

End of Waste Code

Silica fume (EOWC010001828)

Waste Reduction and Recycling Act 2011



Version history

Version	Date	Description of changes
1.00	17 March 2023	Commencement of EOW code on gazettal
1.01	23 June 2023	Minor update to reflect the definition of waste moving into the <i>Waste Reduction and Recycling Act 2011</i> . This does not impact the interests of the producer or user of the resource.

Prepared by: Waste Assessment, Department of Environment and Science

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1. Explanatory Statement

This End of Waste (EOW) code for **Silica fume** has been issued by the **chief executive** in accordance with section 159 of the *Waste Reduction and Recycling Act 2011* (WRR Act).

This EOW code states when **silica fume** become a **resource** and any relevant requirements and/or conditions for its use. If the **resource** is not being used in accordance with the relevant requirements and/or conditions of this EOW code, or another type of permit that allows for its use, it is considered a waste under section 8AA of the WRR Act and must be disposed of appropriately at a facility that is **lawfully** able to receive the waste.

2. Guidance

2.1 Resource use versus activity

Under section 155 of the WRR Act, a waste stops being a waste and becomes a **resource** when it meets the requirements and conditions of an EOW code. Under section 159 of the WRR Act, an EOW code specifies the circumstances when a waste becomes a resource; how it must be used to be considered a resource; when it is no longer considered a resource but a waste instead; and conditions that must be complied with by resources users and registered resource producers.

An Environmental Authority (EA) under the *Environmental Protection Act 1994* (EP Act) is required where an activity being undertaken triggers the threshold for any environmentally relevant activity (ERA). This means that treating or processing the waste to meet the resource quality criteria under the EOW code may require an EA under the EP Act if the activity meets the threshold for an ERA.

2.2 Resource versus waste

A waste that is a **resource** under an EOW code is considered a **resource** only for the use(s) approved in an EOW code. To be considered a resource under the EOW code, the material used as the resource must meet the requirements of the EOW code and be used in accordance with the conditions of the EOW code, otherwise it is considered a waste and must be managed in accordance with waste management requirements under the EP Act and the WRR Act and their subordinate legislation.

A **resource** under an EOW code, is deemed to be a waste again, if it is not used in accordance with the EOW code; if it is disposed of at a waste disposal site; or if it is deposited at a place in a way that would, apart from its use approved under an EOW code, constitute a contravention of the general littering provision (section 103) or the illegal dumping of waste provision (section 104) under the WRR Act.

2.3 Failure to comply

It is an offence under section 158(1) of the WRR Act for a **registered resource producer** to produce the **resource**, or use, sell or give away the **resource** unless they comply with the requirements under an EOW code. Further, it is an offence under section 158(2) of the WRR Act for a **person** to use the **resource** in a way, or for a purpose, that does not comply with an EOW code for the **resource**. These offences carry a maximum penalty of 1,665 penalty units for an individual and 8,325 penalty units for a corporation¹.

Please refer to Appendix A of this EOW code for general obligations for all **persons** operating under this EOW code, which includes the **resource users**.

¹ The value of a penalty unit is stated in the *Penalties and Sentences Regulation 2015* (Qld).

2.4 Lawfulness of the activity

The issuing of this EOW code for the use of a **resource** does not warrant or imply the lawfulness of the activity under all legislation, or that approvals necessary under other legislation have or will be approved. It is the responsibility of the **registered resource producer** and **resource user** to identify and obtain all other approvals necessary for the relevant activities.

3. Period of this EOW code

This EOW code takes effect from 17 March 2023 and remains in force until it is amended, cancelled or suspended by the **chief executive**².

4. Waste to which this EOW code applies

This EOW code is limited to **silica fume**, an ultrafine solid, amorphous, and highly reactive pozzolan powder material composed mostly of amorphous silica generated in the smelting process in the production of silicon and metal silicon alloys where high-purity quartz is reduced by carbon (coke, coal, wood chips) in electric arc furnace. The **silica fume** become a **resource** when the requirements and conditions under this EOW code are met.

