



The New Zealand Ecolabelling Trust

Licence Criteria for Gypsum Plasterboard Products

EC-19-15

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Specification change history

Minor clarifications, corrections or technical changes made since the specification was last reviewed and issued in November 2013.

Date	Version	Change
05/08/15	EC-19-15 August 2015	Update of Clause 5.10d (cardboard packaging) The requirement has been updated to align with the revised criteria in EC-10-14 Packaging and Paperboard Products and is consistent with cardboard packaging requirements across all relevant ECNZ specifications.

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1 Introduction

Environmental Choice New Zealand (ECNZ) 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).

ECNZ operates to the ISO 14024:1999 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 ECNZ licence applicants and is able to be measured and verified. As a result of this approach, criteria may not be included in an ECNZ 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 Gypsum Plasterboard Products. The specification has been published to take account of substances harmful to the environment, energy management, consumption of resources and waste generation.

This specification sets out the requirements that gypsum plasterboard products will be required to meet in order to be licensed to use the ECNZ 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 ECNZ specifications, information available from industry groups and information from environmental agencies.

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 further review process for the specification.

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2 Background

To make plasterboard, gypsum rock ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) is screened, crushed and ground. The ground rock is heated to remove three quarters of the water, producing hemi-hydrate plaster ($\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$). The resulting powder is mixed with water and additives and spread between two sheets of paper. The powder/water mixture sets hard as the water recombines to form gypsum again. The sheets are then cut, dried and trimmed. Production of plasterboard started in New Zealand in 1927¹ and the majority of plasterboard available in New Zealand still comes from one domestic manufacturer. The raw gypsum is imported from mines in Australia and transported by boat to New Zealand. Plasterboard is also imported as finished product from Australia and Asia for sale in the New Zealand market.

According to World Mining Data from 2011², the top five producers of gypsum are China, Iran, Thailand, the US and Spain. Gypsum extraction is usually via open cast mines. The rate at which natural gypsum reserves are exploited in Europe and North America is slowing due to the rise in consumption of synthetic gypsum³. Synthetic gypsums are generally waste/by-products from other industries such as flue gas desulphurisation (FGD) gypsum (from coal fired power plants), phosphogypsum (from phosphoric acid production for fertiliser and detergents), titanogypsum (from titanium dioxide pigment production), fluorogypsum (from production of hydrofluoric acid) and citrogypsum (from production of citric acid for the food, pharmaceutical and detergent industries). Approximately 45 % of the gypsum used by US manufacturers in 2010 was of the synthetic variety⁴, and FGD gypsum provided approximately 44 % of the gypsum used by the European plaster industry in 2007⁵.

FGD gypsum has a higher purity (gypsum content of 96 %) than most natural gypsum (80 %)⁶. This means that lower quality natural gypsum can be blended with high purity FGD gypsum, allowing material that would not have been mined in the past to be classified as exploitable reserves⁶. Change in energy policies, such as an increased use in low-sulphur coal, renewable power sources or gas, has the potential to affect future supplies of FGD gypsum⁷. Phosphogypsum is actually produced in greater quantity than FDG gypsum⁵, however, the use of phosphogypsum is limited in the plasterboard industry as it contains undesirable impurities, a different gypsum crystal shape, fluctuates in quality and may have high levels of natural radioactivity from the phosphoric rock. Titanogypsum comes from the sulphate process of titanium dioxide production but only about half of gypsum produced is “white gypsum” which can be used to produce gypsum plasterboard. Citrogypsum is initially very impure and requires further processing in order to be used by the gypsum industry. Although no significant quantities of useable synthetic gypsum are produced in New Zealand, some of these synthetic gypsums may be present in boards manufactured overseas and imported and sold in New Zealand.

The European Commission Green Public Procurement criteria for Wall Panels⁸ states that the key impacts of wall panels arise from the energy consumed during manufacture, natural resource consumption, and disposal impacts when products reach the end of their useful lives, as well as waste arising during installation. It concludes that the area with the largest opportunity for an

¹ <http://gib.co.nz/winstone-wallboards/>

² <http://www.wmc.org.pl/sites/default/files/WMD2013.pdf>

³ http://eurogypsum.org/_Uploads/dbsAttachedFiles/livingwithgypsum.pdf

⁴ <http://www.gypsumsustainability.org/recycled.html>

⁵ Green Public Procurement – Wall Panels Technical Background Report, European Commission, June 2010.

⁶ http://eurogypsum.org/_Uploads/dbsAttachedFiles/whatisgypsum.pdf

⁷ Plasterboard Sustainability Action Plan, DEFRA, October 2010.

⁸ http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

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impact is waste management: minimisation, recycling and diversion from landfill. Recycling used gypsum plasterboard waste for the manufacture of new products will reduce the amount of plasterboard entering the waste stream. It will also help conserve resources and reduce demand for virgin materials, in turn reducing impacts of mining and related processing.

Gypsum products are one of the few construction materials where “closed-loop” recycling is possible. The process of dehydrating, crushing, rehydrating and reforming gypsum can be repeated almost indefinitely, meaning waste product can be recycled into the same product instead of being downcycled, e.g. like waste concrete and bricks used for aggregate⁶. The association for European manufacturers of gypsum products (Eurogypsum) reports that increased recycling of gypsum product waste from construction sites is occurring in Europe, where it is crushed and re-introduced in a controlled blend to the plasterboard manufacturing processes. Only a small quantity of demolition waste plasterboard is currently recycled due to its contamination with other materials⁶. The Gypsum Association in the US and Canada similarly reports an increase in recycling of construction waste⁴. Benefits of recycling waste plasterboard back into new plasterboard products should be weighed against impacts of transporting the waste back to the plasterboard manufacturer, which may involve considerable distances.

