

MIL-C-53004A(ME)

9 August 1985

SUPERSEDING

MIL-C-53004(ME)

28 July 1982

## MILITARY SPECIFICATION

CAMOUFLAGE SCREENING SYSTEMS, MODULAR, LIGHTWEIGHT,  
SYNTHETIC, WOODLAND, DESERT AND SNOW

This specification is approved for use by the USA Belvoir Research and Development Center, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

## 1. SCOPE

1.1 Scope. This specification covers woodland, desert and snow camouflage screening systems, synthetic, modular, complete with one hexagon and one rhombus lightweight screen, one repair kit with case, and quick-connect-disconnect devices, all within a transport case.

1.2 Classification. The camouflage screens covered by this specification shall be the following types and classes, as specified (see 6.2):

Type I - Radar Transparent  
Type II - Radar Scattering  
Class 1 - Woodland  
Class 2 - Desert  
Class 3 - Snow

## 2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. Unless otherwise specified, the following specifications and standards of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation, form a part of this specification to the extent specified herein.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: USA Belvoir Research and Development Center, ATTN: STRBE-DS, Fort Belvoir, VA 22060-5606 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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## SPECIFICATIONS

## FEDERAL

- L-P-378 - Plastic Sheet and Strip, Thin Gauge, Polyolefin.
- QQ-S-781 - Strapping, Steel, and Seals.
- PPP-B-636 - Boxes, Shipping, Fiberboard.
- PPP-S-760 - Strapping, Nonmetallic, (And Connector).

## STANDARDS

## FEDERAL

- FED-STD-141 - Paint, Varnish, Lacquer, and Related Materials; Methods of Inspection, Sampling, and Testing.
- FED-STD-191 - Textile Test Methods.
- FED-STD-406 - Plastics: Methods of Testing.
- FED-STD-601 - Rubber: Sampling and Testing.

## MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.
- MIL-STD-130 - Identification and Marking of US Military Property.

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this specification to the extent specified herein.

## DRAWINGS

## ME

- TA13226E1355 - Camouflage Screening System, Snow, Radar Transparent.
- TA13226E1356 - Camouflage Screening System, Woodland, Radar Transparent.
- TA13226E1357 - Camouflage Screening System, Desert, Radar Transparent.
- TA13226E1358 - Camouflage Screening System, Snow, Radar Scattering.
- TA13226E1359 - Camouflage Screening System, Woodland, Radar Scattering.
- TA13226E1360 - Camouflage Screening System, Desert, Radar Scattering.

(Copies of specifications, standards, and drawings required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

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2.2 Other publications. The following document(s) form a part of this specification to the extent specified herein. The issues of the documents which are indicated as DoD adopted shall be the issue listed in the current DoDISS and the supplement thereto, if applicable.

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- ASTM B 117 - Salt Spray (Fog) Testing, Standard Method of.
- ASTM D 471 - Rubber Property - Effects of Liquids, Standard Test Method for.
- ASTM D 523 - Specular Gloss, Standard Test Method for.
- ASTM D 1053 - Measuring Rubber Property-Stiffening at Low Temperature: Flexible Polymers and Coated Fabrics, Standard Method for.
- ASTM D 1117 - Nonwoven Fabrics, Standard Methods of Testing.
- ASTM D 1682 - Breaking Load and Elongation of Textile Fabrics, Standard Test Methods for.
- ASTM D 2247 - Coated Metal Specimens at 100 Percent Relative Humidity, Standard Method for Testing.
- ASTM D 3951 - Standard Practice for Commercial Packaging.
- ASTM E 308 - Spectrophotometry and Description of Color in CIE 1931 System, Standard Recommended Practice for.
- ASTM G 26 - Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials, Standard Recommended Practice for.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103).

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

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

## 3. REQUIREMENTS

3.1 Description. The camouflage screening system (hereinafter called "screen") shall be in accordance with the following top assemblies and as specified herein:

## Type I - Radar Transparent

Class 1 - Woodland	TA13226E1356
Class 2 - Desert	TA13226E1357
Class 3 - Snow	TA13226E1355

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## Type II - Radar Scattering

Class 1 - Woodland	TA13226E1359
Class 2 - Desert	TA13226E1360
Class 3 - Snow	TA13226E1358

The screen shall consist of one hexagon-shaped screen and one rhombic-shaped screen, each 4.9 meters per side. The screen shall consist of edge-reinforced polyester fiber nets of 2-1/4 inch, +1/4 inch square mesh, garnished with expanded incised camouflage cloth affixed to the net in color and texture patterns. The screen shall be equipped with quick-connect-disconnect (QCD) devices to allow multiple screen combinations. The screen shall be reversible, employing two different color patterns.

3.1.1 Assembly. The screens shall consist of the following components, and the assembly shall weigh not more than 65 pounds for class 1 and 2 screens and 85 pounds for class 3 screens:

- a. Screens, one hexagon and one rhombic.
- b. Repair kit, one.
- c. Lanyards, three.
- d. Transport case, one.
- e. Technical manual, one.

3.1.2 Drawings. The drawings forming a part of this specification are end product drawings. No deviation from the prescribed dimensions or tolerances is permissible without prior approval of the contracting officer. Where tolerances could cumulatively result in incorrect fits, the contractor shall provide tolerances within those prescribed on the drawings to insure correct fit, assembly, and operation of the screen. Any data (e.g., shop drawings, layouts, flow sheets, processing procedures, etc.) prepared by the contractor or obtained from a vendor to support fabrication and manufacture of the production item shall be made available, upon request, for inspection by the contracting officer or designated representative.

3.2 First article. When specified (see 6.2), a sample shall be subjected to first article inspection (see 4.3 and 6.3).

3.3 Material. Material shall be as specified herein and as shown on applicable drawings. Materials not specified shall be selected by the contractor and shall be subject to all provisions of this specification (see 6.4).

3.3.1 Base cloth. The base cloth shall be constructed so as to meet the performance requirements for finished cloth (see 3.5).

3.4 Performance requirements, nets. The hexagon and rhombic nets shall be fabricated as shown on the following drawings:

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13226E0959 - Net, Rhombic, Snow.  
13226E0958 - Net, Hexagon, Snow.  
13226E0961 - Net, Rhombic, Woodland/Desert.  
13226E0960 - Net, Hexagon, Woodland/Desert.

3.4.1 Treated nets. All nets shall be treated with stable dyes or pigmented coating compound in accordance with the drawings specified in 3.4. When tested as specified in 4.5.2.1.1, the weight increase of the treated net after thorough drying shall be not more than 40 percent of the untreated net.

3.4.1.1 Weight increase after water immersion. When tested as specified in 4.5.2.1.2, the weight increase of the treated net mesh shall be not more than 25 percent based on the weight of the treated net mesh before immersion.

3.4.1.2 Breaking strength. When tested as specified in 4.5.2.1.3, the breaking strength of the treated net mesh before exposure shall be not less than 50 pounds.

3.4.1.2.1 Breaking strength, after exposure. When tested as specified in 4.5.2.1.3.1 through 4.5.2.1.3.5, the breaking strength of the treated net mesh after accelerated weathering, accelerated aging, water immersion, petroleum immersion and salt fog exposure shall be not less than 45 pounds.

3.4.1.3 Stiffness. When tested as specified in 4.5.2.1.4, the stiffness ratio of the treated net at -40° F shall be not more than 10.

3.4.1.4 Solubility. The compounds used in coloring the net shall not be soluble in water. When tested as specified in 4.5.2.1.5, the water shall show no evidence of discoloration.

3.4.1.5 Flame resistance. When tested as specified in 4.5.2.1.6, the treated net mesh shall be self-extinguishing, and after-flame shall be not more than 8 seconds. After-glow shall be not more than 15 seconds after the flame is extinguished or the twine ceases to burn.

3.4.1.6 Fungus resistance. When tested as specified in 4.5.2.1.7, the treated net mesh shall not support fungus growth.

3.5 Performance requirements, camouflage cloth. The camouflage cloth shall be base cloth as specified in 3.3.1 with color compounds applied as specified in 3.5.3. The camouflage cloth shall be processed to produce two basic types of garnish: type I - radar transparent, and type II - radar scattering.

3.5.1 Radar transparent cloth. Nothing shall be in or applied to the base cloth which would interfere with the transmission of the emitted or reflected radar signals. When tested as specified in 4.5.2.2.13, the one-way transmission of flat stock, color-coated, radar transparent cloth shall approximate free space.

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3.5.2 Radar scattering cloth. When tested as specified in 4.5.2.2.13, the one-way transmission of flat stock, color-coated, radar scattering cloth shall be not more than 20 percent nor less than 10 percent.

3.5.2.1 Finished screen radar properties. When tested as specified in 4.5.2.2.14, the radar properties of the screen shall be not less than 3 decibels one-way transmission attenuation.

3.5.3 Color compounds. The color compounds used to produce colors shall impart to the camouflage cloth of both types the required spectral reflectance properties in the ultraviolet (350 to 360 nanometers, white cloth only), visible (380 to 700 nanometers) and near infrared (700 to 900 nanometers) spectrums. The color compounds shall be formulated with commercially available pigments or dye-stuffs. The color compounds shall be applied to each side of the base cloth as specified in table I. Color compounds used shall not produce skin irritation or other effects deleterious to the health of personnel under the proposed condition of use. The color compound shall seal the cloth and provide a matte finish. Surface interruptions or color streaking on the color-coated cloth shall be not more than 1/8 inch in width, a maximum total length of 24 inches in any one pattern, and not more than 30 percent of the patterns on a screen may contain such discontinuities.

3.5.4 Finished camouflage cloth. The finished camouflage cloth shall be the base cloth with color compounds applied (radar transparent, type I) or the base cloth rendered radar scattering with color compounds applied (type II). When tested as specified in 4.5.2.2.1.1, the finished type I camouflage cloth and the finished type II camouflage cloth shall weigh not more than 8.0 ounces per square yard each for class 1 and class 2 screens and not more than 8.5 ounces per square yard for class 3 screens.

3.5.4.1 Water immersion. When tested as specified in 4.5.2.2.1.2, the weight increase after water immersion in distilled water shall be not more than 15 percent for woodland and desert screens and 25 percent for snow screens based on the weight of the unimmersed finished cloth.

3.5.4.2 Stiffness. When tested as specified in 4.5.2.2.2, the stiffness of the finished cloth shall be not more than 10 centimeters (cm) at room temperature, 16 cm at  $-40^{\circ}$  F for class 1 and 2, and 20 cm at  $-40^{\circ}$  F for class 3.

3.5.4.3 Tackiness. When tested as specified in 4.5.2.2.3, folds of the finished camouflage cloth shall not adhere to each other.

3.5.4.4 Solubility. The compound used in coating the cloth shall be insoluble in water. When tested as specified in 4.5.2.2.4, the water shall show no evidence of discoloration.

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TABLE I. Color requirements.

Color	Fig.	Trichromatic coefficients		
		x	y	Y
<u>Woodland</u>				
1. Light Green	2	0.362	0.395	0.094 - 0.108
2. Dark Green	3	0.343	0.390	0.070 - 0.085
3. Forest Green	4	0.330	0.355	0.058 - 0.072
4. Olive	5	0.363	0.377	0.097 - 0.113
5. Khaki	6	0.357	0.362	0.210 - 0.230
6. Brown	7	0.360	0.350	0.102 - 0.118
7. Tan	8	0.388	0.370	0.210 - 0.230
<u>Desert</u>				
1. Khaki	9	0.350	0.355	0.242 - 0.264
2. Tan	10	0.356	0.351	0.336 - 0.361
3. Straw	11	0.396	0.393	0.281 - 0.304
4. Russet	12	0.390	0.350	0.171 - 0.189
5. Light Brown	13	0.367	0.358	0.190 - 0.210
<u>Snow</u>				
1. Forest Green	4	0.330	0.355	0.058 - 0.072
2. Tan	8	0.388	0.370	0.210 - 0.230
3. White	1	0.310	0.315	0.85 or above

Note: Color difference tolerances are shown in figures 1 through 13.

3.5.4.5 Breaking strength, cloth. When tested as specified in 4.5.2.2.5, the breaking strength of the finished camouflage cloth before exposure shall be not less than 40 pounds in both the warp and fill directions.

3.5.4.5.1 Breaking strength, cloth, after exposure. When tested as specified in 4.5.2.2.5.1 through 4.5.2.2.5.7, the breaking strength of the finished camouflage cloth in both directions shall be not less than 40 pounds after accelerated weathering, accelerated aging, accelerated fading, petroleum immersion, salt fog and humidity exposure, and not less than 36 pounds after water immersion exposure.

3.5.4.6 Flame resistance. When tested as specified in 4.5.2.2.6, test specimens shall be self-extinguishing prior to burning of 60 percent of the specimen area.

3.5.4.7 Color. When tested as specified in 4.5.2.2.7, the color of the finished cloth shall be such that the average trichromatic coefficients (x and y coordinates) shall fall within the applicable 2.0 NBS ellipses of figures 1 through 13. No trichromatic coefficient shall fall outside the 2.25 NBS ellipse, and not more than two trichromatic coefficients shall fall outside the

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2.0 NBS ellipse. The trichromatic coefficients for the Snow color white and Woodland colors light green and dark green after the environmental exposures specified in 4.5.2.2.7.1 through 4.5.2.2.7.5 shall fall within the applicable 2.5 NBS ellipse of figures 1 through 3. The apparent reflectance (Y) shall fall within the applicable tolerance specified in figures 1 through 13 and table I.

3.5.4.8 Crocking. When tested as specified in 4.5.2.2.8, the finished camouflage cloth shall be good for wet and fair for dry as defined in FED-STD-191, method 5651.

3.5.4.9 Specular gloss. When tested as specified in 4.5.2.2.9, the finished camouflage cloth shall have a specular gloss of not more than 1.0 gloss unit at 85 degrees and 2.0 gloss units at 60 degrees, for all colors of table I except for Snow color No. 3, white, which will have a specular gloss at 60 degrees of not more than 2.5 gloss units.

3.5.4.10 Spectral reflectance values. When tested as specified in 4.5.2.2.10, separate samples of finished camouflage cloth before exposure, after accelerated weathering, after accelerated fading, after salt fog exposure, after fungus resistance exposure, and after humidity shall have reflectance values within the limits specified in table II. For Woodland colors No. 1 and 2 the spectral curve from 600 to 900 nanometers shall conform to table III both before and after exposure.

3.5.4.11 Fungus resistance. When tested as specified in 4.5.2.2.11, the finished camouflage cloth shall not support fungus growth.

3.5.4.12 Tear strength. When tested as specified in 4.5.2.2.12, the tear strength of the finished camouflage cloth shall be not less than 9 pounds in the fill direction.

3.6 Identification of screen color blend. The color blend of the screens shall be identified on each side of the four reinforcing straps of the rhombic and the six reinforcing straps of the hexagon in accordance with MIL-STD-130 and figure 17.

3.7 Workmanship. The finished screen shall be clean and free from all foreign matter. Patterns shall not be overstretched or stressed on netting. Workmanship shall conform to the appendix.

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TABLE II. Color reflectance in the red, infrared, and ultraviolet spectral regions.

Color No.	Color name	Infrared reflectance <sup>1/</sup> range <sup>2/</sup>		Ultraviolet	Allowable ratio <sup>3/</sup>
		Percent			
		(max)	(min)	(min)	(min)
<u>Woodland</u>					
1	Light green	65.0	-	-	5.2
2	Dark green	65.0	-	-	5.2
3	Forest green	35.0	25.0	-	-
4	Olive	55.0	25.0	-	-
5	Khaki	75.0	40.0	-	-
6	Brown	25.0	20.0	-	-
7	Tan	55.0	35.0	-	-
<u>Desert</u>					
1	Khaki	60.0	25.0	-	-
2	Tan	60.0	35.0	-	-
3	Straw	60.0	35.0	-	-
4	Russet	40.0	20.0	-	-
5	Light brown	45.0	25.0	-	-
<u>Snow</u>					
1	Forest green	35.0	25.0	-	-
2	Tan	55.0	35.0	-	-
3	White	-	85.0*	75.0**	-

1/ IR reflectance range to BaSO<sub>4</sub> or freshly smoked MgO.

2/ See table V for wavelength definition.

3/ The ratio is calculated by dividing the value of the infrared spectral range by the value of the red spectral range (see table V).

\*After environmental exposure, the infrared reflectance shall be 80.0 (min).

\*\*After environmental exposure, the ultraviolet reflectance shall be 73.0 (min).

TABLE III. Spectral reflectance limits for light green and dark green colors.

Wavelength	% Reflectance		Wavelength	% Reflectance	
	(max)	(min)		(max)	(min)
600	10.2	-	760	59.5	40.0
610	9.8	-	770	61.5	42.0
620	9.8	-	780	-	42.0
630	9.8	-	790	-	42.0
640	9.5	-	800	-	42.0

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TABLE III. Spectral reflectance limits for light green and dark green colors. (continued)

Wavelength	% Reflectance		Wavelength	% Reflectance	
	(max)	(min)		(max)	(min)
650	9.5	-	810	-	42.0
660*	9.8	-	820	-	42.0
670*	12.0	4.0	830	-	42.0
680*	14.0	5.8	840	-	42.0
690	21.5	8.5	850	-	42.0
700	28.0	11.0	860	-	42.0
710	35.8	15.0	870	-	42.0
720	41.0	19.0	880	-	42.0
730	48.5	27.0	890	-	42.0
740	51.8	30.0	900	-	42.0
750	56.0	36.3			

\*Values marked with asterisks are for light green cloth only. For dark green cloth, use the following values:

Wavelength	% Reflectance	
	(max)	(min)
660	9.5	-
670	10.0	4.0
680	13.0	5.8

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by 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 supplies and services conform to prescribed requirements.

4.1.1 Component and material inspection. The contractor is responsible for insuring that components and materials used are manufactured, examined, and tested in accordance with referenced specifications, standards, and drawings, as applicable.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

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- a. First article inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).
- c. Inspection of packaging (see 4.6).

#### 4.3 First article inspection.

4.3.1 Examination. The screen shall be examined as specified in 4.5.1. Presence of one or more defects shall be cause for rejection.

4.3.2 Tests. The screen shall be subjected to the tests marked "X" in column 2 of table IV. Samples for test for the net and finished cloth shall be representative of materials used to fabricate the screen. Unless otherwise indicated, test results shall be based upon the average of five specimens. Failure of any test shall be cause for rejection.

#### 4.4 Quality conformance inspection.

##### 4.4.1 Sampling for examination.

4.4.1.1 Screens. For the purpose of sampling for examination, a unit of product shall be one complete screen of the type and class specified herein. Sampling shall be in accordance with MIL-STD-105, inspection level S-4.

4.4.1.2 Attachment rings. Samples of attachment rings on the screens shall be 200 in number for a hexagon screen, and 100 for a rhombic screen.

##### 4.4.2 Sampling for tests.

4.4.2.1 Sampling for nets, plan A. Samples of netting sufficient for testing shall be furnished from not more than 100,000 square yards of net.

4.4.2.2 Sampling for nets, plan B. One unit out of every 20,000 units shall be furnished.

4.4.2.3 Sampling for finished cloth, plan A. Samples of finished cloth sufficient for testing shall be furnished from not more than 50,000 square yards for each color of finished cloth.

4.4.2.4 Sampling for finished cloth, plan B. One unit out of every 20,000 units shall be furnished.

##### 4.4.3 Examination.

4.4.3.1 Screens. Samples selected in accordance with 4.4.1.1 shall be examined for the defects specified in 4.5.1. AQL shall be 4.0 percent defective.

4.4.3.2 Attachment rings. Attachment rings on the screens selected in accordance with 4.4.1.2 shall be examined for the defects specified in 4.5.1. Presence of a defect in 10 percent or more of the examined rings shall be cause for rejection.

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4.4.4 Tests.4.4.4.1 Nets.

4.4.4.1.1 Nets, plan A. Samples selected in accordance with 4.4.2.1 shall be subjected to the tests marked "X" in column 3 of table IV. Failure of any test shall be cause for rejection.

4.4.4.1.2 Nets, plan B. Samples selected in accordance with 4.4.2.2 shall be tested as specified in 4.5.2.1. Failure of any test shall be cause for rejection.

4.4.4.2 Finished cloth.

4.4.4.2.1 Finished cloth, plan A. Samples selected in accordance with 4.4.2.3 shall be subjected to the tests marked "X" in column 3 of table IV. Failure of any test shall be cause for rejection.