5. Person to whom this EOW code applies

5.1 Registered resource producers of the resource

5.1.1 A **registered resource producer** for this EOW code must comply with the stated registered resource producer requirements in Section 6 – Registered Resource Producer Requirements.

5.2 Resource users

5.2.1 The **resource user** must only use the **resource** in a way, and for a purpose allowed under this EOW code.

5.2.2 The **resource user** must comply with the stated conditions of use in Section 7 – Conditions of Use.

² If an EOW code is to be amended, cancelled or suspended, the chief executive will provide an opportunity to make written submissions by providing a proposed action notice to the registered resource producers; and publishing the proposed action notice on the chief executive's [website](https://www.business.qld.gov.au/running-business/environment/waste-management/regulated-waste/eow-framework) (<https://www.business.qld.gov.au/running-business/environment/waste-management/regulated-waste/eow-framework>).

6. Registered Resource Producer Requirements

Registration under this EOW code																												
(6.1)	Prior to operating under this EOW code, the producer of the resource must register with the chief executive by giving a notice in the approved form ³ to become a registered resource producer for this EOW code.																											
Approved resource																												
(6.2)	The approved resource is silica fume which complies with <i>Requirement (6.3)</i> of this EOW code.																											
(6.3)	<p>The registered resource producer must not use, sell or give away the resource under this EOW code unless the resource complies with all of the following criteria and quality characteristics:</p> <ul style="list-style-type: none"> a) is generated in the smelting process in the production of silicon and metal silicon alloys where high-purity quartz is reduced by carbon (coke, coal, wood chips) in an electric arc furnace; b) contains more than 85% silicon as SiO₂, less than 3.0% sulphuric anhydride, less than 3.0% moisture content and less than 6.0% loss on ignition; and c) does not exceed the quality criteria stated in <i>Table 1: Resource quality criteria</i>. <p>Table 1: Resource quality criteria</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="text-align: center;">Quality characteristic</th> <th style="text-align: center;">Total maximum concentration (mg/kg 'dry weight' unless otherwise specified)</th> </tr> <tr> <th style="text-align: center;">Bound applications</th> </tr> </thead> <tbody> <tr> <td>Total Silica content (SiO₂), % minimum ¹</td> <td style="text-align: center;">NS</td> </tr> <tr> <td>Sulphate, (as SO₃), % maximum ²</td> <td style="text-align: center;">NS</td> </tr> <tr> <td>Moisture content, % maximum ³</td> <td style="text-align: center;">NS</td> </tr> <tr> <td>Arsenic</td> <td style="text-align: center;">NS</td> </tr> <tr> <td>Beryllium</td> <td style="text-align: center;">NS</td> </tr> <tr> <td>Boron⁴</td> <td style="text-align: center;">NS</td> </tr> <tr> <td>Cadmium</td> <td style="text-align: center;">NS</td> </tr> <tr> <td>Chromium (total)</td> <td style="text-align: center;">NS</td> </tr> <tr> <td>Copper</td> <td style="text-align: center;">NS</td> </tr> <tr> <td>Lead</td> <td style="text-align: center;">NS</td> </tr> <tr> <td>Mercury</td> <td style="text-align: center;">NS</td> </tr> <tr> <td>Molybdenum</td> <td style="text-align: center;">NS</td> </tr> </tbody> </table>	Quality characteristic	Total maximum concentration (mg/kg 'dry weight' unless otherwise specified)	Bound applications	Total Silica content (SiO ₂), % minimum ¹	NS	Sulphate, (as SO ₃), % maximum ²	NS	Moisture content, % maximum ³	NS	Arsenic	NS	Beryllium	NS	Boron ⁴	NS	Cadmium	NS	Chromium (total)	NS	Copper	NS	Lead	NS	Mercury	NS	Molybdenum	NS
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³ The approved form, *Registered Resource Producer for an EOW code*, is available on the chief executive's [website](https://www.business.qld.gov.au/running-business/environment/waste-management/regulated-waste/eow-framework) (https://www.business.qld.gov.au/running-business/environment/waste-management/regulated-waste/eow-framework).