Where recycling waste plasterboard back into production is not viable (e.g. transporting long distances from the waste generating site to the production facility), other alternatives to landfill should be considered. These may include application as a fertiliser or soil conditioner, or use in cement manufacture. Disposal in compost can, in the case of gypsum that has been painted or treated in some way during installation, or if the composting is not managed correctly, result in hydrogen sulphide being produced. This has the potential to lower the pH conditions in the compost and cause odour. Plasterboard containing FGD gypsum or fly ash fillers may contain high concentrations of heavy metals which also make it unsuitable for composting.

In New Zealand approximately 20 % by weight of all waste to landfills and 80 % of all waste to cleanfills is construction and demolition waste⁹. Studies conducted in 2000, through the REBRI (“Resource Efficiency in the Building and Related Industry”) programme and Massey University, run by the Auckland Regional Council in association with the Building Research Association of New Zealand (BRANZ) have highlighted the viability of the sorting and reprocessing construction and demolition waste such as gypsum plasterboard. More recent trials to collect and recycle plasterboard construction and demolition waste in Christchurch¹⁰ have also had some success. The waste board was added to cement or used as a soil conditioner. However, landfilling is relatively inexpensive in New Zealand, so creating a widespread thriving plasterboard recycling business may prove challenging.

Life Cycle Assessment (LCA) studies in the UK¹¹ and US¹² also highlight the environmental impacts of plasterboard due to energy used in the production process (from mining, through to, manufacturing). Energy management requirements have been included in this specification to encourage energy efficiency and reduce overall energy use. Waste management initiatives during production and installation will reduce impacts on landfills as well as reducing the overall energy needed to manufacture new boards.

Additives used to manufacture gypsum plasterboard may be hazardous to human health or the environment. These additives may include glass fibre and vermiculite to enhance fire resistance;

⁹ <http://www.mfe.govt.nz/issues/waste/construction-demo/>

¹⁰ <http://www.wasteminz.org.nz/wp-content/uploads/Commercialising-waste-turning-waste-plasterboard-in-Christchurch-into-a-valuable-resource-paper.pdf>

¹¹ Life Cycle Assessment of Plasterboard. Technical Report. WRAP, 2012

¹² Life Cycle Assessment Summary. Gypsum Association, January 2013

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foaming agents to decrease the density of the plaster; plastercisers to reduce drying time; wax emulsion or silicone to decrease water absorption of wet area boards; coal fly ash as a filler or reactant for wet area boards; boric acid to prevent the boards from overdrying during production; starch to promote bonding between the gypsum core and the paper liners; ground gypsum dehydrate as an accelerator to decrease drying time; and sugar to increase the potency of the accelerator.

Based on a review of currently available information, the following product category requirements will produce environmental benefits by reducing the amount of waste product entering the waste stream; minimising potential for contaminants in soil; reducing hazardous substances used; and promoting energy efficiency. As information and technology change, product category requirements will be reviewed, updated and possibly amended.

3 Interpretation

AS/NZS means Australian/New Zealand Standard.

CFC means Chlorofluorocarbons.

Chemical Oxygen Demand (COD) means the mass concentration of oxygen equivalent to the amount of dichromate consumed by dissolved and suspended matter when a water sample is treated with that oxidant under defined conditions.

DID means Detergent Ingredient Database, developed by the EU and Nordic Swan ecolabelling authorities. Available from

http://ec.europa.eu/environment/ecolabel/documents/did_list/didlist_part_a_en.pdf

Disposal means the final (or more than short-term, i.e. > 6 months) deposit of waste into or onto land set apart for that purpose.

Diverted material means anything that is no longer required for its original purpose and which would normally be disposed of or discarded.

Energy Management Programme means a program 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.

Fibre-reinforced Gypsum Board means a gypsum board composed of fibres dispersed through the panel.

FGD gypsum means gypsum from flue gas desulphurisation.

Gypsum means hydrous calcium sulphate (CaSO₄.2H₂O)

Gypsum Plasterboard means a gypsum-based core material sold in the form of sheets for the purpose of finishing the interior surfaces of walls prior to the application of paint, wallpaper, or other coating. It includes paper-faced, water-resistant, noise-resistant and fire-resistant and fibre-reinforced gypsum board.

ISO means International Organisation for Standardisation.

Label means the ECNZ Label.

Phosphogypsum means synthetic gypsum, which is a by-product of fertiliser manufacture and is produced from phosphate rock treated with sulphuric acid to produce phosphoric acid by the "wet process", liberating sulphur oxides which are converted to gypsum.

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Raw Materials are the materials used to manufacture gypsum plasterboard products.

Readily Biodegradable shall be as referred to in Directive 67/548/EEC, and its subsequent amendments, in particular the methods detailed in Annex V.C4, or their equivalent OECD test methods (No. 301 (A to F) in OECD Guidelines for the Testing of Chemicals, ISBN 92-64-1222144) or their equivalent ISO tests. The 10 days window principle shall not apply. The pass levels shall be 70 % for the tests referred to in Annex V.C4-A and C4-B of Directive 67/548/EEC (and their equivalent OECD 301 A and E tests and ISO equivalents), and shall be 60 % for tests C4-C, D, E and F (and their equivalent OECD 301 B, C, D and F tests and ISO equivalents).

