The New Zealand Ecolabelling Trust

Licence criteria for

Aluminium building products

EC-62-22

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Specification change history

Minor clarifications, corrections or technical changes made since the specification was issued in September 2022.

Date	Version	Change
1/06/2023	June 2023	Environmental Choice New Zealand renamed to Eco Choice Aotearoa and all references in this document amended to reflect the new name. Wording in section 7 'Use of the Eco Choice Aotearoa Label' updated – the requirement for the label to be accompanied by the specification name is now optional.

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1 Introduction

Eco Choice Aotearoa (ECA) is an environmental labelling programme which has been created to help businesses and consumers find products and services that ease the burden on the environment. The programme results from a New Zealand Government initiative and has been established to improve the quality of the environment by minimising the adverse and maximising the beneficial environmental impacts generated by the production, distribution, use and disposal of products, and the delivery of services. The programme is managed by the New Zealand Ecolabelling Trust (the Trust).

ECA operates to the ISO 14024 standard "Environmental labels and declarations – Type I environmental labelling – Principles and procedures" and the Trust is a member of the Global Ecolabelling Network (GEN) an international network of national programmes also operating to the ISO 14024 standard.

ISO 14024 requires environmental labelling specifications to include criteria that are objective, attainable and verifiable. It requires that interested parties have an opportunity to participate and have their comments considered. It also requires that environmental criteria be set, based on an evaluation of the environmental impacts during the actual product or service life cycle, to differentiate product and services on the basis of preferable environmental performance.

The life cycle approach is used to identify and understand environmental issues (adverse or beneficial impacts) across the whole life of a product or service (within a defined product or service category). This information is evaluated to identify the most significant issues and from those to identify the issues on which it is possible to differentiate environmentally preferable products or services from others available in the New Zealand market. Criteria are then set on these significant and differentiating issues. These must be set in a form and at a level that does differentiate environmentally preferable products or services, is attainable by potential ECA licence applicants, and is able to be measured and verified. As a result of this approach, criteria may not be included in an ECA specification on all aspects of the life cycle of a product or service. If stages of a product or service life cycle are found not to differentiate environmentally preferable products or services, or to have insufficient data available to allow objective benchmarking in New Zealand, those stages will not generally be included in criteria in the specification. For some issues, however, (such as energy and waste) criteria may be set to require monitoring and reporting. These criteria are designed to generate information for future reviews of specifications.

The Trust is pleased to publish this specification for aluminium building products. The specification takes into account environmental concerns about the production of greenhouse gases, disposal of waste products, energy and waste management.

This specification sets out the requirements that aluminium building products will be required to meet in order to be licensed to use the ECA Label. The requirements include environmental criteria and product characteristics. The specification also defines the testing and other means to be used to demonstrate and verify conformance with the environmental criteria and product characteristics.

This specification has been prepared based on an overview level life cycle assessment, information from specifications for similar products from other GEN-member labelling programmes, relevant information from other ECA specifications, publicly available information, and information provided by interested parties.

This specification is valid for a period of five years. Twelve months before the expiry date (or at an earlier date if required), the Trust will initiate a review process for the specification.

2 Background

Aluminium's combination of physical properties results in its use in a wide variety of products including light vehicles, railcars, and aircraft; wire is used for long-distance transmission of electricity; air conditioning, refrigeration, and heat-exchange systems; and building, construction, packing, and engineering products.

Aluminium is the second most used metal after steel and more aluminium is produced than all other non-ferrous metals put together. There are several minerals available in the world from which aluminium can be obtained, but the most common raw material is bauxite. No bauxite is mined in New Zealand, but bauxite from Weipa is refined into Alumina at Queensland Alumina Refinery in Gladstone which is then transported to NZ and smelted into aluminium at New Zealand Aluminium Smelter (NZAS) at Tiwai Point in Southland.

Around 90% of the aluminium produced at NZAS is exported and much of the aluminium used in building and construction in New Zealand is in the form of joinery imported from other countries, particularly China. The world's leading primary aluminium producing countries include China, Russia, Australia, UAE. From January to December 2021, 1,888 metric tonnes of primary aluminium was produced in Australia and New Zealand.

Figure 2.1 shows a generalised model of the life cycle, or flow, of aluminium:

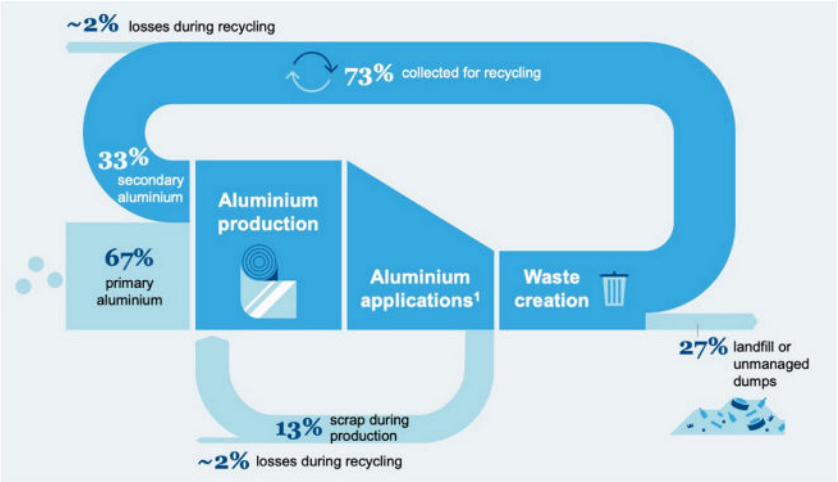

Figure 2.1: The Circular Economy of Aluminium *Source: World Economic Forum (9/12/2021)*

2.1 Methods of primary aluminium production

Fabricated aluminium products can be used in construction (33%), vehicles (28%), industrial equipment (28%), and metal products (11%).

