

MIL-P-10831B

4 September 1964

~~SUPERSEDING~~

MIL-P-10831A

10 April 1953

MILITARY SPECIFICATION

PAPER, TARGET

1. SCOPE

1.1 Scope - This specification covers wood pulp paper suitable for use in printing paper targets for pistol and rifle firing practice.

1.2 Classification - Paper covered by this specification shall be furnished in one grade and two types: (see 6.1).

Type I - Pistol and rifle - lightweight
Type II - Rifle, small bore - heavyweight

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the same issue in effect on date of invitations for bids or proposals, form a part of this specification to the extent specified herein.

SPECIFICATIONS

Federal

✓ UU-P-31 - Paper, General Specifications and Methods of Testing

✓ UU-P-268 - Paper, Kraft, Untreated, Wrapping

✓ PPP-B-601 - Boxes, Wood, Cleated Plywood

FSC 9310

MIL-P-10831B

PPP-B-621 - Boxes, Wood, Nailed and Lock Corner

PPP-B-636 - Boxes, Fiber

Military

MIL-A-140 - Adhesive, Water Resistant, Waterproof
Barrier-Material

STANDARDS

Federal

Federal Standard No. 595; Colors

Military

MIL-STD-105 - Sampling Procedures and Tables for
Inspection by Attributes

MIL-STD-129 - Marking of Shipments

(Copies of specifications, standards, drawings and publications 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 shall apply.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY STANDARDS

^{sm-88}
T459~~m-48~~ - Wax Test for Surface Strength of Paper
(Wax Pick Test)

sm
T480~~m-51~~ - Specular Gloss of Paper and Paperboard
at 75°. Degrees

(Application for copies should be addressed to the Technical Association of the Pulp and Paper Industry, 360 Lexington Avenue, New York 17, New York)

3. REQUIREMENTS

3.1 Material - The composition of the material is not specified, however, the finished product shall comply with all the requirements of this specification.

3.2 Color - Unless otherwise specified in the contract or order, the color of the printing side (top side of the paper as it comes off the wire) of both types of target paper shall correspond reasonably in shade to the color of chip numbers 37855 through 37886 of Federal Standard No. 595. (See 6.1)

3.3 Form - The target paper shall be furnished in rolls or sheets as specified. (See 6.1)

3.3.1 Rolls - When roll form is specified, the paper shall be uniformly and tightly wound with even tension on nonreturnable fiber cores having 6 inch, plus or minus 1/16 inch, inside diameter. The length of the core shall be equal to the width of the roll material, with a plus tolerance of 1/8 inch. The cores shall be of sufficient rigidity to prevent distortion of the roll under normal conditions of use and transportation, and shall be protected by use of fitted metal plugs firmly inserted at each end. The width of the roll material shall be 73 inches, plus 1/8 inch or minus 1/16 inch. The diameter of the roll shall be not more than 36 inches or less than 32 inches. Each roll shall be suitably restrained to prevent unwinding and the direction of the wind shall be so indicated by an arrow marked on both ends of the roll.

3.3.1.2 Splices - No more than 10 percent of rolls within a shipment shall contain splices. No roll shall contain more than three splices (4 pieces) and no piece shall be less than 20 yards in length. Splices shall be evenly and neatly made, the entire width of the roll material, and shall not come apart during unwinding of the roll. Rolls containing splices shall be flagged at both ends of each splice with colored markers to indicate splices within the roll.

MIL-P-10831B

3.3.2 Sheets - Unless otherwise specified, the paper shall be furnished in the size(s) specified and must be flat, trimmed square on four sides with smooth edges. Direction of grain on flat paper shall be optional unless otherwise specified. Paper must not be undersize and not more than 1/8 inch oversize in either direction, except for sheets cut to 8 by 10-1/2 inches, which shall be not more than 1/16 inch oversize in either direction. Paper with the long dimension 32 inches or less will be considered trimmed square if the variation of the diagonal dimensions does not exceed 1/32 inch; over 32 inches, 1/16 inch.

