

May 19, 2008

SCOPING COMMENT SUMMARY: New Green Seal Environmental Standard for Wood Stains, Finishes, and Clear Metal Coating, GS-47

The scoping phase of the Green Seal Environmental Standard for Wood Stains, Finishes, and Clear Metal GS-47, standard development has been completed. This standard is being developed to help consumers identify and choose environmentally preferable stains and finishes. The scoping process was intended for stakeholders to help identify specific areas of the standard to be researched or included in the next step of the project, development of a proposed standard. This is the first of several steps where stakeholders can provide input on the development of the standard. Comments were solicited from the diverse stakeholders including operators, users, and general interest groups. This document includes a summary of the comments received.

By participating in Green Seal's standard setting process, the following organizations played an important role in Green Seal's effort to encourage the design, manufacture and end use of environmentally superior products. Their assistance and involvement is greatly appreciated.

Comments received from these organizations:

Armstrong-Clark Co.

Basic Coatings

BioPreserve, LLC

BonaKemi USA, Inc.

California Environmental Protection Agency, Air Recourses Board

California Environmental Protection Agency, Office of Environmental Health Hazard Assessment

Fuhr Industrial

G. J. Nikolas Co., Inc.

New England Wholesale Hardwoods Inc.

PPG Architectural Finishes, Inc.

Rudd Company, Inc.

Scope (types of stains, varnishes and finishes to include in the standard)

Comment:

Clear Protective Coatings for Metal

Comment:

Exterior and interior wood finishes

Comment:

I believe the standard should address only stains and wood coatings, as defined in ARB's 2007 SCM, including lacquers, varnishes, sanding sealers, etc.

Comment:

Attached is one explanation why it would be helpful to address Clear Coating for Metal in GS-47.

[Attachment]

Based on current classifications for metal coatings, Clear Coatings for Metal would best be described under Green Seal GC-03, Anti Corrosive Coatings. Currently, since there is no other category that addresses Clear Coatings for Metal, we have no choice except to use that classification. Similarly under OTC AIM and CARB, we face the same situation, and the best description comes under the Industrial Maintenance and Rust Preventative Coatings classifications. As we know, these classifications are tailored for pigmented coatings for metal. The only clear classifications that can be found are specifically designated for Clear Wood Coatings.

You may not be aware that US EPA addressed the category of Clear Coatings for Non-Ferrous Ornamental Metal, Lacquers and Surface Protectants, under 63 FR, 176 which was adopted in September, 1998, and amended in September of 1999. That VOC limit is 870 grams per liter, and is still part of the Federal regulation. That classification was tailored to address Clear Nitrocellulose Coatings for protection of Brass and Bronze, as well as other non ferrous metals.

When comparing the OTC, AIM and CARB regulations for the classifications for Clear Wood Coatings with the classification for (pigmented) Industrial Maintenance/ Rust Preventive Metal Coatings, you will notice that Clear Wood Coatings carry higher VOC limits. ARB SCM allows a limit for Clear Shellac at 730 grams per liter and 550 grams per liter for Opaque Shellac.

The logic behind this is that a Clear Wood Coating deserves higher VOC limits than Pigmented Wood Coatings because they do not have the advantage of Pigmented Coatings which contain pigments and fillers in their formulas which raise solids, and lower VOCs. Further, because they are clear, they must flow out and remain crystal clear, to show the substrate which they protect. This logic should hold true for Clear Coatings in general, and not be limited just to wood.

We are aware that the current OTC, AIM and CARB VOC levels for Clear Wood Coatings are lower than the Federal Regulation for Clear Coatings for Non Ferrous Metal. We are not suggesting that the classification of Clear Coatings for Metal carries a higher VOC level than Clear Coatings for Wood, although an argument could be made in that regard. Rather we hope the two categories be linked in respect of allowable VOCs, and at a minimum Clear Coatings for Metal be allowed the same VOC limits as Clear Coatings for Wood.

