



July 2, 2009

**BALLOT RESULTS:** Green Seal Draft Final Environmental Standard for Stains and Finishes GS-47.

Green Seal is in the final stages of developing the Green Seal Environmental Standard for Stains and Finishes, GS-47. Registered stakeholders were invited to review the Draft Final Standard (version 2) and submit a ballot. The ballot resulted in a 64% affirmative vote.

There were a few comments from stakeholders that warranted substantive modifications to the criteria, but did not result in fundamental changes to the standard. These changes are highlighted below for your review. Also included are the comments and responses for your review. After you review this information, you are being provided the opportunity to amend your original ballot. Any amended ballot must be received by 8 PM Eastern on July 24. If you do not submit an amended ballot, your original ballot will be recorded as final

- Revised the definition of conjugated oil varnish, such that the definition now reads:
  - *Conjugated Oil Varnish. A clear or semi-transparent wood coating labeled as such, excluding lacquers or shellacs, based on a natural occurring conjugated vegetable oil (Tung Oil), determined using ASTM Method D-2800 and D-1983, modified with other natural or synthetic resins; a minimum of 50% of the resin solids consisting of conjugated oil.*
  
- Added an exception for cobalt and manganese under the list of prohibited substances.
  - *An exception shall be made for titanium dioxide and, for products that are pre-tinted by the manufacturer, carbon black. Carbon black allowed under this exception shall be less than or equal to 1% by weight of the product.<sup>7</sup> Cobalt and manganese may be allowed up to no more than 0.025% as active metal.*

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<sup>7</sup> Titanium Dioxide: EC Number 236-675-5, CAS Number 13463-67-7  
Carbon Black: EC Number 215-609-9, CAS Number 1333-86-4

**Comment**

I've been impressed and approve of the quality and specificity of Green Seals positions and the comments made by interested parties. Thank you for allowing me to observe and be part of this important effort.

**Response:**

Green Seal appreciates your comments

**Comment**

Fuhr Industrial does not approve of the new standard, GS-47. After reviewing the final standard as well as the identifying phrase "Green Seal is a non-profit organization devoted to environmental standard setting, certification, and public education," Fuhr Industrial has determined that this standard, GS-47, conflicts with the core purpose of Green Seal's existence. GS-47 is a good starting point for companies that are interested in gaining a "green" certification; however GS-47 is not a "new" standard. **The rules are only slightly more stringent than that of CARB, and they are not truly based on setting an environmental "standard."** Unfortunately, GS-47 will allow under-performing companies, in terms of innovation, the right to utilize this highly accredited and esteemed badge. We believe that this badge should be based on innovation and technological advances that push the industry to produce high performing products that are environmentally friendly. Fuhr Industrial has taken this stance for over 20 years with significant success. It takes determination, drive, and skill to develop high performing coatings that surpass the industry's version of "status quo." The coatings that are developed to these unwritten standards are the ones that should be rewarded with this badge, not coatings that only meet "status quo." We, at Fuhr Industrial, are grateful that we could be a part of this developmental process. We can only hope that Green Seal will rethink their latest standard in GS-47.

**Response:**

Green Seal acknowledges your comments. While the limits imposed on stains and finishes by SCAQMD may provide good results in the climatic conditions found in Southern California, these same products may be challenged in performance in other areas of the country where temperatures and moisture may be more variable. Most of the low VOC alternatives mandated by SCAQMD will perform adequately in a dry environment as they are "water resistant" but not waterproof. A waterproof product is required in construction and remodeling situations where either cold or inclement weather can occur. It should be noted that SCAQMD acknowledges that some of the limits "may have performance difficulties in extreme temperature and humidity conditions" but discounts those concerns for their revisions because of Southern California's unique climatic conditions. In addition, SCAQMD includes an averaging provision whereas a manufacture is allowed to sell a product that does not meet the VOC level, if it demonstrates compliance with another product. Green Seal does not consider decisions on the VOC limits in the GS-47 Stains and Finishes Standard as a case of CARB verses SCAQMD but rather on what works best regardless of the climatic conditions.