3.4 Printing characteristics - Both types of target paper shall be capable of being printed in any of the following printing processes: Offset, letterpress or flexographic, using a good grade of commercial printers ink. This requirement shall be satisfied by acceptance of the supplier's certificate of compliance.

3.4.1 Printing side of roll - The printing side of the target paper is defined as the top side of the paper as it comes off the wire of the paper making machine. The paper is then wound with the printing side on the outer surface of the roll.

3.5 Weight

3.5.1 Type I - The basis weight of Type I paper shall be 60 ± 3 pounds/500 sheets, 24 inches x 36 inches when determined by the test specified in Table II.

3.5.2 Type II - The basis weight of Type II paper shall be 95 ± 5 pounds/500 sheets, 24 inches x 36 inches when determined by the test specified in Table II.

3.6 Thickness

3.6.1 Type I - The thickness of Type I paper shall be 0.006 ± 0.0005 inch when determined by the test specified in Table II.

MIL-P-10831B

3.6.2 Type II - The thickness of Type II paper shall be 0.010 ± 0.0005 inch when determined by the test specified in Table II.

3.7 Strength properties - Both types of target papers, as received and after water immersion (as applicable) shall possess the minimum physical strength values given in Table I when tested as specified in Table II.

TABLE I. Minimum Physical Characteristics

<u>Characteristic</u>	<u>Type I</u>	<u>Type II</u>
Tensile, Dry, lbs./inch width		
Machine direction	25.0	35.0
Cross direction	12.0	18.0
Tensile, Wet, lbs./inch width		
Machine direction	6.5	9.0
Cross direction	3.0	4.5
Burst, psi	30	40
Tear, grams		
Machine direction	90	130
Cross direction	100	140

3.8 Gloss - The percent specular gloss shall be not more than 10 units for both types of target paper (on the printing side) when determined by the test specified in Table II.

3.9 Pick strength - The pick strength or the surface bond strength of the printing side (see 3.4.1) of both types of target paper shall withstand not less than No. 11-A Dennison Standard Wax with no picking when tested as specified in Table II.

3.10 pH - The pH of both types of target paper shall be 6 ± 0.5 pH units when tested as specified in Table II.

3.11 Penetration - Penetration of the target paper by 38 caliber wad-cutter ammunition shall produce a minimum of 90% clean cut holes as indicated in figure 1 (cut so that the surface or edge is sharply defined or outlined) when tested as specified in 4.4.2.

MIL-P-10831B

3.12 Workmanship - The target paper shall be uniformly constructed, free from dust, lumps, slime spots, holes, tears, cuts, dirt or oil spots, creases, wrinkles, undigested or foreign matter, and shall conform to the levels of quality established herein.

4. QUALITY ASSURANCE PROVISIONS

4.1 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 or any other inspection facilities or services 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 services conform to prescribed requirements.

4.2 Inspection

4.2.1 Inspection lot - All target paper of the same type, nominal size and construction manufactured in the same identifiable production period, by the same process under the same operating conditions, and submitted for inspection by one supplier at one time shall be considered a lot.

4.2.2 Sampling for inspection and acceptance - Sampling for inspection and acceptance shall be performed in accordance with the provisions set forth in Standard MIL-STD-105 except where otherwise indicated.

4.3 Inspection of the end item

4.3.1 Examination of the end item - Examination of the end item shall be made in accordance with the list of defects, inspection levels and acceptable quality levels (AQLs) set forth below. For purposes of determining the sample size in accordance with Military Standard MIL-STD-105, the lot size for examinations under 4.3.1.1 through 4.3.1.4 inclusive shall be expressed in units of rolls or packages of sheets, as applicable, of the specified type, color and form of material, and for examination under 4.3.1.5 shall be expressed in units of shipping containers.

