BEST PRACTICE GUIDELINES FOR PVC IN THE BUILT ENVIRONMENT - VERIFICATION GUIDANCE

Date Issued: 10 May 2011

green building council australia

greenstar

CONTENTS

1.0 INTRODUCTION

The Best Practice Guidelines for PVC in the Built Environment (Guidelines) represent the most significant outcome of the PVC credit review. The Guidelines address opportunities for the minimisation of environmental and health risk impacts of the PVC life cycle. The Guidelines were first issued in April 2010 with the release of the Literature Review and Best Practice Guidelines for the Life Cycle of PVC Building Products. This document reproduces the Guidelines and provides the means by which auditors are to establish compliance.

1.1 GENERAL NOTES FOR AUDITORS

The manufacturer's product(s) being assessed must conform with all relevant Guidelines.

Compliance with the Best Practice Guidelines is to be assessed on objective evidence. Objective evidence may include:

- Technical specifications of the product including Material Safety Data Sheets and product formulations
- Scientific test results and reports
- Environmental management system and audit reports and results
- A statement of confirmation signed by an Executive Officer
- An independently audited company annual environment/sustainability report
- An assessment of company or government records
- Other material that may be considered objective evidence, for example interviews or observation of activities.

Auditors must not only look for documents, technical data sheets and other records. They must also seek confirmation of practice in interviews conducted with management, workers and interested parties, as well as general observations.

Evidence must definitively validate claims that the Guidelines have been achieved. The Guidelines cannot be customised and are not to be optional, flexible or allowed to be achieved post-certification.

All declarations and documentary evidence shall include:

- The company name
- The location of the manufacturing facility
- Product specific identification

Where the auditor identifies non-compliance, the manufacturer will need to adequately address the non-compliance before the auditor can issue a certificate of compliance to the manufacturer for the product(s).

Post-consumer recycled PVC content that is used in the production of new PVC products is excluded from the Guidelines. Post consumer recycled content refers to material content in a product which has been diverted from a end user's waste stream. This excludes re-utilisation of materials such as re-work, re-grind or scrap generated in a manufacturing process which is termed post industrial recycled content.

2.0 AUDITOR COMPETENCIES AND DOCUMENTATION

Documenting compliance of a PVC product to the guidelines shall be demonstrated using any of the following pathways:

1) **Environmental Management System (EMS):** Inclusion of the Best Practice Guidelines for PVC in the Built Environment in the manufacturer or supplier's independently audited ISO 14001, Environmental Management Systems (EMS). Audits must be conducted by a JAS-ANZ (or equivalent) accredited certification body on a biannual basis. The compliance certificate issued by the auditor must provide written assurance of compliance to the guidelines and serves as the documentation needed to establish compliance with the credit via the EMS option; or
2) **Product Declaration:** Manufacturer or supplier product declaration that the producer-specific and product performance-specific criteria of the Best Practice Guidelines for PVC in the Built Environment have been met for a specific product. An example of a product decleration is available at the Green Building Council of Australia website. The product declaration must be independently audited on a biannual basis by either an accredited auditor registered by RABQSA or another equivalent national or international auditor accreditation system, or a JAS-ANZ (or equivalent) accredited certification body. A copy of the compliance certificate issued to the manufacturer/supplier by the auditor must be included in the Green Star submission along with a copy of the product declaration. These two items serve as the documentation required to establish compliance with the credit via the Product Declaration option; or
3) **Product Certification:** Independent accreditation program(s) or product certification schemes that integrate the producer-specific and product performance-specific criteria of the Best Practice Guidelines for PVC in the Built Environment into standard(s) or certification criteria (e.g. Type 5 ISO product certification, and eco labels). Independent accreditation programs and product certification schemes must either be JAS-ANZ accredited or pre-qualify for Green Building Council of Australia recognition by demonstrating full compliance with Part I, Section A – Governance and Transparency of the Green Building Council of Australia Assessment Framework for Product Certification Schemes. Evidence of independent accreditation

of the product(s)(e.g. to an ISO Type 5 certification such as an Australian Standard or to a Green Building Council of Australia recognised eco label) must be provided to Green Star project teams for inclusion in Green Star submissions and serves as the documentation needed to establish compliance with the credit via the Product Certification option.