Recycling means the reprocessing of waste or diverted material to produce new materials.

Recycled material includes:

- **Post-Consumer:** Material generated by households, or by commercial, industrial and institutional facilities in their role as end-users of the product, which can no longer be used for its intended purpose. This includes returns of material from the distribution chain; and
- **Pre-Consumer:** Material diverted from the waste stream during a manufacturing process. Excluded is re-utilisation of materials such as rework, or scrap generated in a process and capable of being reclaimed within the same process that generated it.

Reduction means lessening waste generation, including by using products more efficiently or by redesigning products; and in relation to a product, lessening waste generation in relation to the product.

Reuse means the further use of waste or diverted material in its existing form for the original purpose of the materials or products that constitute the waste or diverted material, or for a similar purpose.

SDS means Safety Data Sheet, formerly known as Material Safety Data Sheet (MSDS).

Sulphur (S) means gaseous emissions of sulphur to the atmosphere, such as sulphur dioxide and reduced sulphur compounds.

Suspended Solids means undissolved material in water that contributes to a detectable level of turbidity.

Waste means anything disposed of or discarded; and includes a type of waste that is defined by its composition or source (for example, organic waste, electronic waste, or construction and demolition waste); and to avoid doubt, includes any component or element of diverted material, if the component or element is disposed of or discarded.

4 Category definition

This category includes all plasterboard products whose raw material composition includes gypsum. It includes paper-faced, water-resistant, noise-resistant, fire-resistant and fibre-reinforced gypsum board. It excludes vinyl-faced gypsum boards.

The gypsum plasterboard product must be comprised of at least 70 % by weight of natural or synthetic gypsum. Boards which do not meet this requirement should apply for an ECNZ licence under the latest version of EC-46 for Interior Lining Products.

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

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5 Environmental criteria

5.1 Legal requirements

Criteria

- a The product must comply with the provisions of all relevant environmental laws and regulations that are applicable during the product's life cycle.
- b Materials or processes involved in the production of the product may not be under the direct control of a licence applicant/holder. Where this is the case, the licence applicant/holder must have and implement a formal supplier regulatory compliance management/assurance programme that:
 - includes documented requirements for suppliers to provide raw materials or services compliant with applicable environmental regulatory requirements (for example in supply contract conditions);
 - identifies suppliers, materials or processes that involve, or would be expected to be subject to a high level of regulatory control and/or which present a high potential risk of regulatory non-compliance;
 - includes appropriate requirements (based on the risk assessment) for suppliers to provide assurance to the licence applicant/holder on the supplier's environmental regulatory compliance.

Verification required

Conformance with these requirements shall be demonstrated by providing a written statement on regulatory compliance, signed by the Chief Executive Officer or other authorised representative of the applicant company. This statement shall be supported by documentation identifying the applicable regulatory requirements and demonstrating how compliance is monitored and maintained.

In cases where there is a high potential risk associated with environmental regulatory compliance and limited assurance provided by the licence applicant/holder's supplier regulatory compliance management programme, The Trust's assessor may require an on-site inspection at the relevant supplier's premises.

Explanatory notes

Relevant laws and regulations could, for example, include those that relate to:

- producing, sourcing, transporting, handling and storing raw materials and components for manufacture;
- manufacturing processes;
- handling, transporting and disposing of waste products arising from manufacturing;
- transporting product within and between countries; and
- using and disposing of the product.

The documentation required may include, as appropriate:

- procedures for approving and monitoring suppliers and supplies; and

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- information provided to customers and contractors regarding regulatory requirements.

Assurance and/or information that licence applicants/holders may require from their suppliers could include:

- 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 licence applicants/holders 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 ECNZ labelled product is managed to a level that minimises risk of reputation damage to the ECNZ label and programme.

5.2 Gypsum and fillers

5.2.1 Natural and synthetic materials

Criteria

The raw materials must contain less than the following amounts of heavy metals:

– Arsenic	17 mg/kg
– Inorganic lead	160 mg/kg*
– Cadmium	0.8 mg/kg
– Inorganic mercury	200 mg/kg**
– Chrome (III)	290 mg/kg

* This limit is for inorganic lead and does not apply to elemental (pure) lead.

** This limit is for inorganic mercury and does not apply to elemental (pure) mercury.

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 company. This statement shall be supported by documentation, including test results for heavy metals in raw materials.

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Test methods for heavy metals

Metals should be extracted from an air dried sample in accordance with US-EPA Method 200.2 for "Total Recoverable Metals". The extracted metals should be analysed by ICP-MS (Inductively Coupled Plasma Mass Spectroscopy).

5.2.2 Synthetic gypsum and fillers

Criteria

- a Gypsum plasterboard shall not be formulated or manufactured with Phosphogypsum.
- b Licence holders must report annually to The Trust on the synthetic gypsum or fillers used, including:
 - percentage and type of synthetic gypsum or fillers used in specific product/ batches or contracts; and
 - results of any chemical analysis for contaminants undertaken on any synthetic gypsum or filler material used, or determined to be inappropriate.