We feel addressing Clear Coatings for Metal in GS-47 would be helpful by showing the similarities between the two classifications. And use one forum to conclude this issue.

Comment:

Lacquers

- natural
- synthetic

- waterborne
- solvent containing

Impregnations – Oils

- natural
- synthetic

Comment:

The standard should include interior and exterior penetrating stains/clears and film building finishes specifically for wood surfaces. It should not include wood preservatives. Stains would include semi-transparent, toners, and opaque coatings. The film building category would include products such as, varnishes, sanding sealers, lacquers.

Comment:

The standard should be based on the 2007 Suggested Control Measure approved by the California Air Resources Board. This control measure addresses many types of finishes, stains and substrates.

Comment:

Interior and exterior, oil and water based stains should definitely be included.

How much of the formula consists of renewable and/or recycled ingredients.

What is the energy (electricity) cost to produce a gallon. electric bill divided by total gallons manufactured.

Comment:

Green Seal's "Choose Green Report on Wood Finishes and Stains" (February 2005) gives a good starting point on the scope. The report covers water-based wood finishes, shellacs, lacquers, natural oils, and wood stains (interior and exterior). It is important at this early stage to have inclusions, and exclusions to the scope. I agree with an early comment that wood preservatives be excluded. Does the Committee intend GS-47 to be broader than what was in the Green Seal Report such as including use on other substrates (metal, concrete/masonry, etc) other than wood?

Comment:

Clear and opaque lacquers, lacquer sanding sealers, conversion varnishes, undercoaters, sealers and stains, penetrating oils, glazes and textured coatings used for artistic effect for use on various substrates including but not limited to wood, metal, concrete, fiberglass.

The substrate is irrelevant. Lacquers and varnishes can be applied to many substrates for the same reasons they are used on wood; to beautify and protect. The purpose of establishing a Green Seal standard for 'finishes' is to help consumers select a product that is a healthier choice with reduced environmental impact.

Relevant definitions for standard (of terms to be used in the standard)

This section is for ideas on definitions for the standard

Comment:

"Non Ferrous Ornamental Metal Lacquer and Surface Protectants"

This classification should be modified to include "Ferrous Metal" because of the current appeal of clear coated steel and iron.

Current classification under U.S.EPA 63 FR 176: 48848 9-98, last amended 9-99

Current VOC allowed under this classification is 870 grams per liter.

This classification refers specifically to Clear Coatings for the protection of polished and satin: Brass, Bronze, Aluminum, and Stainless Steel.

US EPA is the only government agency which carries a classification for "Clear Coatings for Metal".

Comment:

I believe the definitions for "stains" and "wood coatings" should be those contained in the ARB's 2007 SCM, sections 4.55 and 4.68, respectively.

Comment:

Definitions

Lacquers - products creating a layer on top of the surface

- resin content of the binder higher than 20%

- natural - only natural binding materials
- synthetic
 - waterborne
 - solvent containing

Impregnations – Oils

- natural - only natural binding materials
 - mainly vegetable oils (hardening)
 - natural resins
 - natural waxes

- synthetic - contain synthetic binders
 - can contain non hardening vegetable oils
 - synonyms: UV – oils
 - PU – oils

Comment:

Use the definitions from the CARB 2007 SCM.

Comment:

Lacquer: A clear or opaque wood coating, including clear lacquer sanding sealers, formulated with cellulosic or synthetic resins to dry by evaporation to provide a solid, protective film.

Conversion Varnish: A coating comprised of a homogeneous (alkyd-amino resin) liquid which, when acid catalyzed and applied, hardens upon exposure to air or heat, by evaporation and polymerization, to form a continuous film that imparts protective or decorative properties.

Emissions of volatile compounds

Comment:

VOC limits should be in line with other regional or national limits, such as those listed in the MPI Green Performance Standard for Paints and Coatings (attached). As an example, in the MPI standard, clear varnishes have a VOC restriction of 350 g/L.