4.4.4.2.2 Finished cloth, plan B. Samples selected in accordance with 4.4.2.4 shall be tested as specified in 4.5.2.2. Failure of any test shall be cause for rejection.

4.5 Inspection procedures.

4.5.1 Examination. The screen shall be examined as specified herein for the following defects:

Major

101. Materials not as specified.
102. Components missing, not as specified, or damaged.
103. Dimensions not as specified.
104. Weight of assembly not as specified.
105. Colors not as specified.
106. Color-texture patterns for camouflage screen not as specified.
107. Color uniformity not as specified.
108. Color migration from side to side.
109. Mesh size not as specified.
110. Fabrication of edge-reinforcement not as specified.
111. Attachments not as specified.
112. Holes in screen larger than specified.
113. Incising not as specified.
114. Repair kit not as specified.
115. Severed strand of edge cord.
116. Delamination of the color compounds from the base cloth.
117. Incorrect assembly.
118. Stitching not as specified.
119. Missing, misplaced or malformed attachment rings.
120. Surface discontinuities larger than specified, or more than specified.

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Minor

- 201. Corner location patches not as specified.
- 202. Screen incorrectly folded.
- 203. Identification marking missing, incorrect or illegible.
- 204. Workmanship not as specified.

4.5.2 Tests. Unless otherwise specified herein, test results shall be based on the average of five samples or specimens.

4.5.2.1 Treated nets.

4.5.2.1.1 Weight increase. Weight increase of the treated net mesh shall be determined in accordance with FED-STD-191, method 5041, except specimens shall be 1 square yard of net. Nonconformance to 3.4.1 shall constitute failure of this test.

TABLE IV. Test schedule.

Type of inspection			Test	Test paragraph	Requirement paragraph
Inspection sequence	First article	Quality conf.			
1	2	3	4	5	6
			<u>Treated nets</u>		
1	X	-	Weight increase.	4.5.2.1.1	3.4.1
2	X	X	Weight increase after water immersion.	4.5.2.1.2	3.4.1.1
3	X	X	Breaking strength.	4.5.2.1.3	3.4.1.2
4	X	-	After accel. weathering.	4.5.2.1.3.1	3.4.1.2.1
5	X	-	After accel. aging.	4.5.2.1.3.2	3.4.1.2.1
6	X	-	After water immersion.	4.5.2.1.3.3	3.4.1.2.1
7	X	-	After petroleum immersion.	4.5.2.1.3.4	3.4.1.2.1
8	X	-	After salt fog exposure.	4.5.2.1.3.5	3.4.1.2.1
9	X	-	Stiffness.	4.5.2.1.4	3.4.1.3
10	X	-	Solubility.	4.5.2.1.5	3.4.1.4
11	X	-	Flame resistance.	4.5.2.1.6	3.4.1.5
12	X	-	Fungus resistance.	4.5.2.1.7	3.4.1.6
			<u>Finished cloth</u>		
1	X	-	Weight after processing.	4.5.2.2.1.1	3.5.4
2	X	X	Weight increase after water immersion.	4.5.2.2.1.2	3.5.4.1

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TABLE IV. Test schedule. (continued)

Type of inspection			Test	Test paragraph	Requirement paragraph
Inspection sequence	First article	Quality conf.			
1	2	3	4	5	6
3	X	-	Stiffness.	4.5.2.2.2	3.5.4.2
4	X	-	Tackiness.	4.5.2.2.3	3.5.4.3
5	X	-	Solubility.	4.5.2.2.4	3.5.4.4
6	X	X	Breaking strength.	4.5.2.2.5	3.5.4.5
7	X	-	After accel. weathering.	4.5.2.2.5.1	3.5.4.5.1
8	X	-	After accel. aging.	4.5.2.2.5.2	3.5.4.5.1
9	X	-	After accel. fading.	4.5.2.2.5.3	3.5.4.5.1
10	X	-	After water immersion.	4.5.2.2.5.4	3.5.4.5.1
11	X	-	After petroleum immersion.	4.5.2.2.5.5	3.5.4.5.1
12	X	-	After salt fog.	4.5.2.2.5.6	3.5.4.5.1
13	X	-	After humidity.	4.5.2.2.5.7	3.5.4.5.1
14	X	X	Flame resistance.	4.5.2.2.6.1	3.5.4.6
15	X	-	After accel. weathering.	4.5.2.2.6.2	3.5.4.6
16	X	-	After accel. fading.	4.5.2.2.6.3	3.5.4.6
17	X	-	After leaching.	4.5.2.2.6.4	3.5.4.6
18	X	X	Color.	4.5.2.2.7	3.5.4.7
19	X	-	After accel. weathering.	4.5.2.2.7.1	3.5.4.7
20	X	-	After accel. fading.	4.5.2.2.7.2	3.5.4.7
21	X	-	After humidity.	4.5.2.2.7.3	3.5.4.7
22	X	-	After salt fog.	4.5.2.2.7.4	3.5.4.7
23	X	-	Fungus resistance.	4.5.2.2.7.5	3.5.4.7
24	X	-	Crocking.	4.5.2.2.8	3.5.4.8
25	X	X	Specular gloss.	4.5.2.2.9	3.5.4.9
26	X	X	Spectral reflectance.	4.5.2.2.10	3.5.4.10
27	X	-	After accel. weathering.	4.5.2.2.10.2	3.5.4.10
28	X	-	After accel. fading.	4.5.2.2.10.3	3.5.4.10
29	X	-	After salt fog.	4.5.2.2.10.4	3.5.4.10
30	X	-	After fungus resistance.	4.5.2.2.10.5	3.5.4.10
31	X	-	After humidity.	4.5.2.2.10.6	3.5.4.10
32	X	-	Fungus resistance.	4.5.2.2.11	3.5.4.11
33	X	X	Tear strength.	4.5.2.2.12	3.5.4.12
34	X	X	Radar properties (cloth).	4.5.2.2.13	3.5.1 3.5.2
35	X	-	Radar properties (finished screen).	4.5.2.2.14	3.5.2.1

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4.5.2.1.2 Weight increase after water immersion. Weight increase of the treated net mesh after immersion in water shall be determined in accordance with ASTM D 471 except the specimens shall not be dipped into acetone. The cut ends of the specimens shall be sealed. Three specimens, each approximately 2-1/2 inches x 2-1/2 inches, shall be tested for weight increase after the treated net has been immersed in a container of distilled water for 24 hours at 73° F  $\pm$  2° F. Nonconformance to 3.4.1.1 shall constitute failure of this test.

4.5.2.1.3 Breaking strength. The breaking strength of the treated net mesh shall be tested in accordance with FED-STD-191, method 5102, with modifications as specified herein. The test specimens shall consist of one finished square mesh complete with four knots and cut from the net with a minimum of 1/2-inch extra twine past the knots. The specimen-holding device as shown in figure 15 shall consist of either rods or hooks 5/16-inch diameter and of sufficient length to avoid slippage of the net mesh while testing. The rods or hooks shall have round and smooth surfaces. The gage length shall be 3 inches at the start of the test. The test specimen shall be placed on the rods or hooks as shown in figure 15. Nonconformance to 3.4.1.2 shall constitute failure of this test.

4.5.2.1.3.1 Accelerated weathering. The treated net shall be conditioned in accordance with ASTM G 26, method A, type BH for 300 hours and tested as specified in 4.5.2.1.3. Nonconformance to 3.4.1.2.1 shall constitute failure of this test.

4.5.2.1.3.2 Accelerated aging. The treated net shall be conditioned in accordance with FED-STD-191, method 5851, for 150 hours at 175° F  $\pm$  2° F, and tested as specified in 4.5.2.1.3. Nonconformance to 3.4.1.2.1 shall constitute failure of this test.

4.5.2.1.3.3 Water immersion. The treated net mesh shall be immersed in distilled water for 24 hours at 160° F  $\pm$  2° F, and tested as specified in 4.5.2.1.3. Nonconformance to 3.4.1.2.1 shall constitute failure of this test.

4.5.2.1.3.4 Petroleum immersion. The treated net shall be conditioned in accordance with FED-STD-601, method 6001, in medium No. 5 for 2 hours at 73° F  $\pm$  2° F, and tested as specified in 4.5.2.1.3. Nonconformance to 3.4.1.2.1 shall constitute failure of this test.

4.5.2.1.3.5 Salt fog exposure. The treated net mesh shall be conditioned in accordance with ASTM B 117, for 300 hours and tested as specified in 4.5.2.1.3. Nonconformance to 3.4.1.2.1 shall constitute failure of this test.

4.5.2.1.4 Stiffness. Sample pieces of treated twine shall be tested as specified in 4.5.2.1.4.1. Specimens shall be tested at standard conditions, and after exposure for 94 hours,  $\pm$  1 hour, in a chamber maintained at -40° F  $\pm$  2° F. Nonconformance to 3.4.1.3 shall constitute failure of this test.

4.5.2.1.4.1 Torsional stiffness ratio.

4.5.2.1.4.1.1 Test specimens. Test specimens shall be 2-inch samples of treated twine.

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4.5.2.1.4.1.2 Test apparatus. The test apparatus shall be a Gehman torsional tester conforming to ASTM D 1053 except that only the torsion apparatus, the stand, and a suitable bracket to hold the lower clamp are required. A beryllium-copper-type tension wire of appropriate torsion constant shall be used.

4.5.2.1.4.1.3 Test procedure. The test procedure shall be as follows:

- a. With the specimen and the test apparatus at 73° F  $\pm$  5° F, the lower end of the specimen shall be secured in the rigidly mounted clamps of the test apparatus and the upper end shall be secured in the upper pinch clamp attached to the lower end of the torsional wire.
- b. The pointer shall be adjusted to the zero position by rotating the protractor scale. The torsional head shall be turned 180 degrees, and the pointer reading shall be recorded after a period of 10 seconds.
- c. After conducting the tests specified in a and b, above, the specimen shall be placed in a chamber with an atmosphere of air or a mixture of air and carbon dioxide at -40° F  $\pm$  2° F, for 94 hours,  $\pm$  1 hour. The torsional apparatus and tongs for handling specimens shall be conditioned in the chamber for not less than 2 hours before use.
- d. The tests specified in a and b, above, shall be repeated while specimens and apparatus are still in the conditioning chamber at -40° F  $\pm$  2° F.

4.5.2.1.4.1.4 Calculations. The tests shall be conducted on three specimens and the results shall be averaged. The torsional stiffness ratio at -40° F shall be calculated by means of the following formula:

Torsional stiffness ratio at -40° F =

$$\frac{\text{Torsional stiffness factor at } -40^{\circ} \text{ F}}{\text{Torsional stiffness factor at } 73^{\circ} \text{ F}}$$

Where torsional stiffness factor =

$$\frac{180 \text{ degrees} - \text{angle of twist of specimen}}{\text{Angle of twist of specimen}}$$

4.5.2.1.5 Solubility. A 6-inch square specimen of the finished net shall be immersed for 24 hours in a 400-cubic centimeter glass beaker filled with distilled water at a temperature of 160° F  $\pm$  10° F. Nonconformance to 3.4.1.4 shall constitute failure of this test.

4.5.2.1.6 Flame resistance. The flame resistance of the finished treated net mesh twine shall be tested in accordance with FED-STD-191, method 5903, except the specimens shall be one length of net twine with knots sufficient to test in the apparatus. Nonconformance to 3.4.1.5 shall constitute failure of this test.

4.5.2.1.7 Fungus resistance. The treated net mesh shall be tested in accordance with FED-STD-191, method 5750, except that the test organism shall be *aspergillus niger* ATCC No. 6275 or QM 458 (see 6.5). Nonconformance to 3.4.1.6 shall constitute failure of this test.

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4.5.2.2 Finished cloth.4.5.2.2.1 Weight.

4.5.2.2.1.1 Weight after processing. Weight of the finished cloth shall be tested in accordance with FED-STD-191, method 5041. Three specimens for each test, each 2 inches square, shall be used. Nonconformance to 3.5.4 shall constitute failure of this test.

4.5.2.2.1.2 Weight increase after water immersion. Weight increase of the finished cloth after immersion in water shall be determined in accordance with ASTM D 471, except the specimens shall not be dipped into acetone. Ten specimens, each 2 inches square, shall be tested for weight increase after the finished cloth has been immersed in a container of distilled water for 24 hours at  $73^{\circ}\text{F} \pm 2^{\circ}\text{F}$ . Nonconformance to 3.5.4.1 shall constitute failure of this test.

4.5.2.2.2 Stiffness. The stiffness of the finished cloth shall be tested in accordance with FED-STD-191, method 5204. Specimens shall be tested after exposure for 94 hours  $\pm 1$  hour, in a chamber at  $-40^{\circ}\text{F}$ . For finished cloth manufactured with polyvinyl chloride plastisol materials, the  $-40^{\circ}\text{F}$  exposure time may be reduced to not less than 2 hours. Nonconformance to 3.5.4.2 shall constitute failure of this test.

4.5.2.2.3 Tackiness. The finished cloth shall be tested in accordance with FED-STD-406, method 1131. A specimen of finished cloth, 2 x 6 inches, shall be conditioned for 3 hours at  $100^{\circ}\text{F} \pm 5^{\circ}\text{F}$ , and 95 to 100 percent relative humidity. The cloth shall be folded and a pressure of 2 pounds per square inch shall be applied for a period of 4 hours at  $180^{\circ}\text{F} \pm 5^{\circ}\text{F}$ . Nonconformance to 3.5.4.3 shall constitute failure of this test.

4.5.2.2.4 Solubility. A 2 x 6 inch specimen of the finished cloth shall be immersed for 24 hours in a 400-cubic centimeter glass beaker filled with distilled water at a temperature of  $70^{\circ}\text{F} \pm 10^{\circ}\text{F}$ . Nonconformance to 3.5.4.4 shall constitute failure of this test.

4.5.2.2.5 Breaking strength. The breaking strength of the finished cloth shall be tested in accordance with ASTM D 1682, grab method. Nonconformance to 3.5.4.5 shall constitute failure of this test.

4.5.2.2.5.1 Accelerated weathering. The finished cloth shall be conditioned in accordance with ASTM G 26, method A, type BH for 300 hours and tested as specified in 4.5.2.2.5. Nonconformance to 3.5.4.5.1 shall constitute failure of this test.

4.5.2.2.5.2 Accelerated aging. The finished cloth shall be conditioned in accordance with FED-STD-191, method 5851, for 10 days at  $175^{\circ}\text{F} \pm 5^{\circ}\text{F}$ , and tested as specified in 4.5.2.2.5. Nonconformance to 3.5.4.5.1 shall constitute failure of this test.

4.5.2.2.5.3 Accelerated fading. The finished cloth shall be conditioned in accordance with FED-STD-191, method 5660, for 140 hours and tested as specified in 4.5.2.2.5. Nonconformance to 3.5.4.5.1 shall constitute failure of this test.

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4.5.2.2.5.4 Water immersion. The finished cloth shall be immersed in distilled water for 24 hours at 73° F  $\pm$  2° F, and tested as specified in 4.5.2.2.5. Nonconformance to 3.5.4.5.1 shall constitute failure of this test.

4.5.2.2.5.5 Petroleum immersion. The finished cloth shall be immersed in medium No. 5 for 2 hours at 73° F  $\pm$  2° F, in accordance with FED-STD-601, method 6001, and tested as specified in 4.5.2.2.5. Nonconformance to 3.5.4.5.1 shall constitute failure of this test.

4.5.2.2.5.6 Salt fog. The finished cloth shall be conditioned for 300 hours in accordance with ASTM B 117 and tested as specified in 4.5.2.2.5. Nonconformance to 3.5.4.5.1 shall constitute failure of this test.

4.5.2.2.5.7 Humidity. The finished cloth shall be conditioned for 14 days in accordance with ASTM D 2247 and tested as specified in 4.5.2.2.5. Nonconformance to 3.5.4.5.1 shall constitute failure of this test.

4.5.2.2.6 Flame resistance. Test specimens shall be prepared by attaching 12-inch x 12-inch incised color-coated cloths to 12-inch x 12-inch nets with attachment rings. The incising pattern shall be as specified on drawing 13226E1349-1. Two specimens shall be fabricated from each sampling for finished cloth (see 4.4.2.3) for each color represented. Specimens shall not be selected from the same roll. Each specimen shall be attached to and hung from a horizontal support with the direction of the incising pattern (see arrow on drawing 13226E1349-1) perpendicular to the support, so that the entire 12-inch x 12-inch area is exposed. The middle of the bottom edge of the specimen shall be positioned in the center of a 1-1/2-inch burner flame. The burner, gas regulator valve, and fuel shall be as specified in FED-STD-191, method 5903. The flame shall be applied as specified in method 5903 for 15 seconds, then removed. Nonconformance to 3.5.4.6 of more than three of the specimens or two of the same color shall constitute failure of this test.

4.5.2.2.6.1 Finished cloth, initially. The finished cloth shall be tested as specified in 4.5.2.2.6. Nonconformance to 3.5.4.6 shall constitute failure of this test.

4.5.2.2.6.2 Accelerated weathering. The finished cloth shall be conditioned in accordance with ASTM G 26, method A, type BH for 300 hours and tested as specified in 4.5.2.2.6. Nonconformance to 3.5.4.6 shall constitute failure of this test.

4.5.2.2.6.3 Accelerated fading. The finished cloth shall be conditioned in accordance with FED-STD-191, method 5660, for 140 hours and tested as specified in 4.5.2.2.6. Nonconformance to 3.5.4.6 shall constitute failure of this test.

4.5.2.2.6.4 Leaching. The finished cloth shall be conditioned by placing the specimens in a distilled water bath for 24 hours at a temperature of 120° F  $\pm$  5° F. After leaching, the specimens shall be dried at room temperature for 8 hours and then conditioned at 120° F for 40 hours. The specimens shall then be tested as specified in 4.5.2.2.6. Nonconformance to 3.5.4.6 shall constitute failure of this test.

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4.5.2.2.7 Color. The finished cloth shall be tested for color in accordance with ASTM E 308 using standard illuminant C. The trichromatic coefficients (x and y coordinates) and apparent reflectance (Y) shall be determined by using six cloth samples for each color. Each of the trichromatic coefficients and the average of the trichromatic coefficients shall be plotted on applicable figures 1 through 13. Nonconformance to 3.5.4.7 shall constitute failure of this test.

4.5.2.2.7.1 Accelerated weathering. The finished cloth shall be conditioned in accordance with ASTM G 26, method A, type BH for 300 hours and tested as specified in 4.5.2.2.7. Nonconformance to 3.5.4.7 shall constitute failure of this test.

4.5.2.2.7.2 Accelerated fading. The finished cloth shall be conditioned in accordance with FED-STD-191, method 5660, for 140 hours and tested as specified in 4.5.2.2.7. Nonconformance to 3.5.4.7 shall constitute failure of this test.

4.5.2.2.7.3 Humidity. The finished cloth shall be conditioned in accordance with ASTM D 2247 for 14 days and tested as specified in 4.5.2.2.7. Nonconformance to 3.5.4.7 shall constitute failure of this test.

4.5.2.2.7.4 Salt fog. The finished cloth shall be conditioned in accordance with ASTM B 117, for 300 hours and tested as specified in 4.5.2.2.7. Nonconformance to 3.5.4.7 shall constitute failure of this test.

4.5.2.2.7.5 Fungus resistance. The finished cloth shall be conditioned in accordance with FED-STD-191, method 5750, except that the test organism shall be aspergillus niger ATCC No. 6275 or QM 458 (see 6.5), and tested as specified in 4.5.2.2.7. Nonconformance to 3.5.4.7 shall constitute failure of this test.

4.5.2.2.8 Crocking. The finished cloth shall be tested in accordance with FED-STD-191, method 5651, wet and dry, method B. Nonconformance to 3.5.4.8 shall constitute failure of this test.

4.5.2.2.9 Specular gloss. The specular gloss of the finished cloth shall be tested in accordance with ASTM D 523 at 60 degrees and 85 degrees. Two measurements at each angle shall be made oriented 90 degrees to each other and averaged. Nonconformance to 3.5.4.9 shall constitute failure of this test.

4.5.2.2.10 Spectral reflectance. The finished cloth shall be tested in accordance with FED-STD-141, method 6241. The ordinates shall be those specified in table V. The reflectance values shall be obtained by averaging the reflectance percentage at the wavelength ordinates. Nonconformance to 3.5.4.10 shall constitute failure of this test.

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TABLE V. Selected ordinates for determining infrared, ultraviolet, and red reflectance values from spectrophotometric curves.