The aluminium production stages are:

Extraction – Bauxite is a red dirt and clay mixture commonly found in Australia (top producer), China, Brazil, India, Guinea, Indonesia, Jamaica, Russia and Suriname. Bauxite is a mixture of aluminium hydroxide, iron oxide, titanium dioxide and kaolinite. The great majority of the world's bauxite ores are extracted by open-cut methods which can have significant impacts on local biodiversity. The mining process itself is relatively low energy use (0.6% of total energy for aluminium production) and low carbon emitting (compared to other processes in the production of aluminium chain), representing one quarter of a percent of total aluminium sector greenhouse gas emissions, mainly from mobile equipment used to remove and haul overburden (rock or soil overlying the bauxite) and bauxite. The main wastes from bauxite mining are tailings produced by grinding and washing the bauxite.

Refining – Bauxite ore is first converted into pure aluminium oxide ('alumina') by the 'Bayer Process' which requires energy in the form of heat and steam. A digestion process, using sodium hydroxide, allows the separation of aluminium hydroxide from the so-called "bauxite residue" (a red mud). This waste is usually disposed of in landfill, but research is ongoing to find better ways to recycle and reuse red mud—for example, as building materials (bricks, roofing and flooring tiles), catalysts, ceramics, fillers, fertilisers, and light-weight aggregates. The last step in the refining process is calcination which removes the water content in the hydroxide. Alumina production represents just over 15% of all aluminium sector's greenhouse gas emissions. Approximately 17.1% (or 14,200 MJ/kg) of the total energy for aluminium production is required in the refining stage.

Approximately two to three tonnes of bauxite are required to produce a tonne of alumina, as bauxite only contains 30-54% alumina, and four to six tonnes of bauxite are required to be purified to produce one tonne of aluminium metal.

Smelting – Through the 'Hall-Heroult' process, molten aluminium (created by dissolving alumina in molten fluoride salt) is extracted through an electrolytic process called smelting, which breaks the strong chemical bond of the aluminium and oxygen atoms using a powerful electric current (electrolysis). Electrolysis is an electricity intensive process and requires huge amounts of electricity to break the strong oxygen bonds of alumina. The smelting process requires 68.6% (or 193.6 MJ/kg) of the total energy for aluminium production.

It is reported that Chinese aluminium smelters produced an average of 12.7 tonnes of CO_2e per tonne of aluminium produced from coal-fired power generation versus a global average of 10.3 tonnes (from 2005 to 2019). During 2020, NZAS (which largely uses hydroelectric power) reports that the average emission rate was 2.13 tonnes CO_2e of per tonne of aluminium produced.

The most significant waste products from the production of aluminium from alumina are air emissions, including perfluorocarbon (PFC) gases (tetrafluoromethane (CF_4) and hexafluoroethane (C_2F_6)) and carbon dioxide (CO_2) from the production of anodes and electricity. PFCs are of particular concern because they have a greater global warming potential (GWP) per unit of emission than CO_2. PFCs can be produced during events referred to as 'anode effects'. An anode effect is a process upset condition, where an insufficient amount of alumina is dissolved in the electrolyte bath. This causes the voltage in the bath to be elevated above the normal operating range, resulting in the emission of CF_4 and C_2F_6 which are extremely potent greenhouse gases (GHGs). Over the past 30 years, there has been a decline in PFC emissions from primary aluminium production, associated with successful implementation of anode effects quenching strategies incorporated into the process control of the electrolysis cells. However, some PFCs are still produced from low voltage electrolysis.

There are also environmental concerns associated with solid waste produced from the smelting process including spent pot liner (which comes from the relining of pots, which takes place every five-to-eight years).

New smelting technology is in development to replace carbon electrodes with inert, proprietary materials, which would produce only oxygen (O_2). Combined with renewable electricity sources, this would essentially result in zero carbon emissions from the smelting process. The new process is being developed by ELYSIS, a joint venture between NZAS's majority shareholder Rio Tinto and Alcoa, and has already been earmarked for testing at NZAS.

Casting - once the molten aluminium is collected, it is transferred to the casthouse, where it is purified, alloyed to specification and then cast into ingots.

Aluminium as a material is almost always used in alloyed form. When adding other atomic elements into pure aluminium, such as magnesium, zinc, copper, manganese, silicon, tin, etc., the original softness, reactivity and formability of aluminium change dramatically. Aluminium alloys can be made as strong as steel but with only half the weight of the same strength as steel.

2.2 Aluminium finishing stage

Aluminium can be rolled into sheets from which panels for external cladding or building facades and roofing are made. Using the forming process of extrusion, aluminium can also be shaped to form longer, thinner pieces of aluminium called rod, bar or wire, often used for manufacturing different types of machine parts like nails, bolts, screws and rivets.

The main finishing stages for aluminium are:

Passivation – carried out in one of three ways: alclading, chromate conversion coating and anodising. Pure aluminium naturally forms a tough resistant oxide, almost immediately, that protects it from further oxidation in most environments. There are eight series of grades used to categorise the different types of aluminium alloy available. Different grades of aluminium have different properties, and each has specific applications and uses.

Alclading is the process of metallurgically bonding a thin layer of pure aluminium to the aluminium alloy.

- Chromate conversion coating (CCC) is the traditional way of passivating not only aluminium, but also zinc, cadmium, copper, silver, magnesium, and tin alloys. Historically, hexavalent chromium has been used. Hexavalent chromium (chromium VI) compounds are acutely toxic, carcinogenic, mutagenic, suspected reproductive toxins, corrosive and ecotoxic. Due to these human health and environmental concerns, alternatives to CCC are becoming more widely available. The most common alternative is trivalent chromium, which has fewer human health and environmental concerns.
- Anodising, via an electro-chemical process, forms a thick oxide coating on the aluminium surface. This finish is more robust than the other two processes and also provides good electrical insulation, which the other two processes do not.