Comment:

Current US EPA VOC Limits for Clear Coatings for Ornamental Metal are 870 grams per liter. This limit, if adjusted, should not drop below the Limits for Clear Coatings for Wood. Current CARB levels for Clear Coatings for Wood are: Lacquers, Clear: 550 grams per liter, and Lacquers, Clear Brushing: 680 grams per liter.

Comment:

I believe the VOC content limits should be at least as stringent as those contained in ARB's 2007 SCM: 250 g/l for "stains" and 275 g/l for "wood coatings".

Comment:

Emissions and VOC`s

Emissions: we have to distinguish between volatile emissions and semi-volatile emissions. Volatile emissions usually refer to the used VOC`s. Depending on the boiling point of the VOC`s they evaporate more or less quickly and can leave the interior by ventilation. Today, the semi-volatile compounds are considered more serious. Semi-volatile compounds have a boiling point higher than 250°C and are usually used as minor components in paints and varnishes. Typical products are softeners or preservatives. They penetrate into the surface or exist in the lacquer and are released by diffusion over a long period of time. These compounds can be emitted over years and often they show an endocrine activity, effecting the human health even in very low concentrations.

VOC`s:

We distinguish between natural and synthetic solvents, and between both classes in those,

which effect the human health and those, which do not.

Generally all natural solvents from the class of terpenes can create allergies. Terpene – solvents are a mixture of naturally occurring terpenes. Some components can cause very serious allergies, e.g. delta-3-carene, which is found in turpentine oil.

In contrast the often used orange oil contains as a major component limonene, which is considered as being sensitive to the skin. New investigations have shown that it is not the limonene, which causes the skin irritations, but oxidation products derived from the reaction of limonene with oxygen and/or light.

If someone uses cheap limonene as a solvent, it can be considered as hazardous. If someone uses food grade orange oil, stabilized against oxidation, it can be considered as safe.

This shows how important it is to check the source or purity of a used ingredient.

In case of the isoaliphates, a solvent derived from crude oil, which is considered as being safe for human beings, there are two ways to produce it. One leads to a very pure, odorless product, the other one leads to a product, which has a light, but very unpleasant smell. No one who is prone to allergies will accept the second form of isoaliphates. Again, here it is important to know the purity and the impurities of the product.

Generally a validation of solvents should always calculate the risk for the human beings. Is it better to have a solvent borne product, from which the solvent evaporates quickly, leaving a pure surface or is it better to have a waterborne, low VOC coating, which contains semi-volatile compounds gassing off for years?

Moreover, waterborne products often contain co-solvents, e.g. glycols, which can pass our membranes and there transport the ingredients of the lacquer right into our bloodstream.

Comment:

The VOC limits should be determined by U.S. EPA reference Test Method 24 (Determination of Volatile Matter Content., Water Content, Density Volume Solids, and Weight Solids of Surface Coatings), Code of Federal Regulations Title 40, Part 60, Appendix A. The calculation of VOC shall exclude water and tinting color added at the point of sale.

The VOC content for specific categories:

Interior Stains: 250 g/L

Exterior Stains: 250 g/L

Interior Wood Coatings (Film Formers): 275 g/L

Exterior Wood Coatings (Film Formers): 275 g/L

Comment:

The VOC limits set for the stains and finishes should come from the CARB 2007 SCM.

Comment:

Restrictions on VOC's should to be more in line with SCAWMD or even more restrictive. CARB is hardly more restrictive than EPA.

Use compound VOC in g/l contained as opposed to regulatory (excluding water) limits for VOC's. Also consider restricting or not allowing Acetone, now exempt in California, in formulations.

Consider prohibiting formaldehyde in formulations. Also do not restrict formulations which generate formaldehyde upon curing.

Comment:

Correction: Restrict formulations which generate formaldehyde during curing.

Comment:

VOC restrictions should be based on current available technology. Since this Standard will regulate what will have to be used in the near future, not the distant future. Some of the standards mentioned do not have products commercialized that will work for long term durability, or that can be repaired without the use of caustic or methylene chloride containing strippers.

