Standard for Sanitary Paper Products (GS-1)

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Edition 6.4

Green Seal, Inc. | **greenseal.org**

Green Seal

Green Seal is a nonprofit organization with a mission to transform the economy for a healthier, greener world. Green Seal sets leadership standards that aim to reduce the environmental and health impacts throughout the life cycle of products, services, and companies, to the extent technologically and economically feasible. The standards may be used for conformity assessment and public education.

Green Seal offers certification of products and services in conformance with its standards. For additional information on Green Seal and contact information, visit greenseal.org.

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Foreword

General. The final issued standard was developed in an open and transparent process with stakeholder input that included producers, users, and general interests. Edition 6.4 was issued on August 25, 2021, and replaces Edition 6.3 from July 31, 2020. Corrections and/or clarifications were last made to this standard on August 23, 2024. Information on changes made to this standard are available on Green Seal's website.[1]

The requirements in the standard are based on an assessment of the environmental, health, or social impacts associated with the products, services, or organizations covered in the scope of the standard. These requirements are subject to revision and generally cover aspects above and beyond regulatory compliance. This standard neither modifies nor supersedes laws and regulations. Any conformity assessment to this standard requires compliance with all applicable laws and regulations for the manufacturing and marketing of the products.

Provisions for safety have not been included in this standard since they are supervised by regulatory agencies. Adequate safeguards for personnel and property should be employed for all stages of production and for all tests that involve safety considerations.

Products, services, or organizations that are substantially similar to those covered by this standard in terms of function and life cycle considerations may be evaluated against the intent of the requirements of this standard, accounting for relevant differences between the intended scope of the standard and the actual product, service, or organization to be evaluated.

This standard may not anticipate a feature of the product that may significantly, and undesirably, increase its impact on the environment, health, or society. In such a situation, Green Seal will ordinarily amend a standard to account for the unanticipated environmental, health, or societal impacts.

Normative references (e.g., other standards) in this standard intend to refer to the most recent edition of the normative reference. Test methods may be required for product evaluation. Unless explicitly stated that a specified method is the only acceptable one, the intent of the standard is that an equivalent test method may be accepted, at Green Seal's sole discretion.

Certification to this standard shall be awarded only by Green Seal or, with Green Seal's explicit written permission, by a third-party certification program conducting on-site audits.

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[1] Library of Standards Documents, www.greenseal.org/green-seal-standards/library#section1

List of Acronyms and Abbreviations

BOD. Biochemical Oxygen Demand.
BTU. British Thermal Unit.
CD. Cross direction.
CFR. Code of Federal Regulations.
DOC. Dissolved Organic Carbon.
EPA. United States Environmental Protection Agency.
gf. Gram force.
GHS. Globally Harmonized System for Classification and Labeling of Chemicals.
in. inch.
ISO. International Organization for Standardization.
lb. pound.
m^2 or m^3. Square meters or cubic meters.
MD. Machine direction.
MDIP. Market De-Inked Pulp.
MT. Metric ton.
N. Newton.
OECD. Organization for Economic Co-operation and Development.
PCF. Processed Chlorine Free.
ppm. Parts per million.
SDS. Safety Data Sheet
SIC. Standard Industrial Classification.
TAPPI. Technical Association of the Pulp and Paper Industry.
TCF. Totally Chlorine Free.
$Yield_{PC}$. Post-Consumer Material Yield.
$Yield_{R}$. Recovered Material or Agricultural Residue Yield.

Green Seal Standard for Sanitary Paper Products, GS-1

1.0 Scope

This standard establishes environmental, health, and social requirements for *sanitary paper products* including *paper towels*, *general-purpose wipers*, *paper napkins*, *bathroom tissue*, *facial tissue*, *toilet seat covers*, *placemats*, tray liners, *table coverings*, and other *sanitary paper products*. The standard covers products for *institutional* as well as *retail* markets. This standard does not include *nonwoven sanitary products*, general-purpose disposable and flushable wipes containing cleaning agents or *fragrances*, disposable diapers, or sanitary napkins and tampons. See Appendix 1 for an example list of products included in the standard.

