

Introduction

Rahu Catalytics has developed an innovative bleaching process based on its hydrogen peroxide activator Dragon. Cotton and other cellulose can now be bleached at lower temperatures, in milder alkaline conditions and in less time leading to significant cost reduction and an improved finished product.

Application areas

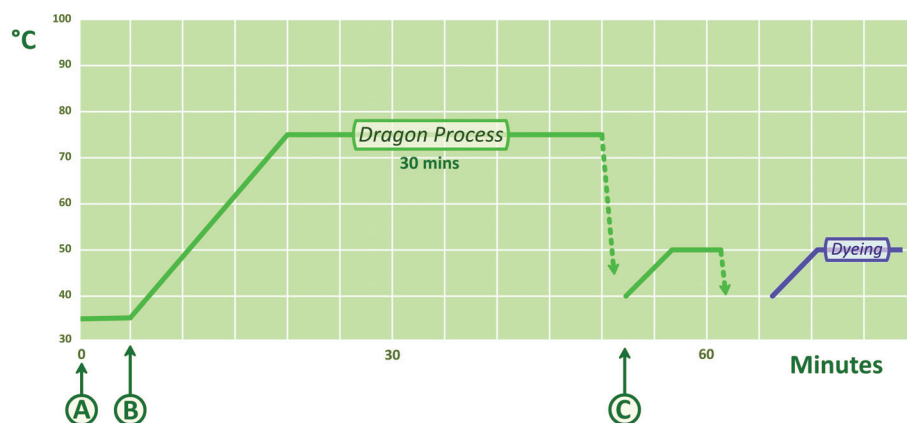
The Dragon-based peroxide bleaching process can be used in the exhaust bleaching of cotton to produce fabrics and yarns suitable for dyeing and in the exhaust bleaching of viscose, to obtain full white viscose. This new bleaching system processes textiles more economically than conventional bleaching systems and delivers fabrics and yarns of superior quality. It is also more environmentally friendly because of the lower temperature and pH needed during bleaching, however, the temperature is sufficient to enable the removal of oils and fats from cotton. A Dragon-based process has already been commercialised, for producing bleached and prepared for dyeing fabrics and yarns.

Cotton Bleaching

The Dragon based process (see figure below) makes cotton bleaching more economic and environmentally friendly versus the conventional process due to:

1. The lower operating temperature (ΔT (temperature difference) is 15 to 40°C), leading to circa 10-15% cost reduction on energy
2. Reduced water usage can result through easier neutralization (circa 15% reduction)
3. Milder alkaline conditions (pH 10-11)
4. Shorter process, which can reduce total preparation time by up to 20%

Temperature and time profile of Dragon exhaust bleaching process for producing bleached fabrics



A: Dosing of bleaching chemicals; B: Dosing of Dragon; C: Dosing of catalase and neutralisation

The Dragon process is a more environmentally friendly process, which supports organic cotton ("GOTS") registration and moreover leads to increased capacity utilisation (circa 18%) and overall cost savings (circa 13%). The lower temperature requirement also reduces the steam demand during the bleaching process. Reducing the peak steam demand this way can lead to an overall improvement in dye-house quality performance.

Furthermore no appreciable damage can be detected when using the Dragon process, which ensures maximum strength of the bleached cotton fabric and yarn. The Dragon process is therefore very suitable for bleaching light weight single jersey. Heavy weight single jersey fabrics exhibit less creasing when bleached at low temperature.

Textiles

Other additional benefits reported when using the Dragon process are: improved fabric handle, improved crease recovery, improved dye levelling and better pilling performance.

Viscose Bleaching

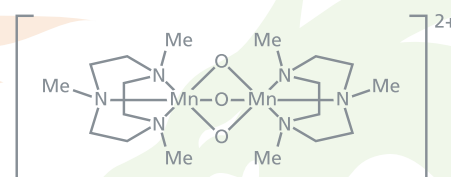
Using the Dragon-based peroxide bleaching process, full white viscose can be obtained at milder alkaline conditions (pH = 9.5) and low temperature (75°C), without damaging the viscose and these milder conditions are very suitable for fabrics containing elastomers.

Your benefits

Dragon helps you address the growing demands of the textile industry for cost reduction and better utilization of scarce natural resources. It gives you the opportunity to improve quality of earnings, to increase total profit through cross selling and to retain profitable customers for longer through innovation.

Dragon

Dragon - a dinuclear manganese compound – is a powerful activator of hydrogen peroxide and was originally developed as a stain removal additive in dish-and clothes-washing formulations. Dragon accelerates the bleaching capability of hydrogen peroxide and improves the bleaching conditions.



Dragon

How Dragon works

Dragon is highly stable in alkaline media compared to simple manganese salts, due to the stabilising effect of its ligand (N,N',N''-trimethyl-1,4,7-triazacyclononane). Dragon accelerates the rate of bleaching without being consumed; it performs the same transformation many times, so only a small amount of Dragon is needed. Bleaching does not involve OH*, but reactive manganese oxo and/or manganese peroxo species, that can transfer oxygen or abstract an electron from chromophoric compounds.

How we work/how to reach us

Our approach can be divided in 5 stages: (i) Introductory meeting and presentation (ii) Signing of confidentiality agreement (iii) Dragon sampling (iv) Your laboratory tests with regular updates and support in the form of lab visits, training of your technicians, tests at our own facilities (v) Advancement to bulk trials and formulation advice.

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