Powder coating - Aluminium extrusions are typically coated with high grade polyester powders as an alternative to anodising (and no solvent is necessary). This involves the following process:

- A detergent cleaner is applied to the aluminium extrusion to remove oil and smut. Once cleaned, the powder is sprayed on through an electrostatic spray gun (the positive charge makes the powder bond with an electrically-grounded extrusion). Then the extrusion is placed into a large curing oven. The oven bakes the extrusions until there is a uniformly-melted coating.

The amount of waste, or scrap, from fabrication and manufacture varies, depending on individual processes. For example, cutting of aluminium sheet can produce significant amounts of scrap whereas casting aluminium parts may produce little scrap. Worldwide, scrap from fabrication and the manufacture of finished goods is generally recycled.

2.3 Recycling and secondary aluminium production

Most aluminium in the world is already recycled (75% of all aluminium ever produced is still in use) and now contributes significantly to the global market with much lower emissions than primary production. McKechnie (aluminium extruder in New Zealand) reports to have a carbon footprint of 1.2 kg CO_2e/kg of aluminium produced as they operate New Zealand's only remelt casthouse and therefore can use mainly recyclable aluminium scrap from its own manufacturing process and scrap sourced from other New Zealand extruders. Although secondary (recycled) aluminium in New Zealand is not widely used in extrusion plants (as other operators don't have remelt casthouses), industry estimates are that recycled aluminium will make up 30% of the market in future and it is assumed that with enough research this aluminium blend will be able to be used in the extrusion industry.

Secondary aluminium is recovered from the processing of various kinds of aluminium scrap, including casting alloys, dross (a mixture of alumina, metal, and other materials), packaging, turnings, used beverage cans, wire and cable, and wrought alloys.

Aluminium does not experience significant product losses in the use stage nor degrade during the recycling process, and its properties do not change between primary and secondary (recycled)

material. It is estimated that during the remelting process, approximately 1-2% of material is lost, primarily due to oxidation. Secondary aluminium production requires nearly 10 to 15 times less energy than primary aluminium production and produces only 5% of the CO_2 emissions as compared with primary production. In addition, fluorocarbon gases are not produced with secondary smelting. Aluminium can be recycled indefinitely and is also cost-effective to recycle.

Nearly all aluminium products are made with some percentage of recycled aluminium, a quality that fluctuates with product requirements, global and local scrap availability, market demands, and sector constraints. While including recycled content in aluminium products is cost effective and environmentally beneficial, manufacturers are constrained by the availability of scrap as the global demand for aluminium outweighs the availability of recycled aluminium.

3 Interpretation

🌏 (Environmental Responsibility) means a criterion or sub-clause within the ECA specification which addresses an environmental concern.

🫂 (Social Responsibility) means a criterion or sub-clause within the ECA specification which addresses a social concern.

Alloy means a metallic substance composed of two or more elements, as either a compound or a solution. It is created to offer more desirable features such as greater strength or a higher melting temperature.

Anodes means large carbon blocks which are used to conduct electricity during the aluminium reduction process.

Anodising means a surface treatment method that thickens the natural oxide layer on the aluminium surface. The aluminium anodising process is an electrochemical process, which requires the aluminium parts to be submerged into an electrolytic bath, and an electric current is run through it.

Bayer process means the two steps to produce alumina; 1) the pressure leaching of bauxite with sodium hydroxide solution to obtain sodium aluminate solution and 2) the precipitation of pure aluminium hydroxide from this solution by seeding with fine crystals of aluminium hydroxide.

CO_2 equivalent (CO_2e) means GHG emissions can be expressed either in physical units (such as tonnes) or in terms of CO_2 equivalent (tonnes CO_2 equivalent). The conversion factor from physical units to CO_2 equivalent is the global warming potential (from the latest published IPCC report) for the corresponding GHG.

Direct GHG Emissions means emissions from sources that are owned or controlled by the smelting plant.

Dross means a waste by-product from the smelting process. It is formed on the surface of molten aluminium or its alloys, by oxidation. It contains mostly aluminium oxide, alloying elements and salts such as sodium chloride or potassium chloride.

Energy management programme means a programme to achieve and sustain efficient and effective use of energy including policies, practices, planning activities, responsibilities and resources that affect the organisation's performance for achieving the objectives and targets of the Energy Policy.

Environmental management system means a framework that helps an organisation achieve its environmental goals through consistent review, evaluation, and improvement of its environmental performance.

GECA means Good Environmental Choice Australia.

GEN means Global Ecolabelling Network.

GHG means a gas that absorbs and emits radiant energy within the thermal infrared range, causing the greenhouse effect (a process that occurs when energy from a planet's sun goes through its atmosphere and warms the planet's surface, but the atmosphere prevents the heat from returning directly to space, resulting in a warmer planet). Six GHG covered by the United Nations Framework Convention on Climate Change (UNFCCC) are: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF_6).

Hall–Héroult process means the common industrial process for smelting aluminium. It involves dissolving aluminium oxide (alumina) (obtained most often from bauxite, aluminium's chief ore, through the Bayer process) in molten cryolite, and electrolysing the molten salt bath, typically in a purpose-built cell.

Indirect GHG Emissions means emissions that are a consequence of the activities of the smelting plant, but occur at sources owned or controlled by another entity.

ILO means International Labour Organisation, which is a United Nations agency whose mandate is to advance social and economic justice through setting international labour standards.

ISO means International Organisation for Standardisation.

Casting means the process of forming aluminium into a shape suitable for further processing.

Label means the Eco Choice Aotearoa Label.

Living Wage means a concept launched in New Zealand in 2012. It is the hourly wage a worker needs in order to pay for the necessities of life and participate as an active citizen in the community.