Note: The Green Building Council of Australia will list relevant standards or eco labels as these become available, on the Green Building Council of Australia website.

3.0 GUIDELINES AND DEMONSTRATION OF COMPLIANCE

The following list the Best Practice Guidelines for PVC in the Built Environment and details the evidence required for the auditor to verify compliance. For background information please refer to the Literature Review and Best Practice Guidelines for the Life Cycle of PVC Building Products document, found at the Green Building Council of Australia website.

The Guidelines are presented in **blue text**, the demonstration of compliance requirements are presented in **black text**.

3.1 MANUFACTURE OF PVC RESIN

- **Chlorine** shall be sourced from membrane cell, non asbestos diaphragm or modified diaphragm chlorine production processes. Chlorine shall not be sourced from production plants using graphite anodes or mercury cells.

Demonstration of Compliance

- Signed declaration from an Executive Officer of the chlorine supplier describing the manufacturing process, naming the plant and location, the type of anodes used and confirming membrane cell or non-asbestos diaphragm or modified diaphragm cell chlorine production processes are used.

Assessed against list of mercury cell plants recorded by UNEP at:

http://www.unep.org/hazardoussubstances/Portals/9/Mercury/Documents/chloralkali/Hg-cell%20chlor-alkali%20facility%20global%20inventory%20table_final.xls

- **VCM** shall be sourced from non-mercury production processes.

Demonstration of Compliance

Signed declaration from an Executive Officer of the VCM supplier stating name and location of plant, describing the manufacturing process and whether mercury catalysts are used in the process.

Assessed against list of Vinyl Chloride Plants by Production Process Type provided by the Chemical Markets Association Inc (CMAI) and available from the Vinyl Council of Australia.

- **EDC and VCM, as well as PVC resin,** shall be sourced from closed lid production manufacturing plants and processes that implement the following strategies:
  - Waste: Hazardous solid waste and sludge, which can contain organohalogens including dioxins, shall be disposed of via government-approved high temperature emission-controlled incineration. Where incineration is not available or is illegal then diversion to other beneficial uses followed by disposal to hazardous waste landfill is acceptable, provided that these processes are government-approved.
  - Water: Effluents shall be treated using advanced wastewater treatment processes to prevent emissions of halogenated hydrocarbons, such as EDC and dioxins, from being released in treated effluents. Residues from those treatments shall undergo further treatment to destroy possible captured contaminants.
  - Air: Effective emission reduction measures shall be used to ensure that VCM and/ or EDC emissions and possibly other contaminants, are close to, or below, negligible risk levels. In the case of VCM and PVC manufacturing plants the occupational exposure limit of VCM shall not exceed 1ppm (for 8 hours weighted average in 95% of cases).

Demonstration of Compliance

Signed declaration from an Executive Officer of the supplier describing:

- the manufacturing process, confirming a closed lid process; AND
- the hazardous solid waste and sludge disposal method are compliant with government regulations; AND
- the water treatment process and hydrocarbon emissions to water; AND
- confirming that the occupational exposure limit of VCM is no greater than 1ppm measured on an 8 hour time-weighted average in 95% of cases over the course of 12 months.

AND supported by the following documentation:

- Copy of Regulatory Licence or Permit that demonstrates government approved disposal of solid wastes and hazardous solid waste disposal certificates.
- Copy of effluent discharge Licence or Permit including hydrocarbons tested for and emission limits and description of treatment & discharge process
- Copy of Regulatory Licence or Permit for air emissions for EDC and VCM as appropriate,
- Evidence of, occupational exposure measurement methodology and the average exposure results as well as the percentage compliance for most recent 12 month reporting period.

- **PVC Resin** shall be sourced from manufacturing plants and processes that practice the following emissions-related indicators:
  - Air and Water: VCM emissions from PVC manufacturing (both to air and water) shall not exceed 43g/tonne of product produced (measured on an annual basis).
  - Products: VCM emissions from raw PVC resin shall not exceed 1ppm when delivered to the end processor.

Note: "manufacturing plants and processes" relates to a facility and not the different classifications of PVC resin product produced from the facility. As such, a manufacturing plant that produces a mix of PVC resins with differing vinyl chloride monomer emissions can still demonstrate compliance if vinyl chloride monomer emissions from the manufacturing plant or process (measured on an annual basis) do not exceed the figure of 43g/tonne of PVC resin produced.

