



End of Waste Code
Ferronickel Slag (ENEW07576219)

Waste Reduction and Recycling Act 2011



Queensland
Government

Version history

Version	Date	Description of changes
1.00	14 August 2020	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.
1.02	28 March 2024	Updated department name to reflect machinery of government changes and the definition of serious or material harm.

Prepared by: Waste and Contaminated Land Assessment, Department of Environment, Science and Innovation

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March 2024

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1. Explanatory Statement

This End of Waste (EOW) code **ferronickel slag** 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 the **ferronickel slag** becomes 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 the date of gazettal of this EOW code 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 **ferronickel slag** generated during the **lawful** smelting of nickel ore to produce ferronickel at an electric arc furnace. The **ferronickel slag** becomes 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 chief executive's [website](#).

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 ferronickel slag 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 it complies with all of the following criteria and quality characteristics:</p> <ul style="list-style-type: none"> a) is generated from the smelting of nickel ore to produce ferronickel at an electric arc furnace; b) has a pH range of 5-10; 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 style="text-align: left;">Quality characteristics</th> <th style="text-align: center;">TCLP leachable concentration (mg/L)⁴</th> </tr> </thead> <tbody> <tr><td>Antimony</td><td style="text-align: center;">0.1</td></tr> <tr><td>Arsenic</td><td style="text-align: center;">0.2</td></tr> <tr><td>Barium</td><td style="text-align: center;">0.3</td></tr> <tr><td>Cadmium</td><td style="text-align: center;">0.05</td></tr> <tr><td>Chromium (total)</td><td style="text-align: center;">0.5</td></tr> <tr><td>Copper</td><td style="text-align: center;">0.2</td></tr> <tr><td>Lead</td><td style="text-align: center;">0.2</td></tr> <tr><td>Mercury</td><td style="text-align: center;">0.01</td></tr> <tr><td>Molybdenum</td><td style="text-align: center;">0.2</td></tr> <tr><td>Nickel</td><td style="text-align: center;">6</td></tr> <tr><td>Selenium</td><td style="text-align: center;">0.1</td></tr> <tr><td>Zinc</td><td style="text-align: center;">0.3</td></tr> </tbody> </table>	Quality characteristics	TCLP leachable concentration (mg/L) ⁴	Antimony	0.1	Arsenic	0.2	Barium	0.3	Cadmium	0.05	Chromium (total)	0.5	Copper	0.2	Lead	0.2	Mercury	0.01	Molybdenum	0.2	Nickel	6	Selenium	0.1	Zinc	0.3
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Resource monitoring																											
(6.4)	The registered resource producer must sample, measure and record the composition of the resource for at least 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																											

³ The approved form, *Registered Resource Producer for an EOW code*, is available on the Queensland Government website at www.qld.gov.au, using the publication number (ESR/2018/4082) as a search term.

⁴ US DESI Test Method 1311: Toxicity Characteristic Leaching Procedure using Extraction Fluid #2: Dilute 5.7ml glacial CH₃CH₂OOH with reagent water to a volume of 1 litre. When correctly prepared, the pH of this fluid will be 2.88 ± 0.05.

(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 <i>Ferronickel Slag (ENEW07576219)</i>⁵; b) the registered resource producer's business name, ABN and address; c) confirmation in writing that the resource being supplied is compliant with the requirements 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 for the resource supplied to a resource user:</p> <ul style="list-style-type: none"> a) origin of the resource (e.g. address, lot on plan and/or GPS coordinates); b) quantity (in tonnes) of the resource supplied; c) quality criteria of the resource (including but not limited to the quality characteristics listed in <i>Table 1: Resource quality criteria</i>); d) date of dispatch of the resource; and e) business name, ABN and address of the person receiving the resource.
(6.8)	<p>All records required to be kept by the registered resource producer under this EOW code must be:</p> <ul style="list-style-type: none"> a) kept by the registered resource producer for a period of not less than five (5) years; and b) provided to the chief executive upon request and in the format requested and time period specified.
Notification of emergencies, incidents and breaches	
(6.9)	<p>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.</p>
(6.10)	<p>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 and in the format requested and time period specified.</p>

⁵ This can be a physical copy, an electronic copy or a link to the chief executive's [website](#) where this EOW code is available.

