



THE MARK OF ENVIRONMENTAL RESPONSIBILITY

# GS-1

## GREEN SEAL™ DRAFT FINAL REVISED ENVIRONMENTAL STANDARD FOR SANITARY PAPER PRODUCTS

Note: Modifications made to the Draft Final Revised Standard are noted in red font in this version of the standard.

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## **GREEN SEAL™**

Green Seal is a non-profit organization devoted to environmental standard setting, product certification, and public education. Green Seal's mission is to work towards environmental sustainability by identifying and promoting environmentally responsible products, purchasing, and production. Through its standard setting, certification and education programs, Green Seal:

- identifies products that are designed and manufactured in an environmentally responsible manner;
- offers scientific analyses to help consumers make educated purchasing decisions regarding environmental impacts;
- ensures consumers that any product bearing the Green Seal Certification Mark has earned the right to use it; and
- encourages manufacturers to develop new products that are significantly less damaging to the environment than their predecessors.

The intent of Green Seal's environmental requirements is to reduce, to the extent technologically and economically feasible, the environmental impacts associated with the manufacture, use and disposal of products. Set on a category-by-category basis, Environmental Standards focus on significant opportunities to reduce a product's environmental impact.

Green Seal offers certification to all products covered by its Standards. Manufacturers may submit their products for evaluation by Green Seal. Those which comply with Green Seal's requirements may be authorized to use the Green Seal Certification Mark on products and in product advertising. Manufacturers authorized to use the Green Seal Certification Mark on their product are subject to an ongoing program of testing, inspection, and enforcement. For additional information on Green Seal or any of its programs, contact:

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STANDARD FOR SANITARY PAPER PRODUCTS (GS-1)**

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## FOREWORD

**A. Certification.** This Environmental Standard contains the basic requirements for certain products (as defined in the Scope section below) to be certified by Green Seal™ and for their manufacturers to receive authorization to use the Green Seal Certification Mark on products and their packaging, and in product advertising. The requirements are based on an assessment of the environmental impacts of product manufacture, use, and disposal and reflect information and advice obtained from industry, trade associations, users, government officials, environmental and other public interest organizations, and others with relevant expertise. These requirements are subject to revision as further experience and investigation may show is necessary or desirable.

**B. Compliance with the Standard.** Compliance with this Standard is one of the conditions of certification of a product by Green Seal.

**C. Compliance with Government Rules.** In order to be authorized to use the Green Seal Certification Mark, the manufacturer of the certified product must disclose all governmental allegations or determinations of violation of federal, state, or local environmental laws or regulations with respect to facilities in which the product is manufactured. Certification will be denied any product manufactured in violation of environmental laws or regulations if, in Green Seal's judgment, such violations indicate that the environmental impacts of the product significantly exceed those contemplated in the setting of the standard.

**D. Limitations on Purpose of Standard.** Green Seal's Standards provide basic criteria to promote environmental quality. Provisions for product safety have not been included in this Standard because government agencies and other national standard-setting organizations establish and enforce safety requirements.

**E. Substantially Equivalent Products.** Products that are substantially similar to those covered by this standard in terms of function and environmental impact may be evaluated and certified by Green Seal against the intent of the requirements of this standard.

**F. Unanticipated Environmental Impacts.** A product which complies with this Standard will not necessarily be certified by Green Seal if, when examined and tested, it is found to have other features which significantly increase its impact on the environment. In such a situation, Green Seal will ordinarily amend its standards to account for the unanticipated environmental impacts.

**G. Certification Agreement and Green Seal Rules.** In order to be authorized to apply the Green Seal Certification Mark to a product or its packaging, or to use the Green Seal Certification Mark in product advertising, the manufacturer of the product must (1) undergo an initial product evaluation to determine that the product complies with Green Seal's requirements, (2) sign a Green Seal Certification Agreement that, among other things, defines how and where the Green Seal may be used, (3) pay fees to cover the costs of testing and monitoring, (4) agree to an ongoing program of factory inspections and product testing, and (5) comply with the requirements found in the most recent version of "Rules Governing the Use of the Green Seal Certification Mark."

**H. Disclaimer of Liability.** Green Seal, in performing its functions in accordance with its objectives, does not assume or undertake to discharge any responsibility of the manufacturer or any other party. Green Seal shall not incur any obligations or liability for damages, including consequential damages, arising out of or in connection with the interpretation of, reliance upon, or any other use of this Standard.

**I. Care in Testing.** Many tests required by Green Seal's Standards involve safety considerations. Adequate safeguards for personnel and property should be employed in conducting such tests.