Words and phrases described in the standard that appear in *italics* have a corresponding definition located in Annex A.

2.0 Safer Products

2.1 Safer Ingredients

2.1.1 Biodegradability. Any *functional papermaking additives* present above 100 ppm by weight in the finished product or *contaminants* used in the *papermaking process*, 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%
- BOD, as % of Theoretical Oxygen Demand (ThOD) > 60%
- CO_2 evolution, as % of theoretical CO_2 > 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.

2.1.2 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*.

2.1.3 Chlorine Free. Products made from *recovered fibers* shall be *Processed Chlorine Free (PCF)*. Products made from *agricultural residue* shall be *Totally Chlorine Free (TCF).*

Additionally, chlorine or chlorine derivatives (e.g., elemental chlorine, chlorine dioxide, sodium hypochlorite, sodium chlorite) shall not be used during the following steps of the *papermaking process*: re-pulping, screening, deinking, and washing.[2]

Exemption: Chlorine and chlorine derivatives can be used during the re-pulping process if necessary to break down *recovered material* with wet-strength resins.

2.1.4 Colorants in Product. 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, the following types of *converted products* may be printed with *colorants* provided that these *colorants* contain a sum concentration of less than 100 ppm by weight (0.01%) of the heavy metals lead, mercury, cadmium, and hexavalent chromium: *paper towels*, *general-purpose wipers*, *paper napkins*, *placemats,* tray liners, and *table coverings*.

2.1.5 Optical Brighteners. *Optical brighteners* may be used as a *functional papermaking additive* at a dosage not to exceed 200 ppm (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*.

2.1.6 Water Disinfection. Chlorine derivatives and *biocides* may be used to disinfect the incoming fresh water supply and recycled process water. Product testing is not required, as long as the residual concentration of the chlorine derivatives and *biocides* used for disinfection is below the applicable maximum residual disinfectant levels in the National Primary Drinking Water Regulations found in 40 Code of Federal Regulations (CFR), Part 141 at any location where chlorine derivatives and *biocides* are added to the *papermaking process*. *Biocides* must be registered with the United States Environmental Protection Agency (EPA) or the Pest Management Regulatory Agency.

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

- *Fragrances*
- The heavy metals lead, chromium, or selenium both in the elemental form or compounds

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

- Chlorophenolic *Biocides*
- *Ozone-depleting compounds*

[2] There are no restrictions on the use of chlorine or its derivatives in the cleaning of production equipment.

2.2 Safer Products

2.2.1 Added Lotion. *Added lotion* may be used on *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 2.0 Safer Chemicals in the Green Seal Standard for Personal Care and Cosmetic Products, GS-50.[3]

2.2.2 Animal Testing. To avoid new animal testing, previous test results will be accepted as evidence of meeting a criterion. When existing data are not available, the preferred methods for new testing include methods that replace, reduce, or refine animal use, particularly those recommended by the Interagency Coordinating Committee on the Validation of Alternative Methods or the European Centre for the Validation of Alternative Methods, unless indicated otherwise. In addition, other non-animal (in-vitro) test results, modeling data, data from structural analogs, and other lines of evidence may be accepted, provided that the methods are peer-reviewed and applicable. Specific in vitro or modeling methods may be noted in the standard, but additional options may be accepted by the certification program. Further, a mixture need not be tested if existing information demonstrates that each of the applicable components complies with the criterion.

3.0 Responsible Sourcing

3.1 Fiber Requirements. The fiber source shall meet one of the following:

a) The product shall be made from 100% *recovered material*, subject to the applicable requirement in section 3.2;
b) The product shall be made from 100% *agricultural residue*;
c) The product shall be made from any combination of *recovered material* and *agricultural residue*, provided that the *recovered material* is 100% *post-consumer material,* or the product meets the applicable requirement in section 3.2 herein.

