



November 14, 2012

PROPOSED CRITERION REVISION: Green Seal Standard for Sanitary Paper Products, GS-1: Papermaking Additives Definition Revision, Updates to Section 2.1.2 (Toilet Seat Covers), Clarification to Section 2.3 Product Specifications, Clarifying the Processed Chlorine Free Definition, Addition of Section 3.6 Added Lotions, Revision to Disposal Section 6.1 and Statement of Basis of Certification Section 6.2

Green Seal has been in the process of recertifying products to the Green Seal Standard for Sanitary Paper Products, GS-1, Fifth Edition, September 1, 2011. During the certification review process it has been determined that the term “papermaking additive,” as defined in the standard, is too broad. The GS-1 standard was substantially revised in 2010 to include criteria to evaluate chemicals used in papermaking. The criteria included carcinogens, mutagens, and reproductive toxins (CMRs), optical brighteners, colorants, and biodegradability. Although the original versions of the criteria evaluated ingredients in the product, the terms were changed during the standard revision process. The term used in the final version was “papermaking additive” instead of “ingredient,” and referred to chemicals that may end up in the product or that may only be used to facilitate the papermaking process. This broader look at chemicals used at the mill resulted in a considerable amount of effort on the part of Green Seal, the manufacturers, and the raw material suppliers to evaluate the criterion. In the end, the processing materials dropped out of the analysis as contaminants below 0.01%.

As a result, Green Seal is proposing a revision to the term to refer to “functional papermaking additives” to streamline and clarify the intention. The definition of CMRs will also be revised to be consistent with our other standards (i.e., we are only concerned with additives that release carcinogens, such as formaldehyde releasers). In addition, it has been determined that the performance requirements for toilet seat covers had been presented incorrectly in the standard, so Green Seal is proposing revisions to Section 2.1.2 for this product category. Also, clarification is proposed for the categories of product specifications, Section 2.3, to allow innovation in the industry; there is a proposed revision to clarify the definition of Processed Chlorine Free; an addition of Section 3.6 Added Lotions is proposed; and there are proposed revisions to Section 6.1 Disposal and Section 6.2 Statement of Basis of Certification. Non-substantive editorial changes are also included in the proposed revisions. This document outlines the proposed revisions to address these issues.

Background

Papermaking Additives: When Green Seal began the development of the Standard for Sanitary Paper Products, GS-1, it was determined that there should be criteria that evaluate the chemicals that end up in the final tissue, towel, or napkin product. For example, one of the criteria was for CMRs. This criterion was added to be consistent with other Green Seal standards because Green Seal has historically moved to prohibit the use of CMRs in environmentally preferable products. The original proposed criterion was as follows (Proposed Revised GS-1 Standard, 2009):

Carcinogens, Mutagens, and Reproductive Toxins. The product shall not contain any ingredients or components that are carcinogens, mutagens or reproductive toxins. Additionally, the product shall not contain any ingredients or components known to produce or release carcinogens, mutagens or reproductive toxins.

Through the stakeholder commenting process it was determined that “ingredient” and “component” were terms not recognized in the papermaking industry. After considerable research and revision (refer to standard development process www.greenseal.org/GS1Revision.aspx and <http://www.greenseal.org/GS1ContaminantRevision.aspx>) these terms were changed to “papermaking additives,” and the final language of the current standard (Fifth Edition, September 1, 2011) reads as follows:

Carcinogens, Mutagens, and Reproductive Toxins. The product shall not contain any papermaking additives or contaminants that are carcinogens, mutagens, or reproductive toxins or that are known to produce or release carcinogens, mutagens, or reproductive toxins. An exception shall be made for titanium dioxide and carbon black used in colorants.

Papermaking additives was defined as follows (following the *Handbook of Pulp & Paper Terminology*, Smook, 2001):

Papermaking Additives. Materials intentionally added to paper or to the papermaking furnish to modify or improve certain paper properties or to facilitate the papermaking process. This definition encompasses all materials that enter the system except fiber and water, including, but not limited to: surfactants, detergents, defoamers, dispersants, foaming agents, collectors, wet strength resins, and biocides.