**J. Referenced Standards.** Standards referenced in this document may have been superseded by a later edition, and it is intended that the most recent edition of all referenced standards be used in determining compliance of a product with this standard.

**K. Labeling Requirements.** This standard neither modifies nor supersedes government labeling requirements. Labeling language which varies in form from the requirements of this section may be used with the written approval of Green Seal.

### List of Acronyms and Terms

**AOX.** Adsorbable Organic Halide.  
**ASTM.** American Society for Testing and Materials.  
**BOD.** Biochemical Oxygen Demand.  
**BTU.** British Thermal Unit.  
**CD.** Cross direction.  
**CFC.** Chlorofluorocarbon.  
**CFR.** Code of Federal Regulations.  
**CO<sub>2</sub>.** Carbon dioxide.  
**COD.** Chemical Oxygen Demand.  
**DOC.** Dissolved Organic Carbon.  
**EPA.** United States Environmental Protection Agency.  
**gf.** Gram force.  
**GHS.** Globally Harmonized System for Classification and Labeling of Chemicals.  
**GJ.** Gigajoules.  
**Hr.** Hour.  
**in.** inch.  
**IARC.** International Agency for Research on Cancer.  
**ISO.** International Organization for Standardization.  
**IRIS.** Integrated Risk Information System.  
**Kg.** Kilogram.  
**Kw.** Kilowatt.  
**lb.** pound.  
**m<sup>2</sup> or m<sup>3</sup>.** Square meters or cubic meters.  
**MCL.** Maximum Contaminant Level.  
**MD.** Machine direction.  
**MRDL.** Maximum Residual Disinfectant Level.  
**MT.** Metric ton.  
**N.** Newton.  
**NO<sub>x</sub>.** Nitrogen Oxides.  
**NTP.** National Toxicology Program.  
**OECD.** Organization for Economic Co-operation and Development.  
**OSHA.** Occupational Safety and Health Administration.  
**PCF.** Processed Chlorine Free.  
**PM.** Particulate matter.  
**QSAR.** Quantitative Structure-Activity Relationship.  
**SIC.** Standard Industrial Classification.  
**SO<sub>2</sub>.** Sulfur Dioxide.  
**TAPPI.** Technical Association of the Pulp and Paper Industry.  
**ThOD.** Theoretical Oxygen Demand.  
**TSS.** Total Suspended Solids.  
**Yield<sub>PC</sub>.** Post-Consumer Material Yield.  
**Yield<sub>R</sub>.** Recovered Material Yield.

## GREEN SEAL™ DRAFT FINAL REVISED ENVIRONMENTAL STANDARD FOR SANITARY PAPER PRODUCTS (GS-1)

### 1.0 SCOPE

This standard establishes environmental requirements for sanitary paper products including paper towels **and general-purpose wipes**, paper napkins, bathroom tissue, facial tissue, toilet seat covers, placemats and other sanitary paper products **not used for personal care**. The standard covers products for institutional as well as retail markets. This standard does not include nonwoven sanitary products, general-purpose and flushable wipes **containing cleaning agents or fragrances**, disposable diapers, or sanitary napkins and tampons.

**This standard assumes compliance with all applicable laws and regulations. As a result, in order to be certified to this standard, the manufacturer of the certified product must disclose all governmental allegations or determinations of violation of federal, state, or local environmental laws or regulations with respect to facilities in which the product is manufactured. Certification will be denied any product manufactured in violation of environmental laws or regulations if, in the certifier's judgment, such violations indicate that the environmental impacts of the product significantly exceed those contemplated in the setting of the standard.**

### 2.0 DEFINITIONS

**2.1 Adsorbable Organic Halide (AOX).** A measure of the total sum of the halide (typically measured as chloride) concentration bound in organic compounds. AOX is a surrogate measure for the amount of chlorinated organic compounds in wastewater.

**2.2 Agricultural Residue.** Process waste material remaining from an agricultural plant after it was used to produce food or fiber, **that would otherwise be incinerated or disposed of as a solid waste.**

**2.3 Base Sheet/Paper.** Manufactured paper that will be further processed or converted. The base sheet/paper is the paper that comes directly off the paper machines.

