INTERNATIONAL STANDARD 3155

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Stranded wire ropes for mine hoisting — Fibre components — Characteristics and tests

Câbles d'extraction toronnés utilisés dans les mines — Composants textiles — Caractéristiques et essais

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FOREWORD

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Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 3155 was drawn up by Technical Committee ISO/TC 82, *Mining,* and circulated to the Member Bodies in August 1973.

It has been approved by the Member Bodies of the following countries :

Austria	Germany	Spain
Belgium	Hungary	Sweden
Bulgaria	India	Thailand
Chile	Ireland	Turkey
Czechoslovakia	Netherlands	United Kingdom
Egypt, Arab Rep. of	Poland	Yugoslavia
France	Romania	

The Member Bodies of the following countries expressed disapproval of the document on technical grounds :

South Africa, Rep. of

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Stranded wire ropes for mine hoisting — Fibre components — Characteristics and tests

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the nature and properties of the fibre components for stranded wire ropes for mine hoisting, together with the corresponding test methods.

2 GENERAL REQUIREMENTS

Fibre cores, or steel cores with fibre inserts, or fibre covers shall be of a size sufficient to give the strands of the rope solid and adequate support and to prevent adjacent strands of a new rope in no-load condition from direct contact. Fibre cores shall be firmly stranded and shall consist of at least three strands. The lay of the strands in the fibre core shall be opposite to the lay of the yarns in the strand.

3 MATERIAL

Fibre cores, fibre covers and fibre inserts shall be made from long hard fibre of the following types :

Sisal (*Agava sisalana* Pervine) and

Manila (Abaca) (*Musa textilis* Nee)

Admixture of any other or of old fibres is prohibited.

Suitable synthetic fibre may be used by agreement between purchaser and supplier.

4 PROPERTIES OF FIBRE COMPONENTS

4.1 All yarns shall contain not more than 2 ml/100 g of water-soluble aggressive acids. This shall be checked in accordance with 5.1.

4.2 The yarns shall contain less than 0,3 % of chloride ions expressed as sodium chloride. This shall be checked in accordance with 5.2.

4.3 The following limit values for the content of extractable matter are applicable for natural fibre yarns.

a) In the case of yarns to which no lubricant has been added during the manufacturing process, the extractable matter content shall not exceed 5 %. In this case, the finished fibre core shall not contain more than 25 % of extractable matter.

b) In the case of yarns to which lubricants and impregnating compounds have already been added during the manufacturing process, the admissible upper limit is 18 %, the admissible lower limit 12 %.

This shall be checked in accordance with 5.3.

5 METHODS OF TEST

5.1 Determination of water-soluble acids

5.1.1 *Procedure*

Weigh, to the nearest 0,1 g, a sample of mass 20 to 30 g of the full cross-section to be tested. Unravel the sample and transfer it to a Soxhlet apparatus. Boil for 30 min with 100 ml of distilled water. Filter through a filter paper and wash the residue with three successive lots of hot distilled water. After washing, the total quantity of the water extract shall not exceed 175 ml.

Add a few drops of phenolphthalein to the extract and titrate with 0,1 N sodium or potassium hydroxide solution to a permanent colour.

5.1.2 *Expression of results*

The water-soluble acids Z, in millilitres per 100 g, is given by the formula :

$$Z = \frac{10 \times V}{m_0}$$

where

m_0 is the mass, in grams, of the sample;

V is the volume, in millilitres, of 0,1 N sodium or potassium hydroxide solution used in the titration.

Express the result to the nearest 0,1 ml/100 g.

5.2 Determination of salt content

5.2.1 *Procedure*

Place 10 g of the fibre moistened with 40 ml of 5 % sodium carbonate solution in a platinum or silica basin. The value of 40 ml is to be verified. Evaporate to dryness and ignite at