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 company. This statement shall be supported by documentation, including an annual report to The Trust which covers the requirements for synthetic gypsum and fillers.

5.2.3 Natural gypsum and fillers

Criteria

- a Virgin mined materials must come from mining operations with documented mine remediation programmes.
- b The applicant/licensee must ensure that natural raw materials do not come from environments that are protected for biological and/or social reasons.
- c Mines from which materials are obtained for an ECNZ-licensed board must have and implement management plans including any policies and management procedures to minimise adverse effects from the following potential impacts:
 - noise;
 - vibration;
 - dust; and
 - discharges to surface water, groundwater, oceans or land.

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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 company. This statement shall be supported by documentation, including:

- information about the natural gypsum and fillers procurement programme and records of the supplier, nature and geographical source of all natural gypsum and filler inputs;
- certificates or other evidence of a documented mine remediation programme;
- description of the raw material procurement management systems in place to ensure that the requirement in b) and c) are consistently met;
- copies of the relevant management plans required by c); and
- records demonstrating the management plans are being effectively implemented (including monitoring results).

5.3 Paper

Criteria

- a The paper must be made from 100 % recycled paper with a minimum of 80 % post-consumer recycled content, when calculated on a 12-month rolling basis;
- b The paper shall not be bleached for reuse. It is accepted that the paper may have been bleached during its previous lifecycle.
- c Where surfactants are used for de-inking recycled paper input, these surfactants shall be readily biodegradable.
- d Foam inhibitors used in manufacturing processes must meet at least one of the options below:
 - no use is allowed of foam inhibitors that are classified as ecotoxic ; or
 - 95 % by weight of the constituent substances that have a foam inhibiting or retarding effect must be either readily or ultimately biodegradable.

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 company. This statement shall be supported by documentation:

- demonstrating the paper is recycled, and the amount of pre- and post-consumer recycled content;
- Safety Data Sheets (SDS), test reports or information from the DID list to demonstrate biodegradability of any surfactants or foam inhibitors used;
- SDS for foam inhibitors to demonstrate compliance with the ecotoxicity criterion, if applicable. Compliance with the requirement for ecotoxicity may be demonstrated by providing data (often included in SDS) indicating that the substance does not have any of the classifications (or combinations thereof) listed in Table 1 (Appendix A) for ecotoxins; and
- describing management systems in place to ensure that these requirements are consistently met.

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Explanatory notes

Proof of Biodegradability

Biodegradability may be demonstrated using the Detergent Ingredient Database List (DID List) or through suitable testing.

DID-list

A copy of the EU Detergent Ingredient Database (DID-List) can be found at http://ec.europa.eu/environment/ecolabel/documents/did_list/didlist_part_a_en.pdf or can be obtained on request from The Trust. Substances with an “R” in the “Aerobic” column are readily biodegradable according to OECD guidelines. Substances with an “I” or “P” in the “Aerobic” column are not readily biodegradable and shall not be used. For substances with an “O” in the “Aerobic” column, biodegradability has not been determined and additional information or testing may be required.

Testing methods

The following test methods, or equivalents, shall be used. If equivalent tests are to be used, The Trust may require details of the methods and validation. Test methods for readily biodegradable shall be as referred to in Directive 67/548/EEC, and its subsequent amendments, in particular the methods detailed in Annex V.C4, or their equivalent OECD test methods (No. 301 (A to F) in OECD Guidelines for the Testing of Chemicals, ISBN 92-64-1222144) or their equivalent ISO tests. The 10 days window principle shall not apply. The pass levels shall be 70 % for the tests referred to in Annex V.C4-A and C4-B of Directive 67/548/EEC (and their equivalent OECD 301 A and E tests and ISO equivalents), and shall be 60 % for tests C4-C, D, E and F (and their equivalent OECD 301 B, C, D and F tests and ISO equivalents).

5.4 Hazardous substances

Trace levels (<0.1 % by weight) of substances, reported in SDS to be potentially present as contaminants or impurities in raw materials or additives, are exempt from Clause 5.4.

Criteria

- a Substances which are classified as acutely toxic, ecotoxic, respiratory sensitiser, carcinogenic, mutagenic or toxic to reproduction shall not be added to the gypsum board product or used during the production process.
 - Boric acid is exempt from this requirement as it is specifically addressed in b) below.
 - Foam agents are exempt from the ecotoxicity requirements as they are specifically addressed in c) below.

Note: Under current New Zealand Hazardous Substances and New Organisms (HSNO) classifications, Globally Harmonised System (GHS) classifications or EU Risk Phrases, this clause will preclude the use of certain phthalates/ plastercisers including DEHP, DBP and DPP, and may preclude the use of fly ash.

- b Licence holders must have and implement an ongoing programme to review options to replace boric acid in licensed products and report annually to The Trust on the progress of the programme.

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- c Foaming agents used in manufacturing processes must meet either option below:
 - no use is allowed of foaming agents that are classified as ecotoxic; or
 - 95 % by weight of the constituent substances that have a foam inhibiting or retarding effect must be either readily or ultimately biodegradable.
- d CFC/halogens must not be used in the production of the gypsum plasterboard or the raw materials.
- e Solvents used to clean the production equipment must not contain halogenated hydrocarbons.