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)	The approved resource is ferronickel slag which complies with <i>Requirement (6.3)</i> of this EOW code and is used for the following purposes: <ul style="list-style-type: none"> a) bound applications where the resource is encapsulated or chemically transformed and incorporated into a final product which complies with relevant Australian Standards⁷ for that product; and b) unbound applications where the resource application is limited to the uses stated in <i>Condition (7.3)</i> on standard areas.
Resource use in unbound applications	
(7.3)	Use of the resource in unbound applications is limited to the below applications: <ul style="list-style-type: none"> a) in abrasive blasting; b) in road construction; c) as base course, sub-base and subgrade; d) as filter aggregate; e) as pipe bedding material; f) as sealing aggregate; g) as subsoil and/or subsurface drainage; and/or h) in other engineered construction works⁸.
(7.4)	Use of the resource in unbound applications must not be carried out on land which: <ul style="list-style-type: none"> a) contains potential acid sulfate soils; b) actual acid sulfate soils; and/or c) has a soil pH of less than 5.5.
Notification of emergencies , incidents and breaches	
(7.5)	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.

⁶ The approved form, *Notification of use of a resource* is available on the Queensland Government website at www.qld.gov.au, using the publication number (ESR/2018/4552) as a search term.

⁷ 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).

⁸ Use of the resource at a **facility** as fill material must be carried out in accordance with the requirements of an environmental authority that authorises Environmentally Relevant Activity (ERA) 60 as prescribed under Schedule 2 of the Environmental Protection Regulation 2019.

(7.6)	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 and in the format requested and time period requested.
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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.

'actual acid sulfate soils' as defined in the most recent version of the *Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines* means soils containing highly acidic soil horizons resulting from the aeration of soil materials that are rich in iron sulfides, primarily pyrite. This oxidation produces hydrogen ions in excess of the sediment's capacity to neutralise the acidity, resulting in soils of pH 4 or less. These soils can usually be identified by the presence of jarosite.

'chief executive' means the Department of Environment, Science and Innovation 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.

'engineered construction works' means:

- a) where the **resource user** uses the **resource** in accordance with an applicable prescribed engineering standard; and/or
- b) engineer designed civil applications that have been certified by a Registered Professional Engineer of Queensland (RPEQ) as suitable for its intended purpose

'facility' means a naturally occurring or constructed hollow, pit or void (e.g. a gully, mining shaft or quarry).

'ferronickel' means an alloy of iron (Fe) and nickel (Ni).

'ferronickel slag' is the by-product generated during the **lawful** smelting of **nickel ore** to produce **ferronickel**.

'lawful(ly)' means allowed or permitted by law and not contrary to law.

'NATA' is the National Association of Testing Authorities.

'nickel ore' means a naturally occurring material that can be smelted to extract **ferronickel**.

'person' means an individual or a corporation.

'potential acid sulfate soils' as defined in the most recent version of the *Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines* means soils that contain iron sulfides or sulfidic material, which have not been exposed to air and so have not oxidised. The field pH of these soils in their undisturbed state is pH 4 or more, and may be neutral or slightly alkaline. Potential acid sulphate soils pose a considerable environmental risk if disturbed, as they will generate iron and sulfuric acid when exposed to air.

'records' include breach notifications, written procedures, analysis results, monitoring reports and monitoring programs required under a condition or requirement 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’ means **ferronickel slag** 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**.

‘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*.

‘standard areas’ mean land use including residential, parks, recreational play fields, open spaces and commercial and industrial sites; excluding **waters** and/or the bed and banks of **waters**.

‘TCLP’ means toxicity characteristics leaching procedure.

‘waters’ includes river, stream, lake, lagoon, pond, swamp, wetland, surface water, natural or artificial watercourse, bed and bank of any watercourse, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and groundwater and any part thereof.

-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* (EP Act) 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.

More information is available on the Department of Environment, Science and Innovation 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 and serious environmental harm are defined in sections 16 and 17 of the EP Act. 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 thresholds amounts in the EP Act also constitutes material or 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 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 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:

31 July 2020

Enquiries:

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