SUBMISSION

Public consultation on the prohibition on the use of engineered stone

Instructions

To complete this online submission:

- Download and save this submission document to your computer.
- Use the saved version to enter your responses under each question below. These questions are from the public consultation on the prohibition on the use of engineered stone.
- Once you have completed your submission, save it and upload it using the upload your submission link on the Engage submission form.

Submissions will be accepted until **11.59 pm on 2 April 2023.**

Additional documentation

Up to three additional documents can also be uploaded when you submit your response. Relevant documents to upload could include cover letters or reports with data and evidence supporting your views.

Help

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Respondents may choose how their submission is published on the Safe Work Australia website by choosing from the following options:

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- submissions containing defamatory material, and
- submissions containing views or information identifying parties involved in hearings or inquests which are currently in progress.

Your details

(Please leave blank if you wish to remain anonymous)

1. Name or organisation

Caesarstone Australia Pty Ltd

2. Email used to log into Engage

[redacted]

Consultation questions

1. Do you support a prohibition on the use of engineered stone? Please support your response with reasons and evidence.

Please refer to attached detailed information

2. If yes, do you support a prohibition on the use of all engineered stone irrespective of its crystalline silica content? Please support your response with reasons and evidence.

Please refer to attached detailed information

3. If no, do you support a prohibition of engineered stone that contains more than certain percentage of crystalline silica? If yes, at what percentage of crystalline silica should a prohibition be set? Please support your response with reasons and evidence.

Please refer to attached detailed information

4. How many businesses work with engineered stone only?

   For these businesses, please provide where possible:

   a) the number of sole traders and small businesses (1-20 employees), medium businesses (21-200 employees), large businesses (>200 employees)
   b) the number of workers in these businesses, by business size
   c) the average annual revenue, by business size
   d) the proportion of business activity with engineered stone containing 40% or more crystalline silica content, by business size
   e) the proportion of business activity with engineered stone containing less than 40% crystalline silica content, by business size.

   Please use the table below to enter this information.

Business type	Description	Sole traders and small business	Medium business	Large business
Business working with engineered stone only	Number of businesses			
	Number of people employed			
	total annual revenue (approximate, rounded to nearest $10,000)			
	Proportion of business activity involving ES with ≥ 40% silica			
	Proportion of business activity involving ES with <40% silica			

Please refer to attached detailed information

5. How many businesses work with both engineered stone and non-engineered stone products?

For these businesses, please provide where possible:

a) the number of sole traders and small businesses (1-20 employees), medium businesses (21-200 employees), large businesses (>200 employees)
b) the number of workers in these businesses, by business size
c) the average annual revenue, by business size
d) the proportion of their business activity with non-engineered stone products, by business size
e) the proportion of their business activity with engineered stone containing 40% or more crystalline silica content, by business size
f) the proportion of their business activity with engineered stone containing less than 40% crystalline silica content.

Please use the table below to enter this information.

Business type	Description	Sole traders and small business	Medium business	Large business
Business working with both engineered stone and non-engineered stone products	Number of businesses			
	Number of people employed			
	Average yearly revenue (approximate, rounded to nearest $1000)			
	Proportion of business activity involving ES with ≥ 40% silica			
	Proportion of business activity involving ES with <40% silica			
	Proportion of business activity involving non-engineered stone products			

Please refer to attached detailed information

6. Do you have any data or information on the risks to workers from the other non-crystalline silica elements of engineered stone? Are these risks increased in engineered stone of less than 40% crystalline silica content?

Please refer to attached detailed information

7. In relation to Option 3, do you have:
    a) any information on the additional benefits of a licensing scheme over the enhanced regulation agreed by WHS ministers (Option 5a) that would already apply to engineered stone products containing less than 40% crystalline silica content?
    b) feedback on the implementation of concurrent licensing schemes for both prohibited engineered stone and non-prohibited engineered stone?

Please refer to attached detailed information

8. Are the assumptions and scenarios described for Option 6 in the Decision RIS accurate and appropriate? If not, why? Please provide additional information to support the impact analysis.

Please refer to attached detailed information

9. Are there any other options or issues you think should be considered for a prohibition on the use of engineered stone?

Please refer to attached detailed information

10. Should there be a transitional period for a prohibition on engineered stone? If so, should it apply to all options and how long should it be?

Please refer to attached detailed information

11. Do you have any evidence or data on the number of cases of the other silica-related diseases (such as lung cancer, chronic obstructive pulmonary disease, kidney disease, autoimmune disease) attributed to exposure to crystalline silica from engineered stone?

Please refer to attached detailed information

12. Do you have any additional evidence or information on the impacts of silicosis or silica-related diseases?

    For example, the direct impacts on the affected worker from the disease, the impacts on the mental health of affected workers and their families, the healthcare costs to the affected worker, loss of income for affected workers and their families, the costs to the health, workers' compensation and social support systems.

Please refer to attached detailed information

Introduction

Thank you for the opportunity to make a submission to Safe Work Australia's Decision Regulation Impact Statement (**Decision RIS**) and public consultation on the prohibition on the use of engineered stone.

Caesarstone shares the concern of all industry participants regarding the rise in silicosis cases in the stone fabrication industry in recent years, largely as a result of historic non-compliance with product handling requirements, a lack of regulatory enforcement and the absence of national standards.

Caesarstone is committed to working collaboratively to improve safety standards and protect workers.

As you are aware, Caesarstone previously made a submission to the Consultation Regulation Impact Statement (**Consultation RIS**).

Caesarstone's submission to the Consultation RIS reflected its consistent efforts to create a safer stone industry, in particular its support for uniform national regulations and safety guidelines and a mandatory, rigorously enforced licensing scheme for the handling of stone containing silica in each State and Territory.

