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## The Australian Ecolabel Program

Australian Voluntary Environmental Labelling Standard

# Architectural and Protective Coatings



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## Use of This Standard

This voluntary environmental labelling standard may be used by competent environmental assessors to establish product compliance to the Australian Ecolabel Program. Products that are certified with the mark of conformity - the "Environmental Choice Label" - have been independently tested and demonstrate compliance to the environmental and social performance criteria detailed in this standard. The overall goal of environmental labels and declarations is, through communication of verifiable and accurate information that is not misleading, on environmental aspects of products and services, to encourage the demand for and supply of those products and services that cause less stress on the environment, thereby stimulating the potential for market-driven continuous environmental improvement.

This standard identifies environmental quality, regulatory and social performance criteria that products sold on the Australian market must meet in order to be considered as "best environment practice". Products certified as complying to this standard may gain greater market recognition and a marketing advantage in government and business procurement programs and broad consumer environmental preference.

Australian producers can use this standard to guide their environment programs by using the environmental criteria as key performance benchmarks that reduce their product's environmental loads. The standard is necessarily restricted in its identification of environmental loads from the product life cycle. Producers should consider environmental improvements along the product cycle not included in this standard in their environment program design and aim for even higher levels of environmental performance where technically possible.

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# Voluntary Environmental Labelling Standard

## Architectural and Protective Coatings

### Abstract

This Standard specifies environmental performance requirements of a broad range of architectural coating products for the Australian Ecolabel Program and requires different criteria for each broad category of product type. The program generally complies with ISO 14024: "Environmental labels and declarations - Guiding principles" which requires environmental labelling specifications to include criteria that are objective, reasonable and verifiable.

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### Definitions:

"Aromatic Solvent" means any organic solvent that has a benzene ring in its molecular structure.

"ASTM" means American Society for Testing and Materials.

"Component" means an intermediate product used in the manufacture of paint.

"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.

"Formulated or manufactured with" refers to the preparation of the paint and not to the preparation of the components of the paint unless the components are specifically mentioned in the product specific requirements. Residual or un-reacted components are covered by the product specific requirements.

"Halogenated solvent" means any volatile organic compound incorporating halogens including fluorine, chlorine, bromine and iodine.

"Integral part" means a necessary component which is intentionally included in the paint formulation.

"Label" means the Environmental Choice Australia Label.

"Paint" means a pigmented liquid that is designed for application in single or multiple layers and forms an opaque, continuous film after application to decorate or protect surfaces, as well as to conceal surface irregularities. It also includes varnishes and stains, where:

a) "Varnish" means a liquid composition that is converted to a transparent or translucent, continuous film after application; and

b) "**Stain**" means a transparent, semitransparent or opaque mixture of colouring matter (dyes and/or pigments) in a vehicle designed to colour and/or protect a surface by penetration, leaving practically no surface film.

Paint does not include wood preservatives or antifouling paints.

"**Raw material**" means a material used in the manufacture of paint.

"**Volatile organic compound**" (*VOC*) *Volatile organic compound*" (*VOC*) means any organic compound which has a vapour pressure more than 0.1mm Hg 25 C. This definition excludes reactive diluents, which are designed to be chemically bound into the cured film.

"**Recycled Paint**" 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.

**Pre-Consumer:** Material diverted from the waste stream during a manufacturing process. Excluded is re-utilisation of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it.

*Where references are made in this document to published lists, standards, or documents, the reference should be read as referring to the most current edition of these documents.*

## **1.0 Introduction to the Environmental Loads of Architectural Coating Products**

This Standard is a voluntary environmental labelling standard which specifies requirements for architectural coating products. Paint products have in the past and continue to receive significant community and environmental concern regarding the environmental impacts from levels of solvents, heavy metals and other toxic substances in paints. VOC emissions can result in toxic and narcotic effects when inhaled and can contribute to the formation of tropo-spheric ozone and smog.

The standard aims in particular at promoting:

- Reduction in the release of solvents, heavy metals and other toxic substances used in their manufacture
- Reduction in the release of solvents and exposure to toxic substances during the application of paints
- Reduction in the release of solvents, heavy metals and other toxic substances during the life of a paint coating, and in its removal and disposal.

## **2.0 Product Category Scope**

This standard is applicable to a range of architectural coating products (Table 1). Covered are three categories of paint products including water-based coatings, which have water as the primary solvent/diluent component, solvent-based coatings, which include all paints which have an organic solvent as the primary volatile component and surface-coating systems such as high solids and recycled paint, which includes all paints where the recycled content constitutes more than 20% by weight of the final product.

The standard identifies core common criteria and in addition stipulates specific environmental performance required for each product type.

### 3.0 Fitness for Purpose

Certified products should be of high quality and perform well in their intended application. High standards of product performance are implicit in the label. Certified product must ensure that the product is fit for its intended purpose and where relevant:

- The product meets the performance requirements of the relevant Australian Standard for its intended application; or
- The product meets any other internationally accepted standard if it is to be exported; or
- The product readily meets consumer and market expectations in the absence of recognised standards.