Green Seal continues to support and applaud innovative measures to lower the VOC limits of products below the set limits in the current GS-47 Stains and Finishes Standard.

**Comment**

While we are generally supportive of the Draft Final Standard, an unresolved issue remains. It was raised in previous comments but there has not yet been a response from Green Seal. The issue involves prohibition of cobalt and manganese compounds as ingredients due to their presence on USEPA's list of Hazardous Air Pollutants. The decision to list these materials was due to the particulate emissions by foundries or during polishing, and plating operations.

Waterborne and solvent-based stains and finishes made with vegetable oils (e.g., linseed, tung, soya, etc.) or resins modified with vegetable oils (e.g., oil-modified alkyds and oil-modified polyurethanes) require the use of drier catalysts in order to polymerize (convert from a liquid to a solid film) in a reasonable period of time. Cobalt and manganese salts of C8 to C10 acids are the most important and most widely used active drier catalysts for this application. They are used at very low concentrations (usually no more than 0.009% Co or Mn based on coating weight). There are no technologically feasible substitutes available at this time. Furthermore, unlike the materials that led USEPA to list "cobalt compounds" and "manganese compounds" as HAPs, these materials pose no risk of air pollution. They are nonvolatile liquids as supplied and are trapped in a polymeric matrix after the applied stain or finish cures. Without them there would be few, if any, stains or finishes made with renewable vegetable oils. For all these reasons, we respectfully request that Green Seal modify the GS-47 Draft Final Standard to allow the use of cobalt and manganese drier catalysts, at which time we will be able to cast an affirmative vote.

**Comment**

At this time, the National Paint and Coatings Association (NPCA/FSCT) will vote "No" on the Draft Final GS-47 Stains and Finishes Standard. The draft final standard currently bans all substances listed on EPA's Hazardous Air Pollutants (HAPs) list. However, cobalt and manganese, two important compounds used in stains and finishes, are included in the HAPs list. Cobalt and manganese salts are dryer catalysts that are necessary ingredients in stains and finishes. Since there are no technologically feasible alternatives to cobalt and manganese salts at this time, NPCA will have to vote "No" on the GS-47 ballot. If an exception were made to allow for the use of cobalt and manganese compounds in the GS-47 Standard, then NPCA would be much more likely to vote "Yes". Thank you for the opportunity to participate in the stakeholder process and vote on the final standard.

**Comment**

From a formulary standpoint, the blanket exclusion of all HAPS in any concentration is untenable. Low percentages of glycol ethers are often included as formulary components of low solids and water based stains to help stabilize the emulsion. Ethylene glycol is

included in raw materials and finished formulations as a wetting agent and for freeze/thaw stability.

In pre-tinted stain products, formulators often do not have a choice on the incidental inclusion of glycol ethers or ethylene glycol as they are sometimes components of pigment emulsions. We believe a 0.5% threshold for total ethylene glycol and glycol ether content could be acceptable.

The same issue holds true for incidental concentrations of cobalt in pre-tinted products utilizing cobalt blue. Unlike GS-11 paints, many stains covered by the draft GS-47 and potentially covered by later iterations are pre-tinted. GS-11 paints utilize post-certification universal tints containing any number of low concentration HAPS chemicals that are not considered in the finished product.

My vote on a future ballot does not necessarily hinge on the above issues. However, I must strenuously object to the section 2.26 requirements for a Source Reduced Package; particularly bag-in-box packages. I participated in the GS-37 stakeholder process in 2008 that originated this particular standard. While I appreciate Green Seal's recognition of the viability of bag-in-box reduced source packaging; this section as written nonetheless misses the mark.

The environmental improvements of bag-in-box packaging over other forms come from reduction of non-renewable resource use (plastic) and maximization of recycled materials (cardboard). In addition, it provides a cardboard structural package form that can easily be recycled. This is a vast improvement on the non-existent recycling rate of LDPE and HDPE containers. The majority of municipal recycling programs will not take poly containers that have held any form of chemical product.