4.3.1.1 Examination of the end item for defects in appearance and general workmanship - For examination of defects within rolls, the sample unit shall be one yard, full width of the roll, randomly selected. For examination of sheets, the sample unit shall be five consecutive sheets randomly selected from a package. No more than five sample units shall be selected from any one roll or package of sheets, as applicable. Both sides of the material shall be examined. Defects of each type shall be scored only once per sample unit.

<u>Examine</u>	<u>Defect</u>
Form	Not in rolls or flat cut sheets, as specified.
Appearance and Workmanship	Color not as specified; does not fall within the color range limitations specified (see 3.2). Color of each side not uniform. Surfaces not thoroughly clean; not free of paper dust, fuzz, or lint; presence of foreign or undigested matter, discoloration, dirt or oil spots, fish eyes, scales, shiners, scabs, shives, or slime spots, hole, tear, cut, crease, wrinkles, welts, fold, lumps, chaffed or scuff marks. Not trimmed smoothly and cleanly; ragged, torn, uneven, or crushed edges.

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

<u>Examine</u>	<u>Defect</u>
Assembly of sheets	Not evenly and uniformly stacked. Splice within sheet.

MIL-P-10831B

ExamineDefect

Assembly of roll

Not suitably restrained to prevent unwinding. Material not wound uniformly and tightly on roll causing soft or uneven edges, or telescoping of the roll. Edges not clean cut; ragged, nicked, crushed or uneven edges. Material not wound on a substantially rigid fiber core; core broken, collapsed, crushed or mutilated. Metal plugs omitted from either one or both ends; plugs do not fit core properly, too loose to the extent that plug(s) fall in or out of end openings. Arrow indicating direction of wind omitted or incorrect.

Unwinding of roll

Does not unroll uniformly and evenly; paper slips over core. Roll wound unevenly causing wrinkles, sharp creases or folds within roll. Roll not continuous; more than 1 splice in any 20 consecutive yards or more than 3 splices in any roll. Splice(s) not evenly and neatly made; does not cover entire width of material; comes apart during unwinding of roll. Splice(s) not flagged at both ends of roll with colored marker.

4.3.1.3 Examination for excessive proportion of spliced rolls - The sample unit for this examination shall be 30 rolls randomly selected from the lot. Two sample units shall be inspected and both units shall comply with the requirements stated in 3.3.1.2. Lots smaller than 60 rolls will require 100 percent inspection.

<u>Examine</u>	<u>Defect</u>
Proportion of Splices	Number of rolls containing splices exceeds 10%.

4.3.1.4 - Examination of the end item for dimensional defects - The sample unit for this examination shall be one roll or one flat cut sheet, as applicable.

<u>Examine</u>	<u>Defect</u>
Rolls	
Width	Varies by more than plus 1/8 inch or minus 1/16 inch from width specified.
Diameter	Greater than 36 inches or less than 32 inches.
Core	Length less than width of roll material or greater by more than 1/8 inch. Inside diameter varies by more than plus or minus 1/16 inch from size specified.
Sheets	Dimensions less than specified in either direction.
Sheets 8 by 10-1/2 inches or less	Oversize by more than 1/16 inch in either dimension from size specified.
Sheets over 8 by 10-1/2 inches	Oversize by more than 1/8 inch in either dimension from size specified.
Squareness	Not trimmed square on 4 sides; i.e., the difference between the length of two diagonals exceeds 1/32 inch for sheets 32 inches or less in length, or exceeds 1/16 inch for sheets over 32 inches

MIL-P-10831B

4.3.1.5 Examination of the end item for count, weight, and length, (as applicable). - The sample unit for this examination shall be one roll or one package of sheets, as applicable. The lot shall be considered unacceptable if any average result does not meet the minimum applicable quantities specified.

<u>Examine</u>	<u>Defect</u>
Sheets	Average count of sheets per package less than the specified or indicated quantity.
Rolls:	
Weight per roll (when specified)	The average weight per roll (including nonreturnable cores, plugs, and wrappers, but not the container varies by more than plus or minus 5 percent of the specified weight.