**2.4 Bathroom Tissue.** A soft paper product used to maintain personal hygiene, designed to disperse in septic tanks.

**2.5 Biocide.** A chemical used to kill biological organisms.

**2.6 By-product.** A secondary or incidental product deriving from a manufacturing process.

**2.7 Carcinogen.** Chemicals listed as a known, probable, reasonably anticipated, or possible human carcinogen by the IARC (Groups 1, 2A, and 2B), NTP (Groups 1 and 2), EPA IRIS (weight-of-evidence classifications A, B1, B2, C, carcinogenic, likely to be carcinogenic, and suggestive evidence of carcinogenicity or carcinogen potential), or by OSHA (as carcinogens under 29 CFR 1910.1003(a)(1)).

**2.8 Chemical Oxygen Demand (COD).** An indirect measure of the amount of organic compounds (and some inorganic compounds, such as ammonia) in wastewater that exert a demand on oxygen during decomposition.

**2.9 Colorant.** Inks, dyes, or pigments **which are capable of imparting color when added** in the paper-making process.

**2.10 Component.** A substance deliberately added to a product, where it is added for its continued presence in the final product to provide a specific characteristic, appearance, or quality.

**2.11 Disinfection By-Product.** Compounds formed when disinfectants used for water treatment react with bromide and/or natural organic matter present in the source water. Regulated disinfection by-products include trihalomethanes, haloacetic acids, bromate, and chlorite.

**2.12 Energy Use.** The total energy used to manufacture sanitary paper products, including energy used during **re-pulping** of recovered material, throughout the paper making process, during waste treatment, and during converting and/or packaging. Total energy use is considered all energy consumed, regardless of source, excluding any generated energy sold to a power grid. It does not include transportation.

**2.13 Facial Tissue.** A class of soft, absorbent, disposable paper products suitable for use on the face. **Product may come in flat, cube, or dispenser type boxes. Flat and dispenser boxes are typically rectangular in shape and wider than they are tall. Cube boxes are typically an upright package with a square base and an elongated height.**

**2.14 Fragrance.** A constituent, often (but not limited to) a multi-component constituent, used in a product for the purpose of imparting a scent to the product.

**2.15 Fresh Water Use.** The total amount of **steam**, process, and cooling water used in the manufacture of sanitary paper products, including water used during recovered material **re-pulping**, throughout the paper making process, and during converting (if applicable).

**2.16 Furnish or Stock.** The mixture of recovered material fiber and other materials that is blended in a water suspension, or slurry, from which paper products are made.

**2.17 General-Purpose Wipes.** A class of absorbent disposal paper products suitable for use as industrial wipers and containing no cleaning agents (e.g., surfactants) or fragrances.

**2.18 Ingredient.** Any component of a product that is intentionally added or known to be a contaminant that comprises at least 0.01% by weight of the finished product.

**2.19 Institutional.** A category of products manufactured for use at institutional facilities, such as schools, hospitals, or offices, **sold to professional purchasing staff and not to consumers.**

**2.20 Integrated Mill or Integrated Facility.** A facility with either a pulp mill or the capability to repulp virgin fiber and a paper mill on the same site.

**2.21 Intentional Introduction.** The act of deliberately utilizing a material in the formation of a package or packaging component where its continued presence is desired in the final package or packaging component to provide a specific characteristic, appearance, or quality.

**2.22 Mutagen.** A chemical that meets the criteria for category 1, chemicals known to induce heritable mutations or to be regarded as if they induce heritable mutations in the germ cells of humans, under the GHS.

**2.23 Non-Timber Species.** Plant species used in the manufacture of sanitary paper products such as bamboo, hemp, cotton, sugar cane, etc., that are not typical fiber sources for pulp or paper products and are botanically not considered trees.

**2.24 NO<sub>x</sub>.** Nitrogen Oxides, which are emitted from motor vehicles, power plants and other sources of combustion.

**2.25 Optical Brightener.** Components designed to enhance the appearance of colors and whiteness in materials by absorbing ultraviolet radiation and emitting blue radiation. These compounds are also known as fluorescent whitening agents.

**2.26 Ozone-Depleting Compound.** Any compound with an ozone-depletion potential greater than 0.01 (CFC 11=1) according to the EPA list of Class I and Class II Ozone-Depleting Substances.

**2.27 Paper Napkins.** A class of absorbent, disposable paper products that is typically folded and is suitable for wiping hands and mouth.

**2.28 Primary Packaging.** Material physically containing and coming into physical contact with the product, including, but not limited to: paper and paperboard material such as roll cores, brown papers, wrappers, bands, and folding cartons; and plastic materials such as film wrappers and roll core inserts.