For *recovered material* produced by *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 residue*, the manufacturer shall document the original source of the material, and the *agricultural residue* shall originate from a crop certified to the Rainforest Alliance Sustainable Agriculture Standard or other approved *third--party certification program.*

3.2 Post-Consumer Material Requirements. Products made from *recovered material* shall meet the following requirements:

[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.

Product Type	*Post-Consumer Material* Requirement (% in product)
Paper Towels, *General-Purpose Wipers*, and Napkins	50%
Bathroom Tissue	25%
Facial Tissue	15%
Toilet Seat Covers	25%
Placemats/Tray liners	40%
Table Coverings	40%

3.3 Post-Consumer Material Calculations. 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*:

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

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.[4] The percentage of *recovered material* or *agricultural residue* 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.

3.4 Source Reduction. Reserved

4.0 Low-Impact Manufacturing

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

4.1.1 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.

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

4.1.3 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

[4] 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* or *Agricultural Residue* yield (Yield_R): 75%
Default *Post-Consumer Material* yield (Yield_{PC}): 75%

there shall be no support or tolerance of corporal punishment, physical or verbal coercion, sexual or other harassment, intimidation or exploitation.

4.1.4 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.

4.1.5 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.

4.2 Manufacturing and Converting Requirements – Water and Energy Use.

Manufacturers shall meet the following freshwater and *energy use* criteria, for combined processes including pulping, re-pulping, deinking, papermaking, product converting, and waste treatment (on-site or offsite facilities).

If a manufacturer only does converting, then the energy and water use for the other processes (pulping, re-pulping, deinking, papermaking, and waste treatment) shall be supplied by the manufacturer of the *parent roll*.

If a manufacturer purchases market de-inked pulp (MDIP), then the supplier of the MDIP will be required to provide the energy and water use data associated with production of the MDIP. This supplier data regarding energy and water use in production of MDIP shall meet the criteria in this section separately and in addition to the data from the paper manufacturer itself.

The data shall represent either the total annual resource used divided by the total annual production of paper,[5] or the total annual resource used to produce all grades of certified paper divided by the total annual production of all grades of certified paper.[6] This implies that estimation and allocation methods are acceptable.

Fresh Water Use **(gallons/ton of final product)** [(a)]	**Total *Energy Use* (millions BTUs/ ton of final product)** [(b)]
19,250	17.0

(a) gallons/T = 0.00417 m3/MT

(b) millions of British Thermal Units (BTUs)/T = 1.16 Gigajoules/MT = 323.2 kilowatt-hour /MT

5.0 Sustainable Packaging

5.1 Packaging Materials

5.1.1 Primary and Secondary. *Primary* and *Secondary packaging* shall meet the following requirements based on the packaging material type:

- Packaging made from paper or paperboard shall be *recyclable* and made from 100% *recovered material*.

[5] Total production represents the gross production of paper from the machines, and not sales of paper.
[6] Total production represents the gross production of certified paper from the machines, and not sales of certified paper.

- Packaging made from containerboard (corrugated cardboard) shall be *recyclable* and made from at least 30% *recovered material*.
- Packaging made from plastic shall be *recyclable*, or a *source -reduced package,* or shall contain 25% *recovered material* (*pre-* or *post-consumer material*). Where a product's packaging is below these levels, the manufacturer shall demonstrate that efforts have been made to use the maximum available *pre-* or *post-consumer material* in packaging. An exception shall be made for packaging with an effective *take-back program*.

5.1.2 Colorants In Packaging. *Primary* and *secondary packaging* may be printed using *colorants* provided that these *colorants* contain a sum concentration of less than 100 ppm by weight of lead, mercury, cadmium, and hexavalent chromium.

5.2 Packaging Label

5.2.1 Resin Identification Code. If plastic, the packaging shall be marked with the appropriate Resin Identification Code.