4.3.1.6 Examination of preparation for delivery - An examination shall be made to determine that packaging, packing, and markings comply with the requirements of Section 5 of this specification. The sample unit shall be one shipping container, full packed, selected just prior to the closing operation. Shipping containers fully prepared for delivery shall be examined for closure defects.

<u>Examine</u>	<u>Defects</u>
Packaging (as applicable)	Not as specified; not in accordance with contract requirements. Flat sheets or rolls, as applicable, not unit wrapped and packaged as specified. Packaging material not as specified; closures not accomplished by specified or required methods or materials. Not as specified; not in accordance with contract requirements. Flat sheets not packed on

<u>Examine</u>	<u>Defects</u>
	skids, when specified. Arrangement or number of unit packages, or reams, per container or skid, (as applicable) not in accordance with contract requirements. Container material not as specified; closures not accomplished by specified or required methods or materials. Skid material or construction not as specified. Liner or wrap material (as applicable) omitted, damaged, or not type specified; closures not accomplished in accordance with contract requirements.
Strapping (as applicable)	Not properly placed lengthwise, girthwise or horizontally, or not applied in manner specified. Tension too great, i.e., strapping tears or cuts through any facing.
Markings	Interior or exterior markings (as applicable) illegible, incorrect, incomplete, omitted, or not in accordance with contract requirements.
Weight	Gross weight exceeds contract requirements.

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

<u>Examination Paragraph¹</u>	<u>Inspection Levels</u>	<u>AQLs</u>
4.3.1.1	I	2.5
4.3.1.2	S-4	4.0
4.3.1.4	S-4	4.0
4.3.1.5	S-3	---
4.3.1.6	S-4	4.0

MIL-P-10831B

1. Note: The same rolls, packages of sheets, or sheets, as applicable, of the specified type of material shall be used for examinations under 4.3.1.1, 4.3.1.2, 4.3.1.4, and 4.3.1.5. The yardage or sheets used for examination under 4.3.1.1 and the rolls, sheets, or packages of sheets used for examinations under 4.3.1.4 and 4.3.1.5, shall be within the rolls or packages of sheets randomly selected under 4.3.1.2.

4.3.2 Testing of the end item - The end item shall be tested for the applicable characteristics as indicated in Table II for each lot presented for examination for each type, color, and form of material. The sample unit shall be one piece full width of the roll by 36 inches long when purchase is on roll basis, or two (2) sheets full size when purchase is on a flat sheet basis. No more than one sample unit shall be drawn from any one roll, package of sheets, or ream. Five sample units, randomly selected throughout the lot, shall be tested with no evidence of failure to meet the specified minimum requirements.

4.4 Test procedures - Each sample of target paper selected in accordance with 4.3.2 and conditioned in accordance with 4.4.1 shall be tested in accordance with the applicable test methods indicated in Table II.

4.4.1 Conditioning - Conditioning of target paper shall be as described in TAPPI Standard Method T402-M.

4.4.2 Penetration by wad-cutter ammunition - Target materials, Types I and II when affixed (pasted, stapled, tacked, etc.) to a backing of approximately 1/8 inch thick solid fiberboard and penetrated by 10 single rounds of 38 caliber wad-cutter ammunition from a distance of 25 yards, shall produce clean cut holes (see Figure 1 for example of satisfactory and unsatisfactory penetration sample). Failure of the target to produce acceptable holes (see figure 1) when penetrated by 38 caliber wad-cutter ammunition shall be cause for rejection of the lot.

