[4 F. 35. August, 1938.]
(*Cancelling B.S. Specification 3 F. 35.*).

NOTE.—*The Institution desires to call attention to the fact that this Specification is intended to include the technical provisions necessary for the supply of the material herein referred to, but does not purport to comprise all the necessary provisions of a contract.*

British Standards Institution.
Incorporated by Royal Charter.

FORMED IN 1901 AS THE ENGINEERING STANDARDS COMMITTEE.
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FLAX CORDAGE

FOR AIRCRAFT PURPOSES.

SECTION 1.—TWISTED CORDAGE.

1. **Description.** (*a*) The cordage shall be made of flax fibre.

(*b*) The weight of the yarn shall have been reduced by not less than 15 per cent by boiling.

(*c*) The cordage shall be polished with water only.

2. **Construction and Properties.** The details of construction and the properties of the cordages shall comply with the requirements specified in the Table below. The twist, weight and breaking strength shall be determined by the methods described in Appendices A, B and C.

Cord.	Number of Yarns in Strand.	Twist in Strand (Turns per ft.)	Number of Strands.	Turns per ft. in Cord.	Weight per 100 yd.	Minimum Breaking Strength.
No. 1	8	—	—	24±3 (Left-Hand)	2·75 to 3·5 oz.	50 lb.
No. 3	8	28±3 (Left-Hand)	3	36±4 (Right-Hand)	8·75 to 11·0 oz.	120 lb.

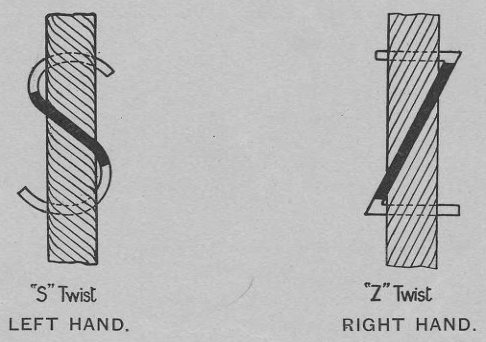

FIG. 1. DIAGRAM ILLUSTRATING DIRECTION OF TWIST.

3. **Selection of Test Samples.** A sample shall be selected from each consignment, where it can be shown that the whole consignment can be correlated with a particular batch of yarn. In other cases the selection of samples shall be left to the Inspector's discretion, at least one sample being selected from each 2 lb. of No. 1 cordage and each 10 lb. of No. 3 cordage.

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SECTION 2.—BRAIDED (PLAITED) CORD.

4. **Description.** (*a*) The cord shall be made of flax fibre.

(*b*) The weight of the yarn shall have been reduced by not less than 15 per cent by boiling.

(*c*) The cord shall be composed of 16 yarns plaited so as to give 12 to 15 turns per foot.

5. **Weight.** The weight of the cord, when determined by the method described in Appendix B, shall be not less than 2·7 oz. or more than 3·2 oz. per 100 yards.

6. **Strength.** The minimum breaking strength of the cord, when determined by the method described in Appendix C, shall be not less than 50 lb.

7. **Extension after Wetting and Drying.** The cord, after wetting and drying, shall show a vertical sag not exceeding ¼ inch, when tested by the method described in Appendix D.

8. **Resistance to Fraying.** The cord shall resist fraying when tested by the method described in Appendix E for not less than 3000 reversals.

9. **Selection of Test Samples.** A sample shall be selected from each consignment, where it can be shown that the whole consignment can be correlated with a particular batch of yarn. In other cases the selection of samples shall be left to the Inspector's discretion, at least one sample being selected from each 2 lb. of finished cordage.

APPENDIX A.
Method for the Determination of Twist.

No. 1 Cord. A specimen from the selected test sample, approximately 10 inches long, shall be held at both ends in an approved machine and the number of twists determined.

No. 3 Cord. A specimen from the selected test sample, approximately 10 inches long, shall be held at both ends in an approved machine and the number of twists in the cord determined. A second specimen from the selected test sample, approximately 10 inches long, shall be held at both ends in an approved machine and two of the strands cut and removed without rotation. The number of twists in the remaining strand shall then be determined.

APPENDIX B.
Method for the Determination of Weight.

The specimens from the selected test samples shall be subjected for one minute to the appropriate loads (*see* below) and the weight of a ten foot length of the stretched cord determined:—

Type of Cord.	Load.
No. 1. Twisted Cord	6 oz.
No. 3. Twisted Cord	20 oz.
Braided Cord	6 oz.

The measuring and weighing shall be carried out under ordinary atmospheric conditions, but in cases of dispute the specimens shall be conditioned for not less than 24 hours in an atmosphere with a relative humidity of 65 per cent, and a temperature of 70°F. (21·1°C.), and then tested under the same conditions.

APPENDIX C.
Method for the Determination of Breaking Strength.

Five specimens shall be cut from each selected test sample and each specimen shall be fixed in an approved testing machine so that the length between the supports is not less than 10 inches. The load shall be uniformly applied at such a rate that the specified breaking load is reached in approximately one minute after the commencement of the application of the load.

The test shall be carried out under ordinary atmospheric conditions, but in cases of dispute the specimens shall be conditioned for not less than 24 hours in an atmosphere with a relative humidity of 65 per cent, and a temperature of 70°F. (21·1°C.), and then tested under the same conditions.