Mine restoration means the process used to repair the impacts of mining on the environment. Mine restoration can also be referred to as 'mine rehabilitation', 'land rehabilitation', 'mine site rehabilitation' or 'mine site restoration'. The long-term objectives of rehabilitation can vary from simply converting an area to a safe and stable condition, to restoring the pre-mining conditions as closely as possible to support the future sustainability of the site.

Mitigation hierarchy means a step-by-step tool used to limit the negative biodiversity impacts of development projects. The mitigation hierarchy consists of four steps: – avoid, minimise, then restore impacted areas and finally offset any impacts that remain. When applying the hierarchy, the best-practice goal is to achieve no net loss or, whenever possible, a net gain.

Passivation means a metal finishing process to prevent corrosion. It is required because unlike other metals, aluminium does not naturally have protection against corrosion.

Primary aluminium production means aluminium produced directly from mined ore.

Secondary aluminium production means aluminium produced from scrap.

Smelting involves passing a large electric current through a molten mixture of cryolite, alumina and aluminium fluoride to obtain liquid aluminium metal. There are three families of smelting technology in operation today – Søderberg and Prebake – which are characterised by the types of anode employed. The latest technology, ELYSIS technology, looks to replace carbon electrodes with inert, proprietary materials, which would produce only O_2. ELYSIS is a joint venture between NZAS's majority shareholder Rio Tinto and Alcoa.

Waste management programme means a programme to achieve and sustain efficient and effective minimisation and disposal of waste including policies, practices, planning activities, responsibilities and resources that affect the organisation's performance for achieving the objectives and targets of the Waste Policy.

4 Category definition

This category includes aluminium products prior to painting, or that have undergone alloy coating, surface passivation, or powder coating.

- The following products are excluded from this category:
- Aluminium products not used in the building industry.
- Aluminium products that have been painted, except where this aluminium has been painted to prevent surface corrosion during storage and transport. Painted aluminium building products are included in EC-57-16 Pre-painted and Resin Coated Metal Products.

To be licensed to use the Label, a product must meet all of the relevant environmental criteria set out in clause 5 and the product characteristics set out in clause 6.

5 Environmental criteria

5.1 Legal requirements

Criteria

a The applicant/licence holder must demonstrate how applicable environmental legal requirements are met, including that all necessary consents and permits are in place.

b Where the applicant/licence holder is not the manufacturer of the product(s), the applicant/licence holder must have a documented requirement for the manufacturer to manage its compliance with applicable environmental regulatory requirements (for example, via supply contract conditions).

Verification required

Conformance with this requirement shall be demonstrated by providing a written statement on regulatory compliance, signed by the Chief Executive Officer or other authorised representative of the applicant/licence holder company. This statement shall be supported by current documentation:

- Identifying the applicable regulatory requirements including specific obligations arising from permits, regulations, and plan rules.
- Demonstrating how compliance is monitored and maintained.
- Copies of wording from supply contract conditions or other documented requirements for contract manufacturers (if applicable).

Verification of continued compliance with legal requirements will form part of the Licence Supervision Plan.

Explanatory notes

Relevant laws and regulations applicable to the facilities that are manufacturing the ECA-licensed product and the licence holder's distribution and sales operations, could, for example, include those that relate to:

- Producing, sourcing, transporting, handling and storing raw materials and components for manufacture.
- Manufacturing processes.
- Handling, transporting, handling and disposing of waste products arising from manufacturing.
- Transporting product within and between countries.
- Using and disposing of the product.

The documentation required may include, as appropriate:

- Procedures for approving and monitoring suppliers and supplies.

- Information provided to customers and contractors regarding regulatory requirements.
- Evidence of a formal certified environmental management system (for example an ISO 14001 certificate) and supporting records on regulatory compliance (for example, copies of regulatory requirements registers, procedures to manage regulatory compliance, monitoring and evaluation reports on regulatory compliance, internal or external audits covering regulatory compliance and management review records covering regulatory compliance).
- Copies of published environmental, sustainability and/or annual reports expressly addressing environmental regulatory compliance (for example verified Environmental Statements prepared under the European EMAS regulations).
- Audit reports completed by independent and competent auditors addressing regulatory compliance (for example, reports for other eco-label licences or reports from regulator audits).
- Participation by the supplier in the applicants/licence holder's own supplier audit programme.

It is not intended to require licence holders to accept increased legal responsibility or liability for actions that are outside their control. The Trust's intention is to ensure any potential for environmental regulatory non-compliance associated with an ECA labelled product is managed to a level that minimises risk of reputation damage to the ECA label and programme.

5.2 Product information required

The applicant/licence holder must provide the following information as part of the assessment process:

a Supply chain information including components or processes, suppliers and geographical origin (see Table A1 in Appendix A)

b Additives and hazardous substances used in the production of the product (see Table A2 in Appendix A).

Licence holders must maintain this information and notify ECA if it changes.

Verification required

Conformance with these requirements shall be demonstrated by providing a written statement on compliance, signed by the Chief Executive Officer or other authorised representative of the applicant/licence holder company. The statement shall be supported by completed Tables A1 and A2.

5.3 Environmental management system or processes

Criteria

a To demonstrate its ability to ensure ongoing compliance with the requirements of this EC-62 specification, the applicant/licence holder must have (or establish, if necessary) appropriate management processes or a management system, to obtain, record, verify and maintain relevant information to provide assurance that it consistently meets all of the relevant requirements of EC-62.

b The aluminium smelting plant must have an ISO 14001-certified Environmental Management System (EMS), or equivalent certification, that includes the aluminium used for the ECA-licensed products.

