hour work shift. It should be noted that every result, with the exception of M3288/2 (Reinforced Hebel), returned a total concentration of  $<0.02\text{mg}/\text{m}^3$ . This is the case due to the requirement of laboratories to use the minimum reporting value when reporting results which in this case was 0.01 mg.

## **7.0 CONCLUSION**

Monitoring of personal exposures to respirable crystalline silica whilst dry cutting using *Festool* power tools and extraction systems on silica containing materials has now been completed. The assessment has revealed that concentrations are below the established occupational workplace exposure standard, and below the 50% action limit of the occupational workplace exposure standard. All samples with the exception of M3288/2 (Hebel) returned results below the detection limit of the laboratory.

Based on the results of this monitoring programme, when used correctly, the dust extraction system in combination with the pre-separator unit and the correct tool provides adequate protection against RCS based on the monitoring results. Training must be provided to users of the extraction system and pre-separator unit to ensure they are capable of selecting the correct extraction settings and tools for the task.

**Appendices and attachments begin on the following page**

## Appendix A: Site Photographs



The following pages contain photographs of significant areas noted during the Eva and Associates Pty Ltd assessment.

<b>Reference number</b>	M3288
<b>Client</b>	ToolTechnic Systems - Festool
<b>Site name</b>	Tooltechnic Systems (AUST)
<b>Site address</b>	21/27 Evolution Drive, Dandenong South VIC 3175

The survey was conducted by:

<b>Consultant name</b>	Michael Eva
<b>Date of site work</b>	26 <sup>th</sup> of April, 10 <sup>th</sup> of May and the 15 <sup>th</sup> of May 2019

## M3288 – ToolTechnic (AUST)



The CTM 36 AutoClean Dust Extractor with the pre-separator cyclone unit attached. This extraction setup was used in samples M3288/1,2,5 and 6.



The CTM 36 AutoClean Dust Extractor with the pre-separator unit not attached. This extraction setup was used in samples M3288/3 and 4.



The Festool TS 55 Plunge Cut saw with dust guard. This unit was used in samples M3288/1 and 6.



The HK 85EB circular saw cutting the Hebel product (Sample no. M3288/2). This was the only sample to return detectable results for RCS and also produce the highest total respirable dust results.



The external sampling setup for sample M3288/3. The Diamond Cutting angle grinder system is seen attached to the extractor with no –pre-separator attached.



The Festool RG 150 E grinder used to grind concrete in sample M3288/5. Results from this sample were well below the relevant exposure standards.

Michael Eva  
Eva & Associates Pty Ltd  
PO Box 2093  
OAKLEIGH VIC 3166

**Lab. Reference:** 2019-1973

Samples analysed as received

**SAMPLE ORIGIN:** Job No. M3288

**DATE OF INVESTIGATION:** 26/04/2019

**DATE RECEIVED:** 3/05/19

**ANALYSIS REQUIRED:** Respirable Crystalline Silica

### REPORT OF ANALYSIS

See attached sheet(s) for sample description and test results.

The results of this report have been approved by the signatory whose signature appears below.

For all administrative or account details please contact the Laboratory.

Increment and total pagination can be seen on the following pages.



Martin Mazereeuw

Manager

**Date:** 20/05/19

**Report of Analysis for Crystalline Silica in Respirable Dust**

**Client: Michael Eva****Job No. M3288****Company: Eva and Associates Pty Ltd****Date Sampled: 26 Apr 2019**

Reference Number	Sample ID	$\alpha$ -Quartz (mg / 25 mm Filter)	Cristobalite (mg / 25 mm Filter)
2019-1973-1	M3288/1	ND	ND
2019-1973-2	M3288/Blank	ND	ND
2019-1973-3	M3288/2	0.013 $\pm$ 0.005	ND

**Report of Analysis for Crystalline Silica in Respirable Dust**

**Client: Michael Eva**

**Job No. M3288**

**Company: Eva and Associates Pty Ltd**

**Date Sampled: 26 Apr 2019**

Method Description : Determination of Crystalline Silica (Alpha-Quartz & Cristobalite) in Respirable Dust by X-Ray Diffractometry.  
Method No. : WCA.220

ND = Not Detected.  
Limit of Quantitation : 0.010mg / 25mm Filter

**Measurement Uncertainty**

The measurement uncertainty is an estimate that characterises the range of values within which the true value is asserted to lie. The uncertainty estimate is an expanded uncertainty using a coverage factor of 2, which gives a level of confidence of approximately 95%. The estimate is compliant with the “ISO Guide to the Expression of Uncertainty in Measurement” and is a full estimate based on in-house method validation and quality control data.

