

MIL-STD-655B

10 March 1976

SUPERSEDING

MIL-STD-655A

12 March 1975

MILITARY STANDARD
PROVISIONS FOR EVALUATING QUALITY
OF
CLOTH, WOOL, WORSTED AND WOOL BLENDS



FSC 8305

MIL-STD-655B

DEPARTMENT OF DEFENSE

WASHINGTON, DC 20301

Provisions for Evaluating Quality of Cloth, Wool, Worsted and Wool Blends.

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1. This Military Standard is approved for use by all Departments and Agencies of the Department of Defense.
2. Recommended corrections, additions, or deletions should be addressed to US Army Natick R&D COMMAND (GL), ATTN: DRXNM-TDC, Natick, MA 01760.

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FOREWARD

This standard provides a standardized procedure for evaluating quality of woolen, worsted and wool blended cloths procured for the Department of Defense.

The objective of this standard is to:

Provide standardized examination requirements.

As of the date of approval of this document, the following Military specifications will reference this standard:

<u>SPECIFICATION</u>	<u>TITLE</u>
MIL-C-823	- Cloth, Serge, Wool; Wool and Nylon, Polyester and Wool
MIL-C-3727	- Cloth, Barathea, Wool
MIL-C-3738	- Cloth, Elastique, Wool
MIL-C-10176	- Cloth, Gabardine: Wool, Polyester and Wool
MIL-C-16290	- Cloth, Melton, Wool (Moth-Proofed) (SA)
MIL-C-16291	- Cloth, Flannel, Wool (SA)
MIL-C-17248	- Cloth, Whipcord, Wool (SA)
MIL-C-17566	- Cloth, Billiard
MIL-C-21115	- Cloth, Tropical: Wool, Polyester/Wool
MIL-C-82252	- Cloth, Broadcloth, Wool and Wool-Synthetic (Moth-Proofed)
MIL-C-83048	- Cloth, Serge Polyester/Wool (USAF)

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1. SCOPE

1.1 Purpose. The purpose of this standard is to provide standardized examination provisions for evaluating quality of woolen, worsted, and wool blended cloths that are the basic materials for quality uniform items.

1.2 Application. This standard will be made applicable to contracts by reference in the appropriate cloth specifications.

2. REFERENCE DOCUMENTS

2.1 The issues of the following documents, in effect on the date of invitation for bids, form a part of this standard to the extent specified herein.

STANDARDS

MILITARY

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

MIL-STD-109 - Quality Assurance Terms and Definitions

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

LAWS AND REGULATIONS

Rules and Regulations under the Wool Products Labeling Act of 1939

(Application for copies should be addressed to the Superintendent of Documents, Government Printing Office, Washington, DC 20402.)

3. DEFINITIONS

3.1 Fabric defects. The fabric defect definitions applicable to the standard are described as follows:

3.1.1 Barré. Bands, streaks or bars in the fabric characterized by texture, tension, color, luster or shrinkage differences.

3.1.2 Bias or bowed filling. Cloth in which the filling yarn does not run at right angles to the warp.

3.1.3 Broken or missing yarn. A yarn partially or entirely missing.

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3.1.4 Coarse or heavy yarn. A yarn larger in diameter than normally being used in the cloth.

3.1.5 Defective selvage. Selvage that is curled, folded, rolled, slack, tight, scalloped, wavy, stringy, beaded, loopy, cut or torn.

3.1.6 Excess material. Extra yarn or waste which has been woven into the cloth or spun into the yarn, or extra length of yarn that has not completely been woven into the cloth.

3.1.7 Fine yarn. A yarn smaller in diameter than normally being used in the cloth.

3.1.8 Finishing imperfections. Cloth which has not been uniformly sheared, does not have the same degree and character of finish throughout, has tentering marks or is streaked, blotched, spotted or otherwise marked.

3.1.9 Heavy or light place. A fillingwise band or bar either across the full width of the cloth or a portion of it containing more or less than the normal number of picks, or containing picks of larger or smaller diameter than normally being used in the cloth.