Although the intent of the standard was to evaluate any additives in the product, the actual term used in the standard was too broad and resulted in requiring the evaluation of both materials intended to remain in the paper and those used only for processing. During the certification review process it was determined that a considerable amount of effort on the part of Green Seal, the manufacturers, and the raw material suppliers was needed with respect to data gathering and evaluation to look at this entire category of papermaking additives. In the end, the processing materials dropped out of the analysis as contaminants below 0.01% in the product. Hence, Green Seal has determined that alternative terminology should be used.

Performance: The performance requirements for toilet seat covers were based on a review of products in the marketplace. The performance data reviewed for this section of the standard came from many different sources and some of the data were in different units. For toilet seat covers, the values were not put into consistent units prior to placement in the Section 2.1.2 tables, so they do not represent achievable performance requirements for toilet seat covers. Green Seal has subsequently evaluated additional data that has been used to develop appropriate performance requirements for this category.

Specifications: A review of the marketplace suggests that innovative processing technologies can result in products that do not fit into the product specification categories identified in the table of Section 2.3. For example, a product may be equivalent to a multi-ply product in thickness without containing more than one ply of material. This section of the standard should not hinder innovation. In addition, a requirement for the number of toilet seat covers per package was deemed unnecessary for this miscellaneous product category.

Processed Chlorine Free: The definition of Processed Chlorine Free (PCF) is meant to refer to a prohibition of chlorine and chlorine derivatives (i.e., elemental chlorine, chlorine dioxide, sodium hypochlorite, sodium chlorite) as processing agents. However, the use of the phrase “chlorine-containing compounds” did not properly convey that intent to manufacturers. Therefore, the definition needs to be clarified.

Added Lotions: The use of agents, such as lotion emulsions, is being utilized by the paper industry to impart certain properties to the finished product. The current GS-1 Standard does not preclude the use of these types of materials, but also does not properly address their use. So a new section is proposed.

Disposal: The current requirement for Section 6.1 Disposal encourages the proper disposal of the product and recycling of the packaging. This section was included to be consistent with other Green Seal Standards. However, the requirement as written is not practicable for users so a revision is proposed.

Statement of Basis of Certification: The current language in the Statement of Basis for Certification, Section 6.2 of the GS-1 standard, was developed in an attempt to make the statement more concise. Instead of listing several individual environmental benefits of the certification, the general phrase “manufactured using environmentally and socially responsible processes” was used to cover the broad range of benefits that a product certified to the standard would meet. Green Seal is proposing to revise the statement in light of the recently released revised Federal Trade Commission (FTC) “Green Guides”.

Technical Considerations

Papermaking additives: The results of the certification review process can often be used to inform the revision of a standard. In the case of the term papermaking additives, it was determined that evaluating the all-encompassing term was resulting in an extensive level of effort on the part of Green Seal, the manufacturers, and the raw material suppliers only to find out that many of the additives dropped out of the analysis once the process was complete. Green Seal has determined that the appropriate intent of the requirement can be achieved by looking only at those papermaking additives that are retained in the product. In the *Handbook of Pulp & Paper Terminology* (2001), Smook defines these terms as internal and external additives. Another resource, the Kirk-Othmer *Encyclopedia of Chemical Technology*, defines the term as functional additives. Based on this information, Green Seal is proposing to change the papermaking additive definition to refer only to functional additives, and to revise the references to this term in the various criteria.

Performance: Toilet seat covers should be evaluated based on appropriate performance requirements. Therefore, Green Seal is proposing new data for dry tensile strength for this product category.

Specifications: The specification categories need to be able to keep up with innovations in the industry, without requiring numerous revisions to the standards. Therefore, Green Seal is proposing to add clarifying language to the single ply and multi-ply category headings. In addition, the requirement for number of toilet seat covers per package has been removed for this miscellaneous product category.