Caesarstone is pleased that its submissions were broadly aligned to the outcomes of the meeting of Work Health and Safety Ministers on 28 February 2023, namely support for the implementation of Option 2 and Option 5a.

While Caesarstone supported Option 2 as complementary to its own actions to improve education and awareness of the risks of silicosis, such as the *Master of Stone* online training program for fabricators, it argued that Options 1-3 alone were not sufficient to address the issue.

Caesarstone supported Option 4 – a nationwide licensing scheme for PCBUs handling engineered stone – adding that it could be combined with Option 5a but applied to all stone containing silica, not just engineered stone. This is consistent with the outcome of the WHS ministers' meeting.

Summary of Submission

In relation to the new Option 6, which was not required to be addressed in the Consultation RIS, Caesarstone supports Option 3 – prohibition on the use of engineered stone containing 40% or more crystalline silica and licensing of engineered stone containing less than 40% crystalline silica.

Caesarstone would support a three-year transition to engineered stone containing less than 20% crystalline silica, with the industry moving towards these low-silica products. At this point, engineered stone would contain less silica – a less commensurate risk to workers – than almost all substitute materials.

Caesarstone's Decision RIS submission will demonstrate that handling engineered stone containing less than 40% silica presents a substantially lower risk to workers than higher-silica stone – and that this stone is as safe or safer than natural stone substitutes, such as granite.

Caesarstone will also demonstrate there is no evidence that the combination of resins and silica increases risk.

The submission will reference relevant research and expert opinion including:

- *"40% silica content engineered stone poses a significantly lower risk than 90% silica content engineered stone when handled safely, in that the levels of RCS produced are significantly lower. Utlising engineering, administrative and PPE controls, and compliance with these, would allow safe*

handling of both 40% and 90% silica content engineered stone" – Dr Robin O'Toole, Occupational and Environmental Physician

- *"A lower crystalline silica content in the bulk engineered and natural stone produces means a lower crystalline silica in any dust created during fabrication, such that should the engineering control systems fail to maintain their designed efficiency, results in an associated lower crystalline silica exposure of the workers"* – Alan Rogers, Certified Industrial Hygienist and Retired Certified Occupational Hygienist

- *"Manufacturing and adoption of engineered stone products with formulations such as Stone B [up to 50% crystalline silica content] or Stone C [no crystalline silica content] could potentially lower or eliminate RCS exposure risks."*[1]

Caesarstone believes Safe Work Australia will have to carefully consider the definition of engineered stone for the purposes of any prohibition. For example, would it be based on silica content, the use or resins or the manufacturing process – i.e. any stone not considered 'natural'.

As can be seen from the studies mentioned in the submission, different types of 'engineered stone' contain significantly different levels of silica – from quartz-based engineered stone with 90%-plus silica to engineered stone using other non-quartz material such as glass or feldspar, which contain next to no silica. Materials such as porcelain –containing ~20% silica, with a commensurate risk of silicosis – could also be considered 'engineered'.

Regardless of the definition of engineered stone, consistent with its Consultation RIS submission, Caesarstone firmly believes that any licensing scheme must apply to <u>all</u> stone containing silica, not just engineered stone, to adequately address the risk of silicosis in the stone industry.

It is Caesarstone's belief that full implementation of Option 2, Option 5a (applying to all silica-containing stone) and Option 6 (Option 3, applying to all silica-containing stone) will create an industry that is safe for all participants. If that means higher costs for industry participants, through equipment upgrades and licensing fees, that is an appropriate price to pay for worker safety, even if it means some businesses will fail.

Responses to questions

Caesarstone is pleased to address the Decision RIS consultation questions below and, where possible, will seek to avoid duplication with its Consultation RIS submission of August 2022. We would be pleased to provide any addition information required by Safe Work Australia.

Consultation Q1. Do you support a prohibition on the use of engineered stone? Please support your response with reasons and evidence.

Caesarstone does not support a wholesale ban on engineered stone.

The first question is defining engineered stone.

Engineered stone takes in a variety of products used for benchtops, including quartz-based engineered stone, feldspar-based engineered stone, glass and porcelain. Each has its specific composition with varying levels of silica – some considerably lower than natural stone, such as granite – from as low as 10% for feldspar-based

[1] *Characterization of the Emissions and Crystalline Silica Content of Airborne Dust Generated from Grinding Natural and Engineered Stones, 11 October 2022*

engineered stone, through porcelain, glass hybrids and up to quartz-based engineered stone with 90% silica content or more.

It is acknowledged that all these products can be handled safely provided proper safety equipment and procedures are used. **A wholesale ban, or a ban on any stone not considered 'natural, would capture products that are less dangerous than those that would continue to be fabricated.**

In addition to the potential issues raised in further detail below, a critical consideration is that **a ban on engineered stone would not address the issue of silicosis in the stone industry**. In NSW alone, about half of all silicosis cases reported in the year to 30 June 2021 – 42 per cent – are from industries outside of engineered stone[2]. These include tunnelling, construction and home-building, where the stone encountered by workers contains similar or higher levels of silica than engineered stone, including natural sandstone (70-95% silica), fibre cement sheeting (up to 60%), concrete and bricks (50-60%).

A ban on engineered stone would result in the substitution of different materials for benchtops. With the exception of wood and laminate (which are either unsuitable for benchtops or not preferred by consumers), every other substitute material contains a level of silica. One of the only reasons that natural stone has not been blamed for the rise in silicosis rates is simply because its less popular. If engineered stone alternatives are banned, natural stone will become more popular and pose the same risks. If not handled safely this will cost lives. That is why only a comprehensive national approach – through education, licensing and enforcement – and capturing all natural and engineered stone will address this issue.