5. PREPARATION FOR DELIVERY

5.1 Packaging, Level C

5.1.1 Rolls - Each roll shall be wrapped over all with 60 pound kraft paper conforming to Grade A of Specification UU-P-268. Wrap shall have a minimum 12 inch overlap of the circumference and a minimum 7 inch overlap on each end of the roll. A disk of the same material as the wrapper, 1 inch less than the diameter of the roll, shall be placed next to each end of the roll and the 7 inch overlaps folded over and sealed with an adhesive conforming to Specification MIL-A-140. A second disk of the same material and size shall be placed over each end and sealed with the same adhesive. The seam of the wrapper shall be sealed with the same adhesive.

5.1.2 Sheets - Paper sheets not to exceed 150 pounds gross weight shall be wrapped in at least one thickness of 60 pound kraft paper conforming to Grade A of Specification UU-P-268. The wrapped sheets with edges suitably protected shall be tied with not less than four steel wires, steel bands or fiber twine, two in each direction.

5.2 Packing - Level C

5.2.1 Rolls - Rolls packaged as specified in 5.1.1 will not require further packing.

5.2.2 Sheets - Packaged sheets shall be packed in boxes, conforming to Specification PPP-B-601 Style A or B, Type I, Class I; PPP-B-621 style 4, Class 1; or PPP-B-636, Type I, Class I. When approved by the procuring agency, packaged sheets may be bonded to nonreturnable skids. Each skid shall have a maximum capacity of 2,000 pounds, a minimum width of 27 inches and a floor clearance of at least 6 inches.

5.3 Marking

5.3.1 Material identification - Each package (or skid) and each roll of target paper shall be clearly marked with applicable material identification (see 6.1).

5.3.2 Marking for shipment - In addition to any special

41

TABLE II - Instructions for Testing

Characteristic	Specification Reference		Require- ments Ap- plicable to Lot Avg.	Number Determinations ² per sample unit	Results Reported As Numerically ³ to nearest
	Requirement	Test Method ¹			
Basis Weight	3.5.1,3.5.2	110	X	1(Avg of 5 sheets)	pound
Thickness	3.6.1,3.6.2	173	X	Avg of 3	0.0001 inch
Tensile Strength, Dry					
Machine direction	Table I	171	X	Avg of 5	Pound/sq.inch
Cross direction	"	"	X	" " "	" " "
Tensile Strength, Wet					
Machine direction	Table I	172 ⁴	X	Avg. of 5	" " "
Cross direction	"	"	X	" " "	" " "
Burst	"	112	X	" " "	" " "
Tear					
Machine direction	"	170	X	" " "	gram
Cross direction	"	"	X	" " "	"
Gloss	3.8	T-480m	X	Avg of 3	unit
Pick strength	3.9	T-459m	X	Avg of 3	number
pH	3.10	200	-	2(composite)	0.1 pH unit
Penetration	3.11	4.4.2	X	1 (10 rounds)	10 percent

- Note: 1. Three digit numbers refer to Federal Specification UU-P-31. Numbers preceded by the letter "T" refer to TAPPI Standard Methods. Test methods shall be performed in accordance with the applicable procedures, except that the stipulation as to the number of specimens to test, number of determinations to perform or number of results to report, shall be as indicated in this table. All testing shall be performed under atmospheric conditions as specified in 4.4.1.
2. The composite shall consist of representative portions taken from each sample unit and combined into a single sample.
3. Test reports shall include all values on which results are based.
4. Test specimens shall be immersed for 5 minutes in distilled water and tested as described in paragraph 4.3 and 4.4 of Method 175 of UU-P-31.

MIL-P-10831B

marking required in the contract, order or by the procuring agency, shipping containers shall be marked in accordance with Standard MIL-STD-129 and shall include the following prominent legend: "STORE IN A COOL, DRY PLACE".

6. NOTES

6.1 Ordering data - Procurement documents shall specify the following:

- a. Title, number, and date of this specification.
- b. Type of paper.
- c. When required, outside diameter and hole dimensions of roll. (as applicable)
- d. Size of sheets. (as applicable)
- e. Inspection responsibility, methods and tests.
- f. Packaging and packing if other than specified.
- g. Color (see 3.2, 6.2).