3.1.10 Hole. A place in the cloth where two or more contiguous yarns have been ruptured.

3.1.11 Knot. Self descriptive. To be scored when it exceeds the limits specified in the basic cloth specification.

3.1.12 Misweave. Any deviation from the specified weave pattern.

3.1.13 Mixed yarn. Yarn which differs from that normally being used in the cloth, such as wrong twist, wrong number of plies, wrong color or mixed yarn lots.

3.1.14 Mottled. A blotchy or spotted appearance in or on the cloth.

3.1.15 Neppiness. A speckled condition of the cloth characterized by a number of definite fiber tangles (neps).

3.1.16 Open place. An open streak or crack which results in a clearly noticeable separation between the yarns.

3.1.17 Reed mark. A mark or line running warpwise in the cloth.

3.1.18 Slub. A thick place in the yarn. To be scored when it exceeds the limits specified in the basic cloth specification.

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3.1.19 Spot, stain or streak. An area in the cloth or on the surface of the cloth showing discoloration, foreign matter or soil.

3.1.20 Uneven yarn. A yarn tighter or slacker than the normal yarn in the body of the cloth or a yarn that does not have the same degree of twist or tension as the normal yarn in the body of the cloth.

3.1.21 Wavy cloth. Cloth that is of such a nature (baggy, ridgy, wavy or contains crease) that it will not lie flat on a cutting table.

3.1.22 Weak spot. A place in the cloth where the surface has been damaged or has been abnormally weakened.

3.1.23 Uneven weaving. Irregular cloth characterized by conditions such as short elliptical or triangular distortions of one or more adjoining yarns, tight or slack places in the same yarn, crimped, rippled, wavy, pebbled, or cockled place in the cloth.

3.2 Quality assurance terms. Definitions of quality assurance terms shall be in accordance with MIL-STD-105 and MIL-STD-109.

4. GENERAL

4.1 This standard contains provisions for visual examination of woolen, worsted and wool blended cloths. Fabric quality in the following quality levels shall be as specified in the applicable cloth specification.

Quality Level 8
Quality Level 10
Quality Level 12
Quality Level 15

4.2 If there are any inconsistencies between the requirement of the appropriate cloth specification and the provisions of the standard, the cloth specification shall control.

4.3 The applicable cloth specification shall specify:

- a. The fabric quality level.
- b. Shade match and finish requirements.
- c. Limits for slub and knot. (Limits to be specified can be found in either Figures 1 to 7 of this standard or on the Sears Fabric Defect Scales)
- d. Requirements for stringing of defects.

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5. SAMPLE AND INSPECTION PROVISIONS

5.1 End item examination. Examination of the end item shall be in accordance with 5.2 through 5.6.

5.2 Yard-by-yard examination. The total yardage of each roll in the sample shall be examined on the face side. The sample size shall be in accordance with the following:

<u>Lot size (yards)</u>	<u>Sample size (rolls) 1/</u>
3200 or less	8
3201 up to and including 10,000	13
10,001 and over	20

1/ No more than one roll shall be taken from any shipping container unless the number of shipping containers in the lot is less than the required number of rolls in which case all shipping containers shall be present in the sample.

A hole shall be assigned four points. An uneven yarn within any linear yard shall be assigned two points. Except for hole and uneven yarn, all defects as defined in section 3.1 of this standard shall be scored and assigned demerit points as follows:

For defects 3 inches or less in any dimension.	- one point
For defects exceeding 3 inches, but not exceeding 6 inches in any dimension.	- two points
For defects exceeding 6 inches, but not exceeding 9 inches in any dimension.	- three points
For defects exceeding 9 inches in any dimension.	- four points

The same yardage shall be given a through - lighting inspection from the back of the cloth towards a light source for holes and thin areas not previously scored on the face side of the cloth. Slight open places resulting from removal of burrs, shives, sisal or broken picks not previously scored on the face side shall not be scored in through - lighting inspection.