### 4.0 Architectural Coating Products Specific Criteria

#### 4.1 VOC levels

4.1.1 Compliance to these criteria can be demonstrated by the VOC levels of the base paints with or without pigments. The scope of the final certification will reflect the scope of the VOC testing as described below.

Conformance with these requirements listed in Table 1 shall be demonstrated by providing test reports from laboratories accredited to carry out the relevant tests and/or calculations and appropriate documentation of production methods and quality controls.

**Table 1:** VOC limits on architectural coatings covered by this standard. Allowable levels include water content in the formulation.

<b>Product Type</b>	<b>Maximum VOC content (g/litre)</b>
Latex primer for galvanized iron and zincalume	60
Exterior latex undercoat	55
Interior latex undercoat	65
Interior sealer	65
Exterior timber primer	50
Interior gloss	75
Interior semi-gloss	16
Interior low sheen	16
Interior flat-washable	16
Interior flat-ceilings	14
Exterior gloss	75
Exterior semi-gloss	70
Exterior flat and low sheen	50

4.1.2 For solvent-based coatings the paint shall not contain VOC's in excess of 200g/litre.

4.1.3 For recycled paints the VOC level (averaged across batches) in the paint, must not exceed 100 g/litre.

Test Method:

The VOC content of the paint shall either be calculated from the VOC data for each of the raw materials or, experimentally by ASTM D3960 or equivalent, as qualified below.

Where the raw material is a mixture of compounds, some of which contain VOC's, the VOC content of the mixture may in turn be calculated from the VOC content of the individual components. Where this is not known, it must be determined by the following method.

- Determine the weight % non-volatile content (and hence the volatile content) by ASTM D2369 or equivalent (60 minutes at 110 ± 5 C) and converting to g/L (as per ASTM D3960). This method shall not be used if the material contains constituents that decompose at elevated temperature.
- Organic compounds with a boiling point >250 C shall be considered non-volatile; otherwise they shall be considered 100% volatile.
- Constituents added in quantities less than 0.5% (by volume) of the total volume of the batch need not be taken into account in calculating the VOC content of the paint unless they are known to be essentially volatile materials.
- For recycled paint, the applicant must provide information to justify the basis used to select batch samples for testing VOC levels. The selection of test samples should reflect typical batch sizes, variation in recycled paint input and total number of batches produced.

If a test equivalent to ASTM D2369 is used, GECA will require details of the test method and its validation.

#### 4.2 Titanium Dioxide, Zinc Oxide and Lithopone Content

Should not exceed 40g/m<sup>2</sup> of dry film.

#### 4.3 Glycol Ethers

Should not contain the following glycol ethers listed in Table 2.

**Table 2:** A list of excluded glycol ethers.

Abbreviated name	Other names
EGME	Ethylene glycol methyl ether, 2-methoxyethanol monomethyl ether, ethylene-glycol, methyl glycol, MG
EGMEA	Ethylene acetate, AMG, monomethyl ether acetate, ethylene-glycol
EGEE	Ethylene glycol ethyl ether, 2-ethoxyethanol, monoethyl ether ethylene-glycol, ethyl glycol, EG
EGEEA	Ethylene acetate glycol ethyl ether, 2-ethoxyethyl acetate, acetate ethylglycol, AEG
EGDME	Ethylene glycol dimethyl ether, 1,2-dimethoxyethane
DEGDDE	diethylene glycol diethyl ether, bis(2-ethoxyethyl)ether
DEGDME	diethylene glycol dimethyl ether, bis(2-methoxyethyl)ether
TEGDME	triethylene glycol dimethyl ether

#### 4.4 Heavy Metals

Sb, Ba, Cd, Pb, Cr, Hg, and Arsenic or any toxic heavy metals and their compounds shall not be added during production.

The use of Barium Sulfate (Barite) is excluded from this limitation.

#### 4.5 Packaging

All plastic packaging containers must have a plastic resin identification code clearly visible on each container. Paint containers must be made of materials that are able to be recycled. Before use, packaging must not be impregnated, labelled, coated or otherwise treated in a manner that would prevent recycling.

#### 4.6 Carcinogenic substances

Approved paints should not contain substances listed as carcinogenic by the International Agency for Research of Cancer (lists A, B1) at a rate of exposure not exceeding one twentieth (1/20) of those defined by exposure standards determined by the National Occupational Health and Safety Commission (Worksafe Australia).

#### 4.7 Restricted Substances

Alkyl phenol alkoxyates (APEO's) shall not be added during production.

#### 4.8 Use of Ozone-depleting Substances in Industrial Solvents and Cleaning Agents

The solvents used to clean the production equipment of architectural coatings must not contain ozone depleting substances as listed in Annex A, Annex B and Annex C of the Montreal Protocol or those listed below.