5.3 Restricted Substances

5.3.1 Heavy Metal Restrictions. The heavy metals lead, mercury, cadmium, and hexavalent chromium shall not be *intentionally introduced* in *primary* and *secondary packaging*. Further, the sum of the concentration levels of these metals shall not exceed 100 ppm by weight (0.01%); an exception is allowed for packaging that would not exceed this maximum level but for the addition of *recovered materials*.

5.3.2 Other Restrictions. Phthalates, bisphenol A, and chlorinated packaging material are prohibited from being *intentionally introduced* to plastic *primary* or *secondary packaging*; an exception is allowed for packaging that would not have added phthalates, bisphenol A, or chlorinated packaging material but for the addition of *post-consumer material*.

6.0 Verified Performance and Claims

6.1 Product Performance. Product performance requirements shall be consistently measured on either the unconverted (*parent roll*) or *converted product* depending on facility procedures. Testing shall be conducted under controlled and reproducible laboratory conditions. In addition to the measured performance requirements, the product shall be made in accordance with reasonable industry practice.

As an exception, products may exceed the upper ranges for tensile strength or stretch, provided the manufacturer demonstrates that the product meets market expectations for usability.

6.1.1 Basis Weight. Basis weight (grammage) shall be measured according to Technical Association of the Pulp and Paper Industry (TAPPI) T 410 or International Organization for Standardization (ISO) 536. It shall also meet the following requirements when measured as grams per square meter (g/m^2, SI Units) or pounds/ream (lbs/ream, English units):

Product	Basis Weight	Grammage[a]
	(lbs/ream[b])	(g/m^2)
Institutional paper towels –hard wound	15 – 35	24.4 – 56.9
Institutional paper towels – center pull	11 - 28	17.9 – 45.6
Institutional paper towels –folded	15 - 35	24.4 – 56.9
Institutional paper towels –kitchen roll	11 - 30	17.9 – 48.8
General-purpose wipers	15 - 35	24.4 – 56.9
Retail paper towels – folded	15 - 35	24.4 – 56.9
Retail paper towels – kitchen roll	11 - 30	17.9 – 48.8
Paper napkins	9 – 28.5	14.6 – 46.4
Bathroom tissue	7.5 – 22	12.2 – 35.8
Facial tissue	7.5 – 19	12.2 – 30.9
Toilet seat covers	7.5– 10.5	12.2 – 17.1
Placemats/Tray Liners	26 – 40	38.5 – 59.2
Table coverings	15 - 22	22.2 – 32.6

(a) See TAPPI T 1210 Table 1, Section 1.1 for conversion factors (Basis weight[pounds/ream]*1.6275 = Grammage [grams per square meter]).

(b) Based on a 24-inch x 36 inch -500 sheet ream, or 3000 sq. ft.

6.1.2 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 6.1.2.1 or section 6.1.2.2.

6.1.2.1 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[b]	
	MD	CD	MD	CD
	(gf/in)	(gf/in)	(gf/in)	(gf/in)
Institutional paper towels –hard wound	1700 - 3100	600 - 2000	250 - 850	100 - 700
Institutional paper towels – center pull	400 - 1500	100 - 800	100 - 500	50 - 200
Institutional paper towels –folded	800 - 2700	200 - 1300	230 - 600	90 - 400
Institutional paper towels –kitchen roll	400 - 1300	100 - 650	100 - 350	50 - 200
General-purpose wipers	800 - 2700	200 - 1300	230 - 600	90 - 400
Retail paper towels – folded	800 - 2700	200 - 1300	230 - 600	90 - 400
Retail paper towels – kitchen roll	400 - 1200	100 - 640	100 - 300	50 - 170
Paper napkins	400 - 1100	230 - 570	--	--
Bathroom tissue	140 - 900	50 – 450	--	--
Facial tissue	250 - 750	80 - 250	15 - 80	8 - 40