Ordinates red region (nanometers)	Ordinates ultraviolet region (nanometers)	Ordinates infrared region (nanometers)	
620.0	350.0	714.0	793.0
626.0	355.0	725.0	797.0
638.0	360.0	730.0	802.0
645.0		737.0	807.0
649.0		742.0	811.0
652.0		747.0	816.0
653.0		751.0	821.0
655.0		756.0	826.0
658.0		760.0	831.0
663.0		764.0	836.0
		769.0	842.0
		773.0	848.0
		777.0	855.0
		783.0	862.0
		787.0	873.0

4.5.2.2.10.1 Report of results. Two determinations shall be made on each sample: one determination of the sample shall be made; and one determination of the sample shall be made again with the sample rotated 90 degrees in position. For each sample, the average of the two determinations shall be reported.

4.5.2.2.10.2 Accelerated weathering. The finished cloth shall be conditioned in accordance with ASTM G 26, method A, type BH for 300 hours and tested as specified in 4.5.2.2.10. Nonconformance to 3.5.4.10 shall constitute failure of this test.

4.5.2.2.10.3 Accelerated fading. The finished cloth shall be conditioned in accordance with FED-STD-191, method 5660, for 140 hours and tested as specified in 4.5.2.2.10. Nonconformance to 3.5.4.10 shall constitute failure of this test.

4.5.2.2.10.4 Salt fog. The finished cloth shall be conditioned in accordance with ASTM B 117 for 300 hours and tested as specified in 4.5.2.2.10. Nonconformance to 3.5.4.10 shall constitute failure of this test.

4.5.2.2.10.5 Fungus resistance. The finished cloth shall be conditioned in accordance with FED-STD-191, method 5750, except that the test organism shall be aspergillus niger ATCC No. 6275 or QM 458 (see 6.5), and tested as specified in 4.5.2.2.10. Nonconformance to 3.5.4.10 shall constitute failure of this test.

4.5.2.2.10.6 Humidity. The finished cloth shall be conditioned in accordance with ASTM D 2247 for 14 days and tested as specified in 4.5.2.2.10. Nonconformance to 3.5.4.10 shall constitute failure of this test.

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4.5.2.2.11 Fungus resistance. The finished cloth shall be tested in accordance with FED-STD-191, method 5750, except that the test organism shall be *Aspergillus niger* ATCC No. 6275 or QM 458 (see 6.5). Nonconformance to 3.5.4.11 shall constitute failure of this test.

4.5.2.2.12 Tear strength. The finished cloth shall be tested in accordance with ASTM D 1117, section 14, trapezoid tearing strength, except the results for each specimen shall be the average of the five highest peak loads of resistance registered for 3 inches of separation of the tear. Nonconformance to 3.5.4.12 shall constitute failure of this test.

4.5.2.2.13 Radar properties for cloth. The finished cloth, type I and II, shall be 100 percent tested. Measurements shall be made at 6 GHz  $\pm 1$  GHz, 10 GHz  $\pm 1$  GHz, 17 GHz  $\pm 1$  GHz and 35 GHz  $\pm 1$  GHz and averaged for each frequency over a monitored area of not more than 100 square feet of camouflage cloth. The measurements shall be made using a 6-horn or 3-horn pair configuration depicted in figure 14. Not more than 7000 square yards of material shall constitute a roll. Nonconformance to 3.5.1 for type I cloth shall constitute failure of this test. Nonconformance to 3.5.2 of more than 5 percent of a roll of the type II cloth shall constitute failure of the test. Defective cloth above 5 percent shall be removed.

4.5.2.2.14 Radar properties for finished screen. A hexagon screen shall be unpacked, deployed using four 8-foot support poles with spreaders, and repacked in the case for 112 cycles. The screen shall then be measured at 6 GHz  $\pm 1$  GHz, 10 GHz  $\pm 1$  GHz, 17 GHz  $\pm 1$  GHz and 35 GHz  $\pm 1$  GHz using a microwave transmitter with the receiving horn located in the far field in an anechoic chamber or in an interference-free environment. The screen shall be inserted between the horns and viewed at normal incidence. The measurement shall be made in raster fashion by passing the screen horizontally across the radar beam and averaging each signal over the entire area of the screen. Nonconformance to 3.5.2.1 shall constitute failure of this test.

#### 4.6 Inspection of packaging.

4.6.1 First article pack inspection. The first article pack shall be examined for the defects specified in 4.6.2.3. Presence of one or more defects shall be cause for rejection.

#### 4.6.2 Quality conformance inspection of packaging.

4.6.2.1 Unit of product. For the purpose of inspection, a completed pack prepared for shipment shall be considered a unit of product.

4.6.2.2 Sampling. Sampling for examination shall be in accordance with MIL-STD-105.

4.6.2.3 Examination. Samples selected in accordance with 4.6.2.2 shall be examined for the following defects. AQL shall be 2.5 percent defective.

Special note: Acceptance criteria for workmanship standards in packaging shall conform to 30.5 of the appendix and as referenced herein.

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<u>No.</u>	<u>Defect</u>	<u>A</u>	<u>B</u>	<u>Comm</u>
121.	Repair kit components not placed in repair kit case as specified.	5.2.1	5.2.2	5.2.3
122.	Screens not folded as specified.	5.2.1	5.2.2	
123.	Components not positioned inside transport case as specified.	5.2.1	5.2.2	5.2.3
124.	Filled transport case not placed inside polyethylene bag as specified.	5.2.1	5.2.2	
125.	Polyethylene bag not as specified.	5.2.1	5.2.2	
126.	Bag not compressed around transport case by vacuum as specified.	5.2.1	5.2.2	
127.	Bag not properly heat sealed to retain vacuum (see 30.5.2).	5.2.1	5.2.2	
128.	Sealed bag containing the screening system not placed in specified close-fitting box.	5.2.1	5.2.2	
129.	Close-fitting box not assembled and closed as specified (see 30.5.1 and 30.5.3).	5.2.1	5.2.2	
130.	Preserved screening systems not unitized in the quantity specified.	5.3.1		
131.	Pallet not the style specified.	5.3.1		
132.	Pallet deckboards not as specified.	5.3.1.1.1		
133.	Pallet deckboards not positioned on top and bottom decks as specified.	5.3.1.1.1		
134.	Pallet stringers not as specified.	5.3.1.1.2		
135.	Pallet size not within specified tolerance.	5.3.1.1.3		
136.	Cartons not strapped to pallet as specified (see 30.5.4).	5.3.1.2		
137.	Commercial packing not as specified.			5.3.2
138.	Marking not as specified.	5.4.1	5.4.1	5.4.2

## 5. PACKAGING

5.1 First article pack. The contractor shall furnish a first article pack for examination within the time frame specified (see 6.2) to prove prior to starting production packaging that the applied preservation, packing, and marking comply with the packaging requirements of this specification. Examination shall be as specified in section 4 and shall be subject to surveillance and approval by the Government (see 6.6). The first article pack may be prepared utilizing either the first article model or a production camouflage screening system. When the first article model is utilized, any preservation and packing shall be removed by the contractor at no expense to the Government, when requested by the Government to facilitate comparison between the first article model and production camouflage screening systems.

5.2 Preservation. Preservation shall be level A, B, or commercial, as specified (see 6.2).

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5.2.1 Level A. The repair kit components shall be placed in the repair kit case. Each screen shall be neatly and compactly folded. The repair kit, case, folded screen, and all other components required for one complete screening system shall be placed in the transport case. Each transport case shall be placed in a polyethylene bag conforming to L-P-378, type I, class I, grade C, finish I, film thickness 0.006 inch. The bag shall be tightly compressed around the transport case by vacuum and the bag closed by heat sealing. The bag containing the screening system shall then be placed in a close-fitting box conforming to PPP-B-636, V3s, style FTC-L. The approximate sizes of the boxes shall be 44 inches x 24 inches x 6 inches for classes 1 and 2 systems and 44 inches x 24 inches x 8 inches for the class 3 system. The boxes shall be assembled and closed as specified in the appendix to the box specification.

5.2.2 Level B. Each complete screening system shall be preserved as specified in 5.2.1, except the box shall conform to PPP-B-636, type CF, class domestic, variety SW, grade 275, style FTC-L. Box assembly and closure shall be in accordance with the appendix to the box specification.

5.2.3 Commercial. The components comprising a complete camouflage screening system, including the repair kit in its own case, contained within the furnished transport case, shall be preserved in accordance with ASTM D 3951.

5.3 Packing. Packing shall be level A or commercial, as specified (see 6.2).

5.3.1 Level A. Ten screening systems, preserved as specified in 5.2, shall be unitized in two stacks side by side, five cartons high, on a reversible, two-way entry, flush, stringer type, hardwood pallet.

5.3.1.1 Pallet. The quality of the lumber and assembly workmanship shall be in accordance with commercially acceptable practices.

5.3.1.1.1 Deckboards. The deckboards shall have a minimum thickness of 9/16 inches and a minimum width of 3-1/2 inches or 5-1/2 inches, as applicable. One 5-1/2-inch width deckboard shall be centered on the stringer length on both the top and bottom decks. Two 3-1/2-inch width deckboards shall be evenly spaced on each side of the centered 5-1/2-inch width boards on both the top and bottom decks as shown in figure 16.

5.3.1.1.2 Stringers. The lumber used for the stringers shall have a minimum thickness of 1-1/2 inches and a minimum width of 2-5/8 inches. Three stringers shall be required per pallet and they shall be positioned as shown in figure 16.

5.3.1.1.3 Size. The length of the pallet (the stringer length) shall be equal to the outside dimension (+ zero inches, -1/2 inch) of the two, side-by-side screen cartons. The width of the pallet (the deckboard length) shall be equal to the outside dimension (+ zero inches, -1/2 inch) of the screen carton length.

5.3.1.2 Strapping. The cartons shall be secured to the pallet with five straps conforming to QQ-S-781, type I or IV, regular duty, size 1/2 inch, finish A, with a minimum thickness of 0.015 inches, or with nonmetallic strapping con-

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forming to PPP-S-760, type II or III, with a minimum thickness of 0.020 inches. Three straps shall be applied lengthwise to the pallet and two straps shall be applied girthwise to the pallet (see figure 16). Fiberboard or plastic edge protectors of adequate design and size shall be placed between the carton edges and the strap to prevent excessive tearing and crushing of the carton.

5.3.2 Commercial. Camouflage screening systems, preserved as specified in 5.2, shall be packed in accordance with ASTM D 3951.

#### 5.4 Marking.

5.4.1 Levels A and B. In addition to any special or other identification marking required by the contract or purchase order, each container and unitized load shall be marked in accordance with MIL-STD-129.

5.4.2 Commercial. Commercial marking shall be in accordance with ASTM D 3951. Additionally, each shipping container shall be marked with the cube and gross weight.

#### 6. NOTES

6.1 Intended use. The camouflage screening system is intended for use as temporary or semipermanent concealment of various types of tactical equipment and field installations from hostile visual, radar, and infrared observations.

6.2 Ordering data. Acquisition documents should specify the following:

- a. Title, number and date of this specification.
- b. Type and class required (see 1.2).
- c. When a first article is required for inspection and approval and number of units required (see 3.2 and 6.3).
- d. Time frame required for submission of first article pack (see 5.1).
- e. Degree of preservation and packing required (see 5.2 and 5.3 respectively).
- f. Any special marking (see 5.4.1).

6.3 First article. When a first article inspection is required, the item should be an initial production model. The first article should consist of one or more units. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, tests, and approval of the first article.

6.4 Recycled material. It is encouraged that recycled material be used, when practical, as long as it meets the requirements of this specification (see 3.3).

6.5 Fungus. Cultures of the organism used in the fungus resistance tests may be obtained from the Department of Botany, ATTN: Dr. Emmory C. Simmons, University of Massachusetts, Amherst, MA 01003-0001.

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6.6 First article pack. Any changes or deviations of production packs from the approved first article pack will be subject to the approval of the contracting officer. Approval of the first article pack will not relieve the contractor of his obligation to preserve, package, pack, and mark the camouflage screening systems in accordance with this specification.

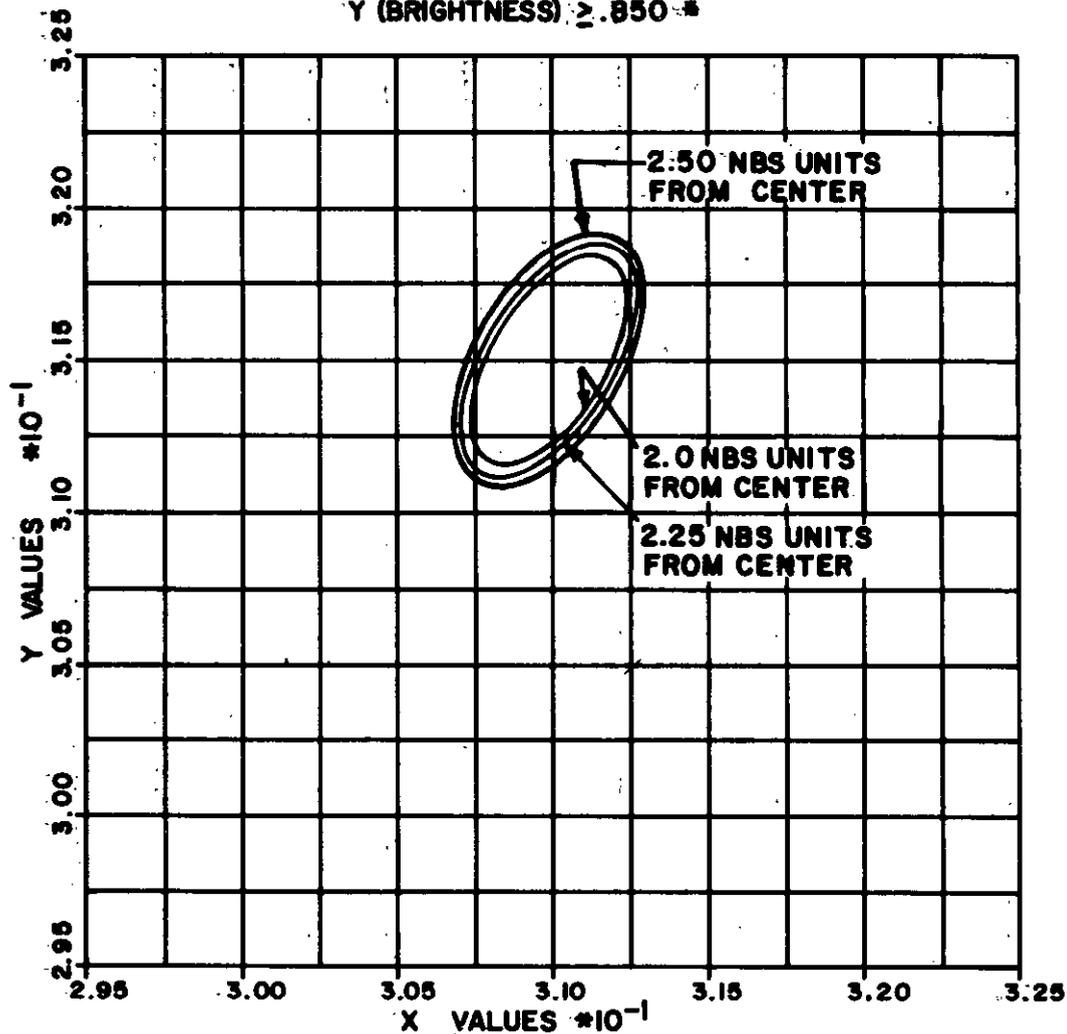
6.7 Levels A and B preservation. The intent of the polyethylene bag is to provide the means for compressing the filled transport case, thus reducing the cube. The moisture barrier characteristics offered by the bag's application is secondary.

Custodian:  
Army - ME

Preparing activity:  
Army - ME

Project 1080-A067

MIL-C-53004A(ME)

Y (BRIGHTNESS)  $\geq .850$ **NOTE:**

COLOR ELLIPSES ARE 2.0 AND 2.25 NBS UNITS FROM CENTER VALUES. AFTER ENVIRONMENTAL EXPOSURE THE ELLIPSE OF 2.50 NBS UNITS FROM CENTER VALUES WILL BE APPLICABLE.

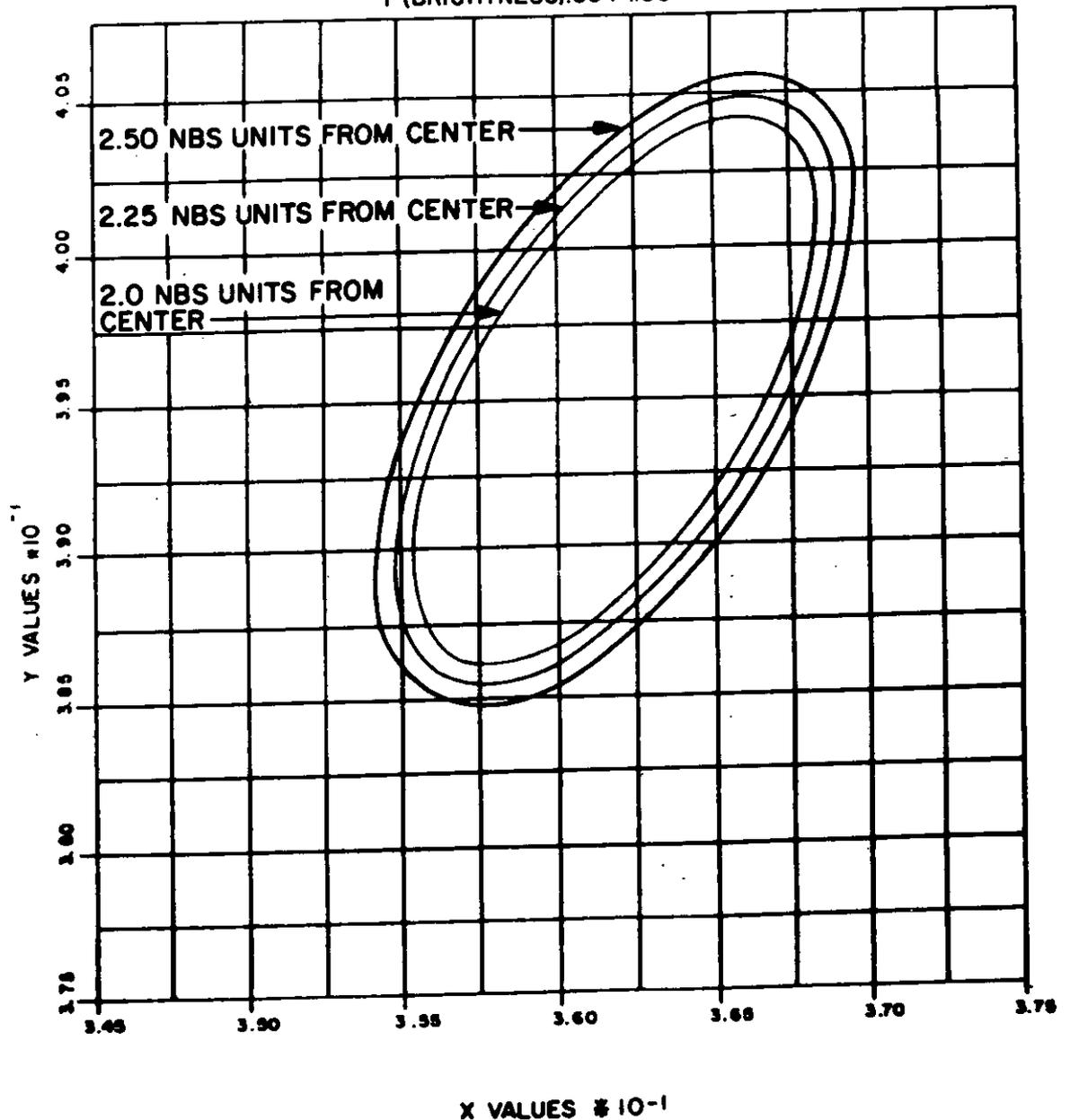
- ◆ AFTER ENVIRONMENTAL EXPOSURE THE Y (BRIGHTNESS) WILL BE  $\geq .830$ .

