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November 20, 1972
SUPERSEDING
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August 23, 1968 and
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June 23, 1965

FEDERAL SPECIFICATION

PAPER, TOILET TISSUE

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers single and two-ply toilet tissue in roll form, sheet tissue, and packets of sheet tissue.

1.2 Classification. Toilet tissue paper covered by this specification shall be of the following types, grades, folds, and packets as specified (see 6.1):

Type I. Roll tissue.

- Grade A - Two-ply facial grade sheets.
- Grade B - Single-ply sheets.

Type II. Sheet tissue.

- Single fold, 4-1/2 by 5 inches.
- Double fold, 4-1/2 by 5-1/2 inches.
- Packet, 12 two-ply sheets or 24 single-ply sheets.

2. APPLICABLE DOCUMENTS

2.1 The following specifications and standards, of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

Federal Specifications:

- QQ-S-781 - Strapping, Flat; Steel.
- PPP-B-636 - Boxes, Shipping, Fiberboard.
- PPP-F-320 - Fiberboard; Corrugated and Solid, Sheet Stock (Container Grade), And Cut Shapes.

Federal Standards:

- Fed. Std. No. 123 - Marking for Domestic Shipment (Civil Agencies).
- Fed. Std. No. 595 - Colors.

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which included cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

(Single copies of this specification and other product specifications required by activities outside the Federal Government for bidding purposes are available without charge at the General Services Administration Regional Offices in Boston, New York, Washington, D.C., Atlanta, Chicago, Kansas City, Mo., Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, Wash.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications, Standards, from established distribution points in their agencies.)

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Military Standards:

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-129 - Marking for Shipment and Storage.

(Copies of Military Specifications and Standards required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply:

Technical Association of the Pulp and Paper Industry (TAPPI) Standards:

T 402 - Standard Conditioning and Testing Atmospheres for Paper, Board, Pulp Handsheets and Related Products.
T 403 - Bursting Strength of Paper.
T 404 - Tensile Breaking Strength of Paper and Paperboard.
T 410 - Weight per Unit Area (Basis Weight or Substance) of Paper and Paperboard.
T 432 - Water Absorption of Bibulous Paper.
T 452 - Brightness of Paper and Paperboard.
T 457 - Stretch of Paper and Paperboard.
T 498 - Softness of Sanitary Tissues.

(Application for copies may be obtained from the Technical Association of the Pulp and Paper Industry, One Dunwoody Park, Atlanta, Georgia 30341.)

National Motor Freight Traffic Association, Inc., Agent:

National Motor Freight Classification.

(Application for copies should be addressed to the American Trucking Associations, Inc., Tariff Order Section, 1616 P Street N.W., Washington, DC 20036.)

Uniform Classification Committee, Agent:

Uniform Freight Classification.

(Application for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

(Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

3. REQUIREMENTS

3.1 Material. Toilet tissue shall be white, unglazed tissue made from fibrous, cellulosic material which may include reclaimed fibers and shall comply with the requirements of this specification.

3.1.1 Type II. When specified, the color of packets of toilet tissue and cover material for the packets shall be Color No. X-34087 of Fed. Std. No. 595 (see 6.1). The color formulation shall have prior approval of Office of the Surgeon General, Department of the Army (see 6.3).

3.2 Roll tissue.

3.2.1 Physical requirements. Roll tissue shall be of single-ply (grade B) or double-ply (grade A) construction and shall conform to the requirements shown in Table I, when tested as specified in 4.3.2. The stated requirements for grade A tissue are for a two-ply sheet.

TABLE I. Physical requirements of roll tissue

| Characteristic | Grade A | Grade B |
|---|---------|------------------|
| Basis weight, 24 x 36-500, minimum, pounds | 19 | 13 |
| Tensile strength, dry, oz./inch, average machine direction | -- | 13 |
| average both directions combined | 7.5 | -- |
| Absorption time of 0.01 milliliter of water, maximum, seconds | 30 | 40 |
| Brightness, minimum, percent | 73 | 68 |
| Softness value, grams, average each direction, maximum | -- | 15 $\frac{1}{2}$ |
| average both directions combined | 12 | -- |

1/ No single set value shall exceed 20 grams.