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Defects on the selvage shall not be scored unless the body of the cloth is affected or the thickness of the selvage exceeds the thickness of the body of the cloth. No linear yard (increments of 1 yard on the measuring device of the inspection machine) shall be scored more than 4 points, however, all defects shall be recorded. The lot shall be unacceptable if:

- a. The point value per 100 square yards for the total yardage in the entire sample exceeds the applicable maximum limit (see table I).
- b. The point value per 100 square yards for the total yardage in any individual roll in the sample exceeds the applicable maximum limit (see table I).

Point value computation shall be as follows:

$$\frac{\text{Total points scored in sample} \times 3600}{\text{Contracted width of cloth (inches)} \times \text{Total yards inspected}} = \text{Points per 100 square yards}$$

The following defects, when present, shall be scored four points for each yard in which they occur.

Width less than specified.

Uneven shade.

Shaded side to side, side to center or end to end.

Edge of roll build-up, or softness of roll in body of cloth.

5.3 Examination for length. During the yard-by-yard examination, each roll in the sample shall be examined for length.

5.3.1 Individual roll. Any length found to be less than the minimum length specified in the material specification or more than 2 yards less than the length marked on the ticket shall be scored as a defect. The lot shall be unacceptable if two or more rolls in the sample are defective in respect to length.

5.3.2 Total yardage in sample. The lot shall be unacceptable if the total of the actual length of the rolls in the sample is less than the total of the lengths marked on the roll tickets.

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5.4 Examination for back marking and compliance with the Wool Products Labeling Act. During the yard-by-yard examination each roll in the sample shall be examined for defects listed below. The lot shall be unacceptable if two or more of the following defects are present in the sample:

Back stamping missing incorrect or illegible from either or both ends, or bleed through occurring.
 Back stamping on wrong side.
 Letters less than 1/2 inch in height.
 Not labeled or ticketed in accordance with the Rules and Regulations under the Wool Products Labeling Act.

5.5 Examination for shade match and finish. The examination for shade match and finish shall be as specified in the applicable cloth specification.

5.6 Examination for defect marking (stringing of defects). During the yard-by-yard examination, each roll in the sample shall be examined for defect marking. Any roll having more than 2-three or four point fabric defects (red string) not strung, or more than 5 fabric defects (red or white strings) not strung shall be classified as a defective roll in regard to the defect marking requirement. The lot shall be unacceptable if more than two rolls in the sample are defective in regard to the defect marking requirement or if there are more than 10-three or four point defects (red strings), or more than 30 fabric defects (red or white strings) not strung in the sample.

6. INSPECTION

6.1 Inspection procedures, except for sampling plans, shall be as specified in MIL-STD-105, except where otherwise indicated in this document.

TABLE I. Maximum acceptable point values

Quality Level	Maximum Acceptable Point Values		
	Entire sample	Individual rolls	
Normal Inspection	8	8 points per 100 sq. yd.	12 points per 100 sq. yd.
	10	10 points per 100 sq. yd.	15 points per 100 sq. yd.
	12	12 points per 100 sq. yd.	18 points per 100 sq. yd.
	15	15 points per 100 sq. yd.	23 points per 100 sq. yd.