6.2 Color chips of color numbers 37855 through 37886 per FED STD 595 may be obtained from:

Business Service Center
Region 3
Seventh and D Streets, S. W.
Washington, D. C.

6.3 Storage - To minimize the effects of natural aging, target papers should be stored in a cool, dry location and it is suggested that target paper or printed targets be stored for no longer than 5 years.

Custodians:

Army - WC

Navy - MC

Reviewer Interest

Army - GL

PREPARING ACTIVITY:

ARMY - WC

Project No. 9310-0031

User Interest

Army - WC

Navy - MC

Air Force - MOA

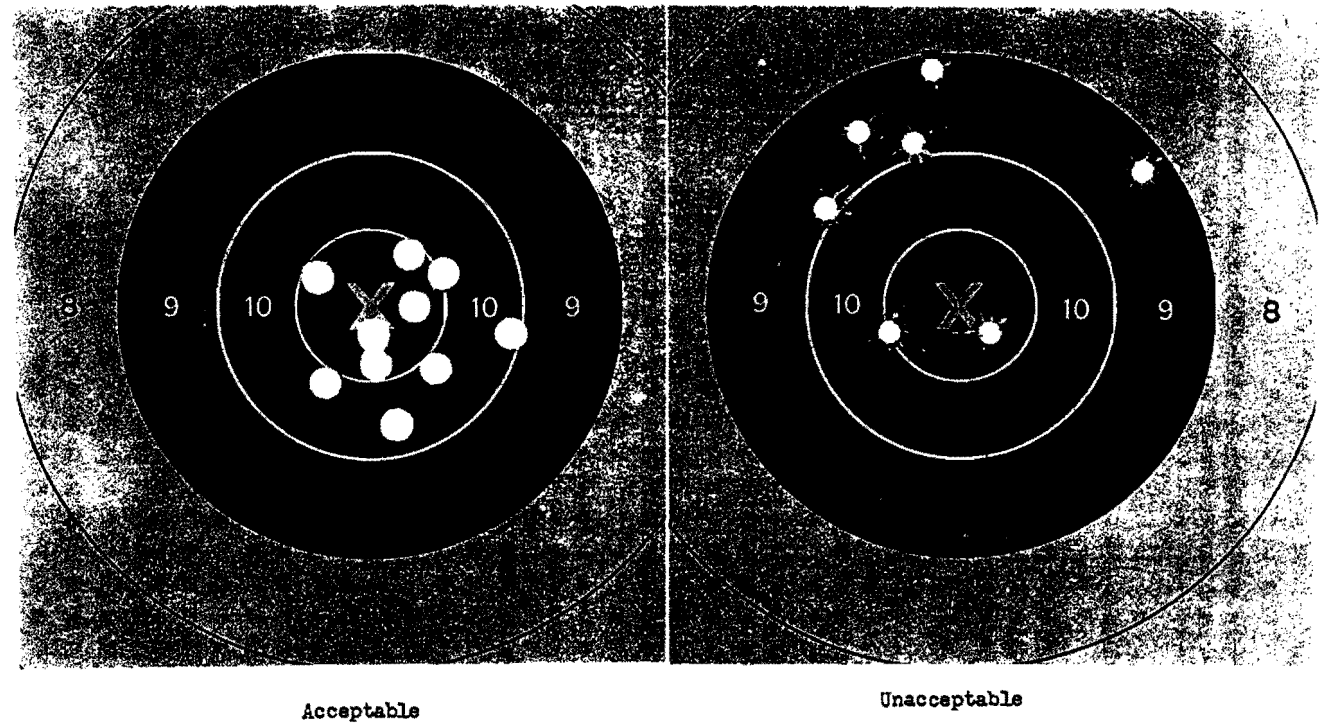


Figure 1. Penetration of target paper using .38 caliber wad-cutter ammunition.

Rock Island Arsenal

11-070-4063/Ord-62