3.2.2 Roll construction. Roll tissue shall be evenly and tightly wound on a stiff round paperboard core having an inside diameter of 1-3/8 to 1-3/4 inches, sufficiently rigid to prevent collapse under ordinary conditions of transportation and usage. When crushed rolls are specified, the requirement for core stiffness shall not be applicable (see 6.1). The width of the rolls shall be 4-1/2 + 1/8 inches. Roll tissue shall be perforated as specified in the subparagraphs below. The tissue shall be so perforated that the sheets are easily and evenly detached.

3.2.2.1 Grade A, two-ply tissue. Grade A tissue roll shall be perforated at not less than 4-3/8 nor more than 4-5/8 inch intervals and shall average not less than 500 double-ply sheets per roll and no single roll shall contain less than 488 sheets.

3.2.2.2 Grade B, single-ply tissue. Grade B tissue roll shall be perforated at not less than 4-1/4 inch nor more than 4-5/8 inch intervals and shall average not less than 4,500 inches per roll (1000 sheets perforated at 4-1/2 inch intervals or 1,060 sheets perforated at 4-1/4 inches). No single roll shall be less than 4,375 inches in length.

3.3 Type II, sheet tissue.

3.3.1 Physical requirements. The sheet tissue shall conform to the requirements shown in Table II, except that for sheets furnished in packets, the bursting strength requirement need not apply provided paper is furnished having a basis weight of not less than 12 pounds (24 x 36-500) and possessing a stretch of not less than 5 percent in one direction. Tissue in packets may also be furnished in two-ply sheets provided it meets the requirements in table II and this paragraph.

TABLE II. Physical requirements of sheet tissue.

| | |
|---|-------|
| Basis weight, 24 x 36-500, minimum, pounds | .10 |
| Bursting strength, minimum, psi (5 sheets) | 9-1/2 |
| Absorption time of 0.01 milliliter of water, maximum, seconds | 300 |

3.3.2 Assemblage.

3.3.2.1 Single-fold and double-fold sheets. Single-fold and double-fold sheet tissue shall be assembled in stacks averaging not less than 800 sheets per package, with not less than 780 sheets in any given package. The sheets shall be so interlocked that two single-fold sheets or two double-fold sheets at a time will dispense satisfactorily from a container. A plus or minus tolerance of 1/8 inch will be allowed in the length and width of single and double-fold sheet tissue.

3.3.2.2 Packet. A packet shall consist of 24 single-ply sheets or 12 two-ply sheets, 5 inches by 4-1/2 inches + 1/4 inch in either dimension. Alternatively the sheets may be 4-1/2 inches by 4-1/2 inches + 1/4 inch in either dimension. The paper shall be folded and contained in a glued, taped or heat sealed sleeve made of

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unbleached kraft or unbleached sulfite paper covering the entire length of the packet within $\pm 1/8$ inch. The sleeve shall be closed by gluing, taping or heat sealing provided an effective seal is obtained and no objectionable odor is present. All edges of the tissue paper visible from the ends of the packet shall be flush with a tolerance of $\pm 1/16$ inch. The maximum dimensions of the final packet shall be not greater than $2\frac{3}{4}$ inches in length, $1\frac{3}{8}$ inches in width and $5/8$ inch in thickness, with all measurements being made to the nearest $1/8$ inch. Alternatively, the sheets shall be enclosed in a sleeve, and the sleeve shall be folded and effectively secured in position by an encircling tape band provided all other requirements for the toilet tissue, sleeve and finished packet are adhered to and the tape approximates natural kraft in color.

3.3.2.2.1 Marking. The name of the supplier and the contract number shall be legibly printed or stamped on each packet with water insoluble black ink. The ink shall not bleed through the packet or sleeve or onto the sheets.

3.4 Cleanliness. All types of toilet tissue shall be clean and free from dirt spot, holes, or tears $1/16$ inch or larger, or more than 5 dirt spots, holes or tears, less than $1/16$ inch in one sheet; shives or sliver $1/8$ inch or more in length, or more than 5 shives or slivers less than $1/8$ inch in length in one sheet; any foreign matter, undigested paper, or unbleached waste. At the option of the contracting officer, a standard sample may be furnished with the invitation for bids, and deliveries shall be at least equal to it with respect to cleanliness.

3.5 Workmanship. Toilet tissue in accordance with this specification shall be uniform in color, trimmed with clean smooth edges, and shall conform to the levels of quality established herein.