We should be focusing on pushing the industry to start using practical compliant products that have been proven to work. If a product is used only because of a ultra low VOC level, and then has to be replaced or repaired at an accelerated maintenance schedule, the point will have been missed. More VOC's and Energy will ultimately be used.

Comment:

It is important to differentiate between those products that are used indoors and outdoors. Health impacts on occupants should be more important for products used indoors for various reasons and should have lower levels of VOCs (g/L). Green Seal's "Choose Green Report on Wood Finishes and Stains" (February 2005) has a cut-off point set at 350 g/L for VOCs. This should definitely be set much lower in view that there are many low-VOC and water-based finishes and stains on the market since 2005.

Comment:

Lacquer 350 gr/l
lacquer sanding sealers, 275 gr/l
conversion varnishes, 550gr/l
undercoaters, 275 gr/l
sealers 275 gr/l
stains, 350 gr/l
penetrating oils, 350 gr/l
glazes 350 gr/l
textured coatings 550gr/l

Chemical component restrictions

Comment:

I would recommend not placing broad restrictions on composition (i. e. for ammonia or formaldehyde) without specifying a "de minimis" limit. For example, a limit of 0.01% (100 ppm) for "incidental" formaldehyde in a final formulation is appropriate.

Comment:

I read recently that a revision to the institutional cleaning products standard (GS-37) prohibiting all materials classified as "asthmagens" by the American Association of Occupational and Environmental Clinics (<http://www.aoec.org/>) has been proposed. Is this restriction likely to be applied to all Green Seal standards?

Comment:

Restrictions regarding certain ingredients

LIVOS has developed its own quality standards regarding the exclusion of special chemical compounds. Since LIVOS cooperates with many customers prone to allergies, even the allowed materials have to be of a high purity, if possible food grade but not technical grade.

In the Quality Management catalogue the following restrictions are listed:

- No GMO Raw Materials
- High stability
- Gentle Production
- No sterilisation by radioactivity
- only synthetic raw materials based on crude oil, if there is no similar technically possible alternative.
- no use of modern designed nanoparticles

Absolutely forbidden should be for natural paints:

- organic-synthetic dyes or pigments
 - silicone
 - Teflon wax
 - synthetic resins
 - acrylics
 - Heavy metal compounds like lead, nickel, cadmium, mercury
- Exceptions: organic cobalt-, zirconium compounds
- butanone oxime
 - glycols
 - glycolethers
 - synthetic biocides
 - chlorinated hydrocarbons
 - phtalates

- alkylphenols and their ethoxylates
- plastics
- no BTX solvents (benzene, toluene, xylene)

- Toxic substances, as
 - carcinogenic substances
 - substances with mutagenic effects
 - substances with teratogenic effects

Comment:

Chemical component restriction levels should be consistent with information available on Material Safety Data Sheets. If there are any compound prohibitions, titanium dioxide, carbon black (added by the manufacturer), and crystalline silica (detected as a result of contamination from mined extender pigments) should be exempt.

Comment:

Chemical component restrictions

- Aromatic solvents
- carcinogens
- heavy metals and their compounds
- Reproductive toxins
- Ozone-depleting compounds
- Ethylene glycol monobutyl ether

Comment:

Chemical restriction should have a de minimus level, as absolute restriction may be impossible to guarantee as in the culmination of a polymer reaction. Broad restriction of a category such as acrylics is unfounded. Technology accepted in GS-11 should not be limited in GS-47. GS-47 is a sub-set of GS-11 which requires special consideration due to performance requirements.

Comment:

Many of the restrictions should be similar to the other GS standards in the works such as GS-37 and GS-11. That will likely be other restrictions specific for stains and finishes, but that could be included when the first draft is being reviewed.

Comment:

I agree that restricted compounds should have deminimus limits.

Also, the definition of carcinogens should not be based of P-65. It should be based on IARC monographs.

Recovered material content

Comment:

Recovered material content should not be as high as it is for most 'paint' standards. It is difficult to achieve a suitable clear finish with high recovered material content.