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 company. This statement shall be supported by documentation, including:

- identifying hazardous substances used in materials and production processes (including CAS numbers and Safety Data Sheets (SDS), where available)
- identifying the classifications that apply to these substances, confirming all meet criteria a). Compliance with the requirements in a) may be demonstrated by providing data indicating that the substance does not have any of the classifications (or combinations thereof) listed in Table 1 (Appendix A) for toxins, ecotoxins, respiratory sensitisers, carcinogens, mutagens and reproductive toxins.
- annual report to The Trust on replacement on boric acid;
- SDS for foam inhibitors to demonstrate compliance with the ecotoxicity criterion, if applicable. Compliance with the requirement for ecotoxicity may be demonstrated by providing data (often included in SDS) indicating that the substance does not have any of the classifications (or combinations thereof) listed in Table 1 (Appendix A) for ecotoxins; and
- describing management systems in place to ensure that these requirements are consistently met.

Explanatory notes

Proof of Biodegradability

Biodegradability may be demonstrated using the Detergent Ingredient Database List (DID List) or through suitable testing.

DID-list

A copy of the EU Detergent Ingredient Database (DID-List) can be found at http://ec.europa.eu/environment/ecolabel/documents/did_list/didlist_part_a_en.pdf or can be obtained on request from The Trust. Substances with an “R” in the “Aerobic” column are readily biodegradable according to OECD guidelines. Substances with an “I” or “P” in the “Aerobic” column are not readily biodegradable and shall not be used. For substances with an “O” in the “Aerobic” column, biodegradability has not been determined and additional information or testing may be required.

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Testing methods

The following test methods, or equivalents, shall be used. If equivalent tests are to be used, The Trust may require details of the methods and validation. Test methods for readily biodegradable shall be as referred to in Directive 67/548/EEC, and its subsequent amendments, in particular the methods detailed in Annex V.C4, or their equivalent OECD test methods (No. 301 (A to F) in OECD Guidelines for the Testing of Chemicals, ISBN 92-64-1222144) or their equivalent ISO tests. The 10 days window principle shall not apply. The pass levels shall be 70 % for the tests referred to in Annex V.C4-A and C4-B of Directive 67/548/EEC (and their equivalent OECD 301 A and E tests and ISO equivalents), and shall be 60 % for tests C4-C, D, E and F (and their equivalent OECD 301 B, C, D and F tests and ISO equivalents).

5.5 Manufacturing process

The criteria below apply to the manufacture of the gypsum plasterboard. The manufacture of paper components or additives is not included.

Criteria

- a Effective measures must be in place to control emissions to air from the manufacturing process including emissions of dust and sulphur dioxide; and discharges to air shall be demonstrated to result in an acceptable and environmentally sustainable level of impact on the quality of the receiving environment.
- b Effective measures must be in place to control discharges to water including suspended solids and COD; and discharges of contaminants to the natural environment (natural water bodies, ocean or land) shall be demonstrated to result in an acceptable and environmentally sustainable level of impact on the quality of the receiving environment.
- c Effective measures must be in place to control exposure of workers to crystalline silica; and exposure to crystalline silica shall be demonstrated to result in an acceptable level of impact on human health.
- d Licence holders must:
 - develop, document and implement an ongoing continual improvement programme to reduce crystalline silica and impacts resulting from exposure to crystalline silica in the workplace; and
 - provide an annual report to The Trust on the continual improvement programme and its implementation in the production facility where the ECNZ-licensed gypsum plasterboard products are manufactured.

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 company. This statement shall be supported by documentation, including:

- For parts a) and b), an independent assessment of quality of discharges to air, water and land, and impacts on the receiving environment completed by a person or agency competent to complete such an assessment. An assessment of environmental effects and other supporting information lodged in support of a resource consent application would be deemed to meet this requirement.

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- For discharges to water, the assessment may be based on the quality of discharges from the point at which the discharges 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 is treated before it is discharged to the natural environment, is outside the control of the plant or licence applicant, and suitable information is not available on the quality of the combined discharge.
- For part c), test results of workplace exposure. These should include results for average and maximum exposure over an eight-hour working day. In New Zealand, exposure of crystalline silica must meet the Workplace Exposure Standard Time Weighted Average (WES-TWA) for cristobalite crystalline silica as respirable dust of 0.1 mg/m³ and quartz crystalline silica as respirable dust of 0.2 mg/m³.
- For part d), an annual report on the crystalline silica continual improvement programme.

5.6 Radioactivity

Criteria

Gypsum plasterboard products containing greater than 5 % by mass of ash from coal or peat, or other potentially radioactive materials, must comply with the following:

- $CK/3000 + CRa /300 + CTh /200 < 1.0$
AND
- $CRa /100 < 1.0$

Where:

- CK = Concentration of Potassium-40 (Bq/Kg)
- CRa = Concentration of Radium-226 (Bq/Kg)
- CTh = Concentration of Thorium-232 (Bq/Kg)

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 company. This statement shall be supported by documentation showing compliance with the above limits and including details of the test method used.

Explanatory notes

- 1 % Potassium is equivalent to 310 Bq/Kg of Potassium-40
- 1 ppm Uranium is equivalent to 12.3 Bq/Kg of Radium-226
- 1 ppm Thorium is equivalent to 4.0 Bq/Kg of Thorium-232

Testing method

The analysis should be performed by gamma spectrometry of crushed materials, gamma spectrometry using a portable gamma spectrometer, strong acid digest ICP-AAS or ICP-MS technique, or similar test method.