Processed Chlorine Free: The definition of PCF is not as clear as it could be. Therefore, Green Seal is proposing additional language to further clarify the intent.

Added Lotions: The use of agents to impart certain properties to the finish product should be allowed in Green Seal certified sanitary paper products, provided that certain requirements are met. A current technology in the industry is to add lotion emulsions to tissue or towel to provide softening of the product. These emulsions are typically either a solid or liquid at room temperature. They are added to the paper by techniques such as printing, spraying, or dipping, with or without the use of heat. Green Seal has a standard for Personal Care and Cosmetic Products, GS-50, which identifies health and environmental requirements for lotions. Green Seal is proposing that lotions used in sanitary paper products meet specific, applicable GS-50 requirements in order to carry the certification mark.

Disposal: Green Seal typically requires that certified product labels provide directions for proper end use management of the product and the packaging. In practice, encouraging the proper disposal of Sanitary Paper Products is impractical. Many of these product categories are soiled prior to disposal, rendering them as waste material. It may be possible to encourage the collection of paper towels for composting, but that practice is not currently generally available. Therefore, labels suggesting that the sanitary paper products can be composted could be considered misleading. Consequently, Green Seal is proposing to modify this requirement to focus solely on the packaging.

Statement of Basis of Certification: The recent revision of the FTC “Green Guides” (16 CFR Part 260) discusses certifications and seals of approval. Section 260.6 part (d) states “marketers should not use environmental certifications or seals that do not convey the basis for the certification” and part (e) states

“marketers should use clear and prominent qualifying language that clearly conveys that the certification or seal refers only to specific and limited benefits”. Green Seal has evaluated the basis of certification for GS-1 and determined that the general phrase “manufactured using environmentally and socially responsible processes” should be more specific. Therefore, Green Seal is proposing a revision of the statement.

Proposed Revisions

In order to streamline and clarify the process for reviewing papermaking additives, Green Seal is proposing to revise the definition of papermaking additives to refer to functional papermaking additives only – those that are meant to be retained in the product. This also results in the need to update the term in several criteria.

In addition, Green Seal is proposing to update the performance requirements for toilet seat covers, since these data were incorrectly presented in the current standard.

Finally, Green Seal proposes to clarify the product specification categories in Section 2.3, to clarify the PCF definition to add a section for added lotions, and to revise the disposal and basis of certification sections.

The proposed revisions are as follows, noted in red text:

Papermaking additive definition and criterion changes:

Functional Papermaking Additives. *Functional papermaking additives* are those that are added to the paper machine *furnish* primarily for retention within or on the product, such as fillers, sizing agents, retention aids, wet- and dry-strength resins, *colorants/dyes*, and *optical brighteners*. Other materials added to the process through the water to facilitate the papermaking process, during drying, or in wastewater treatment, are not considered functional paper making additives, such as, but not limited to, cooling tower or boiler chemicals, paper machine cleaners, surfactants, detergents, defoamers, dispersants, foaming agents, collectors, dryer coating or release aids, and flocculants.

3.5.3 Carcinogens, Mutagens, and Reproductive Toxins. The product shall not contain any *functional papermaking additives* or *contaminants* that are *carcinogens*, *mutagens*, or *reproductive toxins* or that are known to produce or release *carcinogens*. An exception shall be made for titanium dioxide and carbon black used in *colorants*.

3.5.4 Optical Brighteners. *Optical brighteners* may be used as a *functional papermaking additive* not to exceed 200 parts per million (0.02%) by weight **in the finished product**. This level does not include any *optical brighteners* that may be present in the *furnish* through the use of *recovered materials*.

3.5.5 Colorants. The product shall not contain any *colorants* as *functional papermaking additives*; an exception shall be made for products that would not contain *colorants* but from the addition of *recovered materials*.