7. NOTES

7.1 Table II may be used as a guide for computing individual roll quality.

TABLE II. Points per 100 square yards cloth
width is 60 inches

Yards	Points in Sample															
	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32
40	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48
42	3	6	9	11	14	17	20	22	25	28	31	34	37	40	42	45
44	3	5	8	11	13	16	19	21	24	27	30	32	35	38	40	43
46	3	5	8	10	13	15	18	20	23	26	28	31	33	36	39	41
48	3	5	8	10	12	15	17	20	22	25	27	30	32	35	37	40
50	2	5	7	10	12	14	16	19	21	24	26	28	31	33	36	38
52	2	5	7	9	11	13	16	18	20	23	25	27	30	32	34	36
54	2	4	7	9	11	13	15	17	20	22	24	26	28	31	33	35
56	2	4	6	9	10	12	15	17	19	21	23	25	27	30	32	34
58	2	4	6	8	10	12	14	16	18	20	22	24	26	28	31	33
60	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32
62	2	4	6	8	9	11	13	15	17	19	21	23	25	27	29	30
64	2	4	6	8	9	11	13	15	16	18	20	22	24	26	28	30
66	2	4	5	7	9	10	12	14	16	18	20	21	23	25	27	29
68	2	4	5	7	8	10	12	14	15	17	19	21	22	24	26	28
70	2	3	5	7	8	10	12	13	15	17	18	20	22	24	25	27
72					8	10	11	13	15	16	18	20	21	23	25	26
74					8	9	11	12	14	16	17	19	21	22	24	25
76					7	9	11	12	14	15	17	18	20	22	23	25
78					7	9	10	12	13	15	16	18	20	21	23	24
80					7	9	10	12	13	15	16	18	19	21	22	24
82					7	8	10	11	13	14	16	17	19	20	21	23
84					7	8	10	11	12	14	15	17	18	20	21	22
86					6	8	9	11	12	13	15	16	18	19	20	22
88					6	8	9	10	12	13	15	16	17	19	20	21
90					6	8	9	10	12	13	14	16	17	18	20	21
92					6	7	9	10	11	13	14	15	16	18	19	20
94					6	7	8	10	11	12	14	15	16	17	19	20
96					6	7	8	10	11	12	13	15	16	17	18	20
98					6	7	8	9	11	12	13	14	15	17	18	19
100					6	7	8	9	10	12	13	14	15	16	18	19

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Custodians:

Army - GL
Navy - SA
Air Force - 11

Preparing activity:

Army - GL
Project No. 8305-0506

Review activities:

Navy - MC
Air Force - 82
DSA - CT

User activity:

Navy - AS

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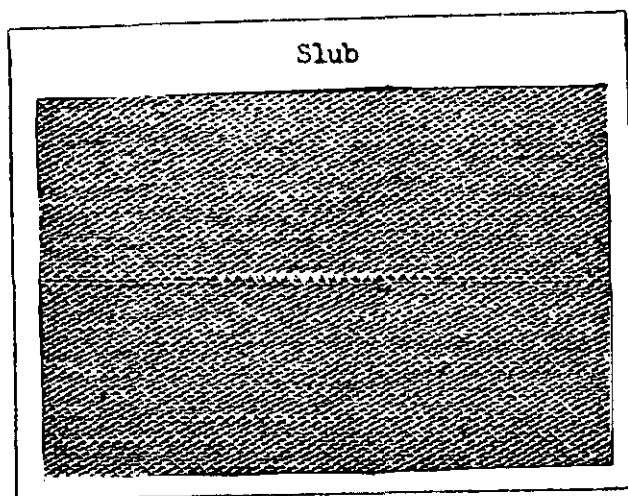
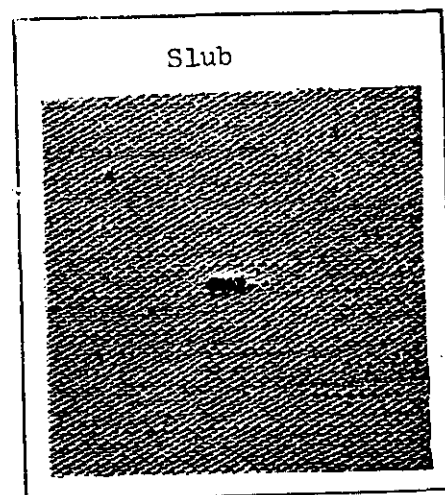
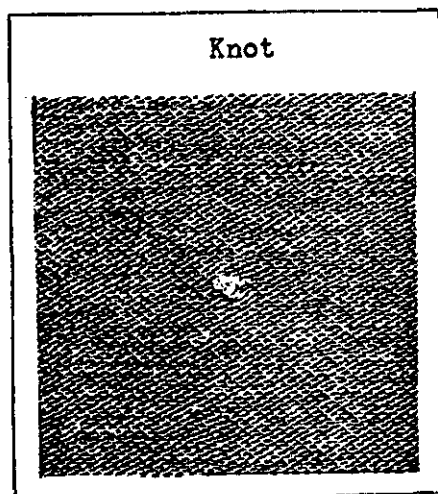


FIGURE 1.