4 QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and service conform to prescribed requirements.

4.1.1 Sampling and inspection for acceptance. Sampling and inspection shall be performed in accordance with the provisions set forth in MIL-STD-105, except where otherwise indicated hereinafter. For purposes of sampling, an inspection lot for acceptance inspection and tests shall consist of all material of the same type, grade, or fold submitted for inspection at the same time.

4.2 Inspection of materials and components. In accordance with 4.1 above, components and materials shall be inspected and tested in accordance with all the requirements of referenced specifications, drawings and standards unless otherwise excluded, amended or qualified in this specification or applicable purchase documents.

4.2.1 Certificate of compliance.

4.2.1.1 Colored toilet tissue packets. The supplier shall certify that the provisions of 3.1.1 have been met, as applicable.

4.3 Inspection of the end item.

4.3.1 Examination of the end item. Examination of the end item shall be made for the defects set forth in the applicable subparagraphs at the inspection levels and acceptable quality levels (AQLs) set forth in 4.3.1.6. The lot size, for purposes of determining the sample size in accordance with MIL-STD-105, shall be expressed in units of rolls, packets, packages of sheets (as applicable) of the specified type, grade, fold, or packet of sheets for examinations under 4.3.1.1, 4.3.1.2, 4.3.1.3 and 4.3.1.4, and in units of shipping containers for examination under 4.3.1.5.

4.3.1.1 Examination of the end item for defects in appearance and workmanship. The sample unit for this examination shall be ten consecutive sheets, to count as one sample unit, selected at random from one roll, packet or package of sheets, as applicable.

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| Examine | Defect |
|-----------------------|---|
| Appearance | Not grade specified, applicable to rolls. Formation not uniform. Hard or glazed finish. Not clean; presence of dirt, spots, holes, tears, shives or slivers larger than specified or greater in number than specified. Does not compare favorably with standard sample, when furnished. Presence of foreign matter, undigested paper, or unbleached waste. |
| Color | Not white, not uniform. |
| Workmanship Type I | Not completely perforated; not perforated along entire width of sheet. Perforations not perpendicular to edges of sheet; perforations wavy, not uniform. Sheets separated at perforations. Sheets cannot be easily and evenly detached from each other, do not separate at perforations. Ragged, uneven edges. |
| Type II | Not single-fold, double-fold, or packet as specified. |

4.3.1.2 Examination of the end item for dimensional defects. The sample unit for this examination shall be one sheet randomly selected from a roll, packet, or unit package.

| Examine | Defect |
|---|--|
| Type I Width of sheet | Greater than 4-5/8 inches or less than 4-3/8 inches. |
| Length of sheets (distance between perforations) | |
| Grade A | Less than 4-3/8 inches. |
| Grade B | Less than 4-1/4 inches. |
| Core | Inside diameter greater than 1-3/4 inches or less than 1-3/8 inches. |
| Type II Width of sheets | Varies more than allowable tolerance. |
| Length of sheet | Varies more than allowable tolerance. |

4.3.1.2.1 Examination of packet for dimensional defects. The sample unit for this examination shall be one packet.

| Examine | Defect |
|-----------|-------------------------|
| Length | More than 2-3/4 inches. |
| Width | More than 1-3/8 inches. |
| Thickness | More than 3/4 inches. |

4.3.1.3 Examination of the end item for defects in construction. The sample unit for this examination shall be one roll, packet, or package, as applicable.

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| Examine | Defect |
|-----------------------|---|
| Type I | Presence of glue or adhesive spots on roll. Roll not evenly and tightly wound. Core not pasteboard. Cores not crushed for packing (when so required). Cores crushed, broken, mutilated, or collapsed (when uncompressed rolls are specified). |
| Type II | |
| Single or double-fold | Sheets not interlocked in such a manner that two sheets at a time will dispense satisfactorily from a dispenser. |
| Packet | Not banded for at least one-half the length of packet. Ends not flush within + 1/16 inch. Band not secured as specified; any objectionable odor. |

4.3.1.4 Examination of the end item for length or count. The sample unit for this examination shall be one roll, packet, or unit package of sheets as applicable. The lot shall be unacceptable if the average number of sheets or length per roll for type I rolls or the number of sheets per package or packet, as applicable, of all rolls, packages, or packets examined is less than specified. The lot acceptability for defects in the specified length or count of individual rolls or packages shall be as indicated in 4.3.1.6.