Product	Dry Tensile Strength[(a)]		Wet Tensile Strength[(b)]	
	MD	CD	MD	CD
Toilet seat covers	800 - 2250	200 - 1100	--	--
Placemats/Tray liners	--	--	--	--
Table coverings	--	--	--	--

(a) See TAPPI T 1210, Table 1, Section 2.1 for conversion factors

(b) Wet tensile strength data needs to be provided only in one direction (MD or CD)

(1 gf/in = 0.3886 newton/meter (N/m); 1 ozf/in = 10.945 N/m)

-- = no requirement

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

(a) See TAPPI T 1210, Table 1, Section 2.1 for conversion factors

(b) Wet tensile strength data needs to be provided only in one direction (MD or CD)

(1 gf/3in = 0.3886 newton/meter (N/m); 1 ozf/in = 10.945 N/m)

-- = no requirement

6.1.3 Stretch and Water Absorbency. Product characteristics shall meet the following requirements when tested according to TAPPI T 494 or ISO 1924/3, or TAPPI T 576 for stretch, and TAPPI T 432 for water absorbency, as measured in % stretch or seconds of water absorbency:

Product	Stretch	Water Absorbency
	(%)	(seconds)
Paper towels- institutional	2 - 22	0 - 160
Paper towels - retail	2 - 22	0 - 160
General-purpose wipers	2 - 22	0 - 160
Paper napkins	2 - 22	0 - 180
Bathroom tissue	2 - 24	--
Facial tissue	2 - 24	--
Toilet seat covers	1 - 10	--
Placemats/Tray liners	1 - 10	--
Table Coverings	--	--

-- = no requirement

6.2 Alternative Product Performance. Alternative test methods may be allowed for *sanitary paper products* or for categories not specified 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.

6.3 Product Design

6.3.1 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**				
Bathroom Tissue	62 ft^2/roll	600–3.75” x 4” sheets	31 ft^2/roll	300 –3.75” x 4” sheets
Facial Tissue –Flat Box	--	--	41 ft^2/box	100 – 7.5” x 8” sheets
Facial Tissue – Cube/ Dispenser Boxes	--	--	35 ft^2/box	80 – 8” x 8” sheets
Paper Towels –Hard wound or Center Pull	125 ft^2/roll	200 feet– 7.5-inch-wide roll	62 ft^2/roll	100 feet – 7.5-inch-wide roll
Paper Towels –Folded	84 ft^2/package	150–9” x 9” sheets	42 ft^2/package	75 – 9” x 9” sheets

Product	Single Ply Specification[b]		Multi Ply Specification[b]	
	Minimum product per roll/package	Conversion Basis	Minimum product per roll/package	Conversion Basis
Paper Towels – Kitchen Rolls (full sheet or select-a-size)	67 ft^2/roll	160–11" x 5.5" sheets	35 ft^2/roll	85 – 11" x 5.5" sheets
Paper Towels –General Purpose Wipers	125 ft^2/box	200–9" x 10" sheets	62 ft^2/box	100–9" x 10" sheets
Paper Napkins – Folded (used with or without a dispenser)	330 ft^2/package	200–14" x 17" sheets	165 ft^2/package	100–14" x 17" sheets
Paper Napkins – Small Dispensing	62 ft^2/package	200–5" x 9" sheets	31 ft^2/package	100–5" x 9" sheets
Paper Napkins –Beverage	69 ft^2/package	100–10" x 10" sheets	34 ft^2/package	50–10" x 10" sheets
Paper Napkins–Luncheon	117 ft^2/package	100–13" x 13" sheets	58 ft^2/package	50–13" x 13" sheets
Paper Napkins – Dinner/Guest Towel	97 ft^2/package	50–16.75" x 16.75" sheets	48 ft^2/package	25–16.75" x 16.75" sheets
***RETAIL* PRODUCTS**				
Bathroom Tissue	36 ft^2/roll	350–3.75" x 4" sheets	18 ft^2/roll	175–3.75" x 4" sheets
Facial Tissue –Flat Box	--	--	41 ft^2/box	100–7.5" x 8" sheets
Facial Tissue – Cube/ Dispenser Boxes	--	--	35 ft^2/box	80–8" x 8" sheets
Paper Towels – Folded	35 ft^2/roll	60–9.1" x 9.25" sheets	17.5 ft^2/roll	30–9.1" x 9.25" sheets
Paper Towels – Kitchen Rolls (full sheet or select-a-size)	67 ft^2/roll	160–11" x 5.5" sheets	35 ft^2/roll	85–11" x 5.5" sheets
Paper Napkins –Beverage	62 ft^2/package	100–9.5" x 9.5" sheets	31 ft^2/package	50–9.5" x 9.5" sheets
Paper Napkins–Luncheon	91 ft^2/package	100–11" x 12" sheets	45 ft^2/package	50–11" x 12" sheets
Paper Napkins – Dinner/Guest Towel	88 ft^2/package	50–15" x 17" sheets	44 ft^2/package	25–15" x 17" 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 (in^2) multiplied by 144 (in^2/ft^2)).