Product specific performance requirements

Comment:

Clear Interior Coatings for Metal, Performance Standards

| | | |
|-------------------------|--|------------|
| Adhesion | 4B or higher | ASTM D3359 |
| Surface hardness | Min. 4H (7.1.1) | ASTM D3363 |
| Moisture resistance | Min. 48 hours | ASTM D2247 |
| Chemical resistance | Must be unaffected by cleaning with Mild soap and Water. Must be resistant to Alcohol; Aromatic and Aliphatic Hydrocarbon; and Mild Amine Solutions | |
| Salt spray resistance | Min. 24 hours | ASTM B117 |
| Perspiration resistance | 2 Cycles | ANSI A156 |
| Wear resistance | 8 liters | ASTM D968 |
| Appearance, clarity | Dry film surface must be clear, without haze or color. | |
| Leveling | Dry film surface must be smooth w/o orange peel or other surface defects. | |
| Reversibility | Coating must be able to be removed by nothing stronger than Acetone. | |

Comment:

product specific requirements

- oils enhance the color of the wood
- oils penetrate into the wood
- do not result in a thick layer on top
- different application technique
- oil have to be buffed into the wood
- longer drying time (than synthetic lacquers)
- hardening through lasts 14 days
- low consumption
- not as hard as polyurethanes
- usually no sanding between the coats is required
- different consumptions in each coating step
- not stable to alkaline and soda
- gentle neutral cleaner is required
- natural resins often require solvents for a perfect hardness, therefore a certain solvent content should be allowed.

Comment:

Since these products are for wood substrates, only wood substrates should be specified on performance requirements. Performance requirements should distinguish between

interior and exterior use, and penetrating (i.e. stains) versus film forming (i.e. varnish) products.

Comment:

Clear Exterior Coatings For Metal, Current Performance Standards

| | | |
|-----------------------|---|--------------------|
| Adhesion | Min. 4b | Astm D3359 |
| Surface Hardness | Min 3h | Astm D3363 (7.1.1) |
| Moisture Resistance | Min 100 Hours | Astm D2247 |
| Salt Spray Resistance | Min. 100 Hours | Astm B117 |
| Uv Resistance | Min. 144 Hours | Astm G154 |
| Wear Resistance | Min. 4 Liters | Astm D968 |
| Appearance/ Clarity | Dry Film Must Be Clear, Without Haze Or Color. | |
| Leveling | Dry Film Must Be Smooth W/O Orange Peel Or Other Surface Defects. | |
| Reversibility | Aged Coating Must Be Able To Be Removed By Nothing Stronger Than Acetone. | |

Comment:

For wood floor finishes, take a look at MFMA Standards.

Comment:

Clarity of Finish shall allow for gloss levels to vary from high gloss to super matte. Color shall not be opaque, but may color as in a stain/finish combined product.

Comment:

Opaque lacquers and conversion varnishes should be included because an opaque lacquer or conversion varnish is not the same as GS-11 type paints.

Labeling requirements for certification

This section requests suggestions about label requirements for certification.

Comment:

Label requirements

full declaration of all ingredients, giving the name of the used chemicals. Only the class (e.g. softener or preservatives) is not sufficient and shouldn't be accepted.

Full legally required declaration

- natural or bio only, if it is a pure natural product (after drying) according to the quality

standards

- no misleading declaration of ingredients (e.g. “based on vegetable oil...”)

Comment:

Do not require specific label placement or logo requirement (Allow text reference vs. logo and flexibility in using logo).

Comment:

I agree with the above: "Do not require specific label placement or logo requirement (Allow text reference vs. logo and flexibility in using logo)."

General Comments

Comment:

I think Green Seal is moving in the correct direction by not including stains and finishes with paints and coatings as most other standards are doing (e.g Canada Ecologo, Australian Ecolabel Program, European Eco-label). There is probably some gray areas where it is difficult to differentiate stains and finishes with paints or coatings. I would like to see some across-the-board agreement with the other reviewed GS standards on the common testing methodology, requirements and definitions.