The sole focus of Section 2.26 on weight-to-weight comparison with the plastic container it replaces does not consider the real lifecycle issues mentioned above. Our experience with bag-in-box packaging shows a 94% decrease in HDPE use and an increase to an overall 30-35% utilization of recovered material content for the assembly. The facing weight is the primary limitation working against further increases in corrugate recycled materials content. Still, over 90% of the overall packaging mass is easily and readily recycled.

I believe a more appropriate bag-in-box metric would be non-renewable materials reduction and a minimum recycled material content for the corrugated outer package.

While an alternative take-back and refill system (Section 5.1) may be appropriate for a jan/san cleaning product, it makes little sense for an architectural coating. The vast majority of architectural coatings containers have no beneficial reuse potential simply due to the products they have held and the difficulty in cleaning and refilling them. I believe this standard should rely less on boilerplate language from the cleaning products sector.

**Response:**

Green Seal acknowledges your comments about packaging. It is noted that the requirement can be met by several ways – all aimed to reduce the total amount of new packaging material used for these products. Source reduction (also called light weighting) is one means, but as noted in the comment, it may not be applicable to all packages. Packages could meet the requirement if they were reusable. In addition, and likely most commonly, packages that have 25% post consumer material content meet the requirement. Thus, the examples provided in the comment could pass if the total material use included 25% post-consumer material (and likely would if used cardboard). If there are innovations in packaging that provide for other ways to reduce the use of new packaging materials for these products, this requirement could be revised in the future.

The prohibition of cobalt and manganese compounds as ingredients was due to their potential health and environmental hazards and their presence on USEPA's list of Hazardous Air Pollutants. However, it has been brought to our attention that these ingredients do not have safer alternatives for the product category of stains and finishes, and there is significant potential for performance-related problems with restricting cobalt and manganese. As a result, cobalt and manganese may be allowed no more than 0.025% as active metal. Glycols are important freeze thaw stabilizers for stains and finishes, Green Seal has also researched and determined that there are safer alternatives to ethylene glycol such as propylene glycol. For this reason Green Seal will not remove ethylene glycol from the list of prohibited chemicals.

*An exception shall be made for titanium dioxide and, for products that are pre-tinted by the manufacturer, carbon black. Carbon black allowed under this exception shall be less than or equal to 1% by weight of the product.<sup>2</sup> Cobalt and manganese may be allowed no more than 0.025% as active metal.*

**Comment**

The conjugated oil varnish category definition should be changed as follows:  
"Conjugated Oil Varnish - means a clear or semi-transparent wood *coating labeled as such*, excluding lacquers or shellacs, based on a natural occurring conjugated vegetable oil (Tung Oil), *determined using ASTM Method D-2800 and D-1983*, modified with other natural or synthetic resins; a minimum of 50% of the resin solids consisting of conjugated oil. Supplied as a single component product, conjugated oil varnishes penetrate and seal the wood. Film formation is due to polymerization of the oil. These varnishes may contain small amounts of pigment to control the final gloss or sheen."

**Response:**

Green Seal agrees with the comment and has modified the definition of conjugated oil varnish accordingly:

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<sup>2</sup> Titanium Dioxide: EC Number 236-675-5, CAS Number 13463-67-7  
Carbon Black: EC Number 215-609-9, CAS Number 1333-86-4

*Conjugated Oil Varnish. A clear or semi-transparent wood coating labeled as such, excluding lacquers or shellacs, based on a natural occurring conjugated vegetable oil (Tung Oil), determined using ASTM Method D-2800 and D-1983, modified with other natural or synthetic resins; a minimum of 50% of the resin solids consisting of conjugated oil.*

**Comment**

The XXXX previously commented on Green Seal's proposed Environmental Standard for Stains and Finishes (GS-47) that we oppose the proposed VOC definition having an initial boiling point limit of 280°C or less. The VOC cut-off remains at 280°C, therefore we are voting against the adoption of this standard.