The reality is that even if engineered stone is banned, the presence of silica in nearly all substitute materials used for benchtops and obviously in other industries such as tunnelling and construction means workers will continue to face the risk of silicosis. Not only does working with these materials pose a risk of RCS exposure to workers, but there are risks in their manufacture.

> *"Though [elimination] has been proposed as a potential solution for the silicosis resulting from RCS exposure with fabrication of engineered … this will not completely resolve the risk of silicosis from RCS due to the abundance of material that is already in place, and the multitude of other silica containing materials that are in use within construction and benchtops"* – Dr O'Toole.

Dr Michael Fanning, a respiratory and sleep physician, says "the recent devastating increase in silicosis cases has resulted from poor workplace practices including dry cutting, poor ventilation, lack of personal protective equipment and complacency regarding the risks of working with silica containing materials".

> *"Calls for a ban on artificial stone products containing high levels of silica due to the emotional toll of silicosis cases may not be the most effective solution. A ban on artificial stone alone would not eliminate the risk of exposure to RCS because many alternative materials, including natural stone can generate levels of RCS similar to engineered stone if not handled correctly. Instead, effective dust control measures, such as wet cutting, proper ventilation, and the use of personal protective equipment, should be implemented regardless of the material used. Recent state government codes have recognized this and regulate the safe handling and installation of all materials containing RCS, including engineered stone"* – Dr Fanning.

[2] Evidence of Kate Cole, former President, Australian Institute of Occupational Hygienists
https://www.parliament.nsw.gov.au/lcdocs/transcripts/2780/Transcript%20-%20CORRECTED%20-%20Dust%20Diseases%202021%20-%2016%20February%202022.pdf

Dr Fanning says "safe work practices play a far more important role in the fabrication of stone products rather than the material type".

> *"Wet cutting reduces exposure by about 10-fold with the addition of local exhaust ventilation resulting in further reductions to the range of 0.2-0.69 mg/m3.[3] Another study[4] found mean exposure of 0.083 mg/m3 for workers performing mostly wet operations with limited use of dry methods. Further, this study demonstrated that exposures to respirable quartz from engineered stone were not higher than exposures to respirable quartz from granite. Whilst Hall et al found that the higher the level of silica in the bulk material, the higher of silica in any dust emissions produced when processing the stone, the levels of RCS in cutting and polishing artificial stone was similar to sandstone (but more than granite)"* – Dr Fanning.

A ban on engineered stone raises the potential need to ban other similar products, such as other silica-containing materials such as sandstone and granite, or alternate products with category 1 carcinogens, such as stainless steel (hexavalent chromium) and wood composites (formaldehyde).

Other issues with a wholesale ban identified by Caesarstone include:

- **It threatens jobs in the fabrication and stone masonry sectors**

There are approximately 8,000-10,000 workers in the fabrication and stone masonry industry in Australia – the vast majority sole traders or in businesses with fewer than 20 employees. There are an estimated 20,000 indirect jobs. Many of these workers are from culturally and linguistically diverse backgrounds in outer-suburban and regional areas.

While there would be some substitution to alternative stone products, which would still require handling by stonemasons, substitution to non-stone products, predominantluy laminate, would result in mass closures business closures and jobs losses in the industry. Caesarstone agrees with the conclusion in the Decision RIS discussion paper that only a small proportion of sole traders and small operators would continue to perform the permitted work with engineered stone under a ban. Only those that could absorb the higher costs of shifting to substitute products, such as wood, would be able to avoid closure.

There will also be a significant impact on the profitability of the estimated 5,000 kitchen, building and installation entities as they are forced to shift to substitute products. For example, an estimated 25,000 displays would need to be removed from kitchen retail and builders showrooms at significant cost.

- **A ban on one product would send the wrong message to fabricators and stonemasons**

A ban on one type of product would send a signal that there are 'hazardous' stone products that need to be handled properly and 'safe' stone products that do not need the same protective handling techniques. All stone products containing silica are hazardous if not handled properly, which reinforces the need for all stone to be covered by a licensing regime. A belief in 'safe' or 'safer' stone could increase complacency, discourage investment in proper equipment and processes, and put workers at risk.

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[3] Cooper JH, Johnson DL, Phillips ML. *Respirable silica dust suppression during artificial stone countertop cutting*. Ann Occup Hyg. 2015 Jan;59(1):122–6.
4 Phillips ML, Johnson DL, Johnson AC. *Determinants of respirable silica exposure in stone countertop fabrication: a preliminary study*. J Occup Environ Hyg. 2013;10(7):368–73.

- **Dealing with installed engineered stone presents significant challenges**

While there is no need to remove installed engineered stone from households, given it is safe, a ban would create a significant legacy issue when the estimated 2-3 million Australian homes with installed engineered stone are renovated or demolished in coming decades.

As identified in the Decision RIS discussion paper, a ban on engineered stone (or high-silica engineered stone) would require the licensing of specialists in the removal, repair and modification of installed engineered stone. The costs of these services are likely to be substantial for consumers and the issue of the sale and disposal of engineered stone needs to be resolved.

- **It risks shifting the risks to workers in other countries with less rigorous WHS regimes**

Without a rigorously enforced importation ban, construction companies and other stone importers may attempt to bypass the major suppliers and importing engineered stone directly from countries with poorer WHS regulations, such as Vietnam and China. This would simply export the risk to workers to those in other countries.