	Nickel	NS
	Zinc	NS
	Electrical Conductivity ⁴	NS
	pH ⁵	NS
<p>NS = Not specified (monitoring of each element is still required)</p> <p>¹ AS 2350.2</p> <p>² AS 3583. 8</p> <p>³ AS 3583. 2</p> <p>⁴ While limits are not included for boron and electrical conductivity these must be tested in each sample and a record kept of the results.</p> <p>⁵ The ranges given for pH are for the minimum and maximum acceptable pH values in the silica fume.</p>		
Resource monitoring		
(6.4)	The registered resource producer must sample, measure and record the composition of the resource for the quality characteristics in <i>Table 1: Resource quality criteria</i> , on an annual basis as a minimum.	
(6.5)	All analysis required under this EOW code must be carried out by a laboratory that has NATA certification, or an equivalent certification, for such analyses.	
Information to be provided		
(6.6)	<p>The registered resource producer must provide the following to the resource user upon establishment of an arrangement to sell or give away the resource, and annually thereafter:</p> <ul style="list-style-type: none"> a) a copy of the EOW code for silica fume (EOWC010001828)⁴; b) the registered resource producer's business name, ABN and address; c) confirmation in writing that the resource being supplied is compliant with <i>Requirement (6.3)</i> of this EOW code; d) a most recent certificate of analysis for the quality characteristics listed in <i>Table 1: Resource quality criteria</i>; and e) safety data sheet for the resource. 	
Records		
(6.7)	<p>The registered resource producer must keep the following records of the resource supplied to a resource user:</p> <ul style="list-style-type: none"> a) quantity (in tonnes or cubic metres) of the resource supplied; b) quality criteria of the resource (including but not limited to the quality characteristics listed in <i>Table 1: Resource quality criteria</i>); 	

⁴ This can be a physical copy, an electronic copy or a link to the chief executive's [website](https://www.business.qld.gov.au/running-business/environment/waste-management/regulated-waste/eow-framework) (https://www.business.qld.gov.au/running-business/environment/waste-management/regulated-waste/eow-framework) where this EOW code is available.

	<p>c) date of dispatch of the resource; and</p> <p>d) business name, ABN and address of the person receiving the resource.</p>
(6.8)	<p>All records required to be kept by the registered resource producer under this EOW code must be:</p> <p>a) kept by the registered resource producer for a period of not less than five (5) years; and</p> <p>b) provided to the chief executive upon request, in the format requested and in the time period specified.</p>
Notification of emergencies , incidents and breaches	
(6.9)	Any breach of a requirement of this EOW code must be reported to the chief executive within 24 hours of becoming aware of the breach ⁵ .
(6.10)	Records of any breach of a requirement of this EOW code, including full details of the breach and any subsequent actions taken, must be kept and provided to the chief executive upon request, in the format requested and in the time period specified.

7. Conditions of Use

Notification under this EOW code	
(7.1)	Prior to operating under this EOW code, a person who intends to use the approved resource must notify the chief executive by giving a notice in the approved form ⁶ at least 10 days prior to the commencement of using the resource .
Approved uses	
(7.2)	<p>The approved resource is silica fume which complies with <i>Requirement (6.3)</i> of this EOW code and is used for the following purpose ⁷:</p> <p>a) bound applications where the resource is encapsulated or chemically transformed and incorporated into a final product which complies with relevant Australian Standards⁸ for that product.</p>
Notification of emergencies , incidents and breaches	

⁵ Reporting can be via the chief executive's Pollution Hotline (1300 130 372 – option 2) or via online reporting through the chief executive's [website](https://www.business.qld.gov.au/running-business/environment/waste-management/regulated-waste/eow-framework) (https://www.business.qld.gov.au/running-business/environment/waste-management/regulated-waste/eow-framework).

⁶ The approved form, *Resource user for an EOW code notification form* is available on the chief executive's [website](https://www.business.qld.gov.au/running-business/environment/waste-management/regulated-waste/eow-framework) (https://www.business.qld.gov.au/running-business/environment/waste-management/regulated-waste/eow-framework).