**FIGURE 1. Chromaticity diagram for camouflage cloth color-white (snow).**

**X-3953C**

MIL-C-53004A (ME)

Y (BRIGHTNESS).094-.108

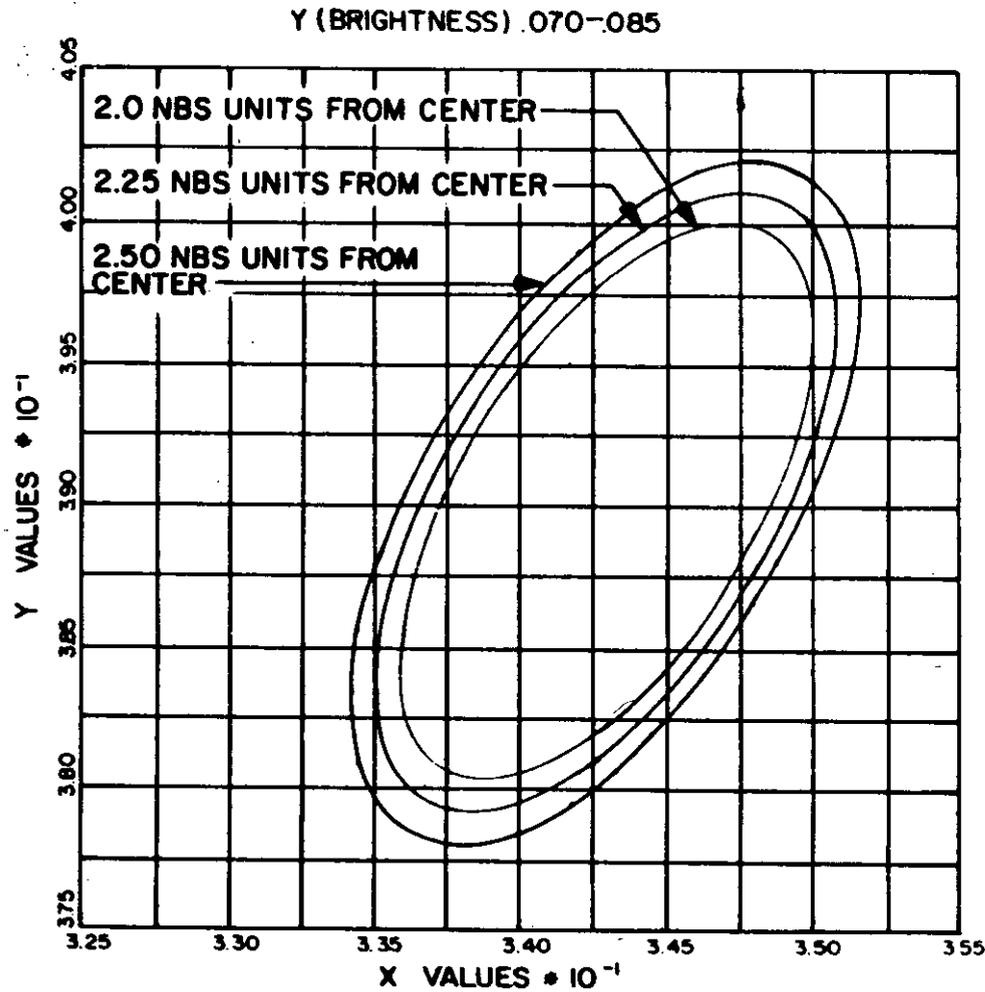


NOTE:  
 COLOR ELLIPSES ARE 2.0 AND 2.25 NBS UNITS FROM CENTER VALUES.  
 AFTER ENVIRONMENT EXPOSURE THE ELLIPSE OF 2.50 NBS UNITS  
 FROM CENTER VALUES WILL BE APPLICABLE.

**FIGURE 2. Chromaticity diagram for camouflage cloth color-  
 light green (woodland).**

**X-4008**

MIL-C-53004A(ME)

**NOTE:**

COLOR ELLIPSES ARE 2.0 AND 2.25 NBS UNITS FROM CENTER VALUES. AFTER ENVIRONMENTAL EXPOSURE THE ELLIPSE OF 2.50 NBS UNITS FROM CENTER VALUES WILL BE APPLICABLE.

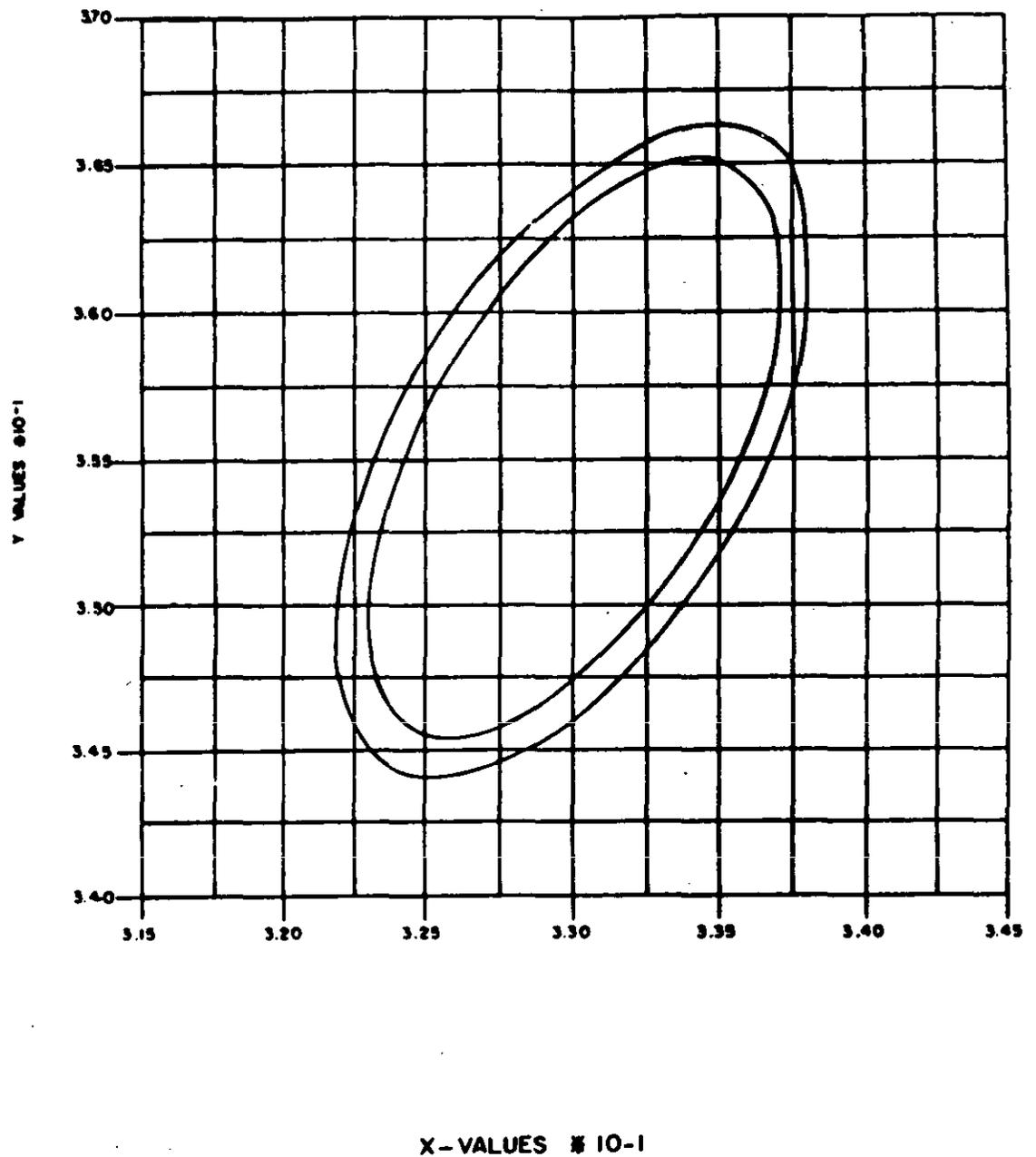
■ AFTER ENVIRONMENTAL EXPOSURE THE Y (BRIGHTNESS) WILL BE .070-.086.

**FIGURE 3. Chromaticity diagram for camouflage cloth  
color - dark green (woodland).**

X-4009

MIL-C-53004A(ME)

Y (BRIGHTNESS) .058-.072



## NOTE:

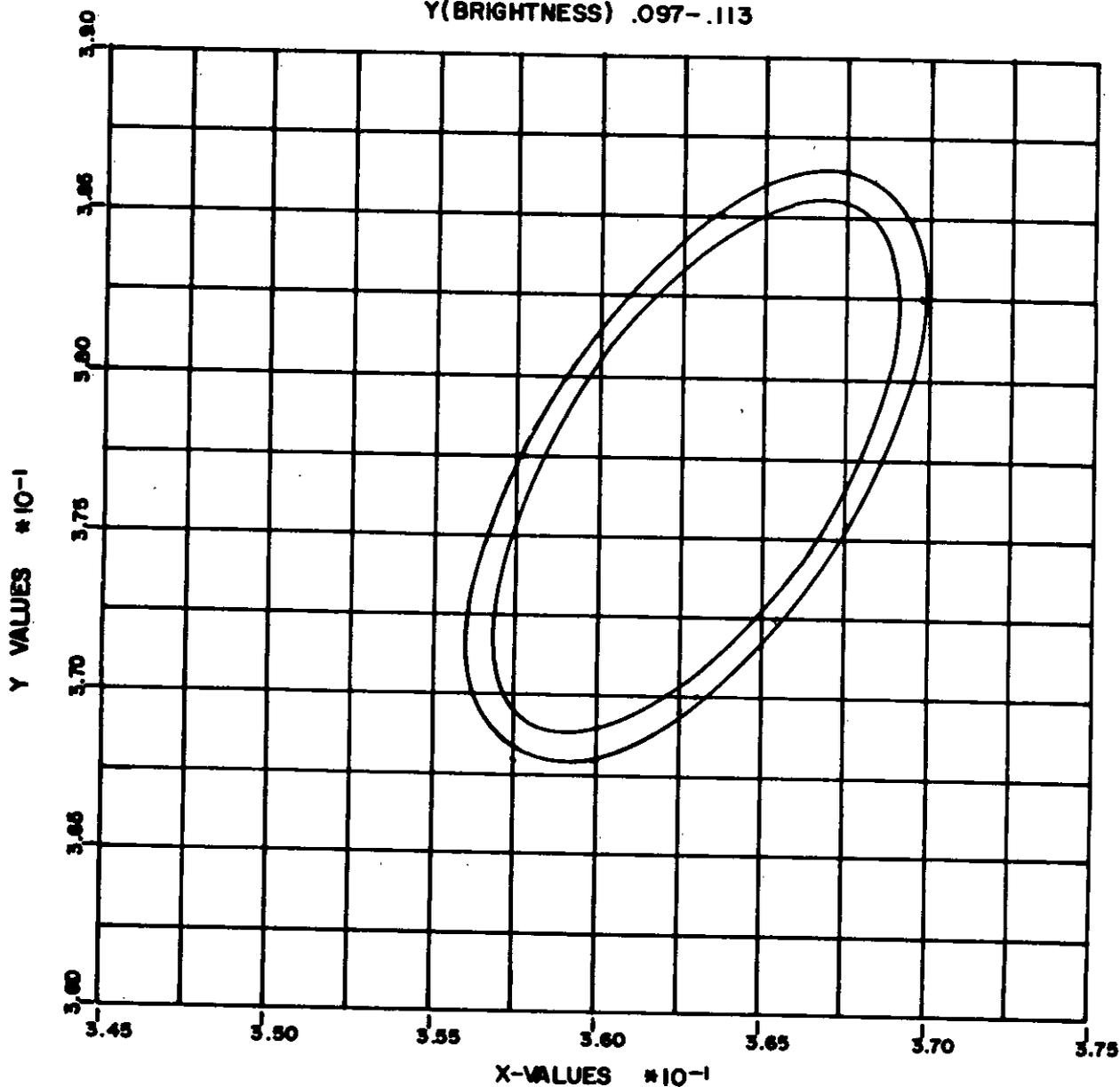
COLOR ELLIPSE IS 2.00 AND 2.25 NBS UNITS FROM CENTER VALUES.  
 AFTER ENVIRONMENTAL EXPOSURE ALLOWABLE Y (BRIGHTNESS) IS  
 .058-.074.

FIGURE 4. Chromaticity diagram for camouflage cloth color - forest green (woodland snow).

X-4010

MIL-C-53004A(ME)

Y(BRIGHTNESS) .097-.113



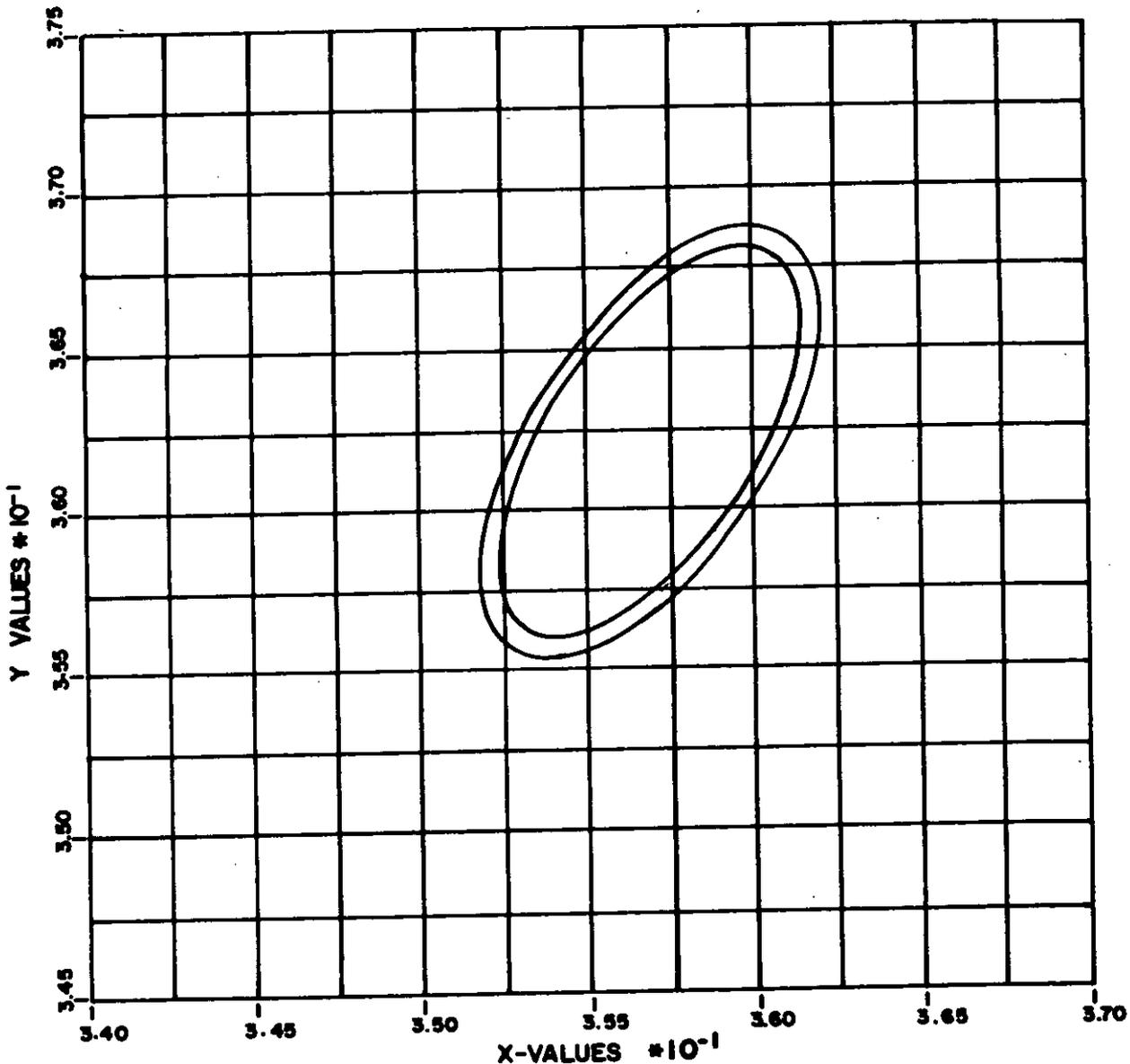
NOTE:  
COLOR ELLIPSE IS 2.00 AND 2.25 NBS UNITS FROM CENTER VALUES.

FIGURE 5. Chromaticity diagram for camouflage cloth color-olive (woodland).

X-2571B

MIL-C-53004A(ME)

Y (BRIGHTNESS) .210 - .230



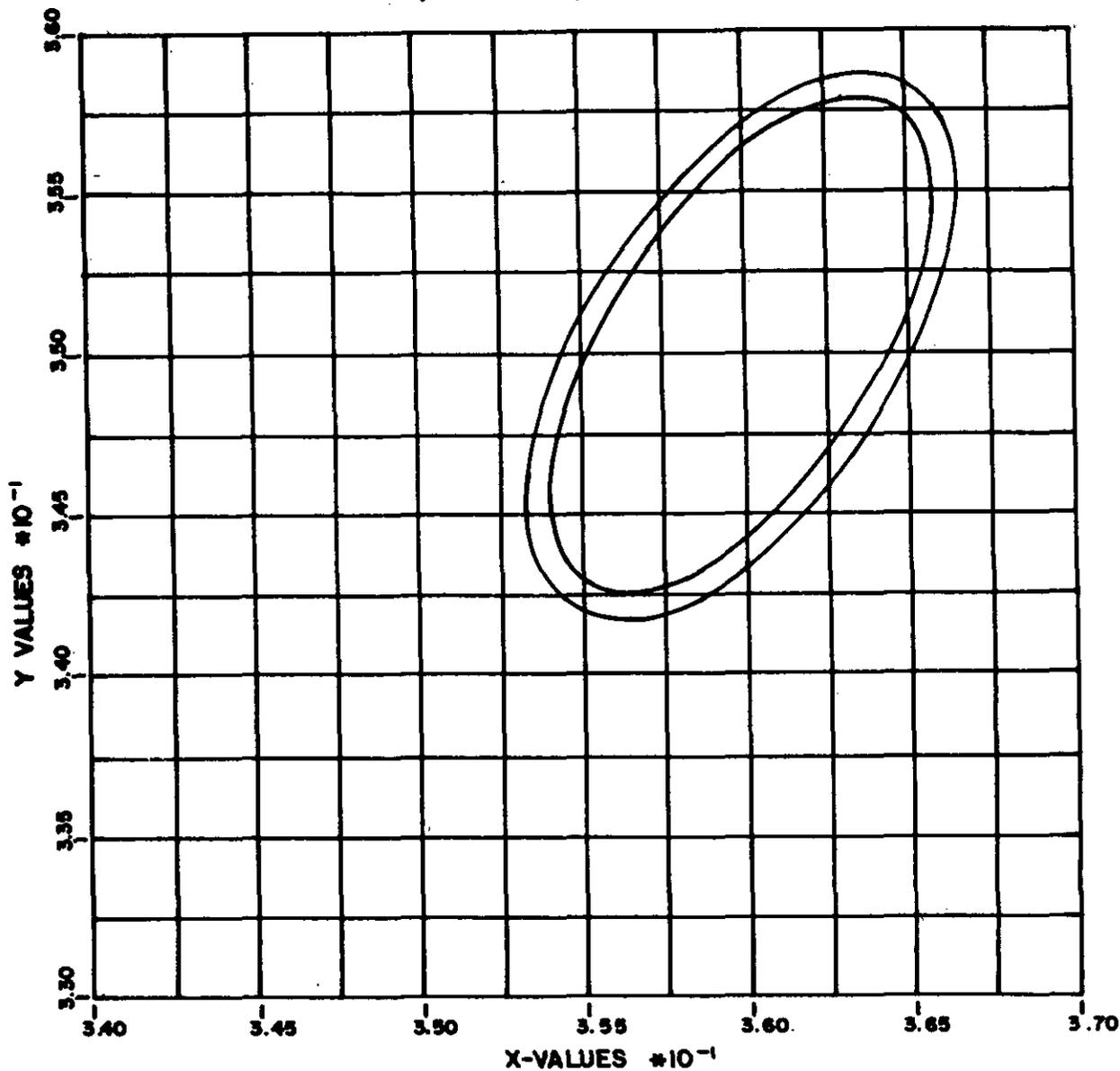
NOTE:  
COLOR ELLIPSE IS 2.00 AND 2.25 NBS UNITS FROM CENTER VALUES.

FIGURE 6. Chromaticity diagram for camouflage cloth color-khaki (woodland).