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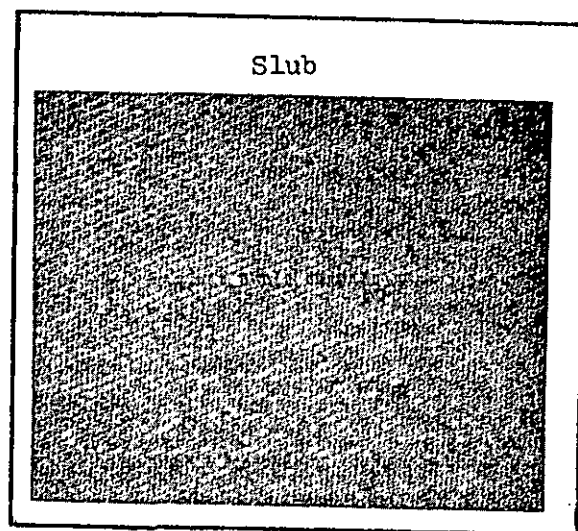
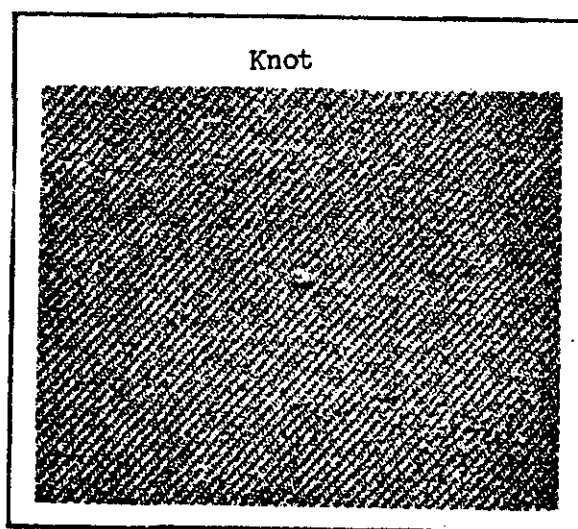


FIGURE 2.

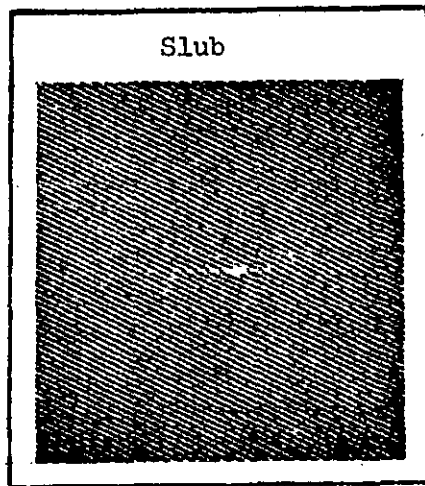
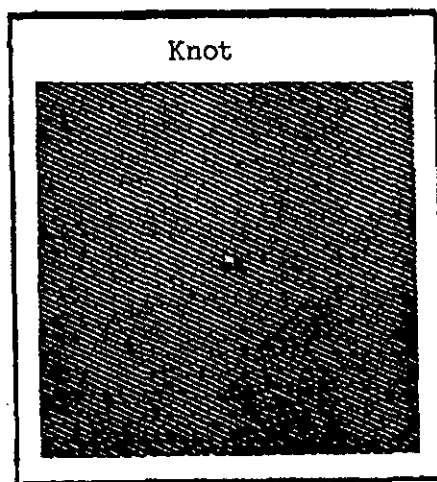


FIGURE 3.