Demonstration of Compliance

Signed declaration from an Executive Officer of the PVC resin supplier stating that the requirements related to VCM emissions from the manufacturing plant and the raw material meet the requirements defined above and supported by the following information/documents:

- test results showing total VCM emissions to air and water per tonne of PVC produced for the most recent 12 month company reporting period; AND
- confirming the basis of calculations includes licensed and fugitive emissions and uses a recognised calculation methodology such as European Council of Vinyl Manufacturers' (ECVM) reference method for identification, measurement and control of fugitive emissions from process equipment and gas holders1 AND
- confirming the scope of emissions data i.e. whether it relates to product derived from a facility or an individual plant AND
- test results confirming the residual VCM content in finished resin is below 1 ppm concentration using a calculation methodology based on recognised standards such as ASTM D3749, US EPA Method 107 or other internationally recognised methods such as ISO 6401. The frequency shall be per batch delivered and evidenced by certificates of analysis.

- An Environmental Management System (EMS) that encompasses the above Waste, Water, Air and Product-related requirements, as well as continuous improvements in performance targets pertaining to these areas, shall be in place.

Demonstration of Compliance

[1] Reference Method: Identification, measurement and control of fugitive emissions from process equipment leaks, October 2004, rev. 2, O/Ref.: 603684, European Council of Vinyl Manufacturers ECVM Reference Method for Assessment of Atmospheric Emissions From Gasholders edition : 20.12.2001 European Council of Vinyl Manufacturers

Objective evidence of the EMS, including but not limited to the scoping document or table of contents, that the EMS includes the criteria Waste, Water, Air and Product-related requirements.

3.2 MANUFACTURE AND END OF LIFE MANAGEMENT OF PVC PRODUCTS

- Stabilisers - cadmium and lead stabilisers shall not be used in PVC products.
- Plasticisers - diethylhexyl phthalate (DEHP), benzylbutyl phthalate (BBP), and diethylbutyl phthalate (DBP) shall not be used in PVC products.

Demonstration of Compliance

- Statement of the composition of the product AND
- Declaration of non-use signed by an Executive Officer of the product manufacturer.
- Objective evidence shall be assessed by the auditor by means of a combination of purchase orders, technical specifications, material safety data sheets and process control documents.

Independent verification of at least one of the following is required:

- Suppliers of PVC products have committed to offering contractual agreements with their customers for extended supplier responsibility (product stewardship). These extended supplier responsibility contracts shall entail arrangements to take products back at the end of the product's in-use phase for some form of recycling or reuse. Producers shall demonstrate that they have established the capacity to deliver the terms of the extended supplier responsibility contract.

Demonstration of Compliance

Copy of documentation outlining the take back service including the costs, contact details of the take-back service, relevant website documentation.

AND/OR

- Existing contractual agreements with recycling and waste transport service providers for the collection of end of life product and delivery of that product to a recycling service provider or the manufacturer, or another third party that will reuse or recycle the material. Agreements must service at least two or more Australian capital cities to demonstrate that adequate geographic coverage exists to recover domestically-sold end of life product.

Demonstration of Compliance

Copy of contractual agreements existing in at least two capital cities in Australia between the manufacturer with any of the following: third party waste contractors,

transport companies, recyclers, reprocessors, council depots, charities etc. confirming the waste will be recycled or reused.

AND/OR

- Proposals for other innovative end of life initiatives may be considered on a case-by-case basis. Clear justification, including quantification of the amount of PVC waste that will be diverted from landfill as a result of implementation, must be provided.

Demonstration of Compliance

Objective evidence to be viewed by the auditor of one or more proposals for other innovative end of life initiatives, AND of the implementation of the proposal(s). Proposals to include clear justification, including quantification of the amount of PVC waste that will be diverted from landfill as a result of implementation.

3.3 USE OF PVC RECYCLATE IN PVC PRODUCTS

Claims of recycled content (post consumer and post industrial) must be verified as such.

Demonstration of Compliance

Contractor receipts showing volumes of recyclate purchased or acquired for use in manufacturing the product under assessment.