(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

6.4 Product Label

6.4.1 Disposal. The manufacturer's label shall include a statement encouraging recycling of appropriate *primary* and *secondary packaging*.

7.0 Trademark Use Requirements

7.1 Trademark Use. Use of the Green Seal® Certification Mark or the Green Seal name, e.g., on the product, product label, packaging, secondary documents, or promotional materials, must be in accordance with Green Seal's Trademark Use Guidelines.[7]

7.2 Misleading Claims. Green Seal trademarks shall not be used in conjunction with any modifying terms, phrases, or graphic images that might mislead consumers as to the extent or nature of the certification.

[7] www.greenseal.org/trademark-use-guidelines

Annex A – Definitions (Normative)

Note that the defined terms are italicized throughout the standard.

Added Lotion. Material applied to the finished surface of the paper or tissue to provide softness to the touch. Techniques to add lotion include dipping or spraying. A softener or debonder added to the furnish as a *functional papermaking additive* is not considered an *added lotion*.

Agricultural Residue. Process waste material remaining from harvesting *nonwood* plants used to produce food or fiber, which would otherwise be incinerated or disposed of *in situ* or in a landfill. Material that would normally be used as compost/fertilizer *in situ* is excluded.

Bathroom Tissue. A class of soft paper products used to maintain personal hygiene, designed to disperse in septic tanks. Products typically come in rolls.

Biocide. A chemical used to kill biological organisms.

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

Carcinogen. A chemical listed as a known, probable, reasonably anticipated, or possible human carcinogen by the International Agency for Research on Cancer (Groups 1, 2A, and 2B), National Toxicology Program (Groups 1 and 2), EPA IRIS weight-of-evidence classifications A, B1, B2, C, carcinogenic, known/likely human carcinogen, likely to be carcinogenic to humans, and suggestive evidence of carcinogenicity or carcinogen potential), by the Occupational Safety and Health Administration (as carcinogens under 29 CFR 1910.1003(a)(1)), or under the Globally Harmonized System for Classification and Labeling of Chemicals (GHS) Hazard Categories 1 (H350, may cause cancer) and 2 (H351, suspected of causing cancer).

Child Labor. Work that deprives children of their childhood, their potential and their dignity, and that is harmful to physical and mental development. To avoid child labor the International Labour Organization provides the following instruments: Minimum Age Convention (e.g., a minimum age not less than 15 for standard work and 18 for hazardous work) and the Worst Forms of Child Labour Convention.

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

Contaminant. A substance in a *functional papermaking additive* that was not intentionally added but is known to be present above 100 ppm by weight, in the finished product.

Converted Product. Manufactured paper that has been further processed and converted into a finished product that is saleable.

Energy Use. The total energy used to manufacture *sanitary paper products*, including the net energy consumption during re-pulping of *recovered material* or *agricultural residue* pulping, throughout the paper making process, during waste treatment, and during converting and/or packaging. Net energy consumption is considered energy purchased and generated less sales. It does not include transportation.