**2.29 Paper Towels.** A class of absorbent, disposable paper products suitable for use in drying hands, wiping windows, cleaning equipment, or cleaning up spills, including, but not limited to: retail, perforated roll towels; institutional, hardwound roll towels; and institutional folded towels.

**2.30 Placemats and other Table Coverings.** A protective table pad or table cover made from paper.

**2.31 Particulate Matter<sub>10</sub> (PM<sub>10</sub>).** Airborne particulate matter (carbonaceous, organic, and sulfate particulates) with an upper size limit of approximately 10 microns in diameter.

**2.32 Particulate Matter<sub>2.5</sub> (PM<sub>2.5</sub>).** Airborne particulate matter (carbonaceous, organic, and sulfate particulates) with an upper size limit of approximately 2.5 microns in diameter.

**2.33 Post-Consumer Material.** Material that would otherwise be disposed of as solid waste, having completed its intended end-use by the consumer. Post-consumer material does not include materials, agricultural residues, or by-products generated from, and commonly reused within, an original manufacturing and fabrication process.

**2.34 Pre-Consumer Material.** Material diverted from a waste stream during the manufacturing process, excluding material such as rework, regrind, or scrap generated in a process and capable of being reused within the same process that generated it.

**2.35 Processed Chlorine Free (PCF).** Recycled or recovered-content papers in which chlorine or chlorine-containing compounds 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.

**2.36 Recovered Material.** Material recovered from or otherwise diverted from the solid waste stream, that is generated after the completion of the paper manufacturing process.

Recovered material may include:

- Manufacturing waste generated after completion of the papermaking process (i.e., during converting), such as envelope cuttings; bindery trimmings; printing waste; cuttings and other converting waste; butt rolls and mill wrappers; obsolete inventories; and rejected unused stock.

- Post-consumer materials such as paper, paperboard, and fibrous materials from retail stores, office buildings, homes, etc., after they have completed their intended end-use.
- Fibers recovered from wastewater or trimmings of paper machine rolls used **only** to make the certified product (mill broke **containing 100% recovered material**).

Recovered material does not include:

- Fibers recovered from wastewater or trimmings of paper machine rolls **used to make non-certified products containing virgin material (mill broke containing any virgin material)**, regardless of whether such materials are used by the same or another company.
- Fibrous by-products of harvesting, extractive or woodcutting processes or forest residues such as cotton linters, bark or sawdust.

For non-timber species, recovered material is considered agricultural residue that would otherwise be disposed as waste.

**2.37 Recyclable.** The package or product can be collected in a substantial majority of communities, separated or recovered from the solid waste stream and used again, or reused in the manufacture or assembly of another product package through an established recycling program.

**2.38 Reproductive Toxin.** A chemical listed as a reproductive toxin (including developmental, female, and male toxins) by the State of California under the Safe Drinking Water and Toxic Enforcement Act of 1986 (California Code of Regulations, Title 22, Division 2, Subdivision 1, Chapter 3, Sections 1200, et. Seq., also known as Proposition 65).

**2.39 Retail.** A category of products manufactured for use in consumer homes **and sold to consumers**, typically sold in retail stores.

**2.40 Sanitary Paper Products.** SIC 2676. Products including facial and bathroom tissues, toilet seat covers, paper towels **and general-purpose wipes**, paper napkins, paper placemats and table coverings. Products that are technically in this category by SIC code, but not covered by this standard, include nonwoven sanitary products, general-purpose and flushable wipes **containing cleaning agents or fragrances**, disposable diapers, or sanitary napkins and tampons.

**2.41 Secondary Packaging.** Any material other than primary packaging, including paper bands, wrappers, boxes, and other packaging.

**2.42 Solid Waste.** Waste material from the manufacturing of the product not included in the finished product, that are not salable and are disposed. **Sanitary waste (e.g., restrooms, etc.) and materials that are recycled are excluded.**

**2.43 Source-Reduced Package.** A package or packaging item that has at least 20% less material by weight for a given product unit (e.g., paper towel roll, box of tissue) compared to the original package for a given product unit (of the same size), commonly used for that product.

**2.44 Source Reduction.** Altering the design, manufacture, or use of sanitary paper products to reduce the amount that gets disposed of in a landfill.

**2.45 Surfactant.** A group of chemicals that have a hydrophilic and hydrophobic group. Defoamers, dispersants, foaming agents, and collectors used in flotation deinking are all considered surfactants. This group of chemicals is also known as surface active agents.

