

CENTRAL STANDARDIZATION COMMITTEE

SPECIFICATION

FOR

SPECIAL REQUIREMENTS FOR RESIN-TREATED
CELLULOSIC FABRICS

Approved by the

CENTRAL STANDARDIZATION COMMITTEE

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SOUTH AFRICAN BUREAU OF STANDARDS

Amendment No. 1 : August 1984

to

CKS 583-1983

SPECIAL REQUIREMENTS FOR RESIN-TREATED CELLULOSIC FABRICS

Scope of Amendment. The specification has been amended to change the units in which free formaldehyde content is expressed and the test method for determining the free formaldehyde content.

Table 1.

a) In Columns 1-6 amend the requirements for free formaldehyde content to read as follows:

<u>Free formaldehyde content*</u> , µg/g of fabric, max.	4 000	4 000	4 000	4 000	6.3
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b) Footnote to Table 1. Delete the existing footnote and substitute the following:

*4 000 µg/g of fabric is equivalent to 400 µg/ml of the original extract (see 6.3.5(a)).

Section 6.3. Delete the entire subsection and substitute the following:

6.3 FREE FORMALDEHYDE CONTENT¹⁾

6.3.1 Apparatus

a) An absorptiometer of suitable sensitivity.

b) A waterbath, thermostatically controlled to maintain a temperature of 20 ± 2 °C .

6.3.2 Reagents

NOTE: Unless otherwise indicated, use only boiled-out distilled water that is neutral to bromo-thymol blue indicator, and reagents of analytical reagent grade or (when such a grade is unobtainable) of the purest grade available.

1) This determination should be undertaken by experienced chemists only.

- a) Formaldehyde solution, approximately 37% by volume (i.e. containing approximately 400 g per litre) and neutral to thymolphthalein.
- b) Sodium sulphite solution, 150 g per litre and neutral to thymolphthalein.
- c) Schiff's reagent, as in the current edition of the C.R.C. Handbook of Chemistry and Physics.
- d) Sulphuric acid
 - 1) General solution, $c(\text{H}_2\text{SO}_4) =$ approximately 5 mol/l .
 - 2) Standard solution, $c(\text{H}_2\text{SO}_4) = 0,5$ mol/l, accurately standardized.

6.3.3 Preparation of the Standard Curve

- a) Dilute 25 ml of the formaldehyde solution to 250 ml . Add 50 ml of the sodium sulphite solution to a 25 ml aliquot of the diluted formaldehyde solution, and titrate the sodium hydroxide liberated by this reaction with the standard sulphuric acid solution.
- b) Calculate the exact concentration of the formaldehyde solution as follows:

$$\begin{aligned}\text{Formaldehyde concentration, \% (by volume)} &= 2,2 V \times c \\ \text{Formaldehyde concentration, g/l} &= 24 V \times c\end{aligned}$$

where V = volume of standard sulphuric acid solution used in the titration, ml
 c = concentration of the standard sulphuric acid solution.

- c) Using this result prepare a stock solution containing 1 000 mg per litre of formaldehyde. By diluting aliquots of this solution obtain standard solutions containing 2,5; 5,0; 7,5; 10,0; 15,0 and 20,0 mg/l (i.e. g/ml) of formaldehyde. Develop the colour of each of these standards and determine its optical density with the absorptiometer. Prepare the standard curve by plotting the values of absorbance versus formaldehyde concentration, micrograms per millilitre, and construct the best straight line relating these points.

6.3.4 Test Specimen. Weigh out accurately an air-dry specimen, of mass $2,0 \text{ g} \pm 1,0 \text{ mg}$, of the fabric.

6.3.5 Procedure

- a) Pipette 20 ml of water into a beaker and add the fabric specimen. Maintain the beaker and contents on the waterbath for 20 min with occasional swirling of the beaker. (If the fabric has been given a non-absorbent finish, add a drop of a suitable wetting agent to ensure complete wetting of the fabric.)
- b) Using tweezers, lift the test specimen clear of the solution and wash it free from solution, allowing the washings to return to the beaker. Transfer the contents of the beaker quantitatively to a 200 ml volumetric flask and make up to volume with water.