Verification required

Conformance with these requirements shall be demonstrated by providing a written statement on compliance, signed by the Chief Executive Officer or other authorised representative of the applicant/licence holder company. The statement shall be supported by:

- Details of the management processes or environmental management system used to maintain and ensure ongoing compliance with EC-62. Examples could include information from the organisation's chain-of-custody control system, and evidence to show EC-62 is included in the compliance obligations register/document of the EMS.
- A copy of the ISO 14001, or equivalent, certificate for the aluminium smelting plant.

Explanatory notes

For 5.3 b)

Examples of certifications that will be considered equivalent to ISO 14001 certification:

- Enviromark Diamond.
- European Commission's EMAS scheme.

Equivalency of other certifications will be determined by the Trust on a case-by-case basis.

The following are some examples that will not be considered equivalent to ISO 14001 certification:

- Other Enviromark certifications (Bronze, Gold).
- Environmental management system based on ISO 14001 that have not be independently audited and certified.
- EPDs, ISO 9001 or any other certifications that are not an environmental management system certification.

5.4 Modern slavery and social accountability 👭

Criteria

a The applicant/licence holder and aluminium smelting plant operator must have a policy/policies on human rights, diversity & inclusion, and anti-bullying. At a minimum, it should comprise:

- An explicit commitment to respect all internationally recognized human rights standards in the United Nations International Bill of Human Rights[1] and the International Labour Organization (ILO) Declaration on the Fundamental Principles and Rights at Work (see below);
- Stipulations concerning the company's expectations of personnel, business partners and other relevant parties e.g. a code of conduct; and
- Information on how the company will implement its commitments and monitor compliance with it.

In addition to the above, the applicant/licence holder and aluminium smelting plant operator shall consider:

- implementing the requirements of Social Accountability International Standard, SA8000.
- Being a Living Wage employer (or equivalent).
- Having a senior member of its organisation responsible for social and environmental sustainability.

b Where an applicant/licence holder and aluminium smelting plant operator has found instances of modern slavery in their business operations and or supply chains in the past two years, they must provide evidence of corrective action.

Explanatory notes

Information on the United Nations International Bill of Human Rights and the ILO Declaration on the Fundamental Principles and Rights at Work is provided in Appendix B.

[1] https://www.ohchr.org/en/what-are-human-rights/international-bill-human-rights

Verification required

Conformance with these requirements shall be stated in writing and signed by the Chief Executive Officer or other authorised representative of the applicant/licence holder company. This statement shall be supported by:

- Copies of the relevant policies, procedures and plans.
- Records demonstrating the plans are being effectively implemented (including monitoring results).

5.5 Materials

5.5.1 Raw materials and biodiversity

Criteria

The applicant/licence holder must request the following plans from the bauxite quarries:

a Management plans, including any necessary policies and management procedures, to minimise adverse effects from the following potential impacts:
  - Noise.
  - Vibration.
  - Dust.
  - Discharges to water or land.

b A biodiversity management plan that includes:
  - Assessing the risk and materiality of the impacts on biodiversity from the land use and activities on the mining site.
  - Consultation with relevant local groups (i.e. indigenous communities).
  - Addressing impacts in accordance with the mitigation hierarchy.
  - Implementing measures to prevent accidental or deliberate introduction of non-native species that could have significant adverse impacts on biodiversity.
  - A mine restoration plan for when the site is no longer operational.
  - Information on how the biodiversity outcomes are shared with stakeholders, made publicly available, periodically reviewed, and updated where necessary.

OR

c Where the management plans in parts a) and b) above are not available, the applicant/licence holder must report to the Trust on attempts made each year to obtain the required management plans and the reasons why the management plans were not able to be obtained.

Verification required

Conformance with these requirements shall be stated in writing and signed by the Chief Executive Officer or other authorised representative of the applicant/licence holder company. This statement shall be supported by:

- Copies of the relevant management plans.
- Records demonstrating the management plans are being effectively implemented (including monitoring results). For b) this could include actions with time-bound targets to address material impacts and monitor effectiveness of the actions.

Note: If the bauxite mine is co-located with the alumina refinery, combined management plans may be prepared and implemented to meet these requirements.

5.5.2 Recycled raw materials

Criteria

Recycled raw materials must be sourced from licensed metal recyclers.

Verification required

Conformance with this requirement shall be demonstrated by providing a written statement of compliance, signed by the Chief Executive Officer or other authorised representative of the applicant/licence holder company. This statement shall be supported by documentation that includes:

- List of suppliers of recycled raw materials, and copies of appropriate licenses or permits.
- For aluminium manufactured in New Zealand, this should include copies of licences or proof of New Zealand Association of Metal Recyclers (NZAMR) membership.

5.6 Storage of raw materials and waste 🌎 🐮

Criteria

The aluminium smelting plant must have and implement effective management policies, procedures and systems covering the appropriate storage and handling of raw materials, including aluminium scrap, solid wastes, and environmentally hazardous materials.

These procedures must include the following requirements:

a The smelting plant must ensure any storage of aluminium scrap is located and managed to prevent contamination of surface water or land.

b Storage areas must be constructed in a manner that effectively prevents the release of waste (including spent pot lining and dross), dust and leachate to the environment.

c The smelting plant must perform regular checks and implement appropriate controls to ensure the integrity of the storage areas.

d The smelting plant must control and treat water discharge from storage facilities, to minimise impacts to the environment.

e There should be no discharge of waste to marine or aquatic environments.

f The smelting plant must develop a Spill Response Plan detailing procedures to identify, contain and clean-up any spill of potentially hazardous substances.

Verification required

Conformance with this requirement shall be demonstrated by providing a written statement of compliance, signed by the Chief Executive Officer or other authorised representative of the applicant/licence holder company. This statement shall be supported by documentation that includes:

- Details, including photographs, of the location and type of storage facilities on site and the materials stored in each; and
- A copy of the Spill Response Plan and records of test/drills, implementation and reviews.