**2.46 Third-Party Certification Program.** A program without any financial interest or stake in the sales of the product or service being certified, or other conflict of interest. There must be a standard to base the certification from and the standard must be appropriate and meaningful for its intended purpose. The standard must be publically available and developed with stakeholder input. Certification to the standard must be completed by an independent party (i.e., not the product company), include site inspections, where applicable, and have a monitoring program to verify ongoing compliance.

**2.47 Toilet Seat Covers.** A soft, thin paper product used to cover toilet seats for personal hygiene protection, designed to disperse in septic tanks.

**2.48 Total Suspended Solids (TSS).** A measure of the amount of suspended solids in wastewater obtained by separating particles from a water sample using a filter with a nominal pore size of 2 micrometers (or smaller). Suspended solids are the portion retained on the filter.

**2.49 Virgin Fiber/Material.** Fiber/material that is not of recovered or post-consumer origin.

**2.50 Wastewater.** Wastewater effluent from the manufacturing of the product, that is not salable and is treated and disposed at an onsite or offsite wastewater treatment facility.

### 3.0 PRODUCT-SPECIFIC PERFORMANCE REQUIREMENTS

Product performance requirements shall be measured on the base sheet for all products, unless otherwise indicated.

**3.1 Basis Weight (grammage).** Product characteristics shall be measured on the base sheet for all products for basis weight (grammage) according to ASTM D646, T-410 or ISO 536 and shall meet the following requirements when measured as g/m<sup>2</sup> (SI Units) or lbs/ream (English units).

Product	Basis Weight	Grammage <sup>(a)</sup>
	(lbs/ream)	(g/m <sup>2</sup> )
Paper towels - institutional	15 – 35	24.4 – 56.9
Paper towels - retail	20 – 30	32.5 – 48.8
Paper napkins	11 – 30	17.9 – 48.8
Bathroom tissue	8.5 – 22	13.8 – 35.8
Facial tissue	8 – 19	13.0 – 30.9
Toilet seat covers	8.5 – 10.5	13.8 – 17.1
Placemats and other table coverings	26 – 40	38.5 – 59.2

(a) See ASTM D 646 for basis weight to grammage conversion.

**3.2 Tensile Strength (Dry and Wet).** Product characteristics shall be measured **on the base sheet** for tensile strength in the machine direction (MD) and cross direction (CD) using the methods described in either section 3.2.1 or section 3.2.2.

**3.2.1 Tensile strength using ASTM D 828/829 (T-494/456).** Product characteristics shall meet the following requirements when tested according to ASTM D 828, T-494 or ISO 1924/3 (dry tensile strength) and ASTM D829 or T-456 (wet tensile strength), as measured in gf/in (English units).

Product	Dry Tensile Strength <sup>(a)</sup>		Wet Tensile Strength	
	MD	CD	MD	CD
	(gf/in)	(gf/in)	(gf/in)	(gf/in)
Paper towels - institutional	700 - 3100	280 - 1800	140 - 750	50 - 450
Paper towels - retail	560 - 1110	250 - 640	120 - 300	50 - 300
Paper napkins	400 - 1100	230 - 570	--	--
Bathroom tissue	140 - 900	50 - 450	--	--
Facial tissue	250 - 470	80 - 160	17 - 40	8 - 15
Toilet seat covers	2.6 - 7	0.85 - 2	--	--
Placemats and other table coverings	--	--	--	--

(a) 1 gf/in = 0.3886 N/m

-- = no requirement

**3.2.2 Tensile strength using T-576 (no equivalent ASTM standard).** Product characteristics shall meet the following requirements when tested

according to T-576 (dry and wet tensile strength), as measured in gf/3 in (English units).

Product	Dry Tensile Strength <sup>(a)</sup>		Wet Tensile Strength	
	MD	CD	MD	CD
	(gf/3 in)	(gf/3 in)	(gf/3 in)	(gf/3 in)
Paper towels - institutional	2100 - 9250	1600 - 5750	900 - 2500	300 - 1400
Paper towels- retail	1680 - 3350	960 - 1950	430 - 900	250 - 510
Paper napkins	1500 - 2900	750 - 1650	--	--
Bathroom tissue	1050 - 2000	475 - 825	--	--
Facial tissue	1130 - 2150	400 - 750	200 - 250	70 - 115
Toilet seat covers	2850 - 5940	1500 - 3125	--	--
Placemats and other table coverings	--	--	--	--

(a) 1 gf/3in = 1.1658 N/m

-- = no requirement

**3.3 Stretch and Water Absorbency.** Product characteristics shall be measured on the base sheet when tested according to ASTM D 828, T-494 or ISO 1924/3 or T-576 for stretch; and ASTM D985, T-452, ISO 2469/2470/2 or T-525 for water absorbency; and shall meet the following requirements, as measured in % stretch or seconds of water absorbence.

