

New ISO Standard on Phenolic Yellowing of Textile Materials

Phenolic yellowing (由酚類引起的黃化) is the most common type of textile yellowing, which is caused by the reaction of oxides of nitrogen in an alkaline medium, with the phenolic compounds present on the textile materials. In fact, the alkaline condition that is required for the reaction between the phenolic compounds and oxides of nitrogen is inherent in cotton textiles. The reason is most of the fabric is processed predominantly in an alkaline medium, unless it is fully neutralized with specialty acids, it would tend to get alkaline while in storage, and become more prone to yellowing. This is especially apparent on white or pastel shades, as the yellowness, which appears on fabric is of very low intensity and can only be visible on white or pastel backgrounds. Dark shades are also affected as the colour becomes dull.

On **September 1, 2007**, the ISO Technical Committee ISO/TC 38, *Textiles*, Subcommittee SC 1, *Tests for coloured textiles and colorants*, has published a new standard **ISO 105-X18:2007** specifying the method intended for assessment of the potential to phenolic yellowing of textile materials. This ISO standard is only specific to phenolic yellowing and does not cover the many other possible causes of yellow discolouration found on textile materials. Also, use of this method does not guarantee that the materials tested will not exhibit yellowing in some form. Its purpose is as a screening test which, in practice, has been found to significantly reduce the number of complaints of phenolic yellowing by enabling corrective action to be taken with materials which, after testing, exhibit yellowing.

Principle of Test

The test is performed by placing each test specimen and control fabric* individually between a folded test paper placed between two glass plates in a horizontal formation. The stack of plates, test papers, test specimens and control fabric is then wrapped firmly in BHT (butyl hydroxytoluene) free polyethylene film to create an airtight package. This package, under loaded in a test device, is then placed in an oven for 16 hours at 50°C. On removal of the test package from the oven and test device, it is allowed to cool. The control fabric and test specimens are then assessed immediately for colour staining by comparison with the grey scale.



* Control fabric: white polyamide, that is known to yellow when subjected to this phenolic yellowing test.

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Specialized Technology Resources (H.K.) Ltd. has obtained HOKLAS accreditation on various textile test standards. For details of our HOKLAS scope of accreditation, please visit: <http://www.itc.gov.hk/en/quality/hkas/doc/hoklas/036.pdf>

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