As XXX previously stated, this VOC definition is inconsistent with the EU definition found in Directive 2004/42/CE which also applies to the Stains and Finishes. Further, the change in the definition from 250°C to 280°C is arbitrary, has little established benefit to the environment, and will result in added cost in reformulation in order to comply with this modification in the VOC definition. Use of the EU definition of a compound with a boiling point less than or equal to 250°C will avoid the creation of a new definition and thus a barrier to compliance and use of the GS-47 standard internationally. Also, it is now recognized that compounds with higher boiling points and lower vapor pressure, such as those in the range of 250°C to 280°C, typically have reduced atmospheric availability due to the retention of significant proportions of these compounds in the coating substrate and film. These compounds are therefore unavailable for atmospheric reactions leading to ozone formation, minimizing any potential environmental impact of compounds with initial boiling points between 250°C to 280°C.

**Response:**

Green Seal adopted the European Union's approach to defining VOCs in terms of boiling point, at a limit of 280°C, due to the realization that maintaining the original 250°C boiling point limit in the European Union's approach may exclude certain semi-volatile compounds that may be partially retained in the film after the 250°C marker (such as those in the range of 250oC to 280oC). For example, under the European definition of boiling point at a cut-off of 250°C, compounds like 2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate (TMP-MIB), CAS No 25265-77-4, a widely-used coalescing agent considered a VOC according to the current U.S. EPA definition (due to its possible contribution to atmospheric photochemical smog) would be excluded since it exudes above the 250°C mark. Green Seal believes that it is necessary to raise the boiling point cut-off to 280°C in order to include semi-volatile compounds such as TMP-MIB that may be partially retained in the film after the 250°C mark.

**Comment**

Section 3.1:

Penetrating stains are typically intended to be sealed and topcoated. The seal and topcoat should be designed properly for support of blush resistance and chemical resistance.

Therefore, the criteria of performance are not relevant for the certification of a penetrating stain.

Section 3.3:

Exterior film forming stains should be flexible for maximum exterior weathering performance due to the fact that wood materials expand and contract with seasonal changes. The criteria of pencil hardness and respective rating are contradictory to most quality exterior semi-transparent film forming systems in use. The pencil hardness rating reflect harder, less flexible surfaces and would reject many quality, environmentally sustainable systems.

Section 3.4:

The pencil hardness specification limits quality systems by virtue of the rationale put forth above relative to Section 3.3.

Section 3.5:

Interior Finishes: Pencil hardness specification will eliminate environmentally sustainable specialty purpose finishes due to too high of hardness and lack of flexibility. Soft touch, elastomeric, decorative purpose, etc. finishes would be compromised and not certified by this specification.

Section 3.4.1:

The salt spray and wear resistance specifications are not universally appropriate.

Salt spray resistance is not necessarily appropriate for all exterior metal coatings.

Perspiration resistance also is not necessary for many types of interior metal finishes and will limit the applicability of the standard.

**Response**

Latex films have a tendency to blush (i.e. develop an opaque haze) when exposed to water. The swelling of trapped hydrophilic material, resulting in pockets with different refractive indexes, has been proposed as a possible model for blushing. Thus, blush resistance is a test method that can be used to evaluate adhesion of penetrating stains. Green Seal has examined and determined that penetrating stains such as those used for kitchen cabinets are periodically exposed to chemicals (such as soap during washing), chemical resistance at these instances for example is important as it determines the ability of the stain to withstand the exposure to soap.

Although a hard, tough coating may seem to be more desirable, wood is a dimensionally unstable substrate. Green Seal believes that the requirements for pencil in the GS-47 Stains and Finshes ensure a tough but flexible coating is more desirable in this instance. Green Seal has therefore decided not to change the specification of pencil hardness.

It is important that the stains and finishes provide corrosion resistance to metallic parts. Since coatings can provide a high corrosion resistance through the intended life of the part in use, it is necessary to check corrosion resistance by other means. A salt spray test is an accelerated corrosion test that produces a corrosive attack to the coated sample in order to predict its suitability as a protective finish.

Green Seal believes that specifying perspiration resistance test for interior metal finishes Interior metal surfaces are periodically exposed to moisture. The ability of the metal finishes on such surfaces to withstand such periodic exposures is important as this prevents corrosion of the metal surfaces resulting from moisture exposure.