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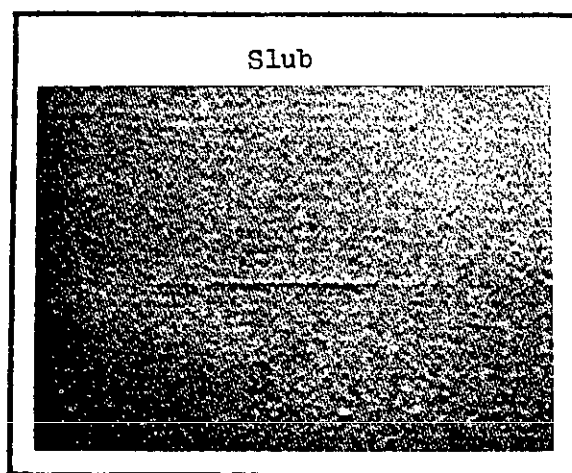
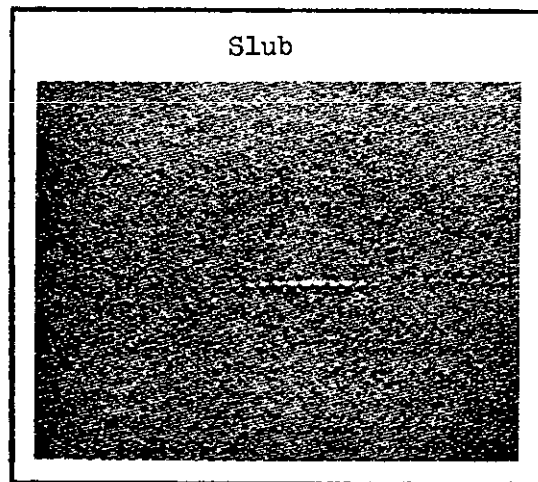
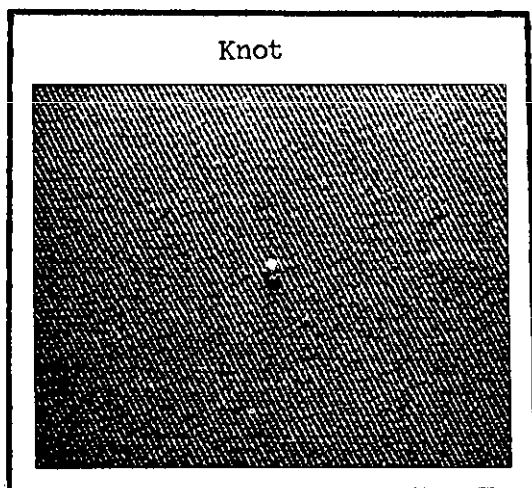


FIGURE 4.