- **It risks exposing the Commonwealth to legal claims**

At the urging of Government and regulators, many fabricators have invested heavily in capital and equipment to improve safety standards for workers. A ban on engineered stone risks leaving those fabricators who have done the right thing with stranded assets and wasted investment. This raises the potential for class actions from fabricators and others affected by a ban on the basis the Government has acted unreasonably and unlawfully. This would be similar to the class action against the Commonwealth over the 2011 ban on live cattle exports.

Victoria commenced a licensing scheme in November 2022. Again the fabrication industry generally in Victoria made capital investments to comply.

Unilateral action risks breaching Australia's free-trade agreements with countries including the US and China, which are both sources of engineered stone.

- **It would send the wrong message to consumers**

A ban could cause alarm for consumers, with an estimated 2-3 million Australian homes containing at least one engineered stone product. It may require a publicly funded education campaign to assure consumers that the engineered stone benchtops in their homes are safe for them and their families. Consumers would also be subject to higher costs if installed engineered stone requires removal or repair.

Consultation Q3. If no, do you support a prohibition of engineered stone that contains more than certain percentage of crystalline silica? If yes, at what percentage of crystalline silica should a prohibition be set? Please support your response with reasons and evidence.

Yes. Caesarstone supports Option 3 – prohibition on the use of engineered stone containing 40% or more crystalline silica and licensing of engineered stone containing less than 40% crystalline silica.

Caesarstone believes the 40% silica limit is an appropriate level based on published research, the hazard presented by silica levels in all stone and the precedent set by Victoria's engineered stone licensing scheme.

Types of silica

The chemical composition of the crystalline silica found in engineered stone is the same as the silica found in natural stone – silicon dioxide, SiO_2. The three main forms are quartz, cristobalite and tridymite.

As demonstrated below, the RCS in the dust released from cutting, grinding or polishing natural stone such as granite is largely in the form of quartz. The RCS in the dust released from engineered stone is a combination of quartz and cristobalite.

Cristobalite was previously considered more toxic than quartz but recent studies have shown the two forms have comparable pathogenic effects.[5] The Occupational Exposure Limits for quartz and cristobalite are the same in most European Union states[6] and under the US Occupational Safety and Health Administration (**OSHA**).

Silica levels in stone

As identified by Safe Work Australia, nearly all stone handled by fabricators and stone masons contains some level of silica. As any level of silica released as dust is considered hazardous, all stone must be handled in exactly the same way to reduce the risk to workers. High-risk activities, such as dry cutting, performed on materials as low as 1% silica can produce RCS that exceeds the workplace exposure standards.

Engineered stone containing 40% or less silica contains the same level of silica as natural stone substitutes such as granite (10-45%) and porcelain (~20%), and substantially less silica than the natural sandstone encountered in tunnelling and construction (70-95%).

As a manufactured product, the silica content in engineered stone is spread evenly spread throughout the slab, meaning workers will not encounter sections with higher or lower content (and commensurate higher and lower risk).

Evidence demonstrates that the higher the silica content, the higher the level of RCS released as dust through cutting, grinding and polishing. According to one study:

> *"The mass of dust emitted when cutting stones was higher than that emitted when polishing.* ***For each process, the mass of dust generated was similar whether the stone was artificial or natural.*** *The percentage of crystalline silica in bulk stone is likely to be a reasonable, or conservative, estimate of that in stone dust generated by cutting or polishing. Larger particles were produced when cutting compared with when polishing.* ***For each process, normalized particle size distributions were similar whether the stone was artificial or natural.*** *VOCs were released when cutting resin-artificial stones.* ***The higher the level of silica in the bulk material, the higher the level of silica in any dust emissions produced when processing the stone****."* [7]

It has been acknowledged that all silica-containing materials can be handled safely if proper procedures are followed, and proper equipment is used – in workshops and on-site. This extends to the fabrication of engineered stone; Dr Graeme Edwards, a senior consulting physician in occupational and environmental

[5] https://www.osha.gov/sites/default/files/methods/osha-id142.pdf

[6] https://ima-europe.eu/wp-content/uploads/2022/12/OEL-FULL-TABLE-January-2022-Europe.pdf

[7] *Characterizing and Comparing Emissions of Dust, Respirable Crystalline Silica, and Volatile Organic Compounds from Natural and Artificial Stones*, 31 July 2021

medicine and member of the National Dust Diseases Taskforce, has provided expert evidence that "the product can be fabricated safely"[8].

For example, there is now clear evidence that the wet-cutting of stone can virtually eliminate dust and the risk of silicosis for workers, particularly when combined with other appropriate equipment, such as dust hoods, and PPE. This evidence has underpinned the widespread use of bans on uncontrolled dry-cutting.

> *Data from four workplaces where granite was being cut showed that changing from dry to wet cutting reduced (8 hour time-weighted average) exposure by approximately an order of magnitude (Simcox et al., 1999). A similar 10-fold reduction in exposure was seen between wet and dry cutting of (artificial stone) (Cooper et al., 2015).*[9]

In a review of published studies, Nili Borochov Greenberg, PhD, an expert in occupational and environmental healthy, reportd that: *"Carlo et al (2010) found under laboratory conditions that the use of water and ventilation controls compared with the 'no control' treatment resulted in a statistically significant (p<0.05) reduction of mean respirable dust concentrations generated per tile cut. The percent reduction for respirable dust concentrations was 99% for the water control and 91% for the local exhaust ventilation. These results suggest that water is an effective method for reducing crystalline 55 silica exposures."*

The benefits of wet cutting are seen most clearly in the controlled experiment conducted by Caesarstone with personal occupational monitoring by Ecocheck Laboratory, which demonstrates how wet-cutting techniques is 100 times safer than uncontrolled dry fabrication, ensuring compliance with current WES. See the video here https://youtu.be/K6x0B5Jq0ak

> *"Most of the reviewed studies and publications suggest a combination of several methods to reduce silica exposure in engineering stone processing to protect workers, for instance, wet processing, suction, engineering measures, personal protection, adoption of engineered stone products with lower percentage of silica"* – Nili Borochov Greenberg

Scientific studies

There have been a number of published studies that demonstrate the airborne dust generated from handling natural stone is not materially different to the dust from engineered stone.