X-2572E

MIL-C-53004A(ME)

Y(BRIGHTNESS) .102-.118



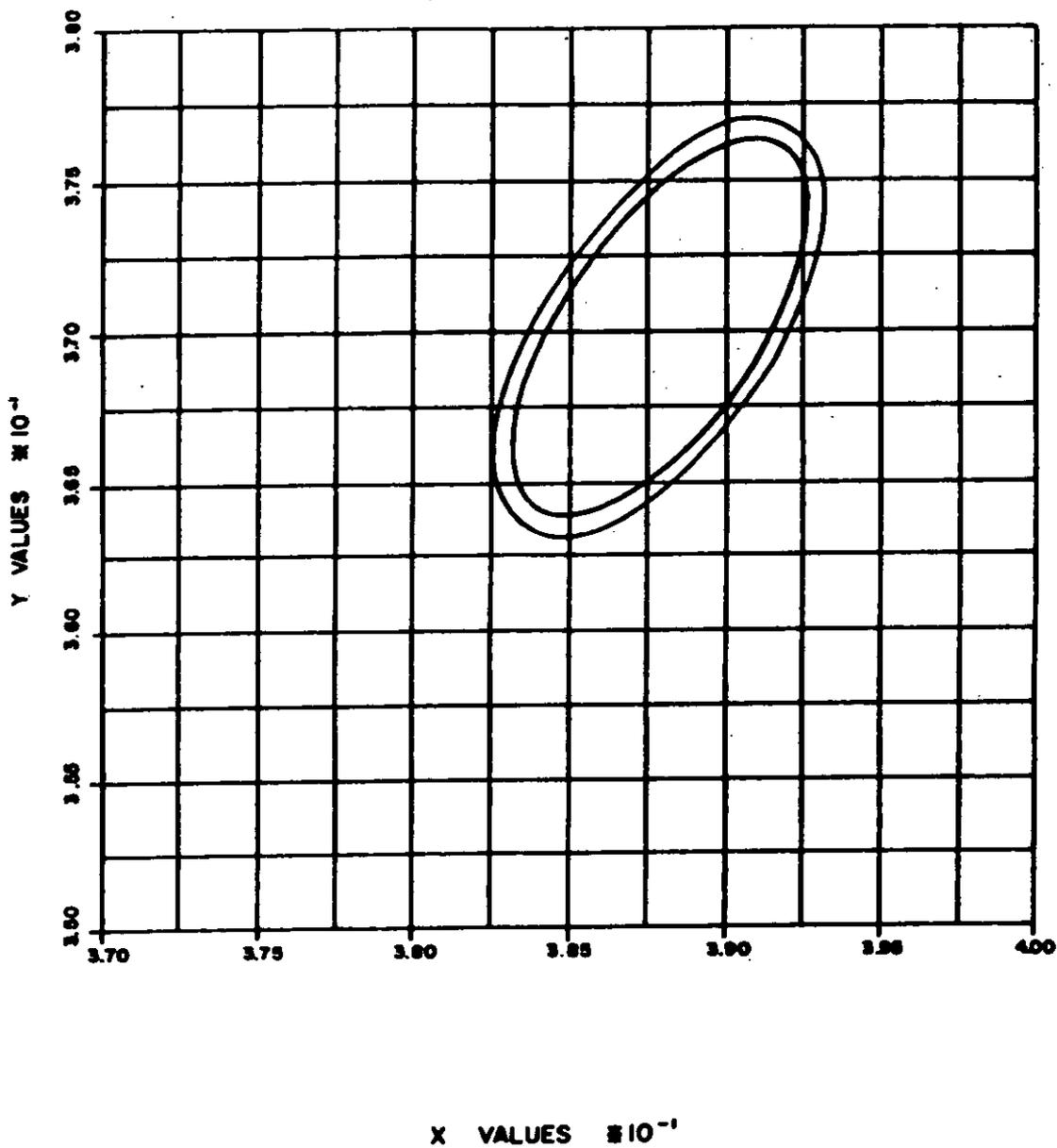
NOTE:  
COLOR ELLIPSE IS 2.00 AND 2.25 NBS UNITS FROM CENTER VALUES.

FIGURE 7. Chromaticity diagram for camouflage cloth  
color-brown (woodland).

X-2573B

MIL-C-53004A(ME)

Y(BRIGHTNESS) .210 - .230



NOTE :

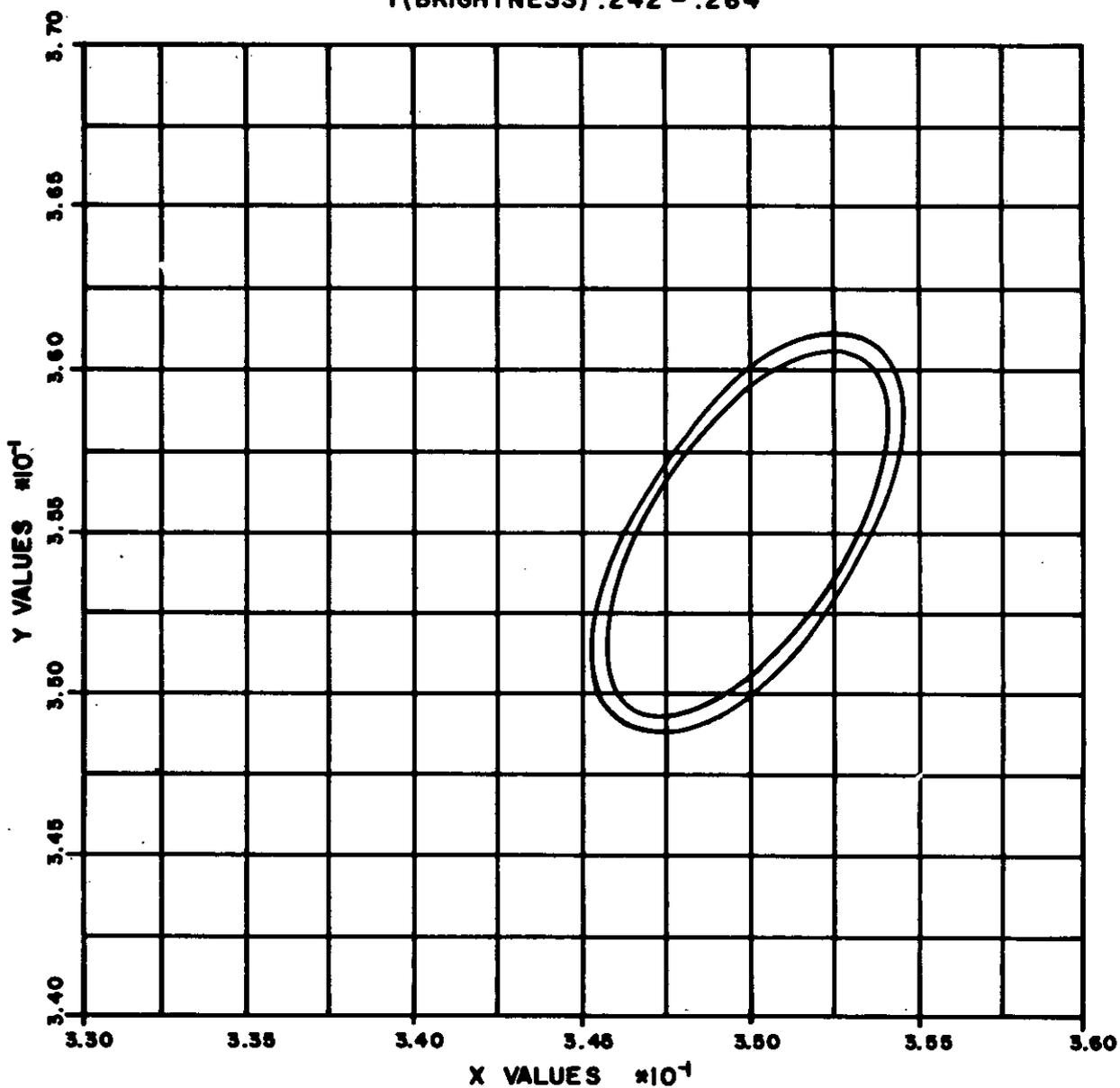
COLOR ELLIPSE IS 2.00 AND 2.25 NBS UNITS FROM CENTER VALUES.

FIGURE 8. Chromaticity diagram for camouflage cloth color-tan (woodland and snow).

X-4011

MIL-C-53004A(ME)

Y(BRIGHTNESS) .242 - .264



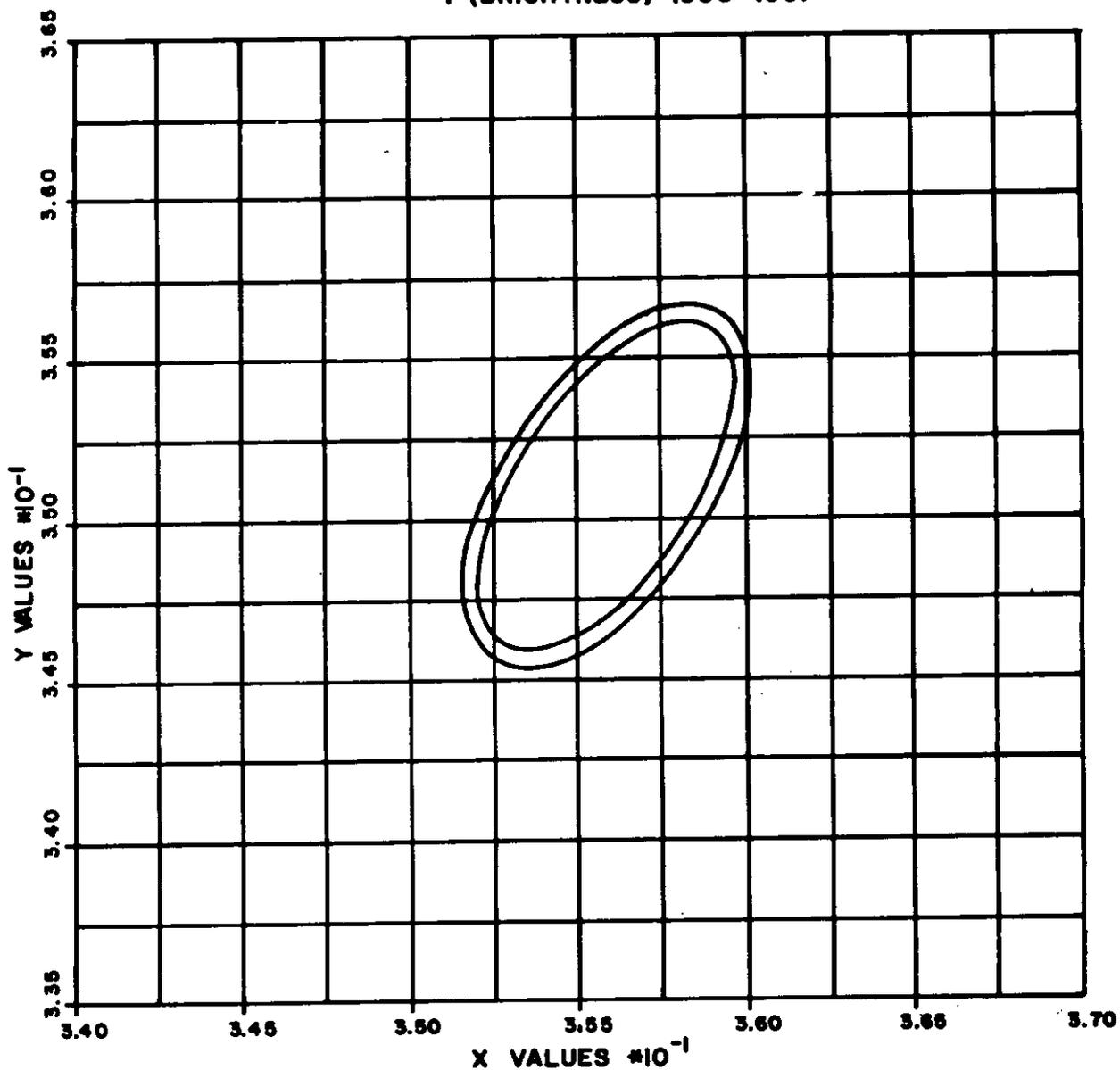
NOTE:  
COLOR ELLIPSE IS 2.00 AND 2.25 NBS UNITS FROM CENTER VALUES.

FIGURE 9. Chromaticity diagram for camouflage cloth color-khaki  
(desert).

X-311A

MIL-C-53004A(ME)

Y (BRIGHTNESS) .336-.361



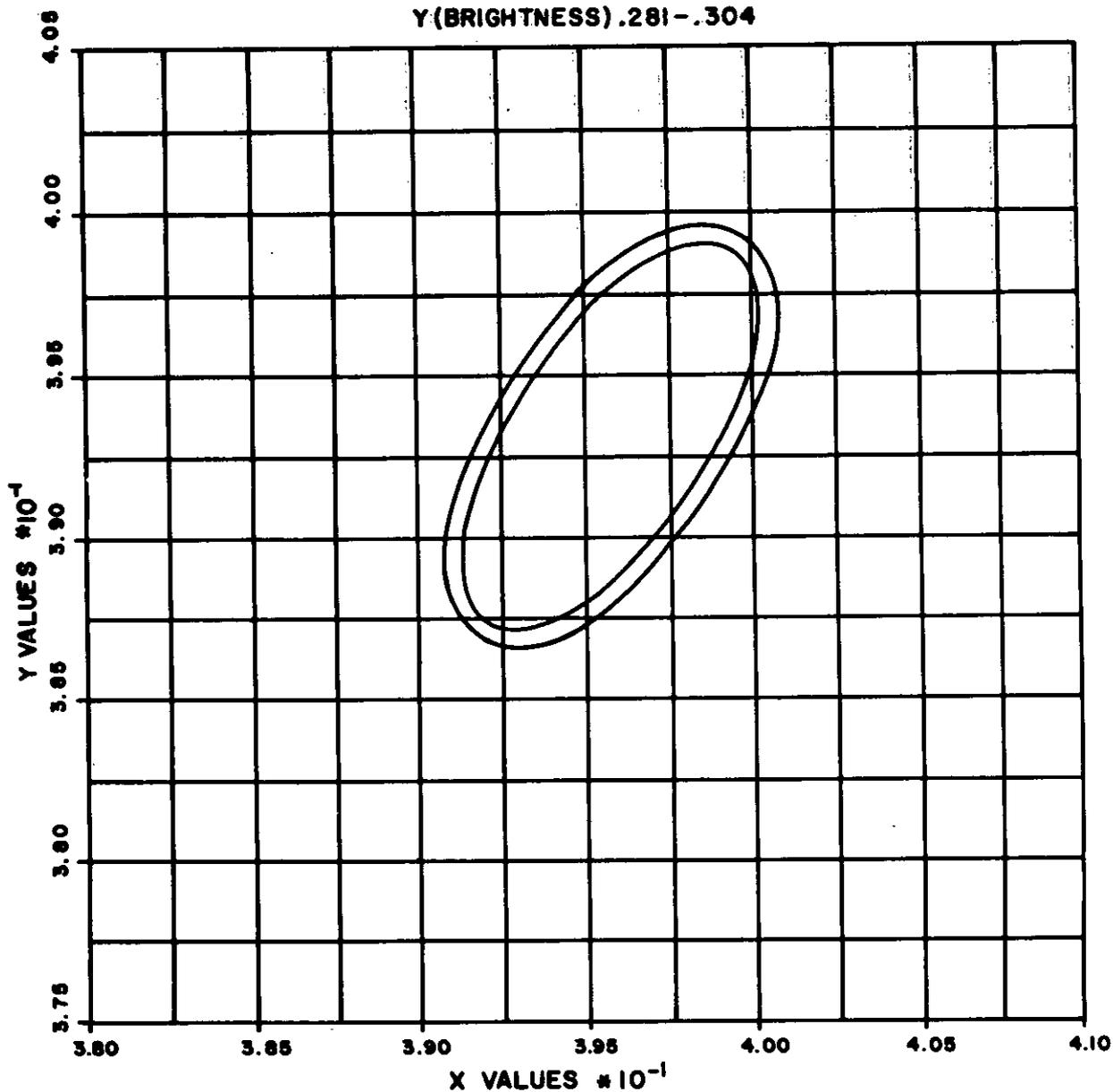
NOTE:  
COLOR ELLIPSE IS 2.00 AND 2.25 NBS UNITS FROM CENTER VALUES.

FIGURE 10. Chromaticity diagram for camouflage cloth color-tan (desert).

**X-3112A**

MIL-C-53004A(ME)

Y (BRIGHTNESS) .281 - .304



NOTE:

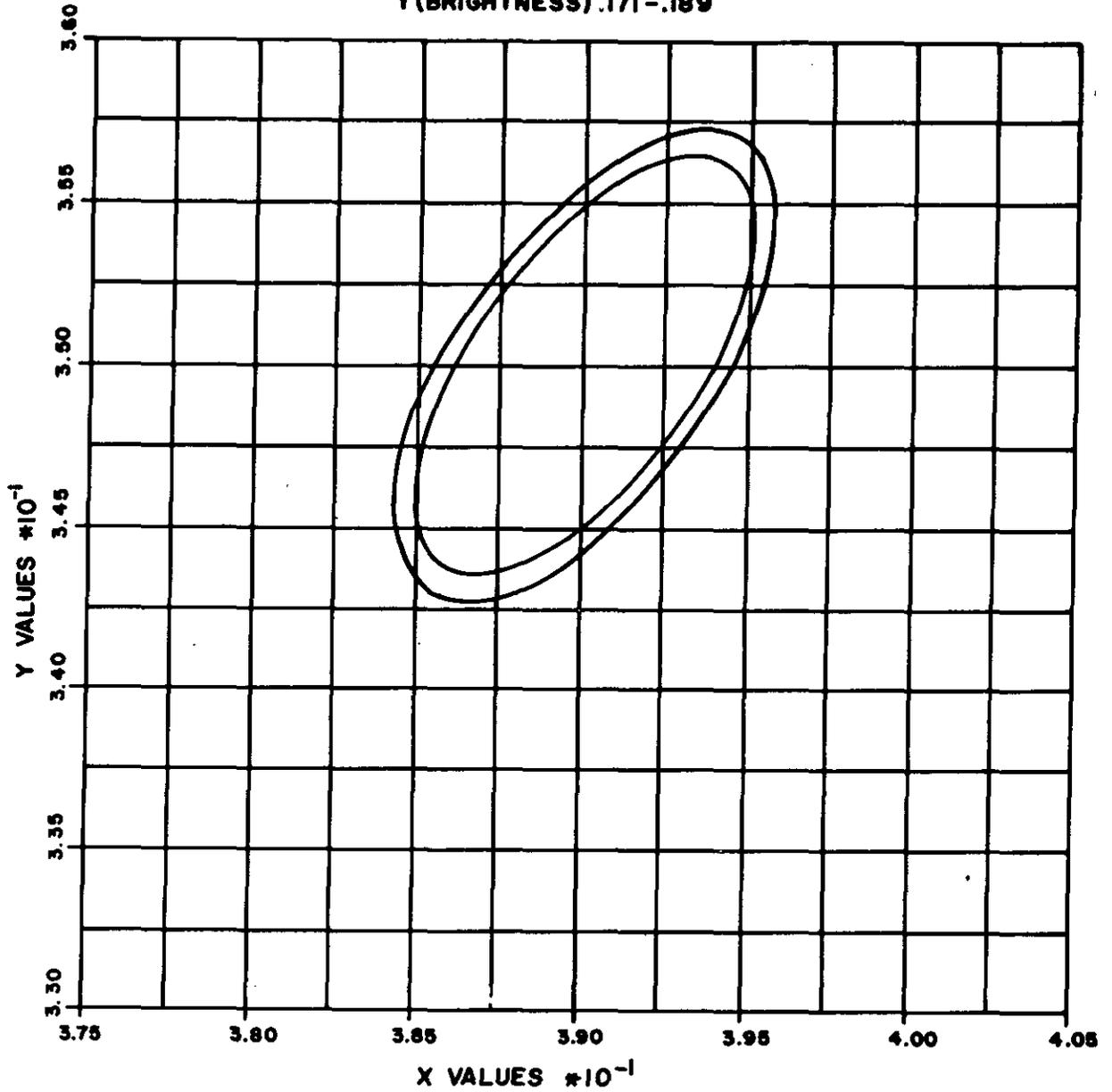
COLOR ELLIPSE IS 2.00 AND 2.25 NBS UNITS FROM CENTER VALUES.

FIGURE II. Chromaticity diagram for camouflage cloth color - straw (desert).

