INTERNATIONAL WOOL TEXTILE ORGANISATION

TECHNOLOGY & STANDARDS COMMITTEE **ISTANBUL MEETING**

Raw Wool Group **November 2003**

Chairman: A.C. BOTES (South Africa) **Report No: RWG 06**

Final Report

By

IWTO Colour Working Group

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SUMMARY

The IWTO Colour Working Group has completed work to meet its terms of reference. As result of the activities of the Group, new versions of IWTO-56 *Method for the Measurement of Colour of Raw Wool* and IWTO-35 *Method for the Measurement of Colour of Sliver* have been formally approved by IWTO and circulated to registered laboratories. These new versions remove the complexity associated with the numerous options that were available to prepare and measure the wool. The new versions of IWTO 56 and IWTO-35:

- Detail a reference preparation method which laboratories shall use in preparing samples for colour measurement. Alternative procedures are permitted providing a laboratory equivalence can be demonstrated to the reference method.
- Require that wool samples are measured in D65/10 colour space using an instrument that has been calibrated using CERAM tiles.
- Require that only instruments nominated in the respective Test Methods, or alternative instruments which have demonstrated equivalence to nominated instruments using the established criteria within each Test Method, are used to measure wool samples for colour measurement.

In addition, several other editorial changes were made to simplify the text. These changes and the activities of the Working Group have been published in IWTO Submissions and Reports (Nice 2002, Buenos Aires 2003)

At the IWTO congress in Barcelona (2002), the National Council of NZ Wool Interests raised concerns about the operation of IWTO-56-00 in New Zealand. One of the important issues was a 'lack of harmony' of measurements of the colour of raw wool in D65/10 colour space. An international Colour Working Group was set up to investigate this issue and was given the following terms of reference:

- To review the difficulties experienced in New Zealand with the application of IWTO-56 *Method for the Measurement of Colour of Raw Wool*
- To recommend text changes for IWTO 56

The sources of the 'lack of harmony' of measurements in D65/10 colour space between the NZ test laboratories were identified and corrected. As a result of the trials undertaken in NZ and internationally, the Working Group identified several changes that would improve IWTO-56. Consequently, the Terms of Reference of the Group were augmented:

- To review the standard IWTO-56 to provide more guidelines for users and to tighten the specification as required.
- To assess the need for international round trial to re-establish the precision of the test.
- To review IWTO-35 *Method for the Measurement of Colour of Sliver* to remove references to C/2 colour space.

In Nice 2002, the Working Group proposed a number of changes to IWTO-56-00 to simplify its use in testing, to remove the confusing array of options and to simplify the text. These proposed changes were submitted to the Raw Wool Group (1,2), approved by the T&S committee and ratified by the Assembly. In many cases, this involved removing redundant options within the former version of IWTO-56. Amendments were approved for the test method to prevent the future use of inappropriate instruments. The new method prescribed that, where wool users require data in C/2 space, this data shall only be obtained by calculation from D65/10 data using baremes contained in the proposed appendix to the test method. The key changes were :

- Clearer definition of the conditions for scouring and preparing samples for testing.
- New performance criteria for the verification of instrument calibrations.
- Addition of a list of colour-measuring instruments which have been found to produce harmonized results.
- Removal of all references to measurement in C/2 colour space.
- A new appendix detailing the bareme that will be used for converting D65/10 measurements into C/2 values.
- Removal of all references to the use of 'Reference Wool' for calibration purposes.
- Removal of the option to prepare the wool using the Waring Blendor.

Small amendments were also approved to the IWTO Colour Testing Regulations. Both the revised Specification and Regulations have now been implemented.

In Buenos Aires, the Working Group submitted a proposal for changes in IWTO-35 *Colour of Sliver* (3) to bring this test method in line with IWTO-56. These changes were also approved in the T&S committee and ratified by the Assembly.

The issue of the need for an international round trial to re-establish the precision of the test method was addressed in meetings in Buenos Aires and in Sydney. The results of the international round trial on colour, undertaken in 1999 (4), were re-analyzed. In this international round trial, four of the six laboratories used techniques that, in their opinion, fully complied in all respects with the requirements of the current version of the IWTO-56-03. Modifications to the technique used by these laboratories were not necessary as a result of the changes in the test method agreed in Nice. The majority view was that the results from these four laboratories could be used to determine the precision of the current version of the test method. The working group concluded that, the precision statistics quoted in IWTO-56-03 remain valid for the measurement of base colour of wool samples prepared from greasy cores.

The precision statistics for base colour of commercially-scoured wool were not measured in the 1999 trial. The Working Group considered that the measurement of "as-is" colour of commercially scoured wool can be regarded as being similar to the measurement of the "as-is" colour of tops, undertaken in accordance with IWTO-35. The precision statistics for the colour of ‘as-is’ tops quoted in IWTO-35 are taken from an international round trial performed in 1998, using 7 laboratories, and reported to IWTO at Nice (RWG 08). The 95% confidence limits for Y and Y-Z in IWTO-35 for samples of sliver are marginally lower (± 1.5 and ± 0.7 units respectively) than those quoted in IWTO-56 for base colour measurements on laboratory-scoured greasy core samples (± 2.1 and ± 0.9 units).

The working group concluded that, at the current time, there is no necessity to carry out a new international round trial to re-assess the precision of measurements within IWTO-56-03 and suggested that this situation should be reviewed by IWTO only if objective data was presented that contradicts this position.

A statement on the precision of colour measurements was sent to all national committees in July 2003.

It is the opinion of the IWTO Colour Working Group that has now met all the terms of reference that governed its activities. The Working Group thus recommends that the Raw Wool Group propose to the T&S Steering Committee that the IWTO Colour Working Group is wound up.

REFERENCES

1. IWTO Colour Working Group. (2002) *Report of the IWTO Colour Working Group.* IWTO T&S Committee, Nice, RWG05

2. IWTO Colour Working Group. (2002) *Amendments to IWTO-56 (Measurement of Colour of Raw Wool) and Colour Test Regulations.* IWTO T&S Committee, Nice, RWG Submission No 01

3. IWTO Colour Working Group. (2002) *Amendments to IWTO-35 Method for the Measurement of Colour of Sliver (and Top).* IWTO T&S Committee, Buenos Aires, SG Submission No 02

4. D.W. Crowe and G.R. Shepherd. (1999) *An International Round Trial Comparing Certified Tile Calibrations to Standard Wool Calibrations for Greasy Wool.* IWTO T&S Committee, Florence, RWG05

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