UTILIZATION OF DYEING APPARATUS WITH INFRARED HEATING FOR DYEING OF FELT MATERIALS

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Abstract

This article shows the possibility of using a dyeing apparatus with infrared heating for laboratory dyeing of various types of felt. Felt is a non-woven fabric with closely interwoven fibers, which decrease dyeing through the felt. In this case a dyestuff is only on the felt surface, consequently color strength is higher than expected and color fastness to rubbing is decreased [1,2,3]. Most often, sufficient dyeing through was achieved mechanically in special dyeing apparatuses with circulation of the dyebath, including laboratory types. In this case, dyeing apparatus with infrared heating (without circulation of the dyebath) AHIBA NUANCE TOP SPEED IIB, Datacolor was used.

Four felts were chosen for study of dyeing through: woolen felt, hare felt and dark or light rabbit felt.

Suitable combinations of acid textile dyes were chosen. For better fastnesses, combinations of metallocomplex dyes were chosen too [4]. There are most common shades for every type of felt, which were used for dyeing:

- woollen felt /fuchsia, police blue, brown/
- hare felt /orange/
- light rabbit felt./light, fuchsia, turquoise/
- dark rabbit felt./police blue, brown/

After dyeing of the felt samples, dyeing through rate was studied including uniform colouration. In the first phase of colouring the hare felt together with the woollen one were fully coloured in the colouring apparatus with infrared heating. The rabbit felts, light and dark, were not dyed through and consequently dyeing process modifications for rabbit felt colouring were established. Different textile auxiliaries were used during modifications in the process of colouring and the same tools were used when the felt was needed to be made wet before colouring. Also, different ways before colouring itself were tested, such as encapsulation of the colour with lecithine, or filtration through Büchner’s funnel. Efficiency of colouring modifications has been evaluated by standard colouristic methods, such as a degree of dye
exhaustion, or strength and fastness in acidic and alkaline perspiration. Mainly the level of dye penetration into the felt has been studied.

Suitability of laboratory dyeing apparatus with infrared heating for dyeing of felt material was confirmed only for woollen and hare felt. Rabbit felt (dark or light) is too closely non woven fabric for standard dyeing process without dyebath circulation. After using 37 modifications of the standard dyeing process, the dyeing trough felt material was achieved when the filtration process before dyeing process was used to simulate the circulation of the dyebath.

References