5.7 Product design

Criteria

The applicant/licence holder shall integrate clear objectives to enhance sustainability in the design and development processes for products or components, including consideration of the environmental impacts of the end product e.g. design longer-lasting and better-functioning products which will have to be replaced less frequently and/or standardising the size of the aluminium products.

Verification required

Conformance with this requirement shall be demonstrated by providing a written statement of compliance, signed by the Chief Executive Officer or other authorised representative of the applicant/licence holder company. This statement shall be supported by documentation demonstrating how sustainability has been considered within the product design.

5.8 Hazardous substances

Criteria

a During the finishing stages, the aluminium products shall not be treated with any chemicals that are classified under Globally Harmonized System of Classification and Labelling of Chemicals (GHS) as follows:

Carcinogens

- Category 1a and 1b ('known or presumed human carcinogens')
- Category 2 ('suspected human carcinogens')

Reproductive toxicants

- Category 1a and 1b ('known or presumed human reproductive toxicant')
- Category 2 ('suspected human reproductive toxicant')

Germ cell mutagenicity

- Category 1a and 1b ('known or presumed to induce heritable mutations in germ cells of humans')
- Category 2 ('suspected to induce heritable mutations in germ cells of humans')

b The aluminium products must not be coated with cadmium, chrome, nickel or tin, or their compounds. In exceptional cases, metal surfaces may be treated with chromium or nickel where this is necessary on the grounds of heavy physical wear. Such chromium plating must not use chromium VI compounds.

Verification Required

Conformance with these requirements shall be demonstrated by providing a written statement on compliance, signed by the Chief Executive Officer or other authorised representative of the applicant/licence holder company. The statement shall be supported by documentation that includes:

- Completed Table A2 in Appendix A, identifying hazardous substances used in the finishing processes.
- Safety Data Sheets (SDS) for each hazardous substance used.
- Information about any chromium or nickel treatments used.

5.9 Process emissions

5.9.1 Effluents to water 🌏 🫂

Criteria

a The applicant/licence holder and aluminium smelting plant must have effective procedures and systems (including an annual improvement plan) in place to minimise emissions of metals in wastewater (including cooling water and stormwater if these contaminants may be present) discharged to the natural environment (natural water bodies, ocean or land).

b The aluminium smelting plant must have and implement systems to recover process wastewater sludges and sediments. The aluminium smelting plant must report on how it re-uses process waste sludge and sediment or it demonstrates that the process waste sludge and sediment are disposed to an appropriate location.

c Discharges of contaminants to the natural environment (natural water bodies, ocean or land) from the aluminium smelting plant, shall be demonstrated to result in acceptable and environmentally sustainable level of impact on the quality of the receiving environment.

Verification Required

Conformance with these requirements shall be demonstrated by providing a written statement of compliance, signed by the Chief Executive Officer or other authorised representative of the applicant/licence holder company. This statement shall be supported by documentation that includes:

- Plans to minimise emissions of metals in wastewater.
- A description of the methods and systems to recover process wastewater sludges and sediments.
- An independent assessment of the discharge quality and its impact on the receiving environment completed by a person or agency competent to complete such an assessment. The assessment may be based on the quality of discharge from the point at which the discharge from the site or any relevant combined or municipal waste collection and treatment system discharges to the natural environment; or from the plant in situations where the plant discharge is mixed with other organisations waste streams and the combined waste stream and its treatment before it is discharged to the natural environment is outside the control of the plant or applicant/licence holder and suitable information is not available on the quality of the combined discharge.

5.9.2 Point source emissions to air 🌎 👯

Criteria

a The applicant/licence holder shall provide information on the following air emission from the primary aluminium smelting plant:
   - Gaseous fluoride
   - Particulate fluoride
   - Sulphur dioxide and
   - Polycyclic aromatic hydrocarbons

b The applicant/licence holder is to provide the following information for the secondary aluminium production (if applicable):
   - Chloride gases
   - Volatile organic compounds and
   - Polycyclic aromatic hydrocarbons.

The above emissions (for primary and secondary aluminium production) must be measured at least annually and reported to the Trust.

Verification required

Conformance with these requirements shall be stated in writing and signed by the Chief Executive Officer or other authorised representative of the applicant/licence holder company. This statement shall be supported by documentation that includes:

- Annual test reports.
- Calculations or emissions inventories.

5.9.3 Emissions of Greenhouse Gases (GHG) from smelting

Criteria

GHG emissions shall be calculated as the sum of the emissions from the aluminium smelting plant*, and should not exceed 8 tonnes CO_2e per metric tonne aluminium by:

2030 or earlier, for smelters that started production up to and including 2020.

Or

The time of certification, for smelters starting production after 2020.

*emissions related to anode production, electricity production, smelting (electrolysis) must all be included in the calculation, irrespective of whether they are direct or indirect sources.

The Trust intends to add requirements for cradle to gate aluminium GHG emissions in future versions of this specification.

Explanatory notes

- The above limit includes emissions from purchased electricity and use of fossil fuels, but excludes emissions from renewable sources. Renewable energy sources means renewable non-fossil energy sources, e.g. wind, solar, geothermal, wave, tidal, hydropower, biomass, landfill gas, sewage treatment plant gas and biogas.
- CO_2 from surplus energy at the manufacturing site sold as electricity, steam or heat may be subtracted from the total CO_2 emissions.
- The energy used for transport in distributing the product or other raw materials shall not be included in the calculations.

Verification Required

Conformance with this requirement shall be demonstrated by providing a written statement on compliance, signed by the Chief Executive Officer or other authorised representative of the applicant/licence holder company. This statement shall be supported by documentation that includes:

- Test reports;
- Calculations or emissions inventories; and
- Production and quality control information.

Test reports must be from laboratories competent to perform the relevant tests. If an equivalent method is to be used, The Trust may require details of the method and its validation.