Facial Tissue. A class of soft, absorbent, disposable paper products suitable for use on the face. Products 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.

Finishing Broke. Discarded paper resulting from any finishing (converting) operation, including, but not limited to, winding, slitting, cutting, sorting, counting, cartoning, palletizing, and wrapping.

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.

Fresh Water Use. The total amount of steam, process, and cooling water used in the manufacture of *sanitary paper products*, including water used during re-pulping of *recovered material* or pulping of *agricultural residue*, throughout the paper making process; and during converting (if applicable). Fresh water does not include *whitewater* or other recycled water streams.

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, including, 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.

Furnish. The mixture of *recovered material* fiber or *agricultural residue* fiber and other chemicals that is blended in a water suspension, or slurry, from which paper products are made. Also referred to as stock.

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

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

Integrated Mill. A facility with either a pulp mill or the capability to re-pulp virgin or recovered fiber and a paper mill on the same site.

Intentionally Introduced. The use of substances for their desired or deliberate presence in the *primary package* for the purpose of providing a specific characteristic or quality. It does not refer to the use of substances as processing aids or the use of an intermediate that imparts certain chemical or physical changes during manufacturing, as long as the substance or intermediate is present in the *primary package* at concentrations below 100 ppm.

Mill Broke. Paper discarded from any point in the manufacturing process, which is subsequently re-pulped and reprocessed. “Wet broke” is typically generated from the wire or presses, while “dry broke” emanates from the dryers, reel, and winder.

Mutagen. Substances designated as known to induce heritable mutations, regarded as if they induce heritable mutations in the germ cells of humans, and thus meet the criteria for categories 1 and 2 (H340 and H341) under the GHS.

Nonwood Fiber. Fiber from plants that can be used in the manufacture of *sanitary paper products*, including: bamboo, hemp, flax, wheat straw, cotton, kenaf, sugar cane, or other plants that are botanically not considered trees.

Nonwoven Sanitary Products. A product category that incorporates nonwoven fabrics in the manufacturing process. A product is considered nonwoven when the fibers (synthetic or pulp) used in fabrication are bonded

together instead of woven, using either an adhesive or a chemical reaction. Nonwoven products include, but are not limited to, disposable diapers, feminine hygiene products, or premoistened tissues.

Optical Brightener. Additives 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.

Ozone-Depleting Compound. Any compound with an ozone-depletion potential greater than 0.01 (chlorofluorocarbon 11=1) according to the EPA list of Class I and Class II Ozone-Depleting Substances; or any substances or mixtures falling into category 1 (H420), hazardous to the ozone layer, under the GHS.

Papermaking Process. The process of using fiber, water and additives to make paper, including, but not limited to, pulping, re-pulping, cleaning, screening, deinking, washing, bleaching, and papermaking.

Paper Napkins. A class of absorbent, disposable paper products that is typically folded and is suitable for wiping hands and mouth, including, but not limited to: *retail* beverage, luncheon, dinner, and guest towel napkins; *institutional* folded napkins used with or without a dispenser; small *institutional* dispenser napkins; and *institutional* beverage, luncheon, dinner, and guest towel napkins.

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; *retail*, folded towels; *institutional*, hardwound roll towels; *institutional*, folded towels, and *institutional*, perforated roll towels.

Parent Roll. The full-width roll produced from a paper machine, prior to any further finishing or converting.

Placemats. A protective layer made from paper for a portion of a table or other surface. Tray liners are considered the same as placemats for the purposes of this standard.

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 or *by-products* generated from, and commonly reused within, an original manufacturing and fabrication process.

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.

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.

Processed Chlorine Free (PCF). Paper products made from *recovered materials* that may have been, in their original manufacturing process, bleached using chlorine or chlorine-derivatives (e.g., elemental chlorine, chlorine dioxide, sodium hypochlorite, sodium chlorite), but were not re-bleached with chlorine or chlorine-derivatives. Any virgin fiber[8] or agricultural residue incorporated into the final product is *Totally Chlorine Free*.