APPENDIX D.

Method for the Determination of Extension after Wetting and Drying.

A 10 foot specimen of the cord shall be cut from the selected test sample, stretched horizontally and fixed under a tension of 5 lb. It shall then be saturated with water and allowed to dry at ordinary room temperature. The vertical sag shall then be measured in the centre of the length.

APPENDIX E.

Method of Measuring Resistance to Fraying.

Twenty specimens of the braided cord shall be cut from different parts of the selected sample.

The specimens, each weighted at the free end with an 8 oz. cylindrical weight (approximately 7¼ inches long and ½ inch in diameter) shall be passed backwards and forwards through a distance of ¾ inch at the rate of approximately 200 reversals per minute over a piece of 16 S.W.G. polished piano wire. The wire shall be polished immediately before each test and shall be supported throughout its length as shown at B, Fig. 2. with the exception of the holes (5/16 inch dia.) as shown at A, Fig. 2. The cord shall make contact with the wire over an arc of 180° (*see* A, Fig. 2). The free length of the cord from the top of the weight to the wire shall be 5 inches ± ¼ inch. A suitable apparatus is shown in Fig. 2.

The number of reversals (*i.e.*, complete revolutions of the crank) required for the failure of each specimen shall be recorded and the average determined.

The test shall be carried out under ordinary atmospheric conditions but in cases of dispute the specimens shall be conditioned for not less than 24 hours in an atmosphere with a relative humidity of 65 per cent, and a temperature of 70°F. (21·1°C.), and then tested under the same conditions.

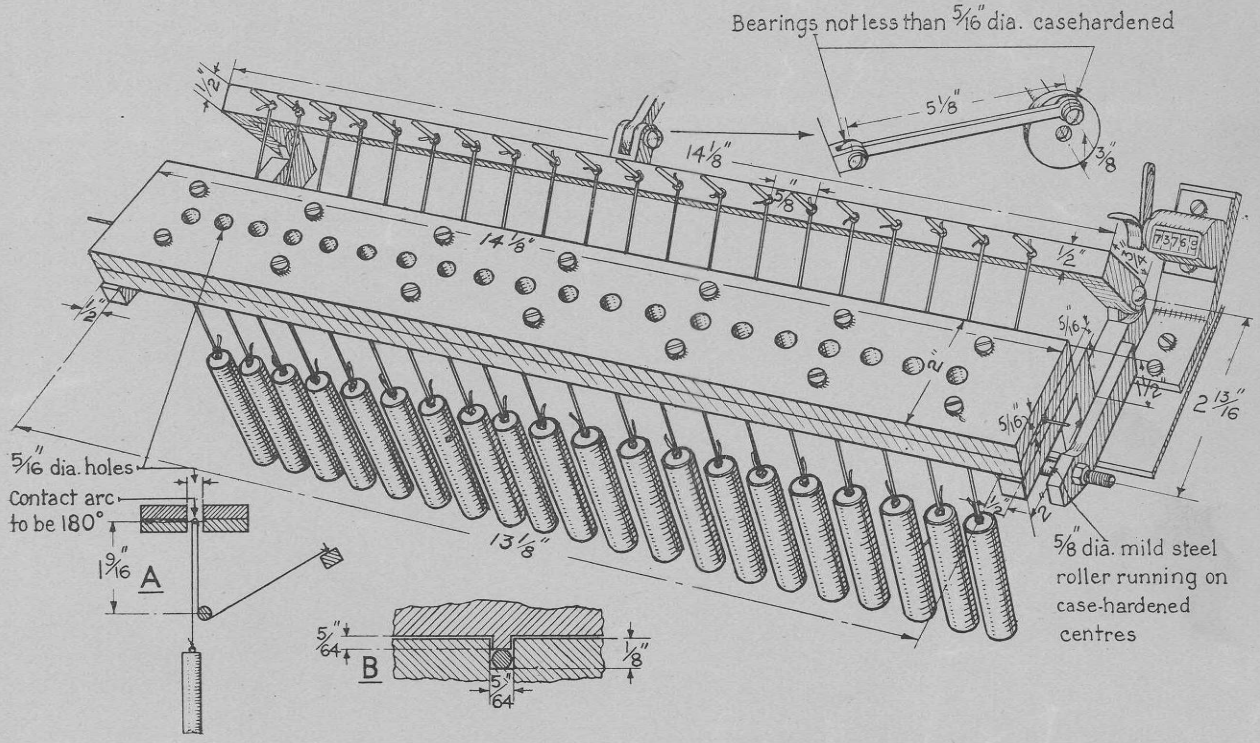

FIG 2. METHOD OF MEASURING RESISTANCE TO FRAYING.

This Specification having been approved by the Aircraft Industry Committee and endorsed by the Chairman of the Engineering Divisional Council, was published under the authority of the General Council as a British Standard on 15th August, 1938.

NOTE.

In order to keep abreast of progress in the Industries concerned, the British Standard Specifications are subjected to periodical review.

Suggestions for improvements, addressed to the British Standards Institution, 28 Victoria Street, London, S.W. 1, will be welcomed at all times. They will be recorded and in due course brought to the notice of the Committees charged with the revision of the Specifications to which they refer.

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