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5.7 Energy management

Criteria

- a The licence applicant/holder and manufacturer of gypsum plasterboard must have effective energy management policies and procedures and/or an energy management programme.
- b The ECNZ licence holder and the product manufacturer must report annually to The Trust on energy management, including:
 - total energy use;
 - breakdown of total energy use to types of energy used;
 - energy use related to production;
 - initiatives taken to reduce energy use and improve energy efficiency; and
 - initiatives taken to calculate and reduce CO₂ emissions associated with energy use.

This should include data from the production facility/facilities where the licensed products are manufactured, and from the ECNZ licence holder's premises, if different.

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 company. This statement shall be supported by documentation, that:

- describes the energy management policies, procedures and programmes; and
- includes annual reports on energy use and management.

5.8 Waste management

Criteria

- a The licence applicant/holder and manufacturer of gypsum plasterboard must have effective waste management policies and procedures and/or a waste management programme covering manufacturing operations. This must include active management of production waste.
- b The ECNZ licence holder and product manufacturer 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;
 - quantities and types of waste disposed of to landfill;
 - quantities and types of waste burned internally for energy recovery;
 - waste generation related to production; and
 - initiatives taken to reduce waste generation and improve recovery/recycling of waste.

This should include data from the production facility/facilities where the licensed products are manufactured, and from the ECNZ licence holder's premises, if different.

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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 company. This statement shall be supported by documentation that:

- describes the waste management policies, procedures and programmes; and
- includes annual reports to The Trust on waste generation, minimisation and management.

5.9 Product information

Criteria

Appropriate and acceptable information describing the handling, installation procedures, surface treatment applications, recycling and/or disposal methods shall be provided with the product or on the packaging or labels. This should include information about how to reduce waste during installation of the plasterboard.

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 company. This statement shall be supported by documentation, including examples of labels, packaging and point of sale information.

5.10 Packaging requirements

Criteria

- a All plastic packaging must be made of plastics that are able to be recycled in New Zealand (or the country to which the product is exported and sold).
- b Packaging must not be impregnated, labelled, coated or otherwise treated in a manner, which would prevent recycling (i.e. PVC sleeves, metallic labels).
- c Information shall be provided to The Trust at application and thereafter reported annually on PVC and/or phthalates used in the packaging. This should include information from production records and/or suppliers on:
 - i the percentages by weight of recycled and virgin PVC;
 - ii the particular production processes (membrane cells, non-asbestos diaphragms, modified diaphragms, graphite anodes, mercury cells, closed-lid production etc) used to produce chlorine and VCM for the PVC being used in the packaging for ECNZ-licensed products (including the locations of the production);
 - iii information, where available, on waste disposal, wastewater treatment and emissions to air (occupational exposure, emissions from the factory and emissions from the final PVC resin);
 - iv information on any Environmental Management System (EMS) for the production process, including requirements for waste, water, air and product-related requirements;
 - v the types of stabilisers used;
 - vi the types and amounts of any phthalate plasticisers present in recycled content of the PVC (if that information is available) and/or added when manufacturing PVC;

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- vii research and initiatives implemented on substitutes for phthalates identified as of concern by regulators; and
- viii any product stewardship arrangements for the packaging.

Note: Regulators have identified the following phthalates to be of concern – dibutyl phthalate (DBP), diisobutyl phthalate (DIBP), butyl benzyl phthalate (BBP), di-n-pentyl phthalate (DnPP), di(2-ethylhexyl) phthalate (DEHP), di-n-octyl phthalate (DnOP), diisononyl phthalate (DINP) and diisodecyl phthalate (DIDP). These phthalates may be prohibited by the Hazardous Substances criteria in Clause 5.4.

- d Cardboard packaging shall consist of any combination of:
 - Packaging approved under EC-10
OR
 - recycled content.
AND/OR
 - waste wood or virgin fibre from native forests provided the forests are certified under the Forest Stewardship Council (FSC) or the Programme for the Endorsement of Forest Certification (PEFC) as sustainably managed (or equivalent certification)
AND/OR
 - waste wood or virgin fibre from plantations (including from farm forests or wood lots), provided the plantations are legally harvested..

NOTE: Please see Appendix B for details of acceptable certifications for certified sustainable forest management and legally harvested wood.

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 company. This statement shall be supported by documentation, including:

- Conformance with criteria (a) shall be supported by documentation verifying the packaging is recyclable.
- Conformance with criteria (b) shall be demonstrated by providing samples of all plastic packaging components.
- Conformance with criteria (c) shall be demonstrated by providing initial and ongoing annual reports to The Truston PVC and plasticisers used. This should include as much of the available information requested in (c) as possible.
- Conformance with criteria (d) shall be supported by documentation from the packaging manufacturer verifying the recycled content of the cardboard packaging and documentation from the packaging manufacturer verifying the source of all fibre in the cardboard packaging.