**Quality Assurance**

In order to ensure the highest degree of accuracy and precision in our analytical results, we undertake extensive intra- and inter-laboratory quality assurance (QA) activities. Our laboratory performs calibrations for each batch of samples and further analyse laboratory and field blanks, perform a duplicate and when available a repeat analysis of a previously positive sample. Spiked QA samples are also included routinely in each analytical batch run to ensure the accuracy of the analyses. The laboratory Services has participated for many years in several national and international inter-laboratory proficiency programs listed below:-

Workplace Air, Ambient Air, and Stack Emissions Proficiency Testing Scheme conducted by LGC, UK;  
G-EQUAS - Quality Management in Occupational and Environmental Medicine QA Program, conducted by the Institute for Occupational, Social and Environmental Medicine, University of Erlangen – Nuremberg, Germany;

pt:a - Proficiency Testing Australia;  
3M Organic Vapour Monitor Quality Assurance Scheme.



Michael Eva  
Eva & Associates Pty Ltd  
PO Box 2093  
OAKLEIGH VIC 3166

Lab. Reference: 2019-2149

Samples analysed as received

SAMPLE ORIGIN: Job No: M3288

DATE OF INVESTIGATION: 10/05/2019

DATE RECEIVED: 15/05/19

ANALYSIS REQUIRED: Respirable Crystalline Silica

### REPORT OF ANALYSIS

See attached sheet(s) for sample description and test results.

The results of this report have been approved by the signatory whose signature appears below.

For all administrative or account details please contact the Laboratory.

Increment and total pagination can be seen on the following pages.

Martin Mazereeuw

Manager

Date: 24/05/19

**Report of Analysis for Crystalline Silica in Respirable Dust**

**Client: Michael Eva**

**Job No. M3288**

**Company: Eva and Associates Pty Ltd**

**Date Sampled: 10 May 2019**

<b>Reference Number</b>	<b>Sample ID</b>	<b><math>\alpha</math>-Quartz (mg / 25 mm Filter)</b>	<b>Cristobalite (mg / 25 mm Filter)</b>
2019-1454-1	M3288/3	ND	ND
2019-1454-2	M3288/4	ND	ND
2019-1454-3	M3288/ Blank	ND	ND

**Report of Analysis for Crystalline Silica in Respirable Dust**

**Client: Michael Eva**

**Job No. M3288**

**Company: Eva and Associates Pty Ltd**

**Date Sampled: 10 May 2019**

Method Description : Determination of Crystalline Silica (Alpha-Quartz & Cristobalite) in Respirable Dust by X-Ray Diffractometry.  
Method No. : WCA.220

ND = Not Detected.

Limit of Quantitation : 0.010mg / 25mm Filter

**Measurement Uncertainty**

The measurement uncertainty is an estimate that characterises the range of values within which the true value is asserted to lie. The uncertainty estimate is an expanded uncertainty using a coverage factor of 2, which gives a level of confidence of approximately 95%. The estimate is compliant with the "ISO Guide to the Expression of Uncertainty in Measurement" and is a full estimate based on in-house method validation and quality control data.

**Quality Assurance**

In order to ensure the highest degree of accuracy and precision in our analytical results, we undertake extensive intra- and inter-laboratory quality assurance (QA) activities. Our laboratory performs calibrations for each batch of samples and further analyse laboratory and field blanks, perform a duplicate and when available a repeat analysis of a previously positive sample. Spiked QA samples are also included routinely in each analytical batch run to ensure the accuracy of the analyses. The laboratory Services has participated for many years in several national and international inter-laboratory proficiency programs listed below:-

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G-EQUAS - Quality Management in Occupational and Environmental Medicine QA Program, conducted by the Institute for Occupational, Social and Environmental Medicine, University of Erlangen –

Nuremberg, Germany;

pt:a - Proficiency Testing Australia;

3M Organic Vapour Monitor Quality Assurance Scheme.