Further, *paper towels* and *general-purpose wipes*, *paper napkins*, and *placemats* and other *table coverings* may be printed with *colorants* provided that these *colorants* contain a sum concentration of less than 100 parts per million, by weight (0.01%), of heavy metals including lead, mercury, cadmium, and hexavalent chromium.

3.5.6 Biodegradability. Any *functional papermaking additives* or *contaminants*, except for inorganic compounds, polymers, *optical brighteners*, and *biocides*, shall exhibit ready biodegradability in accordance with the Organization for Economic Co-operation and Development (OECD) definition, as follows. Biodegradability shall be measured according to any of the following methods: ISO 7827, 9439, 10707, 10708, 9408, 14593;

OECD Methods 301A – F; or OECD 310. Specifically, within a 28-day test, the ingredient shall meet one of the following criteria:

- Removal of Dissolved Organic Carbon (DOC) > 70%
- Biochemical Oxygen Demand (BOD) >60%
- % of BOD of Theoretical Oxygen Demand > 60%
- % Carbon Dioxide evolution of theoretical > 60%

For *functional papermaking additives or contaminants* that do not exhibit ready biodegradability in these tests the manufacturer may demonstrate biodegradability in sewage treatment plants using the Coupled Units Test found in OECD 303A by demonstrating DOC removal > 90%.

An exception shall be made for *functional papermaking additives or contaminants* that do not exhibit ready biodegradability, if the additive has low aquatic toxicity (acute LC50 ≥ 100 mg/L for algae, daphnia, or fish) and exhibits inherent biodegradability per ISO test methods 9887 or 9888 or OECD 302A-C.

Testing is not required for any *functional papermaking additives or contaminants* for which sufficient information exists concerning its biodegradability, either in peer-reviewed literature or databases. In the absence of experimental data, quantitative structure-activity relationship data from EPA's BioWin (EPISuite) models may be considered.

3.5.7 Additional Prohibited Substances. The product shall not contain the following substances as *functional papermaking additives or contaminants*:

- *Fragrances*
- Heavy metals, including but not limited to lead chromium, or selenium, both in the elemental form or in compounds

The *papermaking process* shall not use the following substances:

- *Chlorophenolic biocides*
- *ozone-depleting compounds*

Updated performance requirements:

2.1.2 Tensile Strength (Dry and Wet). Product characteristics shall be measured for tensile strength in the machine direction (MD) and cross direction (CD) using the methods described in either section 2.1.2.1 or section 2.1.2.2.

2.1.2.1 Tensile strength using TAPPI T 494/456. Product characteristics shall meet the following requirements when tested according to TAPPI T 494 or ISO 1924/3 (dry tensile strength) and TAPPI T 456 (wet tensile strength), as measured in gram force/inch (gf/in, English units):

Product	Dry Tensile Strength ^(a)		Wet Tensile Strength	
	MD	CD	MD	CD
	(gf/in)	(gf/in)	(gf/in)	(gf/in)
<i>Institutional</i> paper towels –hard wound	1700 - 3100	600 - 2000	250 - 850	100 - 700

<i>Institutional paper towels – center pull</i>	400 - 1500	100 - 800	100 - 500	50 - 200
<i>Institutional paper towels –folded</i>	800 - 2700	200 - 1300	230 - 600	90 - 400
<i>Institutional paper towels – kitchen roll</i>	400 - 1300	100 - 650	100 - 350	50 - 200
<i>Retail paper towels – folded</i>	800 - 2700	200 - 1300	230 - 600	90 - 400
<i>Retail paper towels – kitchen roll</i>	400 - 1200	100 - 640	100 - 300	50 - 170
<i>Paper napkins</i>	400 - 1100	230 - 570	--	--
<i>Bathroom tissue</i>	140 - 900	50 - 450	--	--
<i>Facial tissue</i>	250 - 750	80 - 250	15 - 80	8 - 40
<i>Toilet seat covers</i>	800 - 2250	200 - 1100	--	--
<i>Placemats/Tray liners</i>	--	--	--	--
<i>Table coverings</i>	--	--	--	--