4.3.1.5 Examination of preparation for delivery. An examination shall be made to determine whether markings, materials, and workmanship comply with the requirements of section 5. The sample unit shall be one shipping container, fully packed. An equal number of shipping containers fully prepared for delivery shall be examined for closure defects.

| Examine | Defect |
|---------------------------------|--|
| Marking (exterior and interior) | Incorrect; incomplete; illegible; omitted; of improper size, location, sequence, or method of application. |
| Material | Any nonconforming component; component missing, damaged or otherwise defective. |
| Workmanship | Inadequate application of components, such as incomplete closure of container flaps, loose or inadequate sealing, strapping or stapling. |
| Contents | Number of intermediate packages per shipping container is less than specified. |

4.3.1.6 Inspection levels and acceptable quality levels (AQLs) for examinations. The inspection levels, for determining the sample size, and acceptable quality levels (AQLs), expressed in defects per 100 units, shall be as follows:

| Examination paragraph | Inspection levels | AQLs |
|-----------------------|-------------------|------|
| 4.3.1.1 | S-4 | 4.0 |
| 4.3.1.2 1/ | S-2 | 6.5 |
| 4.3.1.2.1 1/ | S-3 | 4.0 |
| 4.3.1.3 1/ | S-2 | 6.5 |
| 4.3.1.4 1/ | | |
| Average | S-2 | N.A. |
| Unit | S-2 | 2.5 |
| 4.3.1.5 | S-2 | 2.5 |

1/ The sample units for these examinations shall be selected from among the rolls, packages, or packets selected for sampling in 4.3.1.1.

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4.3.2 Testing of the end item. The end item shall be tested for applicable characteristics in Table III. The methods of testing shall be in accordance with the referenced TAPPI test procedures except where otherwise indicated. The lot size shall be expressed in units of shipping containers for each type, grade, or fold of material. The sample unit for all tests shall be one roll, one unit package, or three packets. Not more than one sample unit, randomly selected, shall be drawn from any one shipping container. Five sample units shall be tested from each lot. The test report shall include all values upon which the results are based and there shall be no failure to meet the sample unit or lot average requirements. All samples shall be conditioned and tested in accordance with the provisions of TAPPI method T 402.

TABLE III. Testing of the end item

| Characteristic | Specification reference | | Requirements applicable to | | No. determinations per unit | Results reported as numerically to nearest |
|---|-------------------------|-------------|----------------------------|-------------|-----------------------------|--|
| | Require-ment | Test method | Indivi-dual | Lot average | | |
| Atmospheric conditions | 4.3.2 | T 402 | All Testing | | | |
| Type I | | | | | | |
| Basis weight (24 x 36-500) | Table I | T 410 | -- | X | 1 | 0.1 pound |
| Tensile strength, dry, <u>1/</u> Machine direction | Table I | T 404 | -- | X | 10 | 0.1 oz./ inch |
| Cross direction | Table I | T 404 | -- | X | 10 | 0.1 oz./ inch |
| Absorption time of 0.01 ml. of water | Table I | T 432 | -- | X | 10 | 1 second |
| Brightness | Table I | T 452 | -- | X | 6 | 0.1 per- cent |
| Softness value | | | | | | |
| Machine direction | Table I | T 498 | X | -- | 5 | 0.5 gram |
| Cross direction | Table I | T 498 | X | -- | 5 | 0.5 gram |
| Type II | | | | | | |
| Basis weight (24 x 36-500) | 3.3.1 | T 410 | -- | X | 1 | 0.1 pound |
| Bursting strength | 3.3.1 | T 403 | -- | X | 10 | 1 psi |
| Absorption time of 0.01 ml. of water | 3.3.1 | T 432 | -- | X | 1 | 1 second |
| Stretch, as applicable | 3.3.1 | T 457 | -- | X | 10 | 1 percent |

1/ Average result of machine and cross machine directions for grade A, for grade B report machine direction value only.

5. PREPARATION FOR DELIVERY

5.1 Packaging. Packaging shall be level A, B, or C, as specified (see 6.1).

5.1.1 Level A and B.

5.1.1.1 Rolls. Rolls of paper (see 3.2.2) shall be wrapped, unwrapped, crushed, uncrushed as specified (see 6.1). When the rolls are required to be wrapped the following packaging is acceptable: each roll is fully wrapped with closed ends or each roll width is wrapped or banded.