X-3113A

MIL-C-53004A(ME)

Y (BRIGHTNESS) .171-.189



NOTE:

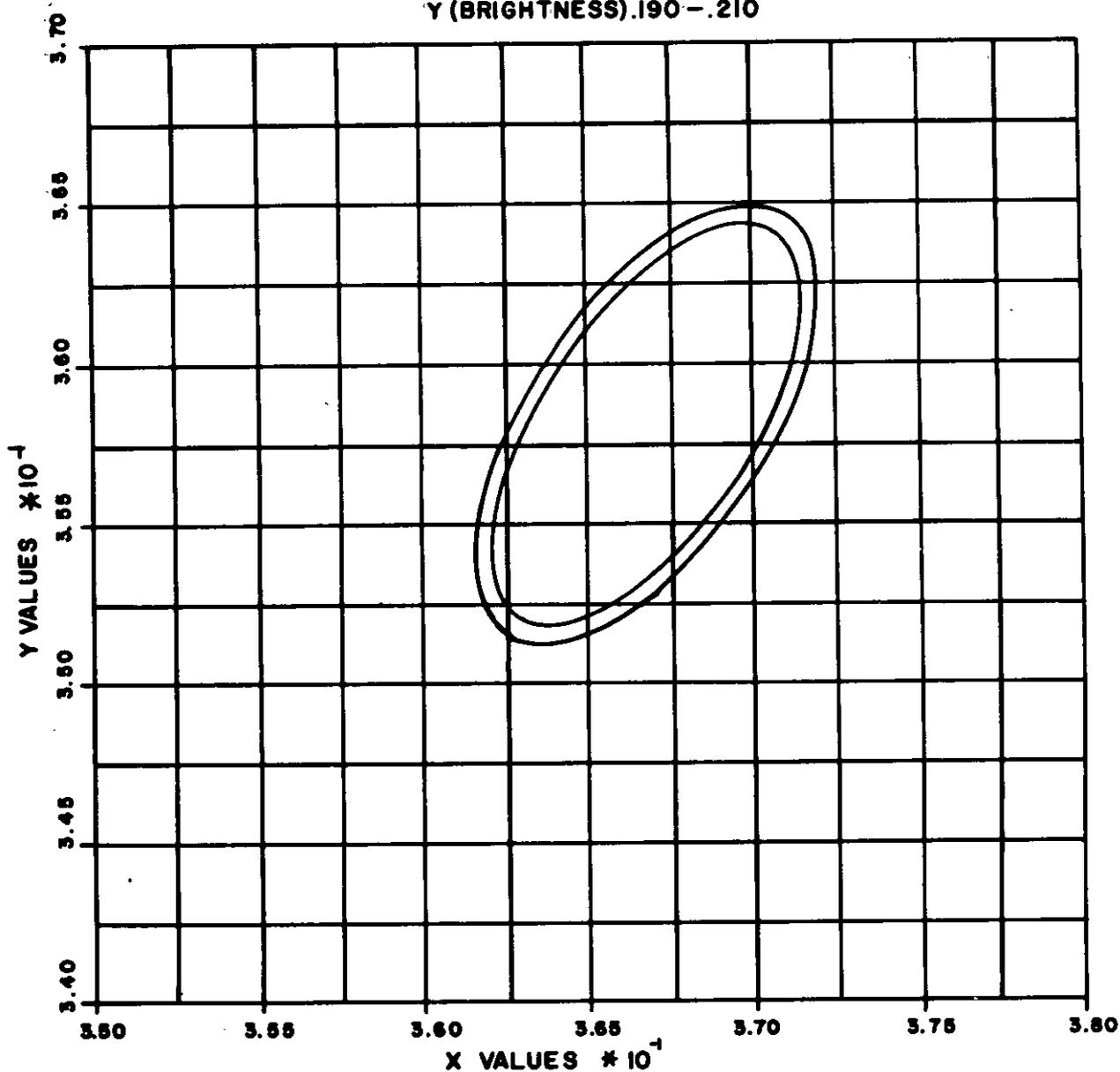
COLOR ELLIPSE IS 2.00 AND 2.25 NBS UNITS FROM CENTER VALUES.

FIGURE 12. Chromaticity diagram for camouflage cloth color-russet (desert).

X-3114A

MIL-C-53004A(ME)

Y (BRIGHTNESS).190-.210

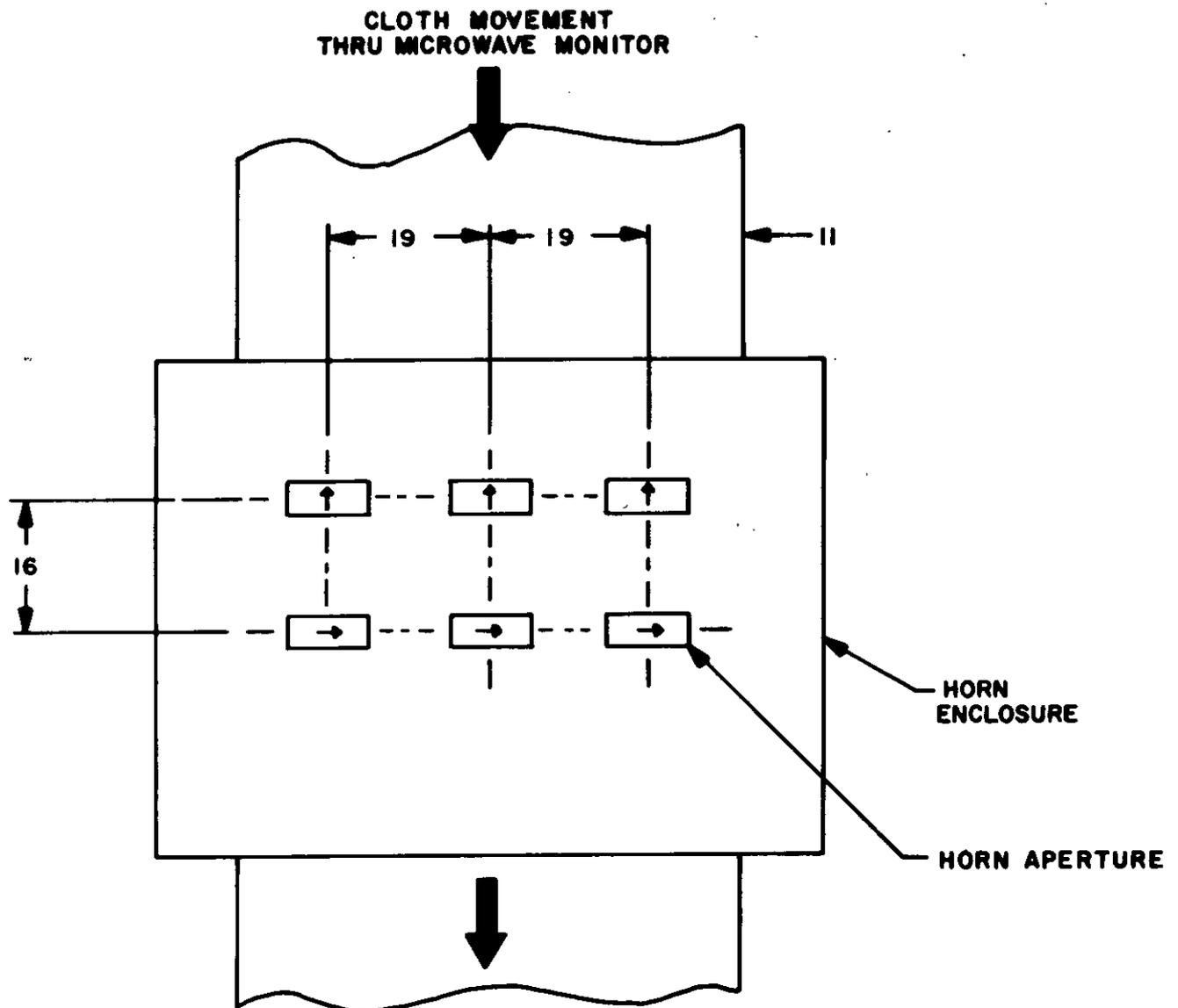


NOTE:  
COLOR ELLIPSE IS 2.00 AND 2.25 NBS UNITS FROM CENTER VALUES.

FIGURE 13. Chromaticity diagram for camouflage cloth color-  
light brown (desert).

X-3115A

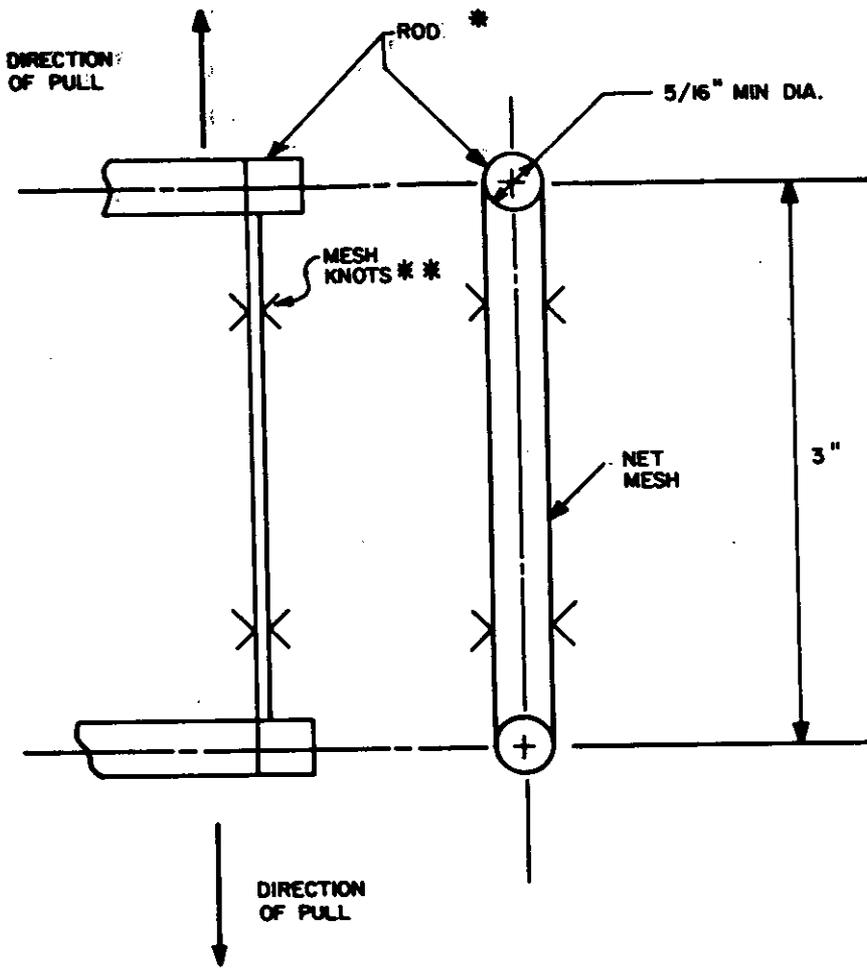
MIL-C-53004A(ME)



**FIGURE 14. Aperture configuration for microwave monitor.**

**X-3118B**

MIL-C-53004A(ME)



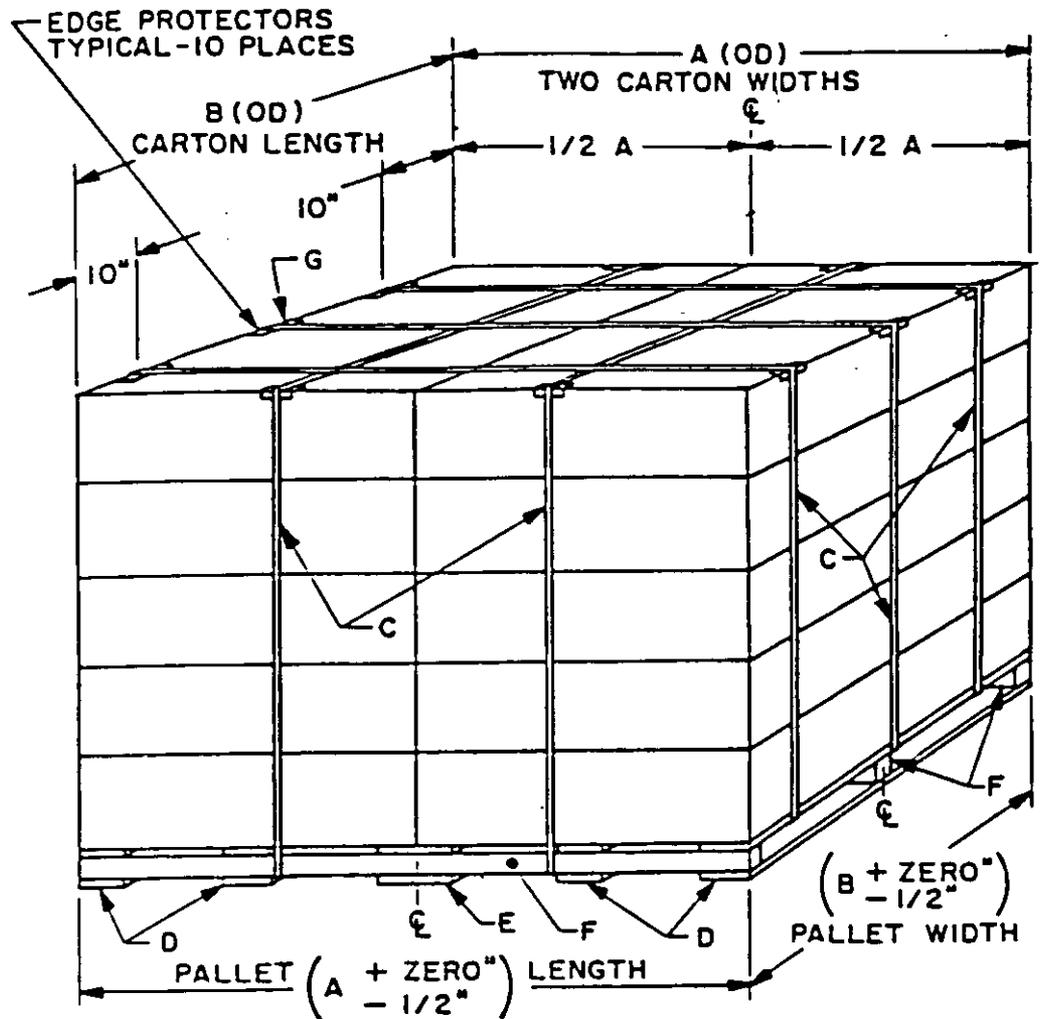
\* HOOK (S) OF SAME DIAMETER ARE ACCEPTABLE IN LIEU OF RODS AS SHOWN.

\*\* LOCATION OF KNOTS OF NET MESH TO BE AS SHOWN ABOVE DURING THE MESH BREAKING TEST.

**FIGURE 15. Mesh breaking strength-test specimen setup.**

X-2581A

MIL-C-53004A (ME)



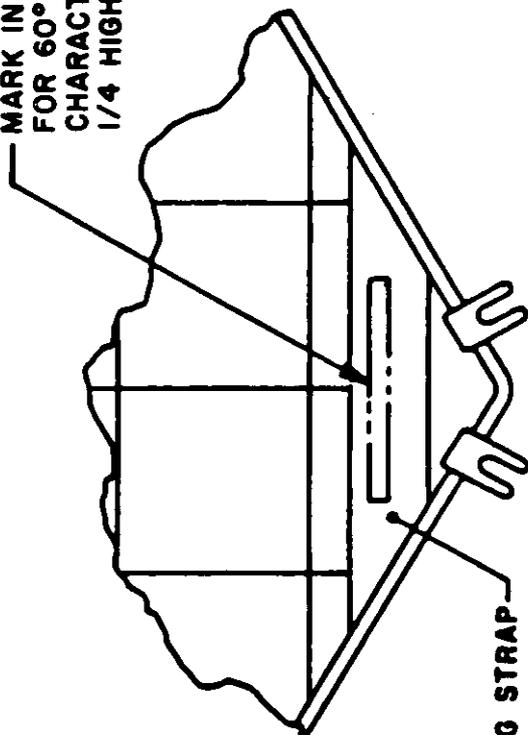
- A = AS SHOWN
- B = AS SHOWN
- C = STRAPPING
- D = 3-1/2" MIN WIDTH BOARDS
- E = 5-1/2" MIN WIDTH BOARDS
- F = STRINGERS
- G = EDGE PROTECTORS

FIGURE 16. Unitization of screening systems.

X-4162

MIL-C-53004A(NE)

MARK IN ACCORDANCE WITH TABULATION.  
 FOR 60° CORNERS, USE 3/16 HIGH  
 CHARACTERS. FOR 120° CORNERS, USE  
 1/4 HIGH CHARACTERS (BOTH SIDES).



CORNER REINFORCING STRAP

CLASS	SIDE 1	SIDE 2
CLASS 1, WOODLAND	SPRING/SUMMER SIDE	FALL/WINTER SIDE
CLASS 2, DESERT	TAN/ARID SIDE	GREY/SEMI-ARID SIDE
CLASS 3, SNOW	TOTAL SNOW SIDE	PARTIAL SNOW SIDE

FIGURE 17. Identification of color blend sides of screens.

X-4163A

## MIL-C-53004A(ME)

## APPENDIX

## WORKMANSHIP STANDARDS

## FOR CAMOUFLAGE SCREENING SYSTEMS

## 10. SCOPE

10.1 Scope. This appendix covers acceptance criteria for workmanship in the manufacture of camouflage systems to achieve uniformity in appearance and quality.

## 20. APPLICABLE DOCUMENTS

This section is not applicable to this appendix.

## 30. REQUIREMENTS

30.1 Completed screen (hexagon or rhombic) and garnished net in the repair kit where applicable.

30.1.1 Pattern incising. Where there is evidence of discontinuity or a variation of incising cut of a pattern on a completed screen, it shall be acceptable only when there is no more than nine square feet per hex screen and three square feet per diamond screen.

30.1.2 Pattern location.

- a. Because patterns have to be located and stretched manually by numerous operators, variations in the stretch will be noticeable. However, the pattern shall not be considered overstretched or unacceptable unless the pattern exhibits tearing of cloth in excess of that permitted by torn pattern standard.
- b. If a pattern has been reworked to remove defective material, replacement of material only in area of removal is acceptable.
- c. Patterns where the outside perimeters just meet, are joined to one another, or lap over another pattern on the same or opposite sides of the net are "Acceptable". However, if a pattern overlap obliterates the continuity of a narrow pattern to the extent that the color of that area has been obscured, it shall be deemed "Unacceptable".

30.1.3 Pattern attachment.

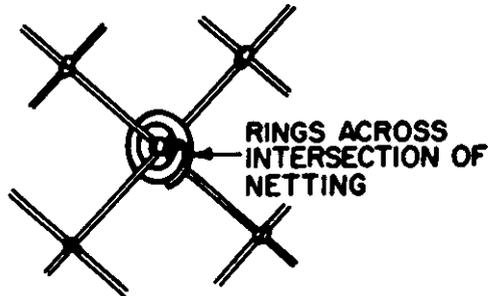
- a. Around the perimeter of a single pattern, garnish attachment rings spaced at 4-3/4 inches average or closer are "Acceptable".
- b. If a spacing on a pattern perimeter is observed which is not more than 10-3/4 inches, without a ring, it shall be deemed "Acceptable" as to pattern attachment, if the majority of the pattern meets the requirements of a. The missing rings shall be installed on that net and the net accepted.

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- c. In the field of a single pattern, rings spaced at 6-3/4 inches average or closer are "Acceptable".
- d. If an area is observed which is less than 15-3/4 inches in diameter, without a ring, it shall be deemed "Acceptable" as to pattern attachment, if the majority of the pattern meets the requirements of c.
- e. Conditions described in b and d shall be considered "a missing ring" under pattern attachment inspection.

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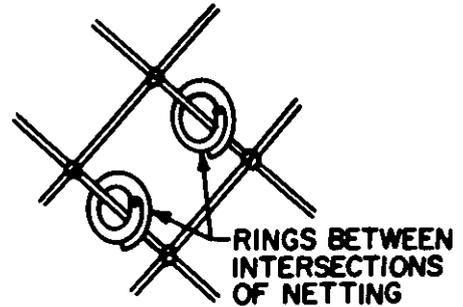
Unacceptable

Ring is across an intersection of netting and will not slide.

Typically misformed rings attached only to netting are not acceptable.

Typically misformed rings attached to cloth only are not acceptable.

The ring will not slide on netting if finger pressure is applied. (Usually caught on net).