(a) See TAPPI T 1210, Table 1, Section 2.1 for conversion factors
(1 gf/in = 0.3886 newton/meter (N/m); 1 ozf/in = 10.945 N/m) -- = no requirement

2.1.2.2 Tensile strength using TAPPI T 576. Product characteristics shall meet the following requirements when tested according to TAPPI T 576 (dry and wet tensile strength), as measured in gf/3in (English units):

Product	Dry Tensile Strength ^(a)		Wet Tensile Strength	
	MD	CD	MD	CD
	(gf/3in)	(gf/3in)	(gf/3in)	(gf/3in)
<i>Institutional paper towels – hard wound</i>	5100 - 9300	1800 - 6000	750 - 2550	300 - 2100
<i>Institutional paper towels – center pull</i>	1200 - 4500	300 - 2400	300 - 1500	150 - 600
<i>Institutional paper towels – folded</i>	2400 - 8100	600 - 3900	690 - 1800	270 - 1200
<i>Institutional paper towels – kitchen roll</i>	1200 - 3900	300 - 1950	300 - 1050	150 - 600
<i>Retail paper towels – folded</i>	2400 - 8100	600 - 3900	690 - 1800	270 - 1200
<i>Retail paper towels – kitchen roll</i>	1200 - 3600	300 - 1920	300 - 900	150 - 510
<i>Paper napkins</i>	1200 - 3300	690 - 1710	--	--
<i>Bathroom tissue</i>	420 - 2700	150 - 1350	--	--
<i>Facial tissue</i>	750 - 2250	240 - 750	45 - 240	24 - 120
<i>Toilet seat covers</i>	2400 - 6750	600 - 3300	--	--
<i>Placemats/Tray liners</i>	--	--	--	--
<i>Table Coverings</i>	--	--	--	--

(a) See TAPPI T 1210, Table 1, Section 2.1 for conversion factors
(1 gf/3in = 0.3886 newton/meter (N/m); 1 ozf/in = 10.945 N/m) -- = no requirement

Clarifying product specification categories:

2.3 Product Specifications. Products must contain the following minimum material specifications, (i.e., minimum product per roll/package). Note that the conversion basis, consisting of the number of sheets and the sheet size, is provided so that a manufacturer can convert between the product in square feet and sheets per roll^(a). Any combination of sheet size and number of sheets is acceptable, as long as the minimum product per roll/package is met:

Product	Single Ply Specification ^(b)		Multi Ply Specification ^(b)	
	Minimum product per roll/package	Conversion Basis	Minimum product per roll/package	Conversion Basis
INSTITUTIONAL PRODUCTS				
<i>Bathroom Tissue</i>	83 ft ² /roll	800–3.75" x 4" sheets	41 ft ² /roll	400–3.75" x 4" sheets
<i>Facial Tissue –Flat Box</i>	--	--	44 ft ² /box	100–8" x 8" sheets
<i>Facial Tissue – Cube/Dispenser Boxes</i>	--	--	37 ft ² /box	85–8" x 8" sheets
<i>Paper Towels –Hard wound or Center Pull</i>	133 ft ² /roll	200 feet–8 inch wide roll	67 ft ² /roll	100 feet–8 inch wide roll
<i>Paper Towels –Folded</i>	84 ft ² /package	150–9" x 9" sheets	42 ft ² /package	75–9" x 9" sheets
<i>Paper Towels – Kitchen Rolls</i>	110 ft ² /roll	160–11" x 9" sheets	58 ft ² /roll	85–11" x 9" sheets
<i>Paper Towels –General Purpose Wipes</i>	125 ft ² /box	200–9" x 10" sheets	62 ft ² /box	100–9" x 10" sheets
<i>Paper Napkins – Folded (used with or without a dispenser)</i>	330 ft ² /package	200–14" x 17" sheets	165 ft ² /package	100–14" x 17" sheets
<i>Paper Napkins – Beverage</i>	69 ft ² /package	100–10" x 10" sheets	34 ft ² /package	50–10" x 10" sheets
<i>Paper Napkins– Luncheon</i>	117 ft ² /package	100–13" x 13" sheets	58 ft ² /package	50–13" x 13" sheets
<i>Paper Napkins – Dinner/Guest Towel</i>	97 ft ² /package	50–16.75" x 16.75" sheets	48 ft ² /package	25–16.75" x 16.75" sheets
RETAIL PRODUCTS				
<i>Bathroom Tissue</i>	36 ft ² /roll	350–3.75" x 4" sheets	18 ft ² /roll	175–3.75" x 4" sheets
<i>Facial Tissue –Flat Box</i>	--	--	41 ft ² /box	100–7.5" x 8" sheets
<i>Facial Tissue – Cube/Dispenser Boxes</i>	--	--	35 ft ² /box	80–8" x 8" sheets
<i>Paper Towels – Folded</i>	35 ft ² /roll	60–9.1" x 9.25" sheets	17.5 ft ² /roll	30–9.1" x 9.25" sheets
<i>Paper Towels – Kitchen Rolls</i>	80 ft ² /roll	130–11" x 8" sheets	40 ft ² /roll	65–11" x 8" sheets
<i>Paper Napkins – Beverage</i>	62 ft ² /package	100–9.5" x 9.5" sheets	31 ft ² /package	50–9.5" x 9.5" sheets
<i>Paper Napkins– Luncheon</i>	91 ft ² /package	100–11" x 12" sheets	45 ft ² /package	50–11" x 12" sheets
<i>Paper Napkins –</i>	88 ft ² /package	50–15" x 17"	44 ft ² /package	25–15" x 17"

Dinner/Guest Towel		sheets		sheets
MISCELLANEOUS PRODUCTS				
Toilet Seat Covers	--	--	--	--
Placemats, tray liners, and Other Table Coverings	--	--	--	--

- (a) For example, *bathroom tissue*: number of sheets per roll = square feet per roll divided by sheet size (in²) multiplied by 144 (in²/ft²).
- (b) The single ply and multi ply headings are meant to identify the typical product category type. However, a product intended for an equivalent use would be allowed due to practicality concerns (e.g., a thicker, heavier basis weight single ply product could be evaluated as a multi ply product for an equivalent use).
- = no requirement

Clarification to the PCF definition:

Processed Chlorine Free (PCF). Recycled- or recovered-content papers in which chlorine or **chlorine derivatives (i.e., elemental chlorine, chlorine dioxide, sodium hypochlorite, sodium chlorite)** are not used in any of the unit processes used to manufacture the product, including, but not limited to, the re-pulping, screening, deinking, washing, and bleaching stages.

Addition of Section 3.6 Added Lotions:

3.6 Added Lotions. Lotions may be added to *sanitary paper products* for product softening or other reasons. Such lotions shall not contain any *fragrances* or *colorants* and shall meet the requirements of Section 3.0 Product-Specific Sustainability Requirements in the Green Seal Standard for Personal Care and Cosmetic Products, GS-50³.

³ Other Personal Care and Cosmetic Products within the scope of GS-50, which were added to impart certain properties to the product, would have to meet the same conditions.

Modification of the Disposal requirement:

6.1 Disposal. The manufacturer’s label shall include a statement ~~encouraging proper disposal of the product and~~ encouraging recycling of appropriate packaging.

Modification of the Statement of Basis of Certification language:

6.2 Statement of Basis of Certification. Whenever the product claims to be certified to this standard, it shall be based on a *third-party certification program* with an on-site auditing program, and shall state, unless otherwise approved in writing by Green Seal:

This product meets the Green Seal™ Standard for Sanitary Paper Products, GS-1, **based on chlorine-free processing, energy and water efficiency, and content of YY** with a minimum of XX% post-consumer material.

[Where YY is the material used (i.e. 100% recovered material, 85% agricultural residue), and where XX is the verified minimum level of post-consumer material].