Textiles — Tests for colour fastness —
Part J03:
Calculation of colour differences

TECHNICAL CORRIGENDUM 2

Textiles — Essais de solidité des teintures —
Partie J03: Calcul des écarts de couleur

RECTIFICATIF TECHNIQUE 2

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An updated version of 3.3 is provided. It has been split into two subclauses, 3.3.1 and 3.3.2. As the information previously given in Note 2 is normative, it has been moved into 3.3.2.
3.3 Calculation of the CMC colour difference, $\Delta E_{cmc}(I:c)$

3.3.1 The CMC colour difference is obtained from the following equation:

$$\Delta E_{cmc}(I:c) = \left[ (\Delta L^*/L_R^*)^2 + (\Delta C^*_{ab}/c S_4)^2 + (\Delta H^*_{ab}/S_4)^2 \right]^{1/2}$$

Calculate the ellipsoid semi-axes from the $L^*_R$, $C^*_{ab,R}$ and the $h_{ab,R}$ of the reference as follows:

$$S_L = 0.040975 L_R^*(1 + 0.017 65 L_R^*) \quad \text{if } L_R^* \geq 16$$

or

$$S_L = 0.511 \quad \text{if } L_R^* < 16;$$

$$S_C = 0.063 8 C_{ab,R}^*(1 + 0.013 1 C_{ab,R}^*) + 0.638;$$

$$S_H = (F + 1 - F) S_C$$

where

$$F = \left( C_{ab,R}^* \right)^4 \left[ (C_{ab,R}^*)^4 + 1 900 \right]^{1/2};$$

$$T = 0.36 + | 0.4 \cos(35 + h_{ab,R}) | \quad \text{if } h_{ab,R} \geq 345^\circ \text{ or } h_{ab,R} \leq 164^\circ$$

or

$$T = 0.56 + | 0.2 \cos(168 + h_{ab,R}) | \quad \text{if } 164^\circ < h_{ab,R} < 345^\circ.$$

3.3.2 The value of $l$ is usually set to 2.0. The value of $c$ shall always remain at 1.0. This fixes the ratio of the three semi-axes to best correlate with visual assessment of typical textile samples. Other values of $l$ may be required in cases where the surface characteristics significantly differ from those of flat textiles.