Michael Eva  
Eva & Associates Pty Ltd  
PO Box 2093  
OAKLEIGH VIC 3166

Lab. Reference: 2019-2238

Samples analysed as received

SAMPLE ORIGIN: Job M3288/3

DATE OF INVESTIGATION: 15/05/2019

DATE RECEIVED: 17/05/19

ANALYSIS REQUIRED: Respirable Crystalline Silica

### REPORT OF ANALYSIS

See attached sheet(s) for sample description and test results.

The results of this report have been approved by the signatory whose signature appears below.

For all administrative or account details please contact the Laboratory.

Increment and total pagination can be seen on the following pages.



Martin Mazereeuw  
Manager

Date: 31/05/19

**Report of Analysis for Crystalline Silica in Respirable Dust**

**Client: Michael Eva**

**Job No. M3288/3**

**Company: Eva and Associates Pty Ltd**

**Date Received: 17/5/2019**

<b>Reference Number</b>	<b>Sample ID</b>	<b><math>\alpha</math>-Quartz (mg / 25 mm Filter)</b>	<b>Cristobalite (mg / 25 mm Filter)</b>
2019-2238-1	M3288/5	ND	ND
2019-2238-2	M3288/6	ND	ND
2019-2238-3	Blank	ND	ND

**Report of Analysis for Crystalline Silica in Respirable Dust**

**Client: Michael Eva**

**Job No. M3288/3**

**Company: Eva and Associates Pty Ltd**

**Date Received: 17/5/2019**

Method Description : Determination of Crystalline Silica (Alpha-Quartz & Cristobalite) in Respirable Dust by X-Ray Diffractometry.  
Method No. : WCA.220

ND = Not Detected.

Limit of Quantitation : 0.010mg / 25mm Filter

**Measurement Uncertainty**

The measurement uncertainty is an estimate that characterises the range of values within which the true value is asserted to lie. The uncertainty estimate is an expanded uncertainty using a coverage factor of 2, which gives a level of confidence of approximately 95%. The estimate is compliant with the "ISO Guide to the Expression of Uncertainty in Measurement" and is a full estimate based on in-house method validation and quality control data.

**Quality Assurance**

In order to ensure the highest degree of accuracy and precision in our analytical results, we undertake extensive intra- and inter-laboratory quality assurance (QA) activities. Our laboratory performs calibrations for each batch of samples and further analyse laboratory and field blanks, perform a duplicate and when available a repeat analysis of a previously positive sample. Spiked QA samples are also included routinely in each analytical batch run to ensure the accuracy of the analyses. The laboratory Services has participated for many years in several national and international inter-laboratory proficiency programs listed below:-

Workplace Air, Ambient Air, and Stack Emissions Proficiency Testing Scheme conducted by LGC, UK;  
G-EQUAS - Quality Management in Occupational and Environmental Medicine QA Program, conducted by the Institute for Occupational, Social and Environmental Medicine, University of Erlangen – Nuremberg, Germany;

pt:a - Proficiency Testing Australia;

3M Organic Vapour Monitor Quality Assurance Scheme.

# SAFETY DATA SHEET

## Section 1: Identification of the Material and Supplier

**Company Details:** Granite Transformations Pty Ltd  
ABN 61 074 218 778

**Address:** 16/167 Prospect Hwy, Seven Hills, NSW 2147

**Tel / Email:** (02) 8817 5900 info@granitetransformations.com.au

**Emergency Contact No:** 0427 195 691 OR (02) 8817 5900

**Product** TREND Q

**Other Names / Synonyms:** Engineered Stone

**Use:** Kitchen, Vanity, Laundry, Benchtops & Splashbacks.  
Flooring & Wall Tiles.

**Other Information:** NA

## Section 2: Hazards Identification

HAZARDOUS SUBSTANCE NON-DANGEROUS GOODS

This product contains Crystalline Silica. Crystalline Silica is classified as Hazardous.