5.10 Water management 🌎 👭

Criteria

a The applicant/licence holder and aluminium smelting plant and must have effective water management policies and procedures and/or a water management programme.

b Licence holders must report annually to the Trust on water management during the aluminium making process, this should include:

  – Objectives and targets.
  – Explanation for any divergence from objectives and targets.
  – Initiatives taken to manage fresh water use better and improve water efficiency, including use of recycled water or harvested rainwater, if applicable.

The annual report shall also include information on water management during aluminium smelting where that information is available from the aluminium manufacturers.

Verification required

Conformance with these requirements shall be stated in writing and signed by the Chief Executive Officer, or other authorised representative, of the applicant/licence holder company. This statement shall be supported by documentation (as relevant):

- Describing the water management policies, procedures and programme's;
- Including annual reports to The Trust on water use and management.

- Detailing performance against continuous improvement objectives and targets relating to the reduction of water use related to production over time.

5.11 Energy management and embodied carbon

Criteria

a The applicant/licence holder and aluminium smelting plant must have effective energy management policies and procedures and/or an energy management programme for their operations.

b Licence holders must report annually to the Trust on energy management, including:
  - Total energy use.
  - Breakdown of total energy use to types of energy used, including renewable energy.
  - Energy use related to production (i.e. the embodied energy of a product).
  - Energy use related to transport of raw materials.
  - Methodology for calculating and recording material GHG emissions.
  - Initiatives taken to reduce energy use and CO_2 emissions and to improve energy efficiency.
  - Initiatives taken to calculate CO_2 emissions per product (i.e. the embodied CO_2 of a product).
  - Initiatives or requirements for suppliers or contract manufacturers.
  - Information on energy use and management, including use of renewable energy, during the smelting process, where that information is available to the licence holder.

c Licence holders must have improvement objectives and targets for reduction of energy use related to production of ECA-licensed products, and associated GHG emissions, over time. Furthermore, licence holders must publicly disclose a commitment to decarbonise between now and 2050 on a 1.5ºC trajectory, with a significant reduction prior to 2030. Any divergence from objectives or targets should be explained in the annual report.

Verification required

Conformance with these requirements shall be stated in writing and signed by the Chief Executive Officer, or other authorised representative, of the applicant/licence holder company. This statement shall be supported by documentation (as relevant) that:

- Describes the energy management policies, procedures and programmes.
- Includes annual reports to the Trust on energy use and management.
- Details of performance against improvement objectives and targets relating to the reduction of energy use related to production of ECA-licensed products, and associated GHG emissions, over time.

5.12 Waste management

Criteria

a The applicant/licence holder and aluminium smelting plant must have effective waste management policies and procedures and/or a waste management programme.

b Licence holders must report annually to the Trust on waste management including:
  - Quantities and types of waste recovered for reuse internally and externally.
  - Quantities and types of waste recycled internally and externally, for example quantities of pre-consumer aluminium scrap used or exported for recycling.
  - Quantities and types of waste disposed of to landfill.
  - Quantities and types of waste burned internally for energy recovery.
  - Waste generation related to production.

Explanatory note

- Uprisings from abnormal conditions or that are contaminated such that they cannot be recycled, are Initiatives taken to reduce waste generation and improve recovery/recycling of waste.
- Initiatives or requirements for suppliers or contract manufacturers.

c Licence holders must have improvement objectives and targets for reduction of waste generation, and the increase of reuse and recycling rates over time, where practical. Any divergence from objectives or targets should be explained in the annual report.

excluded from 5.12(b) above. A specific discussion on the cause of contamination and abnormal conditions and why the uprisings cannot be recycled is to be included in the annual report.

Verification required

Conformance with these requirements shall be stated in writing and signed by the Chief Executive Officer or other authorised representative of the applicant/licence holder company. This statement shall be accompanied by documentation that:

- Describes the waste management policies, procedures and programmes.
- Includes annual reports to The Trust on waste generation and management.
- Details of performance against the improvement objectives and targets for reduction of waste generation and increase of reuse and recycling rates.

5.13 Product stewardship

Criteria

a Aluminium products must not be impregnated, labelled, coated or otherwise treated in a manner which would prevent recycling in New Zealand or in the country where the product is used.

b The applicant/licence holder must be actively participating in a product stewardship scheme in New Zealand that involves:

- recovery of unwanted or unused aluminium from pre- and post-consumer sources.
- reuse and/or recycling of recovered aluminium.
- promotion of the product stewardship scheme to customers.

Note: the product stewardship scheme may be either an internal or a third-party scheme.

c Licence holders must report annually to ECA on the performance of the product stewardship scheme, including:

- volume of pre-consumer and volume of post-consumer aluminium recovered.
- the % of recovered aluminium that was re-used and the means by which it was reused.
- the % of recovered aluminium that was recycled.
- initiatives taken as part of the programme to increase the volume of recovered aluminium and reduce the % of virgin aluminium in the products.

Verification required

Conformance with these requirements shall be stated in writing and signed by the Chief Executive or authorise representative of the applicant/licence holder company. This statement shall be accompanied by documentation that:

- Includes information which demonstrates that the product can be reused or recycled;
- Describes the product stewardship scheme; and
- Includes annual reports on the product stewardship scheme.

6 Product characteristics

6.1 Product performance 🌎 🤝

Criteria

The product must be fit for its intended use and conform, as appropriate, to the relevant code of practice and/or product performance standards.

Verification required

Conformance with this requirement shall be demonstrated by providing a written statement of compliance, signed by the Chief Executive Officer or other authorised representative of the applicant/licence holder company.

Conformance shall be supported by a statement and/or the following documentation:

- Demonstrating how compliance is monitored and maintained (including quality control and assurance procedures).
- Records of customer feedback and complaints.