Acceptable

Typically formed rings attached only to netting shall be acceptable, if not over 10% of total quantity.

Typically formed rings attached to cloth only shall be acceptable, if not over 10% of total quantity.

The ring slides on netting with finger pressure applied.

Note: Judgement of 6-3/4 inches or 4-3/4 inches can be made by counting the meshes in the netting between rings, "diagonals don't count".

Mounting for inspection - The net will be mounted on four points (including corner) per side. If patterns are torn due to mounting of the net, the net may be repaired but the lot will not be rejected.

X-4034

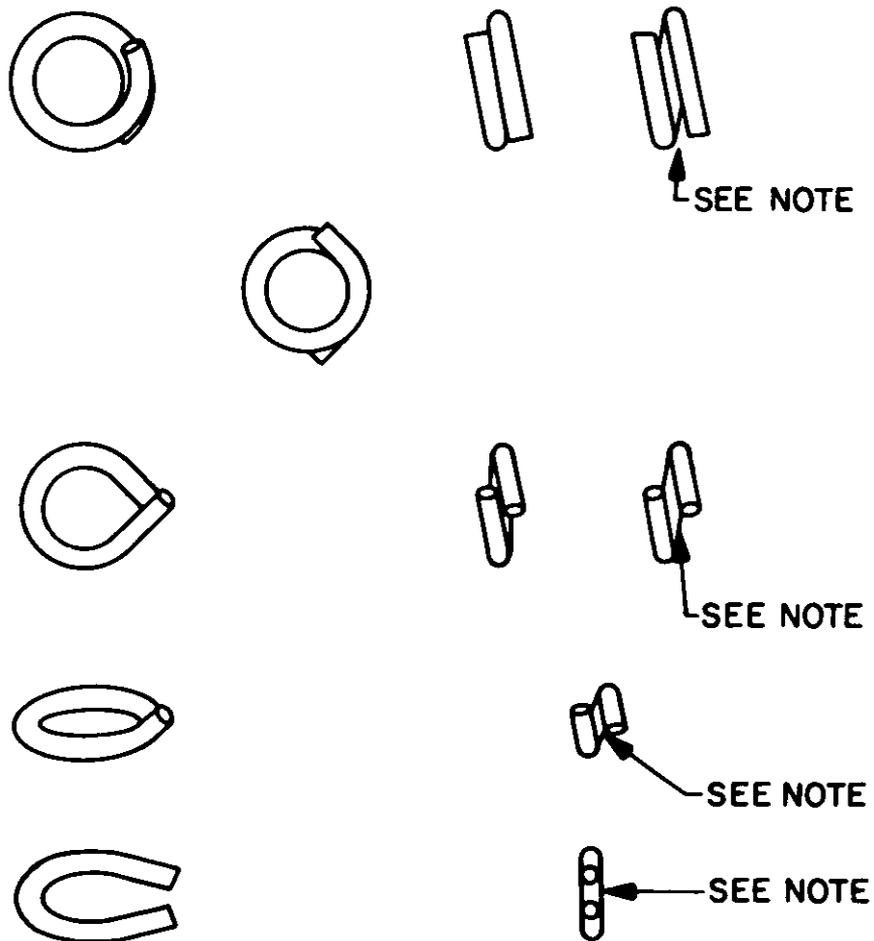
MIL-C-53004A(ME)

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30.1.4 Garnish attachment ring form.

Acceptable

Typically formed rings



Note - Opening shall not be large enough to allow the net mesh to slip out of the ring without the use of force.

X-4037

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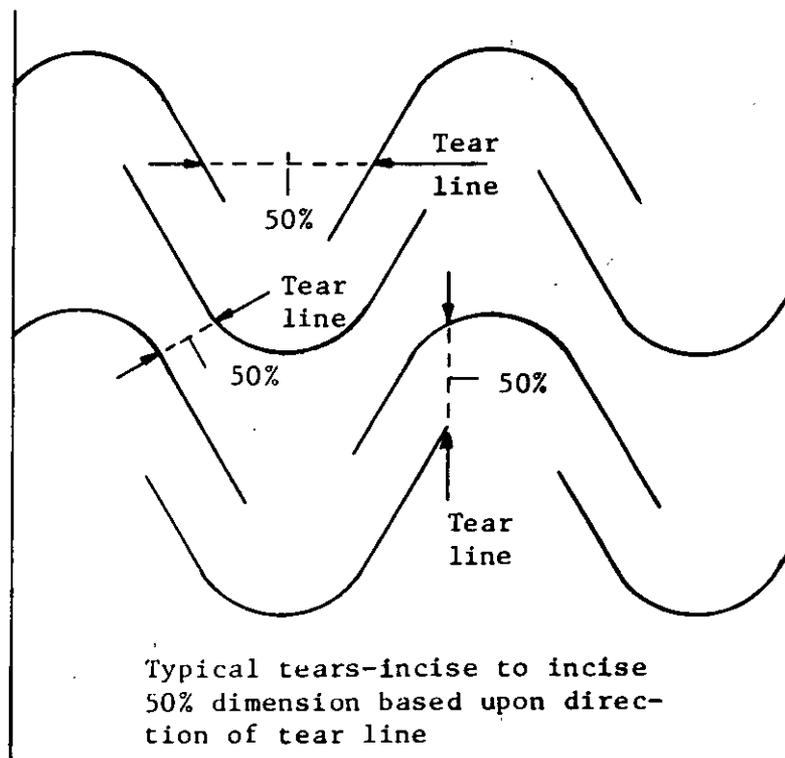
## APPENDIX

30.1.5 Pattern hangdown.Unacceptable

Hangdown of patterns on a net exceeding 12 inches.

Acceptable

Hangdown of patterns on a net not exceeding 12 inches.

30.1.6 Torn patterns.Unacceptable

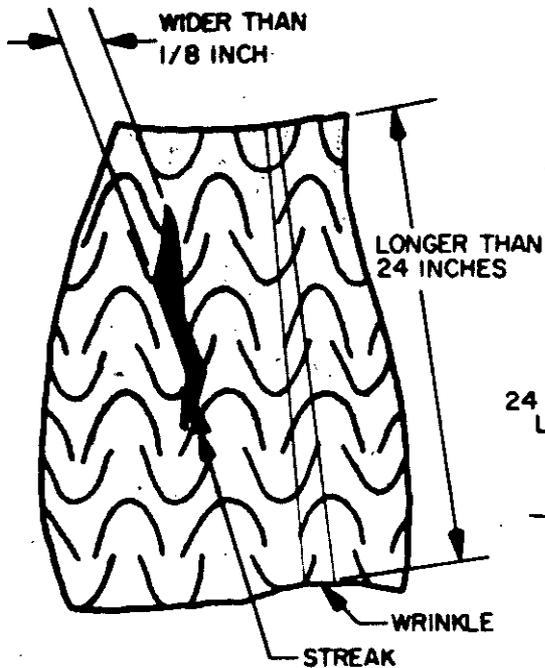
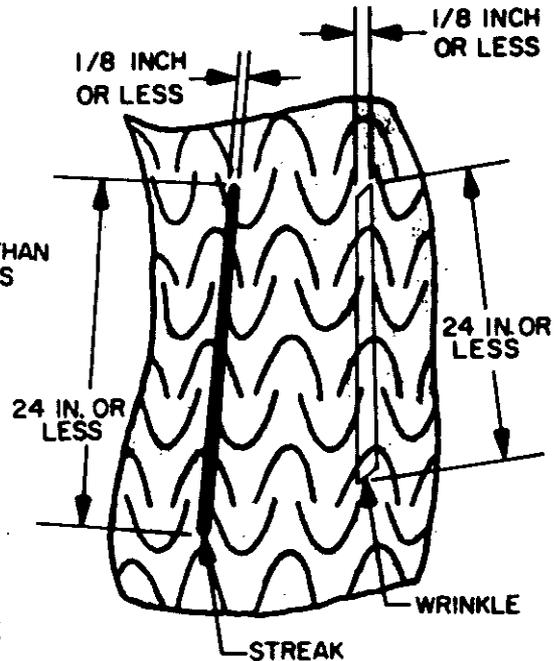
- (a) More than two tears per individual pattern.
- (b) More than 5 rhombic & 15 hex patterns per net containing two tears.

Acceptable

- (a) Two tears per pattern.
- (b) Maximum of 5 patterns on rhombic & 15 patterns on hex nets may contain two tears.
- (c) Tears of less than 50% (incise to incise) do not count as torn patterns.

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## APPENDIX

30.1.7 Discontinuity of color on patterns.UnacceptableAcceptable

Wrinkles or streaking wider than 1/8 inch, or more than 24 inches long when stretched and installed on netting.

Wrinkles or streaking not wider than 1/8 inch and no longer than 24 inches in any one pattern (accumulative all areas).

- Note: (1) Color of wrinkled areas include the color on the opposite side and the color of the base cloth. Color of streaks are darker areas of the specified color.
- (2) Not more than 30% of the patterns in a screen may contain such defects.
- (3) Wrinkles in the cloth which do not open in the process of stretching the patterns to install on netting shall be acceptable.

X-4038

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APPENDIX

30.1.8 Color coated cloth, material seams (patterns).

Unacceptable

- a. Stitched seams are unacceptable.
- b. Overlap bonded seams where edges are unbonded over 1/2 inch.
- c. Total overlap exceeding four inches.

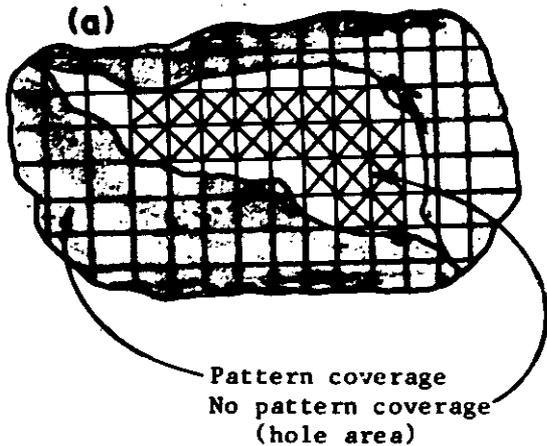
Acceptable

- a. Seams which are of overlap type either bonded together with adhesive or a heat seal method.
- b. Unbonded edges shall be 1/2 inch wide or less.
- c. Total overlap not exceeding four inches.

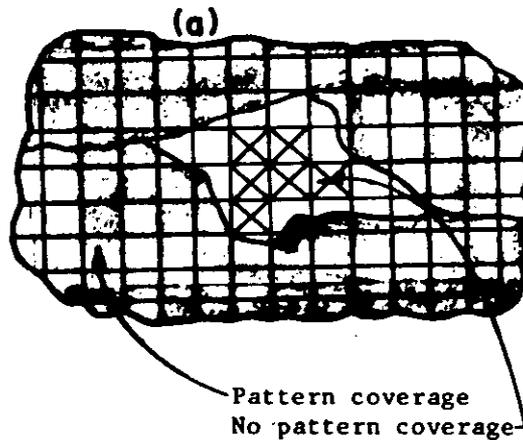
Note: Stitched seams where base material is spliced, (prior to color coating) are acceptable when they meet the acceptance requirements for "Discontinuity of color on patterns" in 30.1.7.

## MIL-C-53004A(ME)

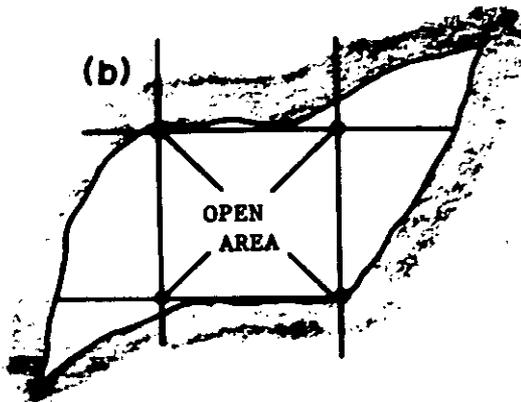
## APPENDIX

30.1.9 Hole areas (areas without pattern coverage).Unacceptable

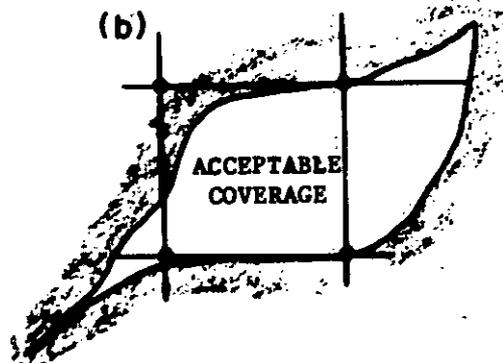
More than 81 square inches without coverage each hole.

Acceptable

Less than 81 square inches with coverage each hole.



Pattern butting against mesh. This condition shall be considered unacceptable when counting meshes (mesh in question shall be counted).



Pattern overlapping mesh. This condition shall be considered acceptable when counting meshes (mesh in question shall not be counted).

Note: (1) One (1) mesh of netting will approximately equal 5 square inches.

(2) Only squares where no overlap by any part of a pattern shall be counted as a defect (reference unacceptable condition (b) above). Determination of overlap shall be made with the net in an "as is" condition when it is presented for inspection.

X-4039

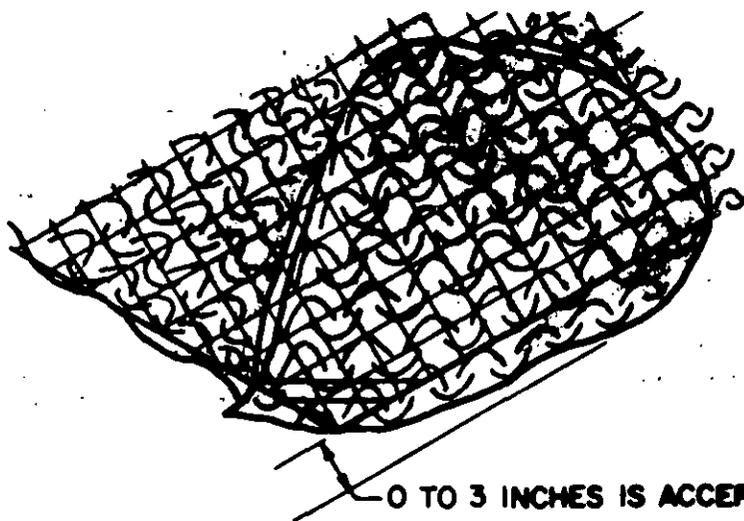
MIL-C-53004A(ME)

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- (3) A total of 16 meshes shall be considered 81 square inches.
- (4) Area from corner patches to edge cord shall not be considered a hole area.
- (5) Cumulative normally acceptable hole areas which exceed 81 square inches on a rhombic net and 243 square inches on a hexagon net are "Unacceptable".
- (6) When cloth overlaps a mesh, it is covered. If it just butts against a mesh, it shall be considered open. This judgement shall be made on the net as it lays. Pulling, collapsing or any other type of handling is not permitted when making this determination.

30.1.10 Overlay. Overlay is a condition where the pattern(s) extend past and hang down over the edge cord around the perimeter of the net.

- (a) Overlay may be present around the entire perimeter of a net.
- (b) Overlay may extend beyond the edge cord up to a maximum of three (3) inches in an unstretched condition.



30.1.11 Edge cord. Severed threads within a strand do not constitute a cut. Any one strand that is severed constitutes a cut and is not acceptable.

X-4040

MIL-C-53004A(ME)

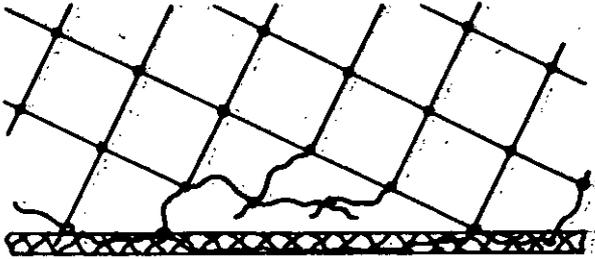
APPENDIX

30.1.12 Netting:

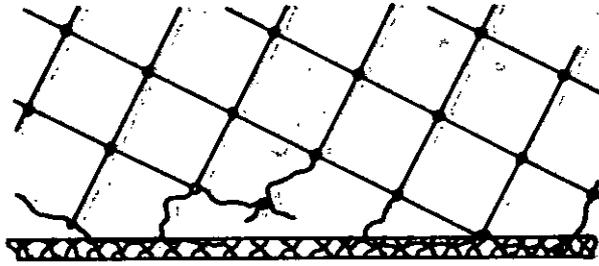
Unacceptable:

Acceptable:

Netting loose from edge cord:

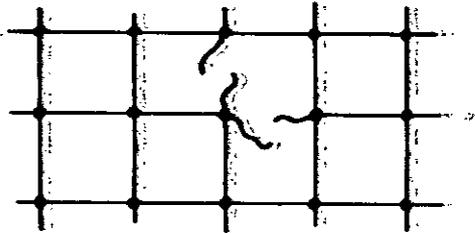


Two or more meshes unattached to edge cord.

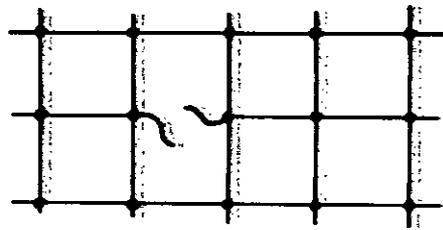


One mesh unattached to edge cord. Maximum of one unattached mesh per each side of the net but not to exceed three (3) per (perimeter) hexagon and two (2) perimeter rhombic.

Broken/cut netting:

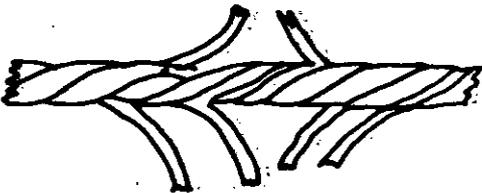


Two or more adjacent mesh bars broken or cut.

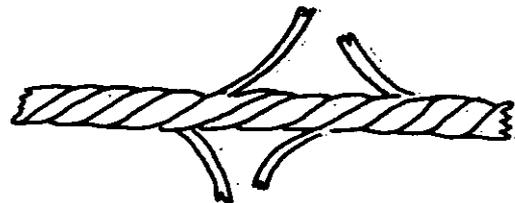


Single mesh bar broken or cut; three allowed per hexagon, one allowed per rhombic.

Frayed netting:



Three or more strands severed, considered as a broken/cut mesh bar.



Maximum of two strands severed, not considered as a defect.

X-4041

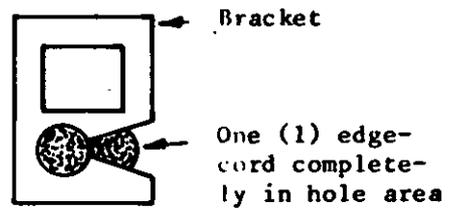
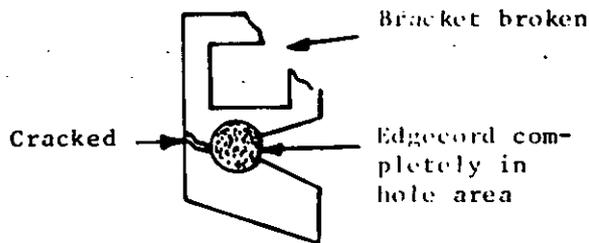
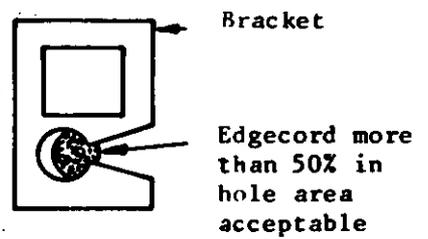
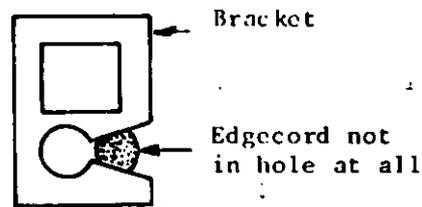
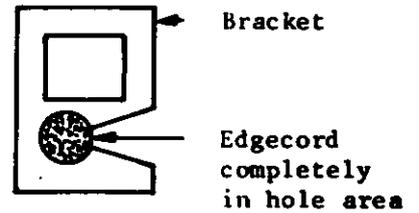
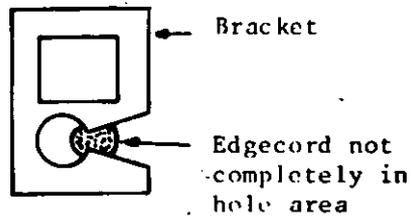
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APPENDIX

30.1.13 Bracket to net assembly.

Unacceptable

Acceptable



(Condition occurs at edge of cord splice)

X-4047

## MIL-C-53004A(ME)

## APPENDIX

30.1.14 Missing brackets (at final net inspection only).UnacceptableHexagon screen

More than one (1) bracket missing on a side or more than three (3) total missing on a screen.

