

Chemistry of flame retardants: III. Aging of N-methylol-3-dimethoxyphosphorylpropionamide and commercial flame retardants for fabrics containing this substance

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Abstract

The behavior of several grades of laboratory N-methylol-3-dimethoxyphosphorylpropionamide and samples of commercial durable flame retardants containing this substance: SPOLAPRET OS, PYROVATEX CP and their Russian-made analog in storage during several months was investigated, using HPLC. Due to the complexity of the composition of laboratory and commercial samples, in which along with N-methylol-3-dimethoxyphosphorylpropionamide are N-methoxymethyl-3-dimethoxyphosphorylpropionamide, N,N'-oxydimethylenebis(-dimethoxyphosphorylpropionamide) and 3-dimethoxyphosphorylpropionamide, various chemical reactions proceed in the aging of these samples. The main path of conversion is transformations of the components to each other. From them, the formation of N,N'-oxydimethylenebis(3-dimethoxyphosphorylpropionamide) and N-methoxymethyl-3-dimethoxyphosphorylpropionamide from N-methylol-3-dimethoxyphosphorylpropionamide should be noted. However, it was also found that reactions resulting in the degradation of the components can occur, the overall concentration of the components in a sample being decreased.

Keywords

Analysis, Chromatography, Durable flame retardants for fabric, PYROVATEX CP, Storage