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5.11 Product stewardship

Criteria

- a Gypsum plasterboard must not be impregnated, labelled, coated or otherwise treated in a manner which would prevent recycling and / or composting in New Zealand or in the country where the product is used.
- b Information on paint types that are acceptable and will not hinder the recycling or diversion process must be available to purchasers of the gypsum plasterboard to avoid the product being painted with substances that will stop it being diverted from landfill sites.
- c The licence applicant/holder and/or the manufacturer of gypsum plasterboard must be actively participating in a product stewardship scheme, operational in New Zealand, that involves:
 - recovery of unwanted or unused plasterboard from pre- and post-consumer sources;
 - reuse and/or recycling/composting of recovered plasterboard; and
 - promotion of the product stewardship scheme to customers.
- d Licence holders must report annually to The Trust on the performance of the product stewardship scheme, including:
 - volume of pre-consumer and volume of post-consumer plasterboard recovered;
 - the % of recovered plasterboard that was re-used and the means by which it was reused;
 - the % of recovered plasterboard that was recycled (including back into plasterboard or downcycled into cement or soil conditioner);
 - the % of recovered plasterboard subsequently disposed to landfill;
 - testing requirements and test results which demonstrate that the plasterboard is suitable for the chosen recycling or disposal option; and
 - initiatives taken as part of the programme to increase the volume of recovered plasterboard and reduce the % of plasterboard unable to be reused or recycled and that are therefore sent to landfill.
- e Initially, at least 5% of waste gypsum board (based on annual production tonnage) must be reused or recycled/composted under the product stewardship scheme.

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 company. This statement shall be supported by documentation, including:

- confirmation that the products can be recycled or composted;
- information about suitable paint types and how this information is made available to customers;
- information that describes the New Zealand-based product stewardship scheme (initiatives, procedures and programme);
- an annual reports on product stewardship; and
- production documentation confirming the amount of material reused or recycled/ composted.

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6 Product characteristics

Criteria

- a The gypsum plasterboard shall be manufactured in accordance with AS/NZS 2588:1998 (or equivalent). This standard specifies the performance requirements for gypsum plasterboard intended for use in buildings as a lining material for walls, ceilings and partitions and providing a surface suitable for receiving decorative treatments. It includes standard bracing, water resistant and fire resistant grades of gypsum plasterboard.
- b The licence applicant/holder or product manufacturer must offer a commercial guarantee of a minimum of eight years on the quality of the product, provided the product is used for its intended purpose. The guarantee must be valid from the date of delivery to the customer.

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 company. This statement shall be supported by documentation, including:

- test reports from laboratories accredited to carry out the relevant test methods; and
- a copy of the product warranty.

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 type of products covered by the licence and the level of sampling appropriate to provide confidence in ongoing compliance with criteria. 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 delivery records and the right of access to production 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 non-compliance 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.

Using the ECNZ Label

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 words "Gypsum Plasterboard Products" and by the Licence Number e.g. 'licence No 1234'.

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The Label must be reproduced in accordance with the ECNZ programme's keyline art for reproduction of the Label and the Licence Conditions.

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

Failure to meet these requirements for using the ECNZ Label and advertising could result in the Licence being withdrawn.

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Appendix A

Hazardous Substances Classifications

- Table 1 – Hazardous Substance Classifications**

European Risk Phrases	New Zealand HSNO Classes	Globally Harmonised System
Toxins		
R23 toxic by inhalation	6.1B or 6.1C	Acute Tox. 2 and 3, H330, H331
R24 toxic in contact with skin	6.1B	Acute Tox. 3, H311
R25 toxic if swallowed	6.1B	Acute Tox. 3, H301
R26 very toxic by inhalation	6.1A	Acute Tox. 2 and 3, H330
R27 very toxic in contact with skin	6.1A	Acute Tox. 1, H310
R28 very toxic if swallowed	6.1A	Acute Tox. 2, H300
Ecotoxins		
R50 very toxic to aquatic organisms	9.1A	Aquatic Acute 1, H400
R51 toxic to aquatic organisms	9.1D or 9.1B	
R52 harmful to aquatic organisms	9.1D or 9.1C	
R53 may cause long-term adverse effects in the aquatic environment	9.1D	Aquatic Acute 4, H413
R50/53 very toxic to aquatic life with long lasting effects	9.1A	H410
R51/53 toxic to aquatic life with long lasting effects	9.1B	H411
R52/53 toxic to aquatic life with long lasting effects	9.1C	H412
Respiratory Sensitisers		
R42 May cause sensitisation by inhalation	6.5A	Resp. Sens. 1, H334
Carcinogens, Mutagens and Reproductive Toxins		
R40 limited evidence of a carcinogenic effect	6.7B	Carc. 2, H351
R45 may cause cancer	6.7A	Carc. 1A and 1B, H350
R46 may cause heritable genetic damage	6.6A	Muta. 1B, H340
R49 may cause cancer by inhalation	6.7A	Carc. 1A and 1B, H350
R60 may impair fertility	6.8A	Repr. 1A and 1B, H360
R61 may cause harm to the unborn child	6.8A	Repr. 1A and 1B, H360
R62 possible risk of impaired fertility	6.8B	Repr 2, H361
R63 possible risk of harm to the unborn child	6.8B	Repr 2, H361d
R68 possible risk of irreversible effects	6.6B	Muta. 2, H341

NOTE: There are different classification systems for hazardous substances that are used internationally. As the ECNZ specifications need to consider products that are manufactured in New Zealand and overseas, it is necessary to consider the equivalence of hazardous property classification systems in different jurisdictions. The table above shows the (broadly) equivalent European Risk Phrases, New Zealand HSNO Classifications and the United Nations' Globally Harmonised System of Classification and Labelling of Chemicals (GHS) classifications. The EU has implemented the GHS into EU law, replacing the Risk Phrases, and all "substances" (single compounds) have now been transferred to the new classification system. Mixtures must be classified under the GHS by 31 May 2015.