One study – *Characterization of the Emissions and Crystalline Silica Content of Airborne Dust Generated from Grinding Natural and Engineered Stones*[10] – compared four different stones:

- Stone A was an engineered stone with crystalline silica content of up to 90%
- Stone B was an engineered stone with crystalline silica content of less than 50%
- Stone C contained recycled glass in a Portland cement matrix, with a claimed crystalline silica content of less than 0.2%
- Stone D was granite with an estimated crystalline silica content of up to 72%.

The aim of the study was to characterise the dust generated during the dry grinding of engineered and natural stones inside a controlled laboratory testing system by following a standard method to determine dust and crystalline silica generation rates, dust size distributions, and crystalline silica content.

[8] https://www.parliament.nsw.gov.au/lcdocs/transcripts/2780/Transcript%20-%20CORRECTED%20-%20Dust%20Diseases%202021%20-%2016%20February%202022.pdf

[9] *Silica Exposure Estimates in Artificial Stone Benchtop Fabrication and Adverse Respiratory Outcomes*, 13 July 2021

[10] *Characterization of the Emissions and Crystalline Silica Content of Airborne Dust Generated from Grinding Natural and Engineered Stones, 11 October 2022*

The quartz form of crystalline silica constituted 30% of the bulk dust from Granite, which is within the range listed by the manufacturer and those typically found in granite. The bulk dust from Stone A was found to contain 46% cristobalite and 14% quartz. The bulk dust from Stone B was 12% cristobalite and 11% quartz. "The manufacturer's claim that Stone B had crystalline silica content comparable to that of natural stone was found to be true," the authors said.

The study reported that "the crystalline silica content in bulk dust, respirable dust, and total dust for each stone were found to be equivalent for all stones investigated, suggesting that crystalline silica content in the bulk dust could be representative of that in respirable dust generated during grinding". It reported that workers were likely to be exposed to higher RCS when working with granite than Stone B (engineered stone with 50% or less silica content).

> *"During grinding, all stones were found to generate similar trimodal lognormal number-weighted particle size distributions with the most prominent mode located at an aerodynamic diameter of about 2.0–2.3 µm, suggesting that the mechanical process of dust formation from grinding different stones is similar and engineering control measures for the grinding task may be consistently applicable to all stone types. However, the evaluation of the normalized generation rate reveals that (i) Granite generated more dust per unit volume of material removed than Stones A, B, and C, which all had similar normalized dust generation rates; and (ii) Stone A had the highest normalized generation rate of crystalline silica, followed by Granite, Stone B, and Stone C (no crystalline silica detected).* ***Therefore, with the same amount of grinding activities and control effectiveness, workers are likely to be exposed to higher RCS when working with Stone A, followed by Granite, Stone B, and, finally, Stone C."***

It concluded that:

> ***"Manufacturing and adoption of engineered stone products with formulations such as Stone B or Stone C could potentially lower or eliminate RCS exposure risks."***

The results for Stone C – no crystalline silica detected in dust – reinforce the need to carefully define 'engineered stone' when considering any prohibition. Stone C would be captured by a broad-based prohibition even though it presents next to no risk of silicosis – and, in this study, demonstrably lower risk than granite.

The Victorian model

In 2021, Victoria introduced in a licensing scheme for engineered stone as part of the Victorian Occupational Health and Safety Amendment (Crystalline Silica) Regulations 2021. For the purposes of the regulations, Victoria chose to define engineered stone as stone containing 40% or more silica. Caesarstone understands this level was set because it was determined that at such levels, engineered stone was no more hazardous to handle than natural stones used for benchtops, such as granite.

Caesarstone has consistently stated that the Victorian scheme should be the model for a nationwide scheme, subject to certain changes:

- The definition of stone should be widened so the regulations apply to all materials containing silica (and not just engineered stone that contains 40 per cent or more silica);
- An independent audit of control plans should be required prior to the granting of a licence;
- Ongoing independent random audits of fabricators
- In addition to the prohibition on selling controlled products to unlicensed fabricators, there should be a prohibition on purchasing controlled products from unlicensed fabricators;

- There should be a publicly available database of licence-holders so that those who buy or sell controlled products can ensure they are dealing with valid licence-holders; and
- Adequate resourcing for regulators to enforce the scheme.

As discussed above, an artificial distinction between engineered stone and natural stone (even between stone containing the same amount of silica) creates both confusion and a perception that some stone is safer to work on than others.

Caesarstone's recent experience is that some fabricators have found the definition of engineered stone under the Victorian licensing scheme so complicated they are considering ceasing work with engineered stone and working only with natural stone. This is an unfortunate consequence of the Victorian scheme and is a clear indication that the industry still does not fully appreciate the risks of RCS with any material containing silica, including natural stone, and the need for appropriate safety measures throughout the stone industry.

Caesarstone's experience during the rollout of the Victorian scheme also leads to the conclusion that the regulator was under-resourced, particularly in education terms about the new system, monitoring and enforcement. While WorkSafe Victoria relied heavily on its website to provide information on the new system to fabricators and workers, Caesastone itself invested a significant amount of resources and hours into educating fabricators. The rollout coincided with the COVID-19 pandemic, which made resources such as health and safety consultants, OCC hygienists and medical testing facilities either scarce or unavailable at all.