Applicable codes of practice and performance standards include:

- New Zealand Metal Roof and Wall Cladding Code of Practice version 3/2021
- AS/NZS 1170.2:2021 Structural design actions, Part 2: Wind actions
- Building Code Clause B1 Structure – this clause sets requirements around the combination of loads that buildings, building elements and sitework are likely to experience during construction, alteration and throughout their lives.
- Building Code Clause B2 Durability - under the clause, building materials, components and construction methods are required to be sufficiently durable
- Building Code Clause E2 External moisture - this clause requires buildings to be constructed to provide adequate resistance to penetration by, and the accumulation of, moisture from the outside. It contains requirements for roofs, wall claddings and external openings.
- Aluminum Standards and Data – 2027 Metric SI (Australian Aluminium Council Ltd).
- AS/NZS 1734:1997 Aluminium and aluminium alloys - Flat sheets, coiled sheet and plate.

7 Requirements and notes for licence holders

Monitoring compliance

Prior to granting a licence, the Trust will prepare a plan for monitoring ongoing compliance with these requirements. This plan will reflect the number and types of products covered by the licence and the level of documentation appropriate to provide confidence in ongoing compliance with criteria. The plan will also reflect the nature of the licence holder (whether a manufacturer and supplier, a wholesale/retail supplier with contract manufacturing, or involved in other arrangements with contract manufacturing and brand ownership). It will specifically provide for supervision of the licence holder's contractual or other explicit arrangements with suppliers, customers or other agents/parties to ensure all relevant requirements of this specification and Licence Conditions are met (including those related to legal requirements, packaging and labelling, information about products, product claims and use of the Label). This plan will be discussed with the licence applicant and when agreed will be a condition of the licence.

As part of the plan, the Trust will require access to relevant quality control and production records and the right of access to manufacturing facilities. Relevant records may include formal quality management or environmental management system documentation (for example, ISO 9001 or ISO 14001 or similar).

The monitoring plan will require the licence holder to advise the Trust immediately of any noncompliance with any requirements of this specification which may occur during the term of the licence. If a non-compliance occurs, the licence may be suspended or terminated as stipulated in the Licence Conditions. The licensee may appeal any such suspension.

The Trust will maintain the confidentiality of identified confidential information provided and accessed during verification and monitoring of licences.

Use of Eco Choice Aotearoa Label

The Licence holder shall supply information on the proposed use of the label on products or promotional material.

The Label may appear on the wholesale and retail packaging for the product, provided that the product meets the requirements in this specification and in the Licence Conditions.

Wherever it appears, the Label must be accompanied by the Licence Number e.g. 'licence No1234'. It is optional to include the spec name.

The Label must be reproduced in accordance with:

- The Licence Conditions; and
- The Eco Choice Aotearoa programme's brand kit which includes examples of keyline art for reproduction of the Label.

Any advertising must conform to the relevant requirements in this specification, in the Licence Conditions and keyline art.

Failure to meet these requirements for using the Eco Choice Aotearoa Label and advertising could result in the Licence being withdrawn

Appendix A: Tables

Table A1 - Component/process supplier information

Supplier name	Supplier address and contact details (include all manufacturing locations)	Component or process supplied
e.g. Supplier A	*Address Wiri, Auckland*	*Passivation*

Include each component and subcontracted processing operation

Table A2 - Hazardous substances and materials description table

Process/Type of Chemical	Trade Name	Chemicals Name	Supplier	Safety Data Sheet (SDS)	
				Issue date	Copy provided to ECA (√)
e.g. Passivation					

Complete one table for each aluminium product

Appendix B: Modern slavery and social accountability

B1 International Bill of Human Rights

In December 1948, the United Nations General Assembly adopted the Universal Declaration of Human Rights (UDHR). In December 1966, the UN General Assembly adopted two international treaties that would further shape international human rights: the International Covenant on Economic Social and Cultural Rights (ICESCR), and the International Covenant on Civil and Political Rights (ICCPR). These are often referred to as "the International Covenants." Together, the UDHR and these two Covenants are known as the International Bill of Human Rights.

The ICESCR and the ICCPR set out the civil, political, economic, social and cultural rights that everyone is entitled to:

ICESCR	ICCPR
• Freedom from discrimination • Right to equality between men and women • Right to life • Freedom from torture • Freedom from slavery • Right to liberty and security of person • Right to be treated with humanity in detention • Freedom of movement • Freedom of non-citizens from arbitrary expulsion • Right to fair trial • Right to recognition before the law • Right to privacy • Freedom of religion and belief • Freedom of expression • Right of peaceful assembly • Freedom of association • Right to marry and found a family • Right of children to birth registration and a nationality • Right to participate in public affairs • Right to equality before the law • Minority rights	• Freedom from discrimination • Right to equality between men and women • Right to work • Freedom to choose and accept work • Right to just and favourable conditions at work • Right to form trade unions • Right to strike • Right to social security • Right of mothers to special protection before and after birth • Freedom of children from social and economic exploitation • Right to an adequate standard of living • Freedom from hunger • Right to health • Right to education • Freedom of parents to choose schooling for their children • Right to take part in cultural life • Right to enjoy benefits of science • Right of authors to moral and material interests from works • Freedom to undertake scientific research and creative activity

B2 ILO Declaration

From ILO Declaration on the Fundamental Principles and Rights at Work, there are the following core labour standards:

- Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87)
- Right to Organise and Collective Bargaining Convention,1949 (No. 98)
- Forced Labour Convention, 1930 (No. 29)
- Abolition of Forced Labour Convention, 1957 (No. 105)
- Minimum Age Convention, 1973 (No. 138)

- Worst Forms of Child Labour Convention, 1999 (No. 182)
- Equal Remuneration Convention, 1951 (No. 100)
- Discrimination (Employment and Occupation) Convention, 1958 (No. 111)