It is important to note that the Risk Phrases, HSNO Classifications and GHS are classification frameworks and the particular classifications applied to a substance may vary between jurisdictions (for example Europe, the United States and New Zealand each have their own agency with responsibility for assessing and classifying hazardous substances). Differences between classifications can be due to the weight placed on particular toxicity studies (i.e. a jurisdiction may consider that a study is flawed) or in the event that new information becomes available (i.e. differences in the timing of the classification or re-classification of a substance). Where there is a discrepancy between the classifications applied to specific substances in the different schemes, The Trust's appointed technical advisors will review supporting information regarding the classifications on a case-by-case basis to determine and recommend to The Trust how these discrepancies should be managed within the life cycle context of the relevant product category. Where appropriate, technical clarifications and changes, with accompanying explanation, will be included in the relevant specification.

NOTE: Where there is a discrepancy between the classifications applied to specific substances in the different schemes, The Trust's appointed assessors will review supporting information regarding the classifications on a case-by-case basis to determine whether the particular substance should be considered to have the identified hazardous characteristic. In reaching this decision, the assessors will be cognisant of the original source of the bans and limitations (which were based on the European risk phrases), and any specific information that is in particular relevant to the risks associated with the substance in a furniture or fitting product and in the New Zealand environmental context. The evaluation will consider issues such as exposure routes, biodegradability and persistence of the particular hazardous substance. The Trust will make information about any such decisions made by The Trust's appointed assessors available on request.

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Appendix B

Explanatory notes for types of claims that can be used to demonstrate compliance with the criteria set in 5.10 d).

Part A:

Sustainable Forest Management (SFM):

The FSC and PEFC certification schemes each have a range of certificates/labels. Some of these allow for wood/fibre from certified sustainably managed plantations or forests to be mixed with non-certified wood/fibre. Under FSC Mixed Credit or PEFC Volume Credit methods, wood/fibre or products associated with the certification claim or label may or may not actually contain wood/fibre from the certified sustainably managed source. Certifications accepted by The Trust are those which will ensure that wood from sustainably managed forests, as required in criteria 5.2.1 and 5.2.2, will be actually present in the final ECNZ-licensed product. These are set out below.

Types of FSC claims which can be used to demonstrate compliance with the above requirements:

- FSC 100 %
- FSC Mix X % - provided the % meets the requirements
- FSC Mix Credit – only if the manufacturer can demonstrate that actual FSC material is used for the ECNZ products.
- FSC Recycled provided it contains 100% recycled material
- FSC Controlled Wood cannot be used to meet the FSC certified requirements

Types of PEFC claims which can be used to demonstrate compliance with the above requirements:

- PEFC Certified – Physical Separation method.
- X % PEFC Certified – Average Percentage method, provided the % meets the requirements
- X % PEFC Certified – Volume Credit method – only if the manufacturer can demonstrate that actual PEFC certified material is used for the ECNZ products.

PEFC Controlled Sources material cannot be used to meet the PEFC certified requirements

The following certification schemes will be accepted as equivalent to FSC or PEFC certification of SFM:

- Pengelolaan Hutan Produksi Lestari – Sustainable Production Forest Management certified (PHPL) (<http://liu.dephut.go.id/>).
- Sustainable Forest Management Plans, supported with Annual Logging Plans that have been prepared and approved under the New Zealand Forests Act 1949 (amended in 1993). These Plans must be prepared in accordance with Standards and Guidelines for the Sustainable Management of Indigenous Forests and guidance for preparing Sustainable Management Plans and Annual Logging Plans. Wood sourced from New Zealand indigenous forests covered by approved plans will be accepted as equivalent to FSC sustainably managed forest certification provided compliance with the approved plans is demonstrated through independent on-site assessment.

For any other schemes to be considered, the applicant will be required to provide detailed information that demonstrates the certification scheme is credible and equivalent. For examples of

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the type of information required, refer to the UK Central Point of Expertise on Timber Procurement (CPET) assessments of certification schemes available on www.CPET.org.uk.

Part B:

Legal harvesting:

The following certification schemes will be accepted as sources of information to demonstrate legal harvesting, where certificates and chain of custody evidence is available for virgin fibre sources:

- Forest Stewardship Council – “Certified” or “Controlled Wood” (www.fsc.org).
- Programme for the Endorsement of Forest Certification (PEFC) - “Certified” or “Controlled Sources” (www.pefc.org).
- SGS Timber Legality & Traceability Verifications service (TLTV) Verification of Legal Compliance certification (TVTL-VLC) (<http://www.sgs.com/en/Public-Sector/Monitoring-Services/Timber-Traceability-and-Legality.aspx>).
- Rainforest Alliance SmartWood Verification of Legal Compliance (VLC) certification (<http://www.rainforest-alliance.org/forestry/verification/legal>).
- System Verifikasi Legalitas Kayu - Timber Legality Verification System (SVLK) certified, or SVLK/PHPL (Pengelolaan Hutan Produksi Lestari – Sustainable Production Forest Management) certified (<http://liu.dephut.go.id/>).
- Sustainable Forest Management Plans (supported with Annual Logging Plans) that have been prepared and approved under the New Zealand Forests Act 1949 (amended in 1993).

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