Capturing all silica-containing products in any regulatory regime would resolve any confusion, reduce substitution to products that do not reduce RCS risks and overcome any complacency or misunderstanding among workers and PCBUs that some stone products can be handled with lower levels of safety.

Caesarstone believes there should be a comprehensive review of the Victorian licensing scheme – both its deployment and the impact on worker safety – so that lessons from the program can then be incorporated into planning for the national licensing scheme.

Industry initiatives

Caesarstone and some other engineered stone manufacturers have been working on low-silica products for a number of years. Caesarstone launched a low-silica product (less than 40% silica) in 2022 and by mid-2024 expects that all of its products sold in Australia will contain less than 40% silica.

Caesarstone and other engineered stone manufacturers are also working on new products that replace the quartz in engineered stone with materials than contain little or no silica, such as glass and feldspar. Even these products, however, must be handled using the exactly the same safety procedures and equipment to reduce the risk of silicosis to workers.

Consultation Q5. How many businesses work with engineered stone only? Q6. How many businesses work with both engineered stone and non-engineered stone products?

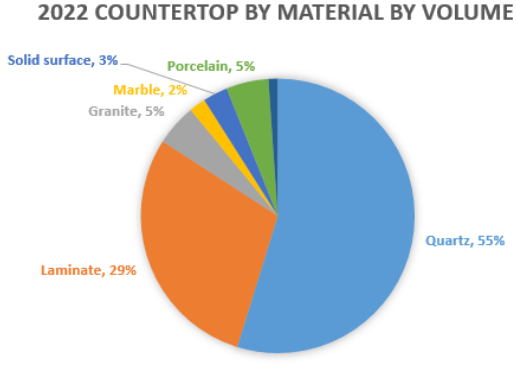
Caesarstone is pleased to provide the following information regarding the stone industry in Australia, based on its experience and 25-year history of operating in this market.

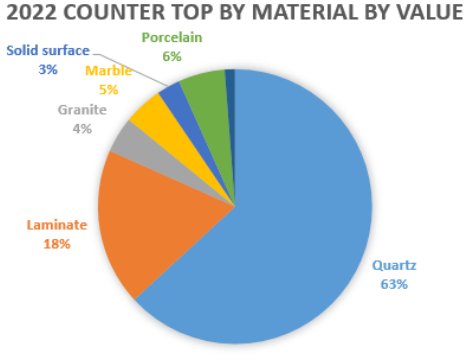
Engineered stone in Australia

Engineered stone was first brought into the Australian market in the mid-late 1990s/early 2000s. Cosentino claims to have been the first importer, from around 1996.

The emergence of engineered stone coincided with growth in demand for stone benchtops, both natural and engineered. Previously, laminate was the dominant benchtop, with ~50% of the market. Laminate still has a significant share of the market. Among stone benchtops, granite held the biggest share before the introduction of engineered stone. Figures from the US[11] show granite held ~38% market share of stone benchtops by volume in 2010, with engineered stone ~14%. In 2020, the market had doubled. Granite held ~28% of the market, with engineered stone ~38%.

The patterns were similar in Australia, with the benchtop market in 2022 worth ~A$600 million, or 4.5 million square metres of material. Today, engineered stone represents about 55% of the Australia market by volume and 63% by value, followed by laminate at 29% and 18% respectively, and granite at ~4-5%.





Source: Caesarstone

Today there are an estimated 2-3 million Australian homes and businesses with some form of installed engineered stone – predominantly kitchen and bathroom benchtops. Caesarstone has ~40% of the engineered stone market in Australia, with demand largely tracking the number of new home builds (~180,000) and rennovations (~150,000-160,000) each year

Engineered stone is just one product in a house that contains silica – demonstrating the potential hazards to builders and installers and the need for proper safety procedures and equipment when handling all silica-containing materials. The others include, fibre cement sheeting, concrete, bricks, roofing tiles, bathroom and kitchen tiles and natural stone.

Industry dynamics

Consistent with other engineered stone suppliers, Caesarstone's core market segments are "places where people live" – new and existing (renovations) residential dwellings. Its most important customers and the companies that manufacture and sell kitchen and bathroom benchtops into those core market segments.

Caesarstone and other suppliers also serve the commercial market, which includes buildings and interiors where people work, shop, receive care or spend their leisure time. Professional designers and architects specify products into projects across all market segments, predominantly into apartment projects, higher-value renovations and commercial buildings.

There is no Australian manufacturing of engineered stone. Caesarstone imports its slabs from China, Israel and the US. It handles the sales and marketing of its products to its channel partners – an estimated 20,000 home

[11] Freedonia Custom Research

builders, kitchen retailers and cabinet makers, architects, designers, developers and commercial builders. In rare instances, a builder may import stone directly from overseas itself.

Like the fabrication sector with more than 1000 individual PCBUs, this is a highly fragmented industry with no major player in kitchen retailing and cabinet making.

When orders are placed, Caesarstone distributes the slabs to a fabricators, who cut, shape and polish the slabs to the required specification. In most cases, the slabs are installed in homes and other buildings by the fabricators or sub-contractors connected to them. Meagan McCool, Director of Construction Services Group Metropolitan at SafeWork NSW[12], says 85 per cent of workers engaged in installation are connected to a fabricator, either as direct employees or contractors. This makes monitoring and enforcement of installation sites easier.

Consultation Q6. Do you have any data or information on the risks to workers from the other non-crystalline silica elements of engineered stone? Are these risks increased in engineered stone of less than 40% crystalline silica content?

Some studies – such as *Characterizing and comparing emissions from natural and artificial stones when cutting and polishing* – found that certain volatile organic compounds were released when temperatures reached up to 120 degrees celsius cutting engineered stone containing resin.