- The Solid state product as supplied is classified as non-hazardous
- Dust created when the product is cut or crushed contains crystalline silica which may be respirable

### Hazard Category:

Category 4 – Harmful if Inhaled

### Signal Word:

Health Hazard



### Hazard Statement

H344 May cause breathing difficulties

### Precautionary Statement

#### Prevention

P261  
Avoid breathing  
Dust/Fume/Gas/Mist/  
Vapours/Spray

#### Response

P304 & P341  
IF INHALED and  
breathing is difficult,  
remove person to  
fresh air and keep at  
rest in a position

#### Storage

P403  
Store in a well  
ventilated place

#### Disposal

P501  
Dispose of  
Contents/Container in  
accordance with  
relevant regulations

P285 comfortable for breathing.  
 In case of inadequate ventilation wear respiratory protection P342 & P311  
 If experiencing respiratory symptoms call A POISON CENTRE or doctor/physician  
 P301 & P330 & P331:  
 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.  
 P303 & P361 & P353  
 IF ON SKIN (or hair):  
 Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower

**Section 3: Composition / Information on Ingredients**

Component	CAS	Proportion
Crystalline Silica	14808-60-7	>90%
Resins & Trace Minerals including Al2O3, FE2O3, TiO2, CaO, MgO, Na2O, K2) Pt05	N/A	Balance

**Section 4: First Aid Measures**

**Inhaled** Remove the person to clear/fresh air. Ensure airways are clear and if breathing is difficult have a qualified person give oxygen via a face mask. If irritation persists seek medical attention

**Swallowed** Rinse mouth and lips with water. Do not induce vomiting. If symptoms persist contact a Poison Information Centre on 13 11 26 (Australia wide) or seek immediate seek medical attention.

**Eye** Flush thoroughly with flowing water while holding eyelids open to remove all traces for a minimum of 15mins. If symptoms such as irritation or redness persist, seek medical attention.

**Skin** Remove heavily contaminated clothing. Wash off skin thoroughly with water. Use mild soap if available. Shower if necessary. Seek medical attention for persistent redness, irritation or burning of the skin.

**First Aid Facilities** Eye Wash and normal washroom facilities

## Section 5: Fire Fighting Measures

Flammability	Not flammable or combustible
Hazards from combustion products	None
Suitable extinguishing media surrounding fire	Use appropriate extinguishing media for
Special protective precautions and equipment for fire fighters	Firefighters should wear full fire-fighting turn-out gear including approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.
Unusual Fire and Explosion Hazards	When heated to decomposition, may release various hydrocarbons, carbon dioxide, carbon monoxide and water. Fumes of metal oxides and mica particles could also be released.
Hazchem code	None allocated

## Section 6: Accidental Release Measures

Cleanup and Disposal of Spill	Solid slabs can simply be gathered as necessary. If large amounts of dust or wastes are created by cutting process, vacuum or sweep up material avoiding dust generation or dampen spilled material with water to avoid airborne dust. Wear sufficient respiratory protection and protective clothing where necessary. Dispose of waste in accordance with local, state and federal regulations.
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## Section 7: Handling and Storage

Handling	Wash hands before eating, drinking, smoking, or using toilet facilities. Wash thoroughly after work using soap and water. Good industrial hygiene practices should be followed when handling this material. Product is heavy and breakable; handle with care to avoid injury and prevent damage. Wear correct PPE (Gloves).
Storage Precautions	No special storage requirements
Transport	Not classified as a Dangerous Goods, according to the Australian Code for the Transport of Dangerous Goods by Road and Rail (Edition 7.5 – 2017)
Proper Shipping Name	None Allocated

## Section 8: Exposure Control / Personal Protection

The following applies to dust from this product:

### Exposure Limits

- National Workplace Exposure Standard (WES). Established by Safe Work Australia (SWA)
- Exposure to dust should be kept as low as practicable, and below the following NES:-  
Crystalline silica (quartz): 0.1 mg/m<sup>3</sup> TWA ( time-weighted average) as respirable dust. Total dust (of any type, or particle size): 10 mg/m<sup>3</sup> TWA

### Engineering Controls

- All work should be carried out in such a way as to minimise dust generation, and exposure to dust.
- Mechanical ventilation: Dust extraction and collection may be used, if necessary, to control airborne dust levels.
- Work areas should be cleaned regularly.