Product	Stretch	Water Absorbency
	(%)	(seconds)
Paper towels-institutional	2 - 22	0 - 160
Paper towels - retail	2 - 22	0 - 160
Paper napkins	2 - 22	0 - 180
Bathroom tissue	2 - 18	--
Facial tissue	2 - 23	--
Toilet seat covers	1 - 10	--
Placemats and other table coverings	--	--

-- = no requirement

**3.4 Alternative Performance Requirements.** Alternative test methods may be allowed for sanitary paper products not specified in this standard that may follow different criteria than those listed in this standard. A manufacturer must provide documented rationale for use of the method. The method must be an objective, scientifically-validated method, conducted under controlled and

reproducible laboratory conditions. The results of the testing must meet performance ranges that are considered reasonable industry practice.

**3.5 Product Specifications.** Products must contain the following minimum material specifications. The basis, consisting of the number of sheets and the sheet size, is provided so that a manufacturer can make conversions between the minimum product in square feet and the minimum sheets per roll<sup>(a)</sup>:

Product	Single Ply Specification		Double Ply Specification	
	Minimum product per roll/package	Basis	Minimum product per roll/package	Basis
<b>INSTITUTIONAL PRODUCTS</b>				
Bathroom Tissue	84 ft <sup>2</sup> /roll	800–3 7/8" x 3 7/8" sheets	42 ft <sup>2</sup> /roll	400–3 7/8" x 3 7/8" sheets
Facial Tissue –Flat Box	--	--	44 ft <sup>2</sup> /box	100–8" x 8" sheets
Facial Tissue – Cube/Dispenser Boxes	--	--	37 ft <sup>2</sup> /box	85–8" x 8" sheets
Paper Towels –Rolls	133 ft <sup>2</sup> /roll	200 sheets–8 inch wide roll	67 ft <sup>2</sup> /roll	100 sheets–8 inch wide roll
Paper Towels –Folded	112 ft <sup>2</sup> /package	200–9" x 9" sheets	56 ft <sup>2</sup> /package	100–9" x 9" sheets
Paper Towels –General Purpose Wipes	125 ft <sup>2</sup> /box	200–9" x 10" sheets	62 ft <sup>2</sup> /box	100–9" x 10" sheets
Paper Napkins – Folded (used with or without a dispenser)	330 ft <sup>2</sup> /package	200–14" x 17" sheets	165 ft <sup>2</sup> /package	100–14" x 17" sheets
<b>RETAIL PRODUCTS</b>				
Bathroom Tissue	62 ft <sup>2</sup> /roll	600–3 7/8" x 3 7/8" sheets	31 ft <sup>2</sup> /roll	300–3 7/8" x 3 7/8" sheets
Facial Tissue –Flat Box	--	--	44 ft <sup>2</sup> /box	100–8" x 8" sheets
Facial Tissue – Cube/Dispenser Boxes	--	--	37 ft <sup>2</sup> /box	85–8" x 8" sheets
Paper Towels –Rolls	110 ft <sup>2</sup> /roll	160–11" x 9" sheets	58 ft <sup>2</sup> /roll	85–11" x 9" sheets
Paper Napkins - Folded	229 ft <sup>2</sup> /package	250–11" x 12" sheets	91 ft <sup>2</sup> /package	100–11" x 12" sheets
<b>MISCELLANEOUS PRODUCTS</b>				
Toilet Seat Covers	250 sheets per package	--	--	--
Placemats and Other Table Coverings	--	--	--	--

(a) For example, bathroom tissue: minimum sheets per roll = square feet per roll divided by sheet size (in<sup>2</sup>) multiplied by 144 (in<sup>2</sup>/ft<sup>2</sup>).

-- = no requirement

Alternatively, different sizes that generate better package or shipping efficiency may be permitted provided that the manufacturer submits specifications to demonstrate that they have improved the packaging and shipping efficiency.

#### 4.0 PRODUCT-SPECIFIC HEALTH AND ENVIRONMENTAL REQUIREMENTS

**4.1 Recovered Material Requirements.** The **product** shall contain 100% recovered materials.

For integrated mills where whitewater and/or wastewater recovery may cause contamination of the incoming recovered material furnish (stock), reclaimed mixed fibers containing virgin material may be acceptable as long as it can be shown, through mass balance calculations, that the amount of virgin fiber in the reclaimed mixed fibers is less than 0.5% of the incoming recovered material furnish (stock).