⁷ It is an obligation of the resource user to handle and utilise the resource in accordance with the requirement of Work Health and Safety Regulation (as the most updated version) and Safe Work Australia: Workplace Exposure Standards for Airborne contaminants (as the most updated version), given the information provided by the resource producer under *Requirement (6.6) d) – e)*.

⁸ In the absence of Australian Standards for the product, it is required that the final product meets any other appropriate industry standards (e.g. relevant prescribed engineering standard or technical specification or Registered Professional Engineer of Queensland certified technical specification).

(7.3)	Any breach of a condition of this EOW code must be reported to the chief executive within 24 hours of becoming aware of the breach ⁹ .
(7.4)	Records of any breach of a condition of this EOW code, including full details of the breach and any subsequent actions taken, must be kept and provided to the chief executive upon request, in the format requested and in the time period specified.

8. Definitions

Words and phrases used throughout this EOW code **in bold** are defined below. Where a definition for a term used in this EOW code is sought and the term is not defined within this EOW code the definitions provided in the relevant legislation shall be used.

‘**ABN**’ means Australian Business Number which is a unique 11-digit number issued by the Australian Business Register and identifies a business in Australia.

‘**chief executive**’ means the Department of Environment and Science or its successor.

‘**emergency(ies)**’ means a situation where either human health or safety is threatened, or serious or material **environmental harm** has been or is likely to be caused; and urgent action is necessary to protect the health or safety of persons, or prevent or minimise the harm, or rehabilitate or restore the environment because of the harm.

‘**environmental authority**’ is an approval granted by the **chief executive** pursuant to the *Environmental Protection Act 1994* which authorises the holder of the environmental authority to carry out an environmentally relevant activity or a mining activity.

‘**environmental harm**’ means environmental harm as defined in Chapter 1 of the *Environmental Protection Act 1994*.

‘**lawful(ly)**’ means allowed or permitted by law and not contrary to law.

‘**measures**’ have the broadest interpretation and includes plant, equipment, physical objects, monitoring, procedures, actions, directions and competency.

‘**NATA**’ means the National Association of Testing Authorities.

‘**person(s)**’ means an individual or a corporation.

‘**records**’ include breach notifications, written procedures, analysis results, monitoring reports and monitoring programs and any other record keeping required under the relevant requirements or conditions of this EOW code.

‘**registered resource producer(s)**’ means a **person** who produces the **resource** and has registered with the **chief executive** (in accordance with *Requirement (6.1)*) to use, sell or give away the **resource** to be used under this EOW code. Where the registered resource producer uses the resource, notification must also be made in the approved form in accordance with *Condition (7.1)* of this EOW code.

‘**resource(s)**’ means **silica fume** that meets the criteria and quality characteristics in *Requirement (6.3)* of this EOW code.

‘**resource user(s)**’ means a **person** who has notified the **chief executive** (in accordance with *Condition (7.1)*) to receive the **resource** from a **registered resource producer** and uses the **resource** for a use approved under this EOW code and does so in such a manner which does not cause any **environmental harm**.

⁹ Reporting can be via the chief executive’s Pollution Hotline (1300 130 372 – option 2) or via online reporting through the chief executive’s [website](https://www.business.qld.gov.au/running-business/environment/waste-management/regulated-waste/eow-framework) (https://www.business.qld.gov.au/running-business/environment/waste-management/regulated-waste/eow-framework).

'safety data sheet' means a document containing data regarding the properties of the **resource** which provides information on handling or working with that substance in a safe manner; and includes information such as physical data toxicity, environmental characteristics, health effects, first aid, reactivity; and storage, disposal, protective equipment and spill handling procedures. The safety data sheet must be compliant with Safe Work Australia's *Model Code of Practice: Preparation of safety data sheets for hazardous chemicals*.

'silica fume' an ultrafine solid, amorphous, and highly reactive pozzolan powder material composed mostly of amorphous silica generated in the smelting process in the production of silicon and metal silicon alloys where high-purity quartz is reduced by carbon (coke, coal, wood chips) in electric arc furnace.