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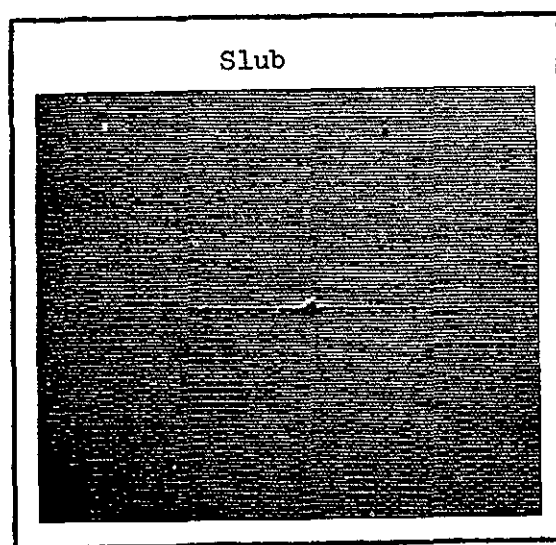
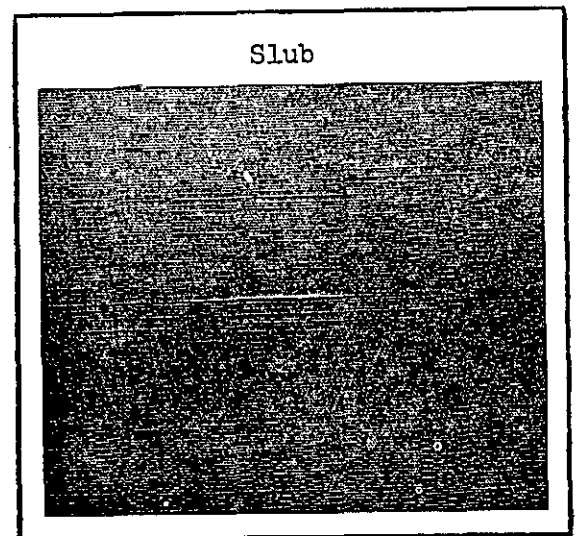
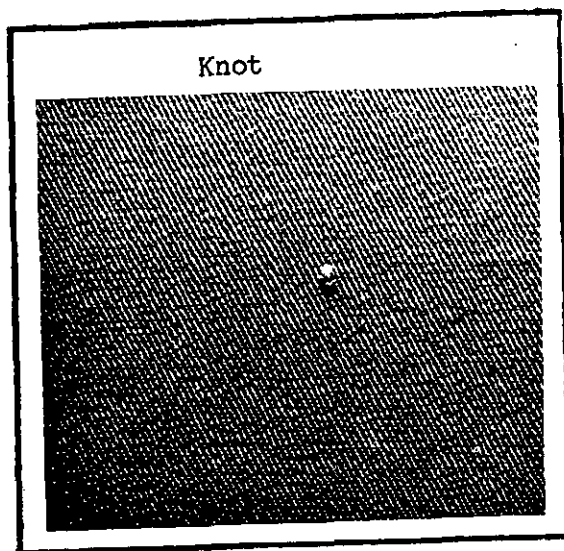


FIGURE 5.