When using agricultural residues for recovered materials, the manufacturer shall document the source of the crop; the original agricultural crop shall be certified to the Rainforest Alliance Sustainable Agriculture Standard, **or other approved third-party certification program.**

**4.2 Post-Consumer Material Requirements.** The percentage of post-consumer material shall be calculated and certified based on the fiber weight of the paper. The calculation of recycled content based on fiber weight shall be performed using the following formula for post- consumer material:

$$\frac{\text{Post-consumer Material} \times \text{Yield}_{\text{PC}}}{\text{Recovered Material} \times \text{Yield}_{\text{R}}}$$

Yield will depend on the product manufactured, the raw material, the level of contaminants and the cleaning and deinking technology employed. The percentage yield shall be calculated by dividing the total material output by the total material input<sup>1</sup>. The percentage of recovered material and post-consumer material shall be calculated based on a weighted average of the materials used for a period of time not to exceed the previous three months.

**The requirement for each product type is summarized as follows:**

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<sup>1</sup> If a particular manufacturer's operating procedures do not provide for accurate yield measurements, the following shall be used as default values:

Default Recovered Material yield (Yield<sub>R</sub>): 75%

Default Post-Consumer Material yield (Yield<sub>PC</sub>): 75%

Product Type	Post-Consumer Material Requirement (%)
Paper Towels, General-Purpose Wipes, and Napkins	50%
Bathroom Tissue	25%
Facial Tissue	15%
Toilet Seat Covers	25%
Placemats and other Table Coverings	40%
Agricultural Residue Products	15% <sup>(a)</sup>

(a) For agricultural residue products, because post-consumer materials originally made from agricultural residue may not be available, this requirement may be satisfied by using post-consumer material that originated from tree pulp.

Alternatively, if a reduction of total fiber use and disposal (i.e., through source reduction) can be demonstrated, the post-consumer material requirements may be lowered by an equivalent amount. The maximum credit for source reduction is a 15% reduction in the post-consumer material requirement.

### 4.3 Recovered Material Processing:

**4.3.1 Processed Chlorine Free.** The manufacturing process used to produce the products shall be PCF.

As an exception, chlorine, chlorine derivatives, biocides, and disinfection by-products may be allowed in the manufactured product, if the presence of these chemicals are a result of disinfection of the incoming water supply. Product testing is not required, as long as the wastewater concentrations of the materials used for disinfection are below the applicable MCLs or MRDLs in the National Primary Drinking Water Regulations found in 40 CFR, Part 141.

**4.3.2 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.

**4.3.3 Other Prohibited Ingredients.** The product shall not contain the following ingredients; an exception is allowed for products that would not exceed 100 parts per million by weight (0.01%) but for the addition of recovered materials:

- Optical brighteners
- Ozone-depleting compounds
- Fragrances

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

**4.3.4 Colorants.** The product shall not contain any colorants as components; an exception is allowed for products that would not contain colorants but for 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.

**4.3.5 Surfactants.** Any surfactants used shall exhibit ready biodegradability in accordance with the OECD definition. 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 DOC > 70%
- BOD > 60%
- % of BOD of ThOD > 60%
- % CO<sub>2</sub> evolution of theoretical > 60%

For organic ingredients 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%.

Testing is not required for any ingredient for which sufficient information exists concerning its biodegradability, either in peer-reviewed literature or databases. In the absence of experimental data, QSAR data from EPA's BioWin (EPISuite) models may be considered.

## 5.0 MANUFACTURING REQUIREMENTS

**5.1 Social Responsibility.** Documentation must be provided that the production of the product meets the following social responsibility requirements:

**5.1.1 Freedom of Association and Collective Bargaining.** Workers shall have the right to join or form trade unions of their own choosing and their right to bargain collectively shall be recognized and respected.

**5.1.2 Freedom of Labor.** There shall not be forced or bonded labor or use of child labor.

**5.1.3 Freedom from Discrimination.** There shall not be discrimination in terms of race, color, sex, religion, age, disability, gender, marital status, sexual orientation, union membership, political opinion, national extraction or social origin such that it affects the opportunity or treatment in employment and there shall be no support or tolerance of corporal punishment, physical or verbal coercion, sexual or other harassment, intimidation or exploitation.

**5.1.4 Occupational Health and Safety.** A safe and hygienic workplace environment shall be provided with access to potable water. Adequate steps shall be taken to minimize the hazards of the workplace and workers shall receive health and safety training to prevent accidents and injury.

