

the environmentally unfavourable melamine formaldehyde binder.

The combination of organophosphorus agent, polycarboxylic acids and its phosphorus based catalyst (sodium hypophosphite) improved the flame retardant properties, which proved to be durable to several washing cycles. The main advantage of the reactive systems, such as baths 2 - 4, is their chemical bond by which the flame retardant agent is firmly linked to the textile substrate. In our previous research, CA was used for the purpose of durable press finishing, where it proves its crosslinking performance when combined with SHP catalyst. The best flammability effectiveness among the systems applied was obtained with the melamine formaldehyde binder, whose good performance was retained after 30 HLWD cycles.

Nevertheless, the primary advantage of PCA is its eco-friendliness since it has no unfavourable influence on formaldehyde release, which is a major issue in the usage of conventional agents based on N-methylol compounds. In order to fulfil the rather strict regulatory requirements and obtain very low levels of free formaldehyde, it may be necessary to find a non-methylol substitute for the organophosphorus agent, as well as an oligomeric phosphorus reagent, as studied by Yang and co-authors [16, 17].

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