Mr Rogers says there has been "unproven speculation" that the organic chemical breakdown products arising from frictional heating of the resin matrix during cutting, grinding and polishing have been responsible for the rapid onset of accelerated silicosis in engineered stone fabricators. However, under the now required wet-cutting dust control conditions, the spot cutting temperature on the slab is reported at only 35-45^{0}C, which would lead to only minor resin breakdown and release of irritants (Hall et al, 2022).

The Hall et al study result also suggests that silica particles released during the processing of the resin-artificial stones are not bonded to the resin material. In factor, another study suggested that resin can significantly reduce the reactive pathways of RCS, hence toxicity, in the lungs by acting as a 'protective' coating for the particles. In their earlier studies, Pavan et al. subjected RCS particles to a thermal treatment to remove the polymeric resin and reported a significant increase in cytotoxicity, suggesting that resin partially covers the particle surface from interaction with cellular membranes[13].

Consultation Q7. In relation to Option 3, do you have:

a. **a) any information on the additional benefits of a licensing scheme over the enhanced regulation agreed by WHS ministers (Option 5a) that would already apply to engineered stone products containing less than 40% crystalline silica content?**
b. **feedback on the implementation of concurrent licensing schemes for both prohibited engineered stone and non-prohibited engineered stone?**

There have been significant improvements in the regulation of workplace safety in the stone industry in the past five years, including lower workplace exposure standards, bans on uncontrolled dry cutting, new codes of practice and significant industry education and awareness, including Caesarstone's own *Master of Stone*

[12] Evidence of Meagan McCool. https://www.parliament.nsw.gov.au/lcdocs/transcripts/2780/Transcript%20-%20CORRECTED%20-%20Dust%20Diseases%202021%20-%2016%20February%202022.pdf

[13] Ramkissoon et all, 2022.

online training program, which is offered free to fabricators and has already been completed by more than 3800 people worldwide. In Australia, 1450 workers from 63% of registered stone fabrication businesses have completed the entire program.

The Housing Industry Assocaition and other industry bodies have asked for access to the Master of Stone program as a tool to further educate their workers. Caesarstone has made the program freely available to anyone who wishes to use it.

Caesarstone supports the position taken by WHS Ministers in recommending stronger regulation of high-risk crystalline silica processes for all materials (including engineered stone) across all industries, as well as improvements in areas such as education and awareness, and air monitoring and reporting.

However, the reality is that the best regulations are undermined by poor compliance and enforcement. Any new regulations must be accompanied by adequate funding for work safety bodies to conduct regular audits and enforce penalties for non-compliance.

The main benefit of a licensing scheme is the ease of enforcement. If all PCBUs and duty-holders handling stone require a licence, anyone found dealing with an unlicensed PCBU – either a stone manufacturer or builder – can be easily identified and penalised.

The imposition of a licensing fee on fabricators and other PCBUs handling engineered stone will go towards funding stronger enforcement[14]. There will be costs to industry in terms of licensing fees and necessary equipment upgrades. But these are a necessary price to pay for worker safety. Any PCBU that cannot afford the costs and/or will not provide a safe environment should not be in business.

This is why Caesarstone explored – and committed considerable resources to – the implementation of a self-regulatory accreditation program and had a clear path to its execution. The only reason this was not actioned was due to legal issues raised by the Australian Competition and Consumer Commission.

Mr Rogers says that current experience in parts of Australia, such as Victoria and NSW, is that an intense inspection regime and/or a mandatory licencing system is "by far more effective in controlling exposures than a the historical system which is reliant on the user having to interpret the acceptable level of risk and then attempt to assess the level and type/s of controls which are necessary".

> *"What is required is an umbrella effect where all aspects of managing dust exposure in the industry [are] brought under one roof. This focuses on a mandatory system of education and implementation of the necessary components of control and surveillance, along with the frequency of testing of compliance.*
>
> *"The best and most thorough approach is licensing which focuses the understanding of the users/fabricators that they are required to conduct their business to work in a required and controlled manner. Licencing will remove the 'cowboys' from the industry who defile or fail to comply best-practice controls. Licensing will set a certain standard and frequency of inspection by licensed testing personnel to test control systems, monitor dust exposures, and perform medical monitoring of the workforce. All stages of the system then need to be subject to routine independent reporting of the findings.*

[14] Under the Victrorian scheme, there was no licensing fee structure set out for those who applied for their license within the required 12-month timeframe. The fee is only applicable to those duty holders who did not apply for their licence before the cut-off date

> *"**A licensing system is the best cornerstone for successful and consistent controlling the dust and the associated level of risk.** Licensing must include at the point importation and the points of sale to fabricators. A separate add-on licencing system is also needed for those professionals involved in the assessment and testing of the control system to ensure their ongoing efficiency (wet methods design and operation, ventilation systems flow and capture velocity, respiratory protection assessment, fitting and maintenance, and dust monitoring to determine that the combined engineering and human factors interact together)."*

Mr Rogers draws parallels between a potential licensing regime and the specific licence-based regulations that govern coal mining in NSW. He says that Australia has always had a number of high-exposure, high-risk silica based industries, mainly associated with mining and construction. These have been traditionally managed according to state-based specific health and safety regulations, with mining in particular persisting with a specific, descriptive style of management of dust and silica exposures and workers' associated medical outcomes.

He notes that the NSW coal mining industry has been subject to specific regulations in dust controls since the 1950s, and "despite the presence of coal and silica dusts in the mining environment the industry has an outstanding record of a continuing downward trend in dust cases and, for [a] few decades, essentially an absence of pneumoconiosis in the workforce".