Name	Chemical Formula	ODP	Other Names
Hexachlorobutadiene	C <sub>4</sub> Cl <sub>6</sub>	0.07	HCBd
n-propyl bromide	1-C <sub>3</sub> H <sub>7</sub> Br or CH <sub>2</sub> BrCH <sub>2</sub> CH <sub>3</sub>	0.0033-0.111	1-bromopropane, CH <sub>2</sub> BrCH <sub>2</sub> CH <sub>3</sub> and nPB
1,1,1-trichloro-2,2,2-trifluoroethane	CFC-113a	0.65	R.113a
6-bromo-2-methoxy-naphtalene	C <sub>10</sub> H <sub>6</sub> BrOCH <sub>3</sub>		bromo-methoxy-naphtalene, BMN (CAS number 511165-9)
Halon-1202	CBr <sub>2</sub> F <sub>2</sub>	Best Estimate: 1.25	dibromodifluoromethane, difluorodibromomethane, Freon 12-B2, R12B2 and UN1941
1-bromo-3-chloro-propane	CH <sub>2</sub> ClBr	Guess – 0.05	
Bromochloromethane**	CH <sub>2</sub> BrCl	0.12	chlorobromomethane

#### 4.9 Solvents

4.9.1 The paint shall not be formulated or manufactured with more than 20% by weight of hydrocarbon solvents, based on the total formulation.

4.9.2 The paint shall not be formulated or manufactured with aromatic hydrocarbon solvents.

4.9.3 The paint shall not be formulated or manufactured with halogenated solvents.

4.9.4 The paint shall not be formulated or manufactured using ethylene glycol as an integral part of the paint formulation.

#### **5.0 Compliance to Environmental Regulations**

The applicant is required to comply with relevant environmental legislation and if they have been issued government orders at the Local, State and Commonwealth level. This compliance may be established by a statement of self declaration by an executive officer of the applicant organisation. Where an applicant is from an overseas jurisdiction, that jurisdiction's environmental regulations apply.

#### **6.0 Compliance to Labour, Anti-discrimination and Safety Regulations**

An applicant shall demonstrate that all employees are covered by a Federal or State award or a certified industrial agreement or a registered workplace agreement as determined by the Industrial Relations Commission, the Employment Advocate or a State or Territory Workplace Relations Agency.

An applicant shall demonstrate general compliance to the terms of State or Territory Legislation concerning Occupational, Health and Safety and/or the *Commonwealth Safety, Rehabilitation and Compensation Act 1988* where applicable. Where the applicant is subject to a guilty verdict by an Australian Court within the last 24 months on the basis of a breach of State, Territory or Commonwealth Occupational, Health and Safety Legislation there must be evidence of corrective action.

The applicant shall demonstrate general compliance to the requirements of the *Racial Discrimination Act 1975*, *Sex Discrimination Act 1984*, *Disability Discrimination Act 1992*, and *Equal Opportunity for Women in the Workplace Act 1999* and complementary State Legislation. Applicants cannot be in the list of 'named' or non-compliant employers under the *Equal Opportunity for Women in the Workplace Act 1999*. Where the applicant is subject to a guilty verdict by an Australian Court in the last 24 months on the basis of a breach of these Acts there must be evidence of corrective action.

Where an applicant is from an overseas jurisdiction, the applicant shall demonstrate general compliance to that jurisdiction's anti-discrimination, occupational health and safety and workers compensations regulations. Where the applicant is subject to a guilty verdict by a legal court in their respective country within the last 24 months on the basis of a the breach of anti-discrimination, occupational health and safety and workers compensations regulations there must be evidence of corrective action.

An applicants compliance with these criteria may be established by a undertaking a series of random checks and gathering samples of applicant operational procedures and documents by approved assessors as evidence to support compliance during the verification and /or a statement of self declaration by an executive officer of the applicant organisation.

### **7.0 Compliance Testing**

Conformance with this standard shall be demonstrated by undertaking an assessment to the above criteria by an approved assessor following the certification and verification procedures detailed in Good Environmental Choice Australia Ltd Documented Quality Management System which generally follows the environmental auditing requirements of ISO 14 011 and 14 012.

The Australian Ecolabel Program classifies approved assessors as:

- Assessors registered by Good Environmental Choice Australia Ltd as environmental professionals that hold expertise relevant for an assessment and which have undertaken training in the procedures of the Australian Ecolabel Program, or
- Environmental auditors accredited with the Quality Society of Australasia; or
- Assessors registered with the Environmental Choice New Zealand Trust.

New testing shall be undertaken by a laboratory accredited by NATA or similar overseas accreditation to carry out the relevant tests and/or documentation detailing environmental performance against the key indicators for this standard. The tests results should be presented on NATA endorsed reports or from a laboratory acceptable to Good Environmental Choice Australia Ltd

Audit evidence should be of such a quality and quantity that competent environmental auditors working independently of each other will reach similar audit findings from evaluation of the same audit evidence against the same audit criteria

Suitable sources of information to establish compliance may be but are not limited to:

- 1) Technical specification of the product.
- 2) Obvious characteristics of the product from examination.
- 3) Scientific and test results and reports.
- 4) Environmental management system and audit reports and results.
- 5) Life cycle assessment of each stage of the product life cycle via a physical audit and examination.
- 6) Life cycle assessment via scientific testing.
- 7) A statement of confirmation by an executive officer.
- 8) An assessment of company or government records.
- 9) Other material that can be considered objective evidence.

If testing results or environmental auditing results are not available, and/or there is not sufficient data to establish full compliance to the criteria required by this standard then certification cannot be awarded.