'site of use' means the relevant location(s) where the **resource user** uses the **resource** in accordance with this EOW code.

- END -

Appendix A —General obligation for all persons

This appendix is not intended to provide a comprehensive assessment of all obligations under Queensland law. It provides some general information and persons are encouraged to familiarise themselves with all requirements related to their specific operation.

Responsibilities under the *Environmental Protection Act 1994*

All persons within the State of Queensland must also meet their obligations under the *Environmental Protection Act 1994*, and the regulations made under that Act.

General environmental duty

Section 319 of the *Environmental Protection Act 1994* states that we all have a general environmental duty. This means that we are all responsible for the actions we take that affect the environment. We must not carry out any activity that causes or is likely to cause environmental harm unless we take all reasonable and practicable measures to prevent or minimise the harm. To decide what meets your general environmental duty, you need to consider:

- the nature of the harm or potential harm
- the sensitivity of the receiving environment
- the current state of technical knowledge for the activity
- the likelihood of successful application of the different measures to prevent or minimise environmental harm that might be taken
- the financial implications of the different measures as they would relate to the type of activity.

It is not an offence not to comply with the general environmental duty. However, maintaining your general environmental duty is a defence against the following acts:

- (a) an act that causes serious or material environmental harm or an environmental nuisance
- (b) an act that contravenes a noise standard
- (c) a deposit of a contaminant, or release of stormwater run-off, mentioned in section 440ZG.

More information is available on the Department of Environment and Science website www.des.qld.gov.au.

Some relevant offences under the *Environmental Protection Act 1994*

Causing serious or material environmental harm (sections 437–39)

Material environmental harm is when the harm is not trivial or negligible in nature. Serious environmental harm is harm that is irreversible, of a high impact or widespread, or that is caused to an area of high conservation value or special significance. Damages, or costs required to rehabilitate the environment, of over \$5000 constitutes material environmental harm and damages, or costs required to rehabilitate the environment, of over \$50,000 constitutes serious environmental harm.

Serious or material environmental harm excludes environmental nuisance.

Causing environmental nuisance (section 440)

Environmental nuisance is unreasonable interference with an environmental value caused by aerosols, fumes, light, noise, odour, particles or smoke. It may also include an unhealthy, offensive or unsightly condition because of contamination.

Depositing a prescribed water contaminant in waters (section 440ZG)

Prescribed water contaminants include a wide variety of contaminants listed in Schedule 10 of the Environmental Protection Regulation 2019.

It is your responsibility to ensure that prescribed water contaminants are not left in a place where they may or do enter a waterway, the ocean or a stormwater drain. This includes making sure that stormwater falling on or running across your site does not leave the site contaminated. Where stormwater contamination occurs you must ensure that it is treated to remove contaminants. You should also consider where and how you store material used in your processes onsite to reduce the chance of water contamination.

Placing a contaminant where environmental harm or nuisance may be caused (section 443)

A person must not cause or allow a contaminant to be placed in a position where it could reasonably be expected to cause serious or material environmental harm or environmental nuisance.

Some relevant offences under the *Waste Reduction and Recycling Act 2011*

Littering (section 103)

Litter is any domestic or commercial waste and any material a person might reasonably believe is refuse, debris or rubbish. Litter can be almost any material that is disposed of incorrectly. Litter includes cigarette butts and drink bottles dropped on the ground, fast food wrappers thrown out of the car window, poorly secured material from a trailer. However, litter does not include any gas, dust, smoke or material emitted or produced during, or because of, the normal operations of a building, manufacturing, mining or primary industry.

Illegal dumping of waste (section 104)

Illegal dumping is the dumping of large volumes of litter (200 litres or more) at a place.

Failure to comply with EOW code (section 158)

A registered resource producer for an EOW code must not use, sell or give away the resource unless the registered resource producer complies with the requirements of the EOW code relating to the resource.

A person, other than a registered resource producer, must not use a resource in a way, or for a purpose, that does not comply with an EOW code for the resource.

Approved:

20 February 2023

Enquiries:

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