**5.1.5 Conditions of Employment.** Workers shall work under fair conditions of employment. Wages, working hours and overtime shall meet at a minimum the national legal or industry benchmark standard and regular employment shall be provided.

**5.2 Manufacturing and Converting Reporting Requirements.** The following information shall be reported for processes including re-pulping, parent roll production, product converting, and waste treatment, on an annual basis or when any changes are made to the processes. If a manufacturer only does converting, then the supplier of the parent rolls will be required to provide additional relevant data. The data should represent the total annual output of the relevant parameter divided by the total annual production of all grades of certified product.

Media	Reporting Requirement	Units
Air	Fossil CO <sub>2</sub> (from grid and external sources) SO <sub>2</sub> , NO <sub>x</sub> , Mercury, and PM <sub>10</sub> and PM <sub>2.5</sub>	kg/ton of final product
Wastewater	AOX, TSS, and BOD or COD	kg/ton of final product
Solid waste	ratio of the dry tons of material entering an external solid waste disposal stream to the tons of product produced	dry ton/ton of final product

**5.3 Manufacturing and Converting Requirements – Water and Energy Use.** Manufacturers shall meet the following fresh water and energy use criteria, for processes including re-pulping, parent roll production, product converting, and waste treatment. If a manufacturer only does converting, then the supplier of the parent rolls will be required to provide additional relevant data. The data should represent the total annual resource used divided by the total annual production of all grades of certified product.

Fresh Water Use (gallons/ton of final product) <sup>a</sup>	Total Energy Use (millions of BTUs/ton of final product) <sup>b</sup>
19,250	17.0

<sup>a</sup> gallons/T = 0.0042 m<sup>3</sup>/MT

<sup>b</sup> millions of BTUs/T = 1.16 GJ/MT = 323.2 kwh/MT

## 6.0 PACKAGING REQUIREMENTS

**6.1 Primary Packaging.** Primary packaging shall meet the following requirements, based on the packaging material type:

- Primary packaging made from paper or paperboard shall be recyclable, and made from 100% recovered material.
- Primary packaging made from plastic shall be recyclable, or source-reduced by 20%, or shall contain 25% recovered material content (pre- or post-consumer). The package must be clearly marked with the appropriate Society of the Plastics Industry symbol to identify the type of plastic for recycling.

**6.2 Secondary Packaging.** Secondary packaging shall meet the following requirements, based on the packaging material type:

- Secondary packaging made from paper or paperboard shall be recyclable and made from 100% recovered material.
- Secondary packaging made from containerboard (corrugated cardboard) shall be recyclable and made from 30% recovered material.
- Secondary packaging made from plastic shall be recyclable, or source-reduced by 20%, or shall contain 25% recovered material content (pre- or post-consumer). The package must be clearly marked with the appropriate Society of the Plastics Industry symbol to identify the type of plastic for recycling.

**6.3 Colorants.** Packaging may be printed using colorants provided that these colorants contain a sum concentration of less than 100 parts per million, by weight, of lead, mercury, cadmium, and hexavalent chromium.

**6.4 Heavy Metal Restrictions.** Heavy metals, including lead, mercury, cadmium, and hexavalent chromium, shall not be intentionally introduced in packaging. Further, the sum of the concentration levels of these metals present shall not exceed 100 parts per million by weight (0.01%); an exception is allowed for packages that would not exceed this maximum level but for the addition of recovered materials. Further, intentional introduction does not include the use of one of the metals as a processing aid or intermediate to impart certain chemical or physical changes during manufacturing, where the incidental retention of a

residual of that metal in the final packaging or packaging component is not desired or deliberate, if the final packaging or packaging component complies with the incidental concentration restrictions of 100 ppm.

**6.5 Other Restrictions.** Phthalates, **bisphenol A**, and chlorinated packaging material are prohibited from being intentionally introduced in packaging; an exception is allowed for packages with added phthalates, **bisphenol A**, or chlorinated packaging material solely from the addition of post-consumer material.

## **7.0 LABELING REQUIREMENTS**

**7.1 Disposal.** The manufacturer's label shall include a statement encouraging proper disposal of the product and encouraging **recycling of appropriate packaging**.

**7.2 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™ environmental standard for **Sanitary Paper Products (GS-1) manufactured chlorine free, with efficient energy and water use; made from 100% recovered material with XX% post-consumer material; and no added colorants or fragrances.**” [Where XX is the verified level of post-consumer material].