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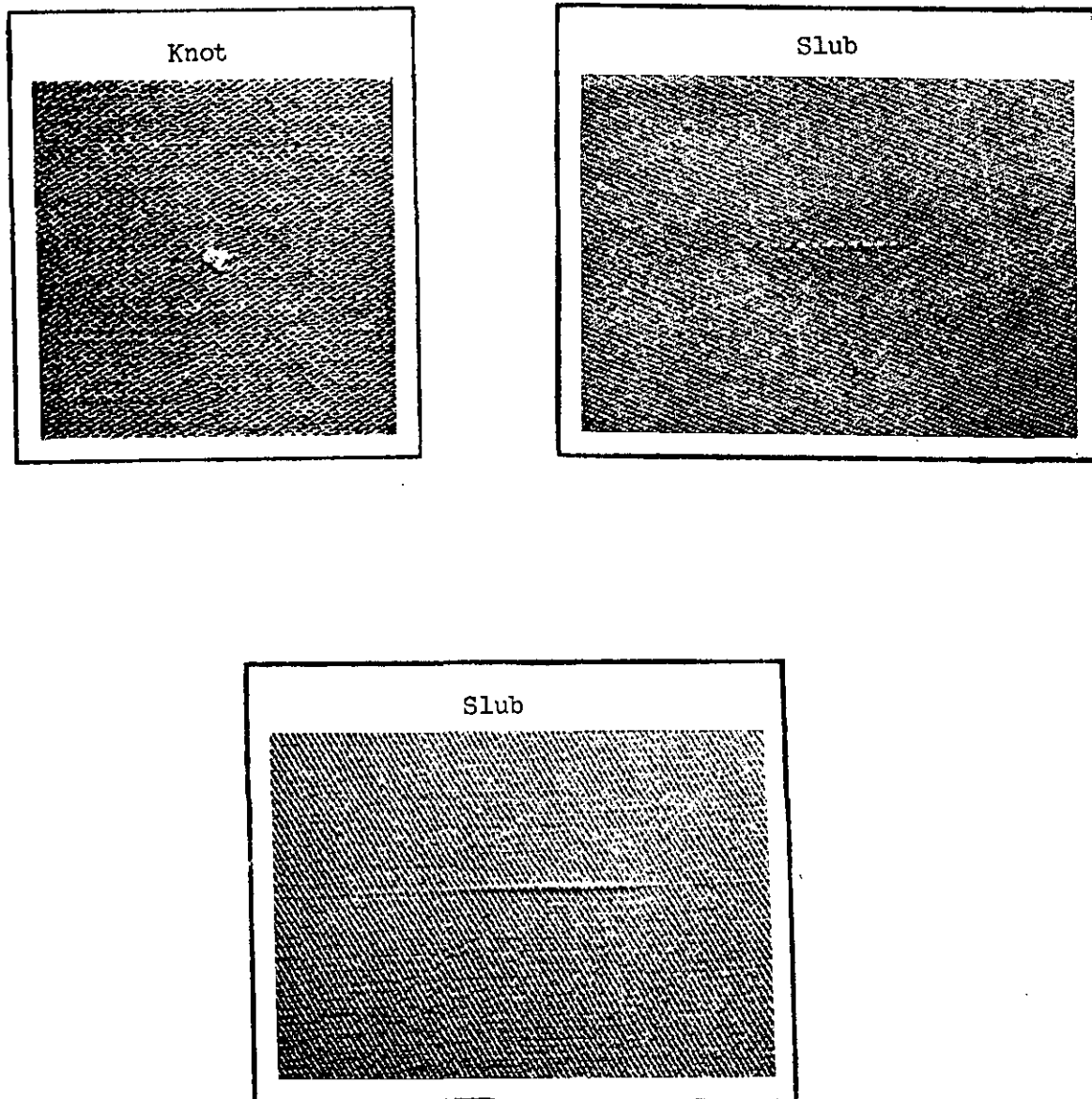


FIGURE 6.

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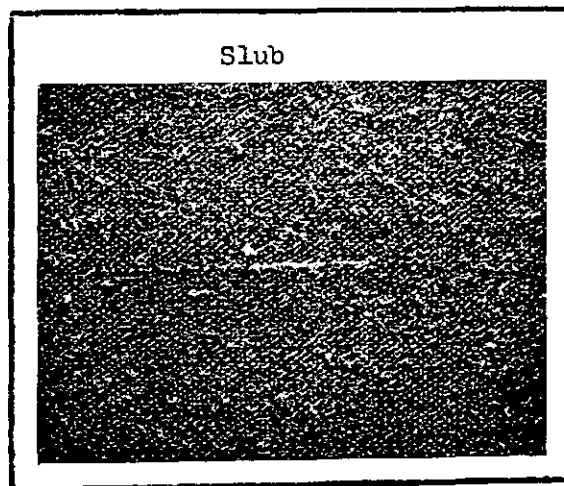
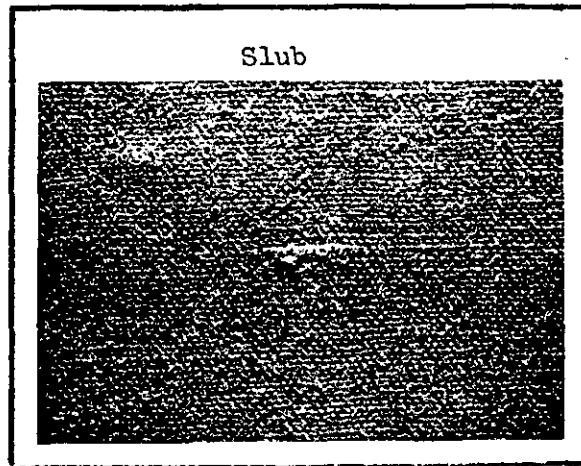


FIGURE 7.

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