### Personal Protection:

- **Skin** : Ensure a high level of personal hygiene is maintained when using this product. That is, always wash hands before eating, drinking, smoking or using the toilet.
- Remove all contaminated clothing. Wash gently and thoroughly with tepid water and non-abrasive soap. If irritation develops and persists seek medical attention.
- During cutting, grinding or sanding operations use body protection appropriate for task including work gloves if handling sharp or rough edges and steel-toed shoes if lifting product.
- **Eyes** : Safety glasses with side shields or safety goggles (AS/NZ 1336) or a face shield should be worn
- **Respiratory**: Where engineering and handling controls are not enough to minimise exposure to total dust and to respirable crystalline silica, personal respiratory protection may be required.
- The type of respiratory protection required depends primarily on the concentration of the respirable crystalline silica dust in the air, and the frequency and length of exposure time.
- A suitable P1or P2 particulate respirator chosen and used in accordance with AS/NZS 1715 and AS/NZS 1716 may be sufficient for many situations, but where high levels of dust are encountered, more efficient cartridge type or powered respirators or supplied-air helmets or suits may be necessary. Use only respirators that bear the Australian Standards mark and are fitted and maintained correctly.
- For dust levels approaching or exceeding the NES (see above) a more effective particulate respirator providing a greater protection factor should be worn.

## Section 9: Physical and Chemical Properties

Appearance Multi Coloured Engineered Stone

Odour None

Ph NA

Water Solubility	Insoluble
Vapour Pressure	Not determined
Boiling Point/range	Not determined
Freezing/melting point	Not determined
Viscosity	ND
Specific gravity	2.4
Flash Point	Not applicable
Percent Volatiles by Volume	Not applicable
Explosion Limits	Lower – ND: Upper - ND
Autolgnition Temp	Not applicable

#### **Section 10: Stability and Reactivity**

Chemical Stability	Chemically Stable
Incompatible Materials	This product is incompatible with hydrofluoric acid. Silica will dissolve in hydrofluoric acid and produce the corrosive gas silicon tetrafluoride
Conditions To Avoid	None
Hazardous Decomposition Products	Upon Decomposition, various hydrocarbons, carbon dioxide, carbon monoxide fumes, and water may be released
Hazardous Polymerization	Will not occur

#### **Section 11: Toxicological Information**

##### Acute Effects

Swallowed: Unlikely under normal industrial use. Mildly abrasive to mouth and throat if swallowed

Eyes : Dust is irritating to the eyes. Exposure to dust may aggravate pre-existing eye conditions

Skin: Dust may be mildly irritating and drying to the skin due to its physical characteristics

Inhaled : Dust is mildly irritating to the nose, throat and respiratory tract and may cause coughing and sneezing. Pre-existing upper respiratory and lung diseases including asthma and bronchitis may be aggravated Dust may cause irritation and inflammation of the eyes and aggravate pre-existing eye conditions

For Crystalline Silica: Inhalation (human) LCLo: 0.3mg/m<sup>3</sup>/10Y Inhalation (human) TCLo: 16mppcf/ 8H/17.9Y  
Intermittent; focal fibrosis, (pneumoconiosis), cough, dyspnoea. Inhalation (rat) TCLo: 50mg/m<sup>3</sup>/6H/71W  
Intermittent; liver – tumors

## Chronic Effects

**Silicosis:** The major concern is **silicosis**, caused by the inhalation and retention of respirable crystalline silica dust. Symptoms include:

**Chronic or ordinary silicosis** is the most common form of silicosis, and can occur after many years of exposure to relatively low levels of airborne respirable crystalline silica dust. It is further defined as either simple or complicated silicosis.

**Simple silicosis** is characterized by lung lesions (shown as radiographic opacities) less than 1 centimeter in diameter, primarily in the upper lung zones. Often, simple silicosis is not associated with symptoms, detectable changes in lung function, or disability.