5.1.1.2 Sheet tissue. Stacks of sheet tissue specified in 3.3.2.1 shall be wrapped or banded with paper. The packets specified in 3.3.2.2 do not require any packaging.

5.1.2 Level C. Rolls and sheet tissues shall be packaged to afford adequate protection against damage during shipment from the supply source to the first receiving activity.

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5.2 Packing. Packing shall be level A, B, or C, as specified (see 6.1).

5.2.1 Level A.

5.2.1.1 Crushed rolls. Ninety-six crushed rolls of paper of one type and grade packaged as specified in 5.1.1, shall be packed 6 long, 4 wide, and 4 deep in a box conforming to PPP-B-636, V2s. Closure and reinforcement shall be in accordance with the appendix of the box specification, except that the reinforcement shall conform to QQ-S-781, type 1, class A or B and not less than 1/2 inch by 0.015 inch or shall be tape bands.

5.2.1.2 Uncrushed rolls and sheet tissue. One hundred uncrushed rolls of tissue of one grade only, or one hundred thousand sheets (100 or 125 packages) of sheet tissue of one fold only, packaged as specified in 5.1.1, shall be packed in a box, specified in 5.2.1.1. The closure and reinforcement shall be as specified in 5.2.1.1.

5.2.2 Level B. One hundred uncrushed rolls of tissue of one grade only, or one hundred thousand sheets (100 or 125 packages) of sheet tissue of one fold only, packaged as specified in 5.1.1, shall be packed in a box conforming to PPP-B-636, class domestic, grade not less than 175.

5.2.3 Level C. The rolls and sheet tissue packaged as specified in 5.1 and packets specified in 3.3.2.2, shall be packed in containers to assure acceptance and safe arrival at destination in compliance with Uniform Freight Classification or National Motor Freight Classification, as applicable.

5.3 Unit loads. When specified, boxes of toilet paper shall be furnished in unit loads on standard 40 x 48 inch non-returnable, wing-type, four-way entry pallets. The overall dimensions of the load shall not exceed 43 inches in width, 51 inches long and 45 1/2 inches high. A piece of fiberboard conforming to PPP-F-320, class weather resistant, type CF, grade not less than 200, shall cover the top of the load. The load shall be secured to the pallet with steel or nonmetallic strapping conforming to QQ-S-781.

5.4 Marking. In addition to any special markings required in the procurement documents and 3.3.2.2.1, marking of the interior packages and exterior shipping containers shall be in accordance with Fed. Std. No. 123 for civil agencies or MIL-STD-129 for military agencies, as applicable (see 6.1).

6. NOTES

6.1 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents:

- (a) Title, number, and date of this specification.
- (b) Type, grade, and fold required, if applicable (see 1.2).
- (c) Whether rolls shall be fully wrapped (closed ends). Entire roll width wrapped, or banded, crushed or uncrushed (see 5.1.1.1).
- (d) Selection of applicable levels of packaging and packing (see 5.1 and 5.2).
- (e) Whether Olive Drab Color No. X-34087 is required for packets of type II tissue (see 3.1.2).
- (f) Marking document required (see 5.4).
- (g) When unit loads are required (see 5.3).

6.2 Information with respect to Handle-O-Meter, may be obtained from Thwing-Albert Instrument Company, Penn Street, at Pulaski Avenue, Philadelphia 44, Pennsylvania.

6.3 Formulations (type II color only). The following formulations have been found acceptable by the Surgeon General, Department of the Army:

American Cyanamid
Calcomine Bright Green
Calcomine Orange 2 RS Conc.
Calcomine Yellow 4 GL
Epsom Salt - Heat to 120° F.
Alum. to pH 4.5

duPont
duPont Stilbene Yellow GXG Liquid
Pontamine Fast Scarlet 4B Liquid
Pontamine Sky Bly M Liquid
Salt
Pontamine Retention Agent A (added after dilution)

Any change in formulation from those indicated herein shall receive prior approval from the Office of the Surgeon General, Department of the Army.

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6.4 The Department of Defense have waived coordination of this specification.

Military Interest:

Army-GI

Civil Agency Interest:

GSA
FSS
PBO

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