Rhombic screen

More than one (1) bracket missing on a side or more than two (2) missing on a screen.

AcceptableHexagon screen

No more than one (1) bracket missing on a side or three (3) missing on a screen.

Rhombic screen

No more than one (1) bracket missing on a side or two (2) missing on a screen.

Note: All brackets found to be missing during the manufacturing or inspection of screens shall be replaced.

30.2 Repair kit assembly.

30.2.1 Edge cord. Severed threads within a strand do not constitute a cut. Any one strand that is severed constitutes a cut and is not acceptable.

Unacceptable

5/8 inch



Frayed ends exceeding 1/2 inch not acceptable.

Acceptable

1/4 inch



Frayed ends less than 1/2 inch acceptable.

X-4042

MIL-C-53004A(ME)

APPENDIX

30.2.2 Twine.

Unacceptable



No knots acceptable



No untwisting acceptable



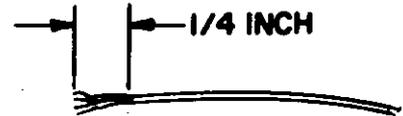
Frayed ends exceeding 1/2 inch not acceptable.

Acceptable



Without knots acceptable

Absence of untwisting



Frayed ends less than 1/2 inch acceptable.

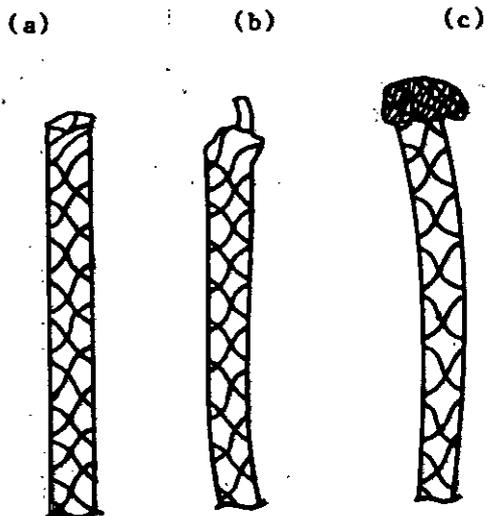
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## APPENDIX

## 30.3 Lanyard assembly.

## 30.3.1 Sealing of cord ends.

Unacceptable

- (a) No heat seal, will unravel in use.
- (b) Partially heat sealed in an unraveled condition.
- (c) Heat either applied too long or was unraveled some prior to sealing and produced a large knobish end.

Acceptable

- (a) Heat sealed preferred condition, end completely sealed, no unravel present and no large knobish end.

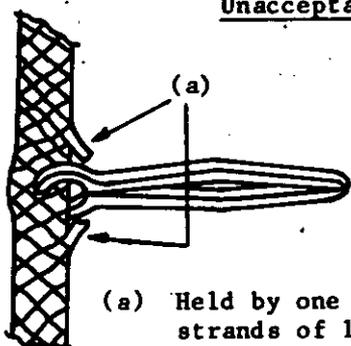
X-4044

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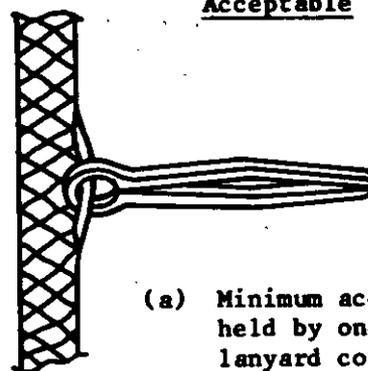
30.3.2 Assembly of pins to cord.

Unacceptable

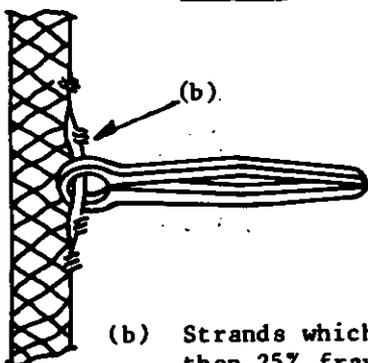


(a) Held by one (1) or more strands of lanyard but one (1) is completely severed.

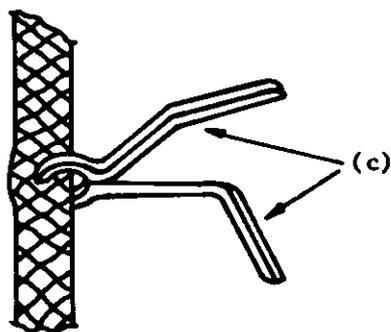
Acceptable



(a) Minimum acceptable - held by one strand of lanyard cord.



(b) Strands which exhibit more than 25% fraying per strand are not acceptable.



(c) Malformed QCD pin not acceptable.

Note: Three to five strands in ring desired.

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Unacceptable

When inserted QCD pin is held by one (1) strand only, and that strand is partially broken, it shall be unacceptable.

Acceptable

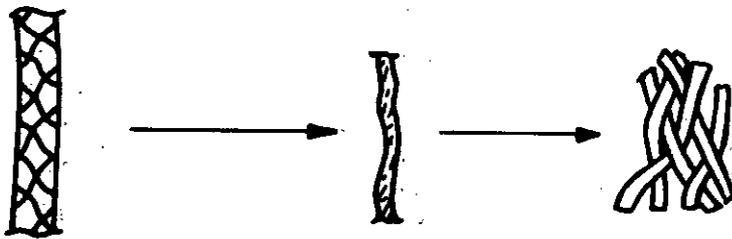
Chafing of the strands is acceptable if any single strand exhibits not more than 25% of its plies frayed around (and/or through) the insertion area with not more than 3 strands affected.

Note: Below are visual definition of terms used above.

Lanyard cord

Strand

Plies



X-4046

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APPENDIX

30.4

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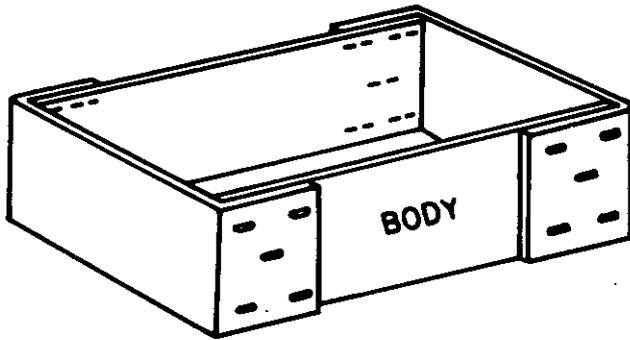
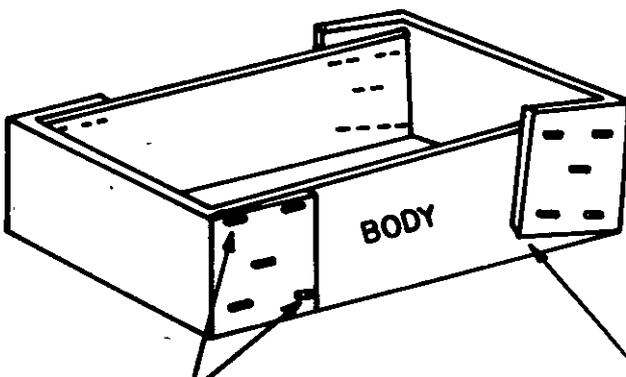
APPENDIX

30.5 Packaging.

30.5.1 Box assembly.

Unacceptable

Acceptable

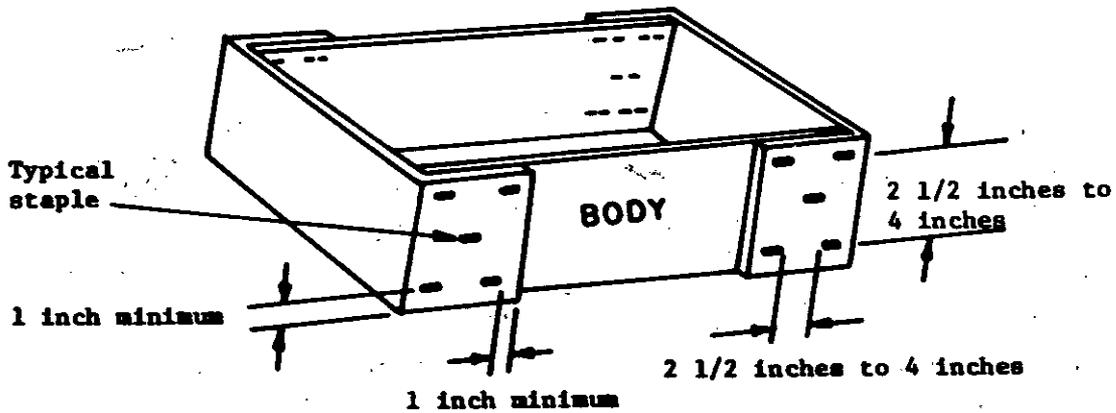


Staples closer than one (1) inch to free edges are not acceptable.

Typically preferred

Flaps more than 1/4 inch above edge of side wall are not acceptable.

Folding, staple location and pattern.



Acceptable dimensions for assembly

X-4048

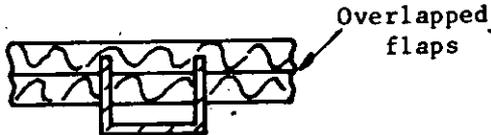
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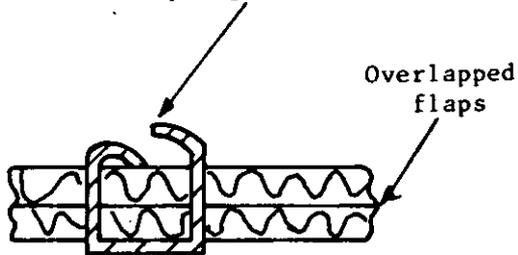
Unacceptable

Acceptable

(a)



(b) Sharp edge

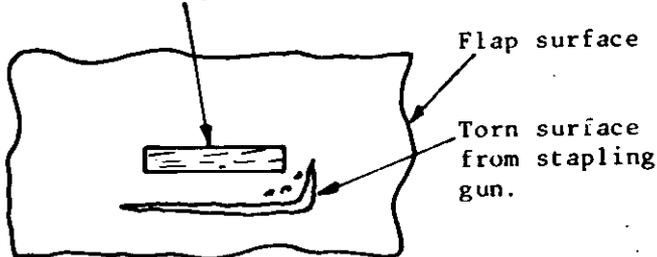


Staple completely through flaps and clenched.

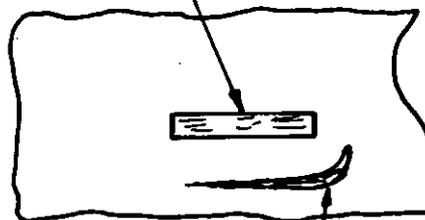
Staple fully inserted but not clenched properly.

Note: Degree of clenched ends and impression into box material of staple will vary.

(c) Staple crown

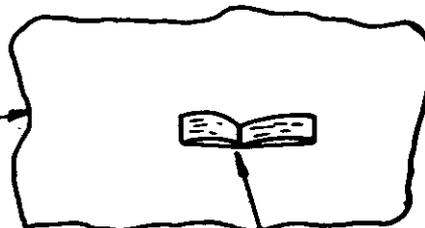
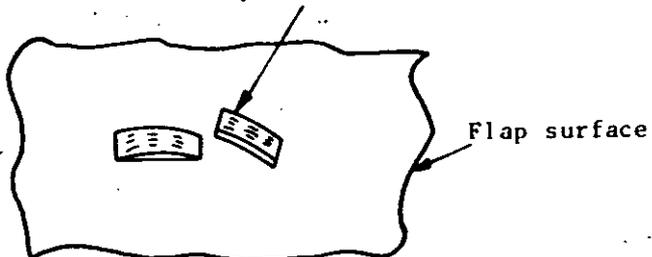


Staple crown



Surface depressed by stapling gun - no break in surface

(d) Sharp edge



Securely clenched

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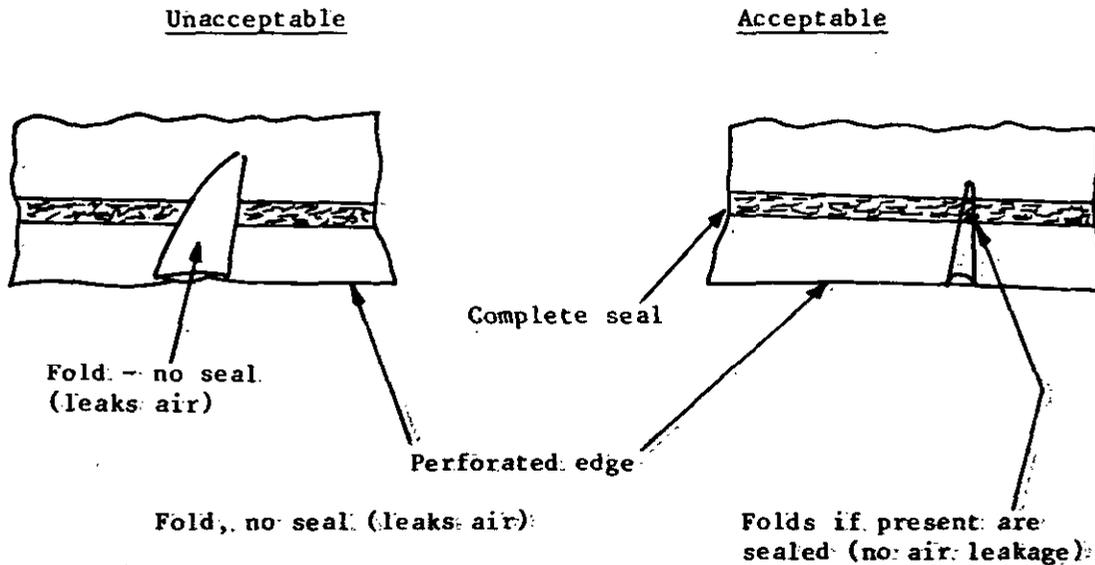
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Top or body of a container which exhibits punctures through the wall which exceed 1/2 inch square or which exhibits tears or separations of fiberboard material in excess of one (1) inch in length.

Completed container which contains not more than two (2) punctures which are 1/2 inch or less, or which contains not more than two (2) tears or separations which are one (1) inch in length or less.

Note: If not more than 10% of unacceptable conditions (a) and (c) are present on a completed box assembly, it shall be considered acceptable.

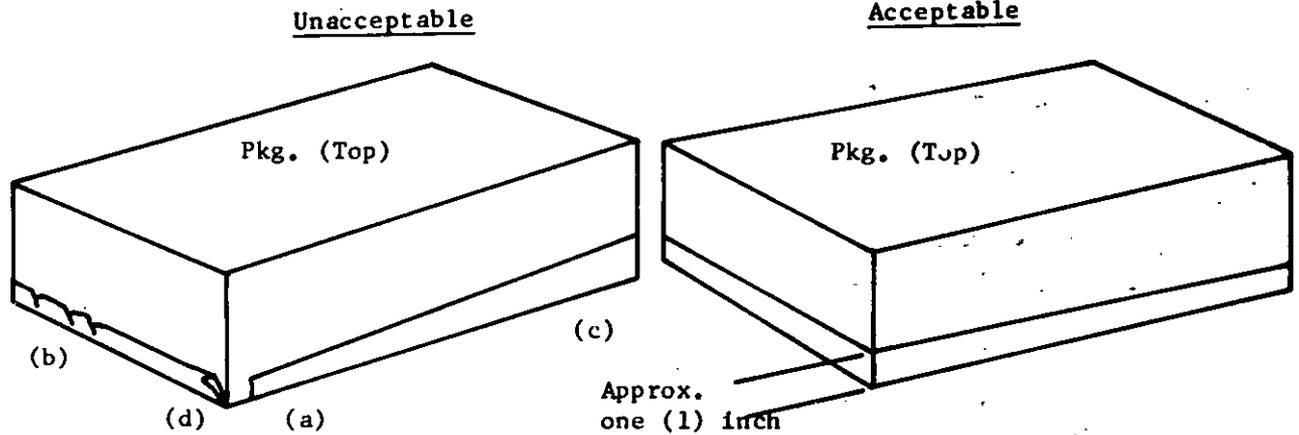
30. 5.2 Polybag, heat seal.

X-4050

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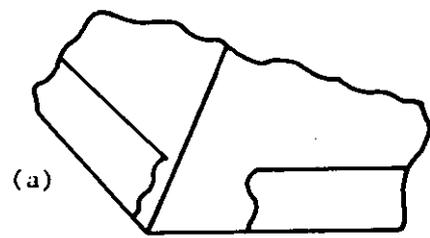
APPENDIX

30.5.3 Box closure.



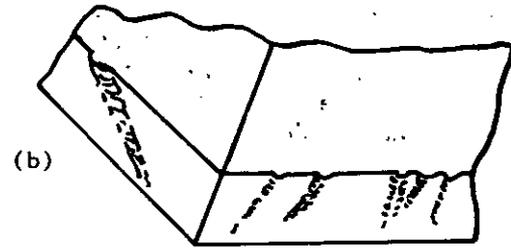
- (a) Tape incomplete application
- (b) Excessive wrinkles
- (c) Tape unevenly applied
- (d) Tape not sticking

Preferred condition, complete application, no wrinkles, not unevenly applied and well stuck to carton all over.



- (a) Tape must meet or overlap to be acceptable. (Length of overlap may vary.)

Incomplete application



- (b) Note: Folding of tape is necessary at the corner proper, and acceptable.

Excessive amount of wrinkles on more than 10% of a side and significant in size.

Amount of wrinkles on not more than 10% of a side of significant size and/or not more than 20% which are superficial in nature.

**X-4051**

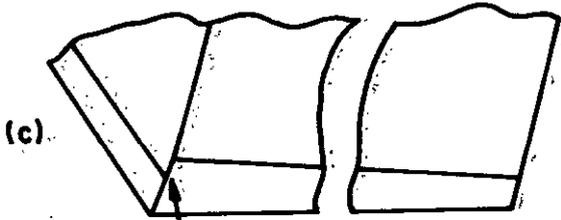
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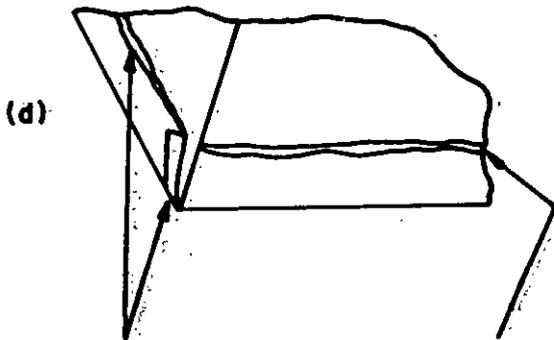
Unacceptable

Acceptable

(c) Taping acceptable when it varies in width less than 1/2 inch on a side.



(c) Tape not evenly applied on sides. (Varies over 1/2 inch in width)



(d) More than 25% of tape edge curls or does not adhere to box over 1/2 inch from edge of tape.

(d) Conditions where less than 25% of tape edge curls does not adhere to box over 1/2 inch from edge of tape are acceptable.

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30.5.4 Strapping application and pallet quality.

Unacceptable

- a. Tension so great that strapping tears and cuts completely through carton edges.
- b. Strapping not within two inches of being parallel to the carton edges.
- c. Strapping loose to the point that it can be easily moved sideways at the box or pallet edges where it had been applied.
- d. Major damage to pallet such as broken stringers or deckboards.

Acceptable

- a. Strapping tension firm but does not tear or cut completely through carton edges.
- b. Strapping parallel to carton edges within two inches.
- c. Strapping which is applied firmly and cannot be easily moved sideways at the box or pallet edges.
- d. Minor departures in pallet quality such as checks, shakes, splits, any of which are no longer than the width of the member.

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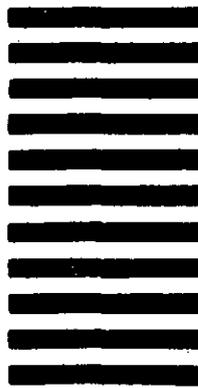
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