Simple silicosis may be progressive and may develop into complicated silicosis or progressive massive fibrosis (PMF). Complicated silicosis or PMF is characterized by lung lesions (shown as radiographic opacities) greater than 1 centimeter in diameter. Although there may be no symptoms associated with complicated silicosis or PMF, the symptoms, if present, are shortness of breath, wheezing, cough and sputum production. Complicated silicosis or PMF may be associated with decreased lung function and may be disabling. Advanced complicated silicosis or PMF may lead to death. Advanced complicated silicosis or PMF can result in heart disease secondary to the lung disease (cor pulmonale).

**Accelerated silicosis** can occur with exposure to high concentrations of respirable crystalline silica over a relatively short period; the lung lesions can appear within five (5) years of the initial exposure. The progression can be rapid. Accelerated silicosis is similar to chronic or ordinary silicosis, except that the lung lesions appear earlier and progression is more rapid.

**Acute silicosis** can occur with exposures to very high concentrations of respirable crystalline silica over a very short time period, sometimes as short as a few months. The symptoms of acute silicosis include progressive shortness of breath, fever, cough and weight loss. Acute silicosis is fatal.

**Carcinogenicity:** The International Agency for Research on Cancer (IARC) concluded that “crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is *carcinogenic to humans* (Group 1).”

**Scleroderma:** There is evidence that exposure to respirable crystalline silica or that the disease silicosis is associated with the increased incidence of scleroderma, an immune system disorder manifested by a fibrosis (scarring) of the lungs, skin and other internal organs.

**Tuberculosis:** Individuals with silicosis are at increased risk to develop tuberculosis, if exposed to persons with tuberculosis.

**Nephrotoxicity:** There are several recent studies suggesting that exposure to respirable crystalline silica or that the disease silicosis is associated with the increased incidence of kidney disorders.

**Mutagenicity:** No Data

**Reproductive Effects:** No Data  
**Developmental Effects:** No Data

**Section 12: Ecological Information**

Ecotoxicity	Crystalline Silica pose no ecology risk. It is non-toxic to aquatic and terrestrial organisms and not biodegradable.
Persistence and Degradability	Product is persistent and is non-degradable
Mobility	Low mobility would be expected in a landfill situation

**Section 13: Disposal Considerations**

- Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility
- Measures should be taken to prevent dust generation during disposal and exposure and personal precautions should be observed (see above)
- Wear sufficient respiratory protection. Dampen spilled material with water to avoid airborne dust, then transfer material to a suitable container for reuse
- May be disposed in local landfill. Dispose in accordance with federal, state and local requirements.

**Section 14: Transport Information**

UN Number	None Allocated
UN proper Shipping name	None Allocated
Class and subsidiary risk	None Allocated
Packing Group	None Allocated
Hazchem Code	None Allocated
Special precautions for user	See above
DG class	None Allocated

**Section 15: Regulatory Information**

- Crystalline silica is classified as non-Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail
- Crystalline silica in the form of respirable dust is classified as Hazardous according to the Code Of Practice for the preparation of SDS for Hazardous Chemicals (NSW WorkCover:Dec 2011)

- Exposures by inhalation to high levels of dust may be regulated under the Hazardous Substances Regulations (State and Territory) as they are applicable to Respirable Crystalline Silica, requiring exposure assessment, and control of inhalation exposure below the NES
- Persons who have potential for exposure above the NES may be required by Regulations to have periodic health surveillance including Chest X-ray (see relevant State Government Regulations and ASCC/NOHSC documentation)

**Section 16: Other Information**

Emergency Contact No (All hours): 0427 195 691 OR (02) 8817 5900

Authorised By: John Grigg, Director

Date of Issue: 24<sup>th</sup> September 2018

**Notice:** The information contained in this Safety Data Sheet is given in good faith, but no warranty expressed or implied is made. The suggested procedures are based on knowledge and experience as of the date of publication. They are not necessarily all-inclusive nor fully adequate in every circumstance. Users are advised to make their own independent determination of suitability and completeness of information at their own risk, in relation to the particular purposes and specific circumstances. Since the information contained in this document may be applied under conditions beyond our control, no responsibility can be accepted by us for any loss or damage cause by any person acting or refraining from action as a result of any information contained in this Safety Data Sheet. Where the information provided herein disclosed a potential hazard or hazardous ingredient, adequate warning should be provided to employees and users and appropriate precautions taken.