Recovered Material. Either material recovered from or otherwise diverted from the *solid waste* stream, that

[8] This definition is consistent with common use in industry. GS-1 only covers products that are made from waste materials (i.e., *recovered material* and *agricultural residue*). Virgin fiber is not an acceptable raw material for products certified to GS-1.

is generated after the completion of the paper manufacturing process; or fiber and broke recovery that contains 100% *recovered material* and is integral to the manufacturing process from which it was generated.

Recovered material may include:

- *Pre-consumer materials* such as finishing 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 (*finishing broke*); 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 *whitewater* or *wastewater*, or *mill broke* (wet or dry) generated from the manufacturing process used only to make the certified product (i.e., *mill broke* containing 100% *recovered material*).

Recovered material does not include:

- Fibers recovered from *whitewater* or *wastewater*, or *mill broke* (wet or dry) generated from the manufacturing process used to make non-certified products containing virgin material (i.e., *mill broke* containing any virgin material), regardless of whether such materials are used by the same or another company.
- Forest residue such as fibrous *by-products* of harvesting, extractive, or woodcutting processes.

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.

Reproductive Toxin. A chemical listed as a reproductive toxin (including developmental, female, and male reproductive 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), substances designated as category 1 (H360), known or presumed reproductive toxicant, or category 2 (H361), suspected human reproductive toxicant, under the GHS, or a substance designated as having adverse effects on or via lactation (H362), under the GHS.

Retail. A category of products typically manufactured for use in residential homes and sold to consumers.

Sanitary Paper Products. Products covered by the Standard Industrial Code (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 disposable and flushable wipes containing cleaning agents or *fragrances*, disposable diapers, sanitary napkins, and tampons.

Secondary Packaging. Packaging used to contain primary package/s and typically used for merchandizing or labeling. This does not include the *primary package* or additional shipping packaging.

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

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 packaging for a given product unit (of

the same size), commonly used for that product.

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

Table Coverings. A lightweight, protective layer made from paper intended to cover an entire table or other surface.

Take-Back Program. A program sponsored by the original product manufacturer that has been demonstrated to receive at least 50% of sold containers for recycling, composting, or reuse.

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. The basis for certification must be a publicly-available standard that was 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.

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

Totally Chlorine Free (TCF). Virgin-content papers, including those made from *agricultural residue*, that have not been bleached using chlorine or chlorine-derivatives (e.g., elemental chlorine, chlorine dioxide, sodium hypochlorite, sodium chlorite).

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

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.

Whitewater. Whitewater is a general term for any *furnish* (stock) filtrate or process water that contains fiber fines. On a paper machine, whitewater is produced during the forming and dewatering of the paper sheet.

Appendix 1 – Scope (Informative)

Examples of products included in or excluded from the scope of GS-1:

Products included in GS-1

- *Paper towels* (hardwound, folded, or kitchen roll)
- *Paper napkins* (beverage, luncheon, dinner)
- *General-purpose wipers* that do not contain any added cleaning agents or fragrances
- *Bathroom tissue*
- *Facial tissue* (flat box and cube box)
- *Facial tissue* with *added lotion*
- *Toilet seat covers*
- *Placemats* or tray liners
- *Table coverings*

Products excluded from GS-1

- *Nonwoven sanitary products*
- General purpose disposable and flushable wipes that contain added cleaning agents or *fragrances*
- *Facial tissue* (travel packs)
- Cotton balls, cosmetic pads
- Disposable diapers
- Sanitary napkins and tampons
- Printing and writing paper (included in GS-7)
- Newsprint
- Paper products used in the preparation of food (included in GS-18)
- Coated groundwood paper and coated groundwood free printing paper (included in GS-10)
- Specialty paper such as thermal or carbon paper
- Packaging materials