> *"Most of the basics of the system from the coal mining industry has been recently been adopted into the NSW metalliferous and extractives mining industries. The NSW tunnelling industry and parts of the NSW construction industry have expanded the generalised duties and responsibilities in the regulations by developing more specific industry codes of practice on dust and silica monitoring and control, which they enforce on their own work sites.*
>
> ***"The basics principles of licencing of the industry, ongoing dust control, dust exposure monitoring, medical surveillance and oversight by the regulator from coal mining, metalliferous and extractives mining, and construction industries can be readily applied to a model regulatory system for the engineered stone industry and to other segments of industry where there is risk silica expose an associated risk of silica-related disease."***

Consultation Q8. Are the assumptions and scenarios described for Option 6 in the Decision RIS accurate and appropriate? If not, why?

Broadly, the assumptions and scenarios for Option 6 are accurate and appropriate, particularly the likely failure of SMEs and smaller PCBUs whose business is predominantly related to the fabrication of engineered stone if a wholesale or partial prohibition was imposed.

Caesarstone makes the following comments:

1. The assumptions do not consider that regardless of the ultimate shape of new regulation (and the kind of prohibition imposed on engineered stone, if any) almost all PCBUs will face significant increases in costs in terms of new equipment. Few fabricators and stonemasons will not need to upgrade equipment, including air monitoring equipment, to meet new standards. Caesarstone has previous estimated the costs of compliance and equipment upgrades as follows:

Service	Cost estimates	Time frames	Comments
Air monitoring	$6,000-$15,000 per facility	Depending on the State, either annually or twice yearly	Can be more if the results are high and tests need to be redone after controls are implemented
Health surveillance	$650-$800 per person	Annually – potentially reducing to every 2-5 years under a licensing scheme	Some States have free services but it can take months to get an appointment. Due to the demand in Victoria, appointments are currently taking six months. This will inhibit the approval of licences in some cases.
Pre-employment Screening	$600-$1000 per person	Initial medical check	
PPE/RPE	$10-$4000	Mandatory	The cost of PPE/RPE will depend on the outfit of the operation and the results of the air monitoring as to the appropriate controls required. However, if Powered Air Purified Respirators are mandatory then costs can be $500-$4000 per unit, excluding servicing costs
Consultancy fees	$150-$350 per hour	8-10 hours (minimum)	Typically, occupational hygienists and safety consultants are engaged to assist with the development of safe systems of work and/or an Engineered Stone Control Plan.(**ESCP)** (If a consultant is engaged to only assist with the development of an ESCP, this is a minimum of 8-10 hours. Anecdotal evidence suggests complying with the Victorian licensing requirement costs $6000-$10,000 in consultancy fees.
Repairs or equipment/system modifications to be compliant		Prior to obtaining a licence	Typically relate to water filtration system and/or ventilation systems. Can be tens of thousands of dollars.
Waste management	~4 times greater		As a result of the reclassification of engineered stone as materials containing

			more than 40% silica, all products that contain >39% silica are now being classified as landfill in some states (predominantly Victoria) rather than recyclable material. This increases waste management costs by almost 4 times

2. The cost of a licence fee appears low – and certainly not sufficient to properly resource work safety bodies to enforce a licensing regime and tougher regulations. Based on an estimated 7000 PCBUs, a $302 fee would raise just $2 million nationwide. This raises the prospect of significantly greater government investment, which, given the presence of silica in almost all stone, would be required to ensure a safe stone industry. This investment would be required regardless of whether or not there is a prohibition on certain types of engineered stone.

3. The assumptions – and the entire Decision RIS – do not take into account the potential additional costs to Government of effectively enforcing an importation ban at the border. In Caesarstone's view, the costs of enforcing a ban on certain types of engineered stone – such as stone containing more than 40% silica content – are not prohibitive.

   One proposed model would be:
   - A body would be appointed to act as Independent Certifier (e.g. SGS Australia or the CSIRO)
   - The ~12 stone importers and suppliers would be required to lodge independently certified safety data sheets with the Certifier and to publish the details on their websites.
   - The Certifier would visit and randomly select a number of stone slabs for testing. This would be done twice a year to confirm silica content
   - The stone supplier would be required to advise the Certifier of any changes in silica content
   - Breaches would be punished appropriately

Consultation Q10. Should there be a transitional period for a prohibition on engineered stone? If so, should it apply to all options and how long should it be?

Caesarstone believes that from an industry point of view, the mid-2024 timetable for a prohibition on >40% engineered stone is achievable. Any earlier date would cause severe disruptions in the housing, renovation and construction industries. There are an estimated 180,000 new house and unit constructions each year and another 150,000-160,000 home renovations, many of them involving kitchens or bathrooms that require benchtops. Customers who have already chosen materials for work in 2023, 2024 and beyond would be forced to select substitute materials, likely causing supply issues and construction delays.

As previously stated, there are approximately 8,000-10,000 workers in the fabrication and stone masonry industry in Australia – the vast majority sole traders or in businesses with fewer than 20 employees. Many of these workers are from culturally and linguistically diverse backgrounds in outer-suburban and regional areas.

Any prohibition on engineered stone will severly impact these businesses and employees, with a wholesale ban likely to lead to massive business closures and job losses.

Even a transition to to lower silica stone will have a significant impact on the profitability of the estimated 5,000 kitchen building and installation entities as they are forced to shift to substitute products. For example,

an estimated 25,000 displays would need to be removed from kitchen retail and builders showrooms at significant cost.

Evidence of the level of disruption should be sought from the HIA and kitchen and building companies.

Caesarstone makes no comment on the practicality of implementing and enforcing a probation by